

1510 - B Third Street
Tillamook, Oregon 97141
www.tillamook.or.us

Building (503) 842-3407
Planning (503) 842-3408
On-Site Sanitation (503) 842-3409
FAX (503) 842-1819
Toll Free 1 (800) 488-8280



Land of Cheese, Trees and Ocean Breeze

**FLOODWAY DEVELOPMENT PERMIT #851-21-000096-PLNG:
MOHLER SAND & GRAVEL/BOSWELL**

*NOTICE TO MORTGAGEE, LIENHOLDER, VENDOR OR SELLER:
ORS 215 REQUIRES THAT IF YOU RECEIVE THIS NOTICE,
IT MUST BE PROMPTLY FORWARDED TO THE PURCHASER*

December 3, 2021

Dear Property Owner:

This is to confirm that the Tillamook County Department of Community Development **APPROVED WITH CONDITIONS** the above-cited requests on December 3, 2021. A copy of the application, along with a map of the request area and the applicable criteria for review are available for inspection on the Tillamook County Department of Community Development website: <https://www.co.tillamook.or.us/commdev/landuseapps> and is also available for inspection at the Department of Community Development office located at 1510-B Third Street, Tillamook, Oregon 97141.

Appeal of this decision. This decision may be appealed to the Tillamook County Planning Commission, who will hold a public hearing. Forms and fees must be filed in the office of this Department before **4:00pm on December 15, 2021**. This decision will become final on December 15, 2021 after 4:00pm unless an appeal is filed in accordance with Tillamook County Land Use Ordinance Article X.

Request: A review of a Floodway Development Permit for the extraction and redeposition of 45,000-cubic yards of gravel within the Floodway.

Location: The subject property is accessed from Foss Road, a County road, and is designated as Tax Lot 1100, of Section 5 of Township 2 North, Range 9 West of the Willamette Meridian, Tillamook County, Oregon.

Zone: Rural Industrial (RI)

Applicant: Mohler Sand & Gravel/Todd Boswell, 35980 Underhill Ln, Nehalem, OR 97131

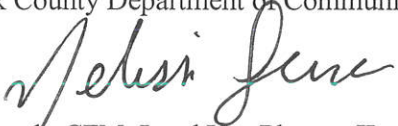
Property Owner: Nancy Smith, 20855 Foss Road, Nehalem, OR 97131

CONDITIONS OF APPROVAL

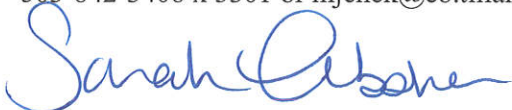
1. The applicant/property owner shall obtain all required Federal, State, and Local permits and/or licenses and will comply with applicable rules and regulations.
2. All applicable permits, including a consolidated Zoning and Building Permit from the Tillamook County Department of Community Development shall be obtained prior to construction the proposed dwelling.
3. A minimum 50-foot riparian setback from the Nehalem River, measured in accordance with TCLUO Section 4.140, shall be maintained on the subject property for the deposition of extracted gravel. Future development on the subject property shall also maintain the required riparian setback and comply with the requirements of TCLUO 4.140: Development Requirements for Water Quality and Streambank Stabilization.
4. The applicant/property owner shall coordination with DSL a to obtain all applicable permits for gravel extraction activities within the Nehalem River.
5. The applicant/property owner shall submit a site plan drawn to scale that confirms all required setbacks are met. The site plan shall be submitted to the Department of Community Development at the time of consolidated Zoning and Building Permit application submittal.
6. Development shall comply with the applicable standards of TCLUO Section 3.030, 'Rural Industrial (RI) Zone'.
7. The applicant/property owner shall comply with all 'Zone AE' flood hazard construction standards per FEMA requirements. All development shall adhere to the standards for fill in the 'AE' and 'Floodway' flood zone per TCLUO Section '3.510'.
8. This approval shall be void on December 3, 2023, unless construction of approved plans has begun, or an extension is requested from, and approved by this Department.

Sincerely,

Tillamook County Department of Community Development



Melissa Jenck, CFM, Land Use Planner II
503-842-3408 x 3301 or mjenck@co.tillamook.or.us



Sarah Absher, CFM, Director

Enc.: Vicinity, Assessor's and Zoning maps



Land of Cheese, Trees and Ocean Breeze

**FLOODWAY DEVELOPMENT PERMIT REQUEST 851-21-000096-PLNG:
MOHLER SAND & GRAVEL/BOSWELL**

ADMINISTRATIVE DECISION & STAFF REPORT

Decision Date: December 3, 2021

**Decision: APPROVED WITH CONDITIONS
(This is not Building or Placement Permit Approval)**

Report Prepared by: Melissa Jenck, CFM, Land Use Planner II

I. GENERAL INFORMATION:

- Request:** A review of a Floodway Development Permit for the extraction and redeposition of 45,000-cubic yards of gravel within the Floodway.
- Location:** The subject property is accessed from Foss Road, a County road, and is designated as Tax Lot 1100, of Section 5 of Township 2 North, Range 9 West of the Willamette Meridian, Tillamook County, Oregon.
- Zone:** Rural Industrial (RI)
- Applicant:** Mohler Sand & Gravel/Todd Boswell, 35980 Underhill Ln, Nehalem, OR 97131
- Property Owner:** Nancy Smith, 20855 Foss Road, Nehalem, OR 97131

Proposal Description: The subject property encompasses 28.71 acres, is improved with various industrial buildings including offices and a service garage, abuts the Nehalem River to the south, and is accessed via Foss Road, a County road, to the north (Exhibit A). The topography at this location has varying terrain with a swift downward slope as it approaches the Nehalem River according to County LIDAR data (Exhibits A and B). Wetlands are indicated throughout the subject property as indicated on the National Wetlands Inventory Map (Exhibit A). No geologic hazards are mapped on the subject property (Exhibit A).

As indicated on FEMA FIRM 41057C0230F dated September 28, 2018, the subject property is located predominately within in an ‘AE’ Area of Special Flood Hazard and the Floodway of the Nehalem River (Exhibit A). The proposed project activity of extraction and redeposition of 45,000-cubic yards of gravel is to occur within the mapped Regulatory Floodway (Exhibit A & B). Staff finds that the proposed extraction and deposition activity is subject to the standards and criteria of TCLUO Section 3.510, Flood Hazard Overlay’ which are addressed below.

Currently, the application is a Floodplain Development Permit approval for the extraction and redeposition of 45,000-cubic yards of gravel within the Floodway adjacent to the Nehalem River (Exhibit B). The criteria and standards for each of this review is addressed below in this Staff Report.

II. APPLICABLE ORDINANCE AND COMPREHENSIVE PLAN PROVISIONS:

The desired use is governed through the following Sections of the Tillamook County Land Use Ordinance (TCLUO). The suitability of the proposed use, in light of these criteria, is discussed in Section III of this report:

- A. TCLUO Section 3.030, ‘Rural Industrial (RI) Zone’
- B. TCLUO Section 3.510, ‘Flood Hazard Overlay (FH) Zone’
- C. TCLUO Section 4.140, ‘Requirements for Protection of Water Quality and Streambank Stabilization’

III. ANALYSIS

The subject project is located within the regulatory floodway and is subject to a Type II review per TCLUO Article X: Development Approval Procedures. TCLUO Section 10.070 requires notification of Type II applications to be mailed to landowners within 250 feet of the subject properties, to allow at least 14 days for written comment and requires staff to consider comments received in making the decision.

Findings: Notice of the request was mailed to property owners and agencies on August 10, 2021. Staff finds that notification requirements have been met. Comments were received from the Oregon Department of State Lands (DSL), Oregon Department of Fish and Wildlife (ODFW) and FEMA Region X and are included as “Exhibit C”. DSL stated that permit authorization was provided for the extraction of 15,000-cubic yards until June 30, 2022. DSL stated if the materials are to extract are in excess of 15,000-cubic yards, a new permit application may be required with DSL (Exhibit C).

A. **TCLUO Section 3.030, ‘Rural Industrial (RI) Zone’**

PURPOSE: The purpose of the RI zone is to accommodate commercial activities requiring large sites and industrial activities that have impacts of such a nature that do not preclude the use of surrounding properties for legal purposes. Considerations for the inclusion of land in the RC zone apply likewise to the RI zone, but the site should be at least 5 acres in size; in addition, site location and the nature of nearby uses are especially critical.

Findings: Applicant is proposing the extraction and redeposition of 45,000-cubic yards of gravel within the Floodway on a Rural Industrial (RI) zone (Exhibit B).

The Goal 5 element of the Tillamook County Comprehensive Plan, Section 1.4(1.4a.2) provides an inventory of potential mineral and aggregate sites in Tillamook County that was compiled in 1996 based on information found in the DOGAMI database and the existing inventory information (Exhibit D). The site known as “Gravel Pit” identified at 2N09-0500-

01100, which is the location of the subject property, is included on that list of permitted and potentially significant sites (Exhibit D). Section 1.4(1.4a) of the Goal 5 Element identifies the subject property maintained removal permits issued from the Oregon Department of State Lands for gravel extraction within County Rivers since 1974 (Exhibit D). Staff finds that the proposed use at the site as a gravel pit and gravel extraction within County rivers is allowed as legally established non-conforming use in the Rural Industrial (RI) zone.

B. TCLUO Section 3.510 ‘Flood Hazard (FH) Overlay’

(5) *GENERAL STANDARDS: In all areas of special flood hazards the following standards are required:*

LETTER OF MAP REVISION

(a) If hydrologic and hydraulic analysis indicates an increase in flood levels, the applicant shall obtain a Conditional Letter of Map Revision (CLOMR) from FEMA before any encroachment, including fill, new construction, substantial improvement, or other development is permitted. Upon completion of the project, but no later than six months after project completion, a Letter of Map Revision (LOMR) shall be submitted to FEMA to reflect the changes on the FIRM and/or Flood Insurance Study. A LOMR is required only when the CLOMR documents an increase in flood levels during the occurrence of the base flood or where post-development conditions do not reflect what was proposed on the CLOMR.

...
Findings: Applicant provided a no-rise analysis prepared by Watershed Professionals Network, LLC dated September 21, 2020 which concluded that impact of the gravel extraction located within the Floodway will have no impact on the 100-year flood elevations (Exhibit B). Staff finds that a CLOMR will not be required as part of the proposed development as no increase of flood levels was generated by the proposed activity. Staff find this standard is met.

...
(9) *SPECIFIC STANDARDS FOR FLOODWAYS: Located within areas of special flood hazard established in Section 3.510(2) are areas designated as regulatory floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential, the following provisions apply:*

(a) Encroachments in the regulatory floodway including fill, new construction, substantial improvements and other development are prohibited unless certification is provided by a professional registered civil engineer demonstrating through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that such encroachment shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) If Subsection 8(a) is satisfied, all new construction and substantial improvement shall comply with all applicable flood hazard reduction provisions of Section 3.510(5) and (6).

(c) If hydrologic and hydraulic analysis indicates an increase in flood levels, the Applicant shall obtain a Conditional Letter of Map Revision (CLOMR) from FEMA before any encroachment, including fill, new construction, substantial improvement, or other development, in the regulatory floodway is permitted. Upon completion of the project, but no later than six months after project completion, a Letter of Map Revision (LOMR) shall be submitted to FEMA to reflect the changes on the FIRM and/or Flood Insurance Study. A LOMR is required only when the CLOMR documents an increase in flood levels during the occurrence of the base flood or where post-development conditions do not reflect what was proposed on the CLOMR.

Findings: Applicant has provided site plans prepared by HLB & Associates, Inc. which indicate the locations of gravel extraction from the in-water sites on the Nehalem River (Exhibit B). A site

plan indicated the deposition location of the fill to be located entirely outside a FEMA flood zone and not redeposited into the Floodway (Exhibit A & B). Applicant provided a no-rise analysis prepared by Watershed Professionals Network, LLC dated September 21, 2020 which concluded that impact of the gravel extraction located within the Floodway will have no impact on the 100-year flood elevations (Exhibit B). Staff finds that a CLOMR will not be required as part of the proposed development as no increase of flood levels was generated by the proposed activity. Comments were received from Josha Crowley, FEMA Region X Service Center, to conclude that the proposed development of extraction of materials from the Floodway as demonstrated in Watershed Professionals Network, LLC report would not produce adverse impacts (Exhibit C).

Staff finds that these standards have been met.

(14) DEVELOPMENT PERMIT PROCEDURES: A development permit shall be obtained before construction or development begins within any area of special flood hazard zone. The permit shall be for all structures including manufactured dwellings, and for all development including fill and other development activities, as set forth in the Definitions contained in this Section of the Land Use Ordinance.

(a) Application for a development permit shall be made on forms furnished by the Community Development Director and shall include but not necessarily be limited to: plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question, existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing. Specifically, the following information in 3.510(14)(a)(1)–(4) is required and Development Permits required under this Section are subject to the Review Criteria put forth in Section 3.510(14)(b):

- (1) Elevation in relation to a specific datum of the lowest floor, including basement, of all structures as documented on an Elevation Certificate;*
- (2) Elevation in relation to a specific datum to which any proposed structure will be floodproofed as documented on an Elevation Certificate;*
- (3) If applicable, certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in Subsection (6)(c)(3) of this Section; and*
- (4) Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.*

Findings: Applicant submitted the required information on forms provided by the Community Development Department and as attachments thereto (Exhibit B). As described in Applicant’s submittal, the proposed extraction and redeposition of fill for use of the Mohler Sand & Gravel operations – a use that is allowed to continue due to being a legally established non-conforming use (Exhibit D). The extraction activity is within the FEMA Floodway, with the deposition occurring entirely outside the FEMA Special Flood Hazard Area (SFHA) as indicated on the Applicants site plan (Exhibit A & B).

(b) Development Permit Review Criteria

- (1) The fill is not within a Coastal High Hazard Area.*

Findings: Staff finds the proposed extraction activities are located is within a FEMA ‘AE’ Floodway and is therefore not located within a Coastal High Hazard Area (Exhibit B). Staff find this criterion is met.

- (2) Fill placed within the Regulatory Floodway shall not result in any increase in flood levels during the occurrence of the base flood discharge.*

- (3) The fill is necessary for an approved use on the property.*
- (4) The fill is the minimum amount necessary to achieve the approved use.*

Findings: Applicant provided a no-rise analysis prepared by Watershed Professionals Network, LLC dated September 21, 2020 which concluded that impact of the gravel extraction located within the Floodway will have no impact on the 100-year flood elevations (Exhibit B). The proposed activity extraction of 45,000-cubic yards of gravel within the Nehalem River Floodway, to be deposited on the subject property entirely outside the FEMA SFHA (Exhibit A & B). The proposed fill is to be used by Mohler Sand & Gravel for concrete and operations of the enterprise (Exhibit B). Staff find these criteria are met.

- (5) No feasible alternative upland locations exist on the property.*

Findings: The subject property maintains upland area outside the FEMA SFHA (Exhibit A). Applicant has proposed for the deposition of materials to be sited upland and outside the FEMA SFHA (Exhibit A & B). The extraction activity is for in-water extraction of gravel within the Nehalem River, which is within the FEMA Floodway boundary (Exhibit A). The extraction activities have historically been performed in this area and are evident with prior Department of State Land permitting and the areas inclusion for in-water gravel extraction contained within the Goal 5 Element of the Tillamook County Comprehensive Plan. Staff find this criterion is met.

- (6) The fill does not impede or alter drainage or the flow of floodwaters.*

Findings: Applicant has provided site plans prepared by HLB & Associates, Inc. which indicate the locations of gravel extraction from the in-water sites on the Nehalem River (Exhibit B). A site plan indicated the deposition location of the fill to be located entirely outside a FEMA flood zone and not redeposited into the Floodway (Exhibit A & B). Applicant provided a no-rise analysis prepared by Watershed Professionals Network, LLC dated September 21, 2020 which concluded that impact of the gravel extraction located within the Floodway will have no impact on the 100-year flood elevations (Exhibit B). Staff find this criterion is met.

- (7) If the proposal is for a new critical facility, no feasible alternative site is available.*
- (8) For creation of new, and modification of, Flood Refuge Platforms, the following apply, in addition to (14)(a)(1-4) and (b)(1-5):*

- i. The fill is not within a floodway, wetland, riparian area or other sensitive area regulated by the Tillamook County Land Use Ordinance.*
- ii. The property is actively used for livestock and/or farm purposes,*
- iii. Maximum platform size = 10 sq ft of platform surface per acre of pasture in use, or 30 sq ft per animal, with a 10-ft wide buffer around the outside of the platform,*
- iv. Platform surface shall be at least 1 ft above base flood elevation,*
- v. Slope of fill shall be no steeper than 1.5 horizontal to 1 vertical,*
- vi. Slope shall be constructed and/or fenced in a manner so as to prevent and avoid erosion.*

Findings: The Applicant has proposed the extraction and deposition of 45,000-cubic yards of gravel from the Nehalem River onto the subject property (Exhibit B). Staff find the proposed improvement is neither a critical facility as defined in TCLUO Section 3.510(4) or a Flood Refuge Platform. Staff find these criteria are met.

Conditions of approval may require that if the fill is found to not meet criterion (5), the fill shall be removed or, where reasonable and practical, appropriate mitigation measures shall be required of the property owner. Such measures shall be verified by a certified engineer or hydrologist that the mitigation measures will not result in a net rise in floodwaters and be in coordination with applicable state, federal and local agencies, including the Oregon Department of Fish and Wildlife.

Findings: Applicant submitted the required information on forms provided by the Community Development Department and as attachments thereto (Exhibit B). Applicant has proposed for the deposition of materials to be sited upland and outside the FEMA SFHA (Exhibit A & B). The extraction activity is for in-water extraction of gravel within the Nehalem River, which is within the FEMA Floodway boundary (Exhibit A). Watershed Professionals Network, LLC provided a no-rise analysis certifying that the proposed extraction activity will not create a rise in flood levels (Exhibit B). Staff finds that these criteria are met.

C. TCLUO Section 4.140, 'Requirements for Protection of Water Quality and Streambank Stabilization'

(1) The following areas of riparian vegetation are defined:

(a) Fifty (50) feet from lakes and reservoirs of one acre or more, estuaries, and the main stems of the following rivers where the river channel is more than 15 feet in width; Nestucca, Little Nestucca, Three Rivers, Tillamook, Trask, Wilson, Kilchis, Miami, Nehalem and North and South Fork Nehalem River.

*...
For estuaries, all measurements are horizontal and perpendicular from the mean high water line or the line of non-aquatic vegetation, whichever is most landward. Setbacks for rivers, streams, and coastal lakes shall be measured horizontal and perpendicular from the ordinary high water line.*

Findings: Staff finds the subject property is adjacent to Nehalem River (Exhibit B).

(2) All development shall be located outside of areas listed in (1) above, unless:

(a) For a bridge crossing; or

(b) Direct water access is required in conjunction with a water dependent use; or

(c) Because of natural features such as topography, a narrower riparian area protects equivalent habitat values; or

(d) A minimal amount of riparian vegetation is present and dense development in the general vicinity significantly degrades riparian habitat values.

Setbacks may be reduced under the provisions of (c) and (d) above only if the threat of erosion will not increase and a minimum 20-foot setback is maintained. Determinations of habitat values will be made by the Oregon Department of Fish and Wildlife.

Findings: The subject property abuts the Nehalem River, which defines the riparian area as 50-feet. Applicant is proposing to extract gravel within the Nehalem River for deposition of fill on the subject property (Exhibit B). The site plan provided by the Applicant would indicate the deposition site exceeds 50-feet from the high-water line of the Nehalem River (Exhibit B). The Oregon Department of Fish and Wildlife commented that the operation should adhere to a 2009 Mediated Gravel Agreement to prevent stranding of fish on the site (Exhibit C).

Staff finds that these requirements can be met through compliance with Conditions of Approval.

V. DECISION: APPROVED WITH CONDITIONS

Based on the findings shown above, Staff concludes that the Applicant has satisfied the review criteria, and can meet all applicable ordinance requirements at the time of application. Therefore, the Department approves Floodplain Development Permit 851-21-000096-PLNG subject to the Conditions of Approval in section VI of this report.

Appeal of this decision. This decision may be appealed to the Tillamook County Planning Commission, who will hold a public hearing. The forms and fees must be filed in the office of this Department before **4:00 PM on December 15, 2021.**

VI. CONDITIONS OF APPROVAL:

1. The applicant/property owner shall obtain all required Federal, State, and Local permits and/or licenses and will comply with applicable rules and regulations.
2. All applicable permits, including a consolidated Zoning and Building Permit from the Tillamook County Department of Community Development shall be obtained prior to construction the proposed dwelling.
3. A minimum 50-foot riparian setback from the Nehalem River, measured in accordance with TCLUO Section 4.140, shall be maintained on the subject property for the deposition of extracted gravel. Future development on the subject property shall also maintain the required riparian setback and comply with the requirements of TCLUO 4.140: Development Requirements for Water Quality and Streambank Stabilization.
4. The applicant/property owner shall coordination with DSL a to obtain all applicable permits for gravel extraction activities within the Nehalem River.
5. The applicant/property owner shall submit a site plan drawn to scale that confirms all required setbacks are met. The site plan shall be submitted to the Department of Community Development at the time of consolidated Zoning and Building Permit application submittal.
6. Development shall comply with the applicable standards of TCLUO Section 3.030, 'Rural Industrial (RI) Zone'.
7. The applicant/property owner shall comply with all 'Zone AE' flood hazard construction standards per FEMA requirements. All development shall adhere to the standards for fill in the 'AE' and 'Floodway' flood zone per TCLUO Section '3.510'.
8. This approval shall be void on December 3, 2023, unless construction of approved plans has begun, or an extension is requested from, and approved by this Department.

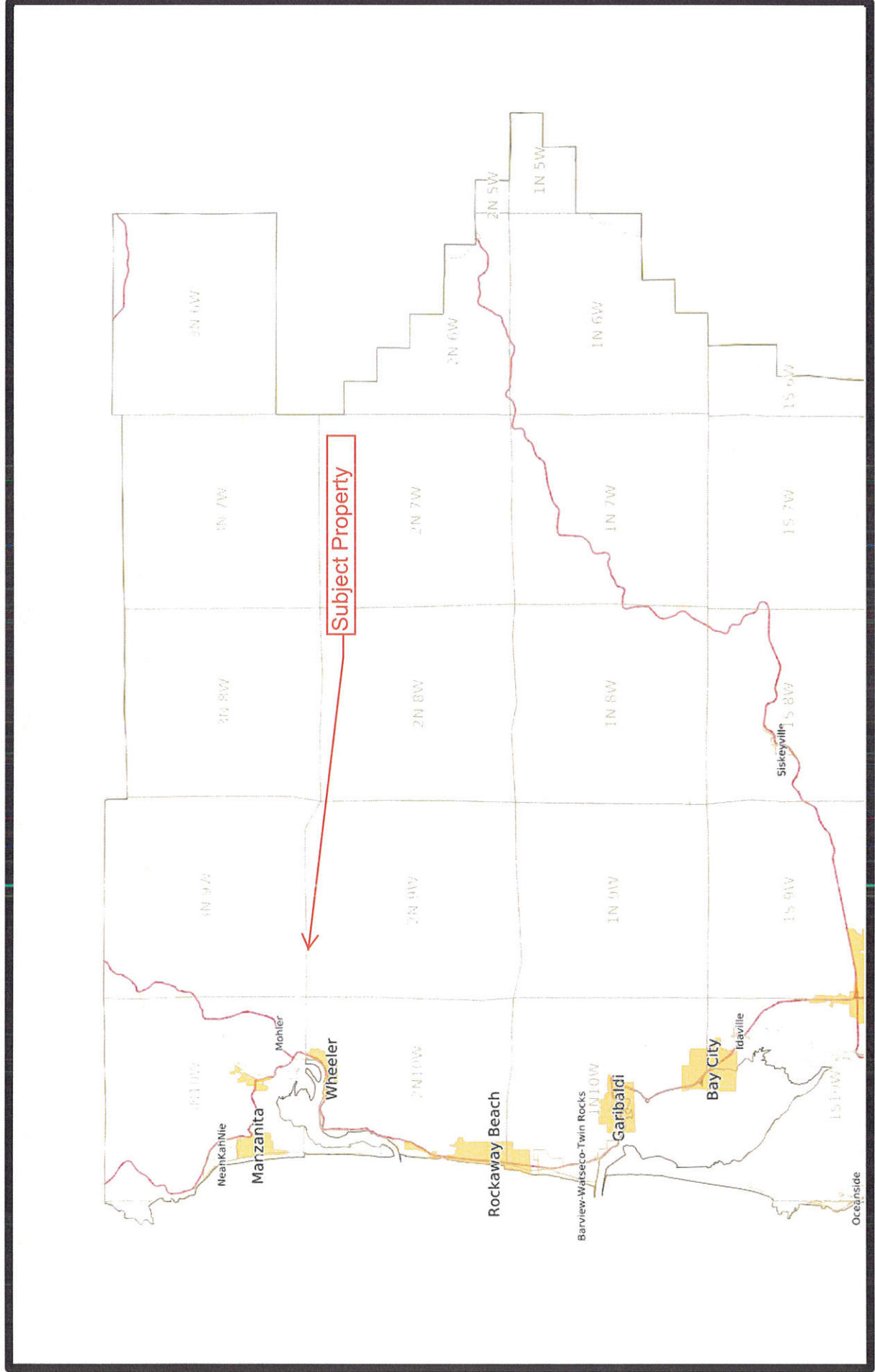
VII. EXHIBITS

All Exhibits referred to herein are, by this reference, made a part hereof:

- A. Location map, Assessor map, Zoning map, FEMA FIRM, NWI Wetlands map
- B. Applicant's submittal
- C. Public Comments
- D. Goal 5 Element of the Comprehensive Plan

EXHIBIT A

Vicinity Map



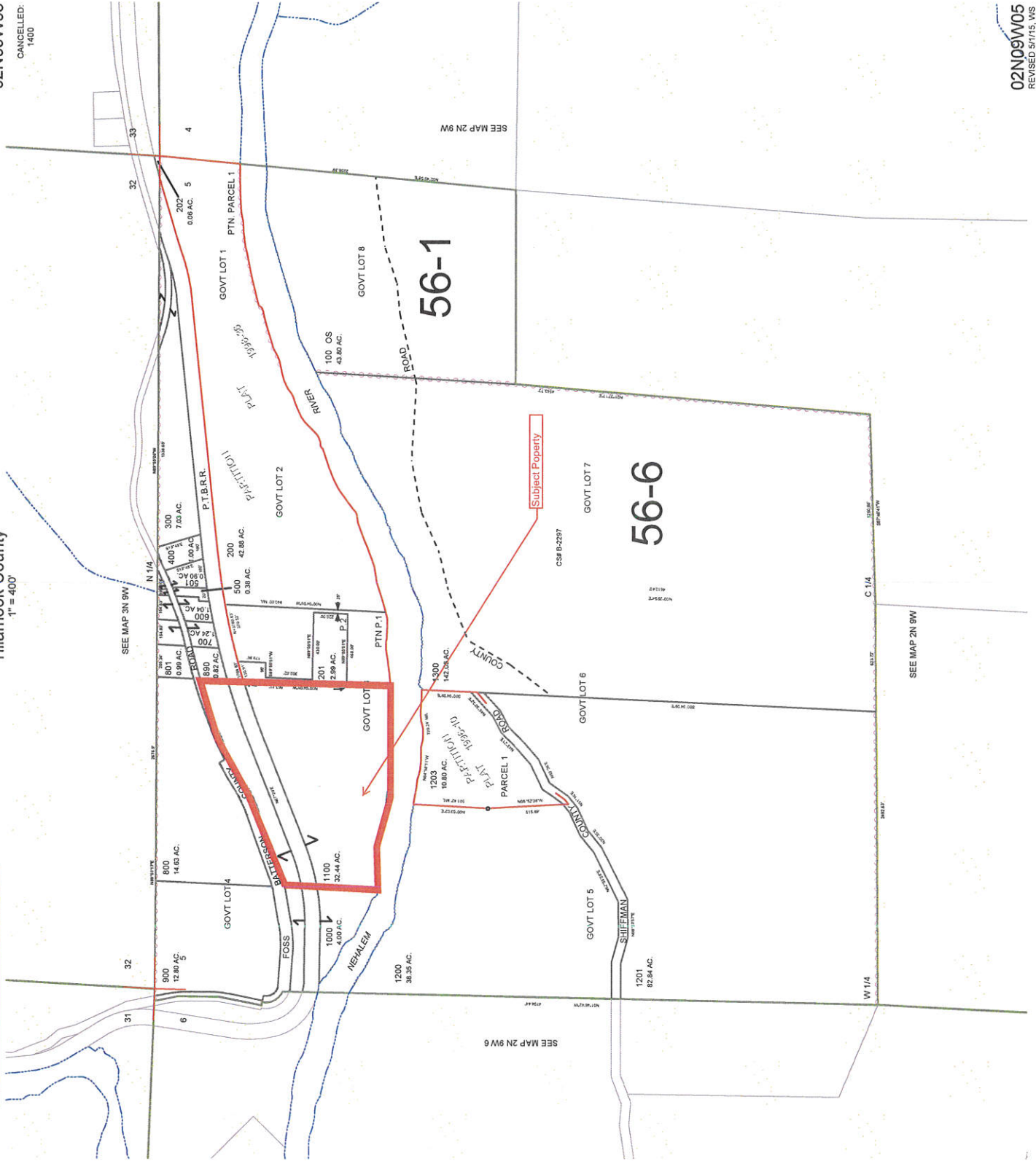
FOR ASSESSMENT AND TAXATION ONLY, NOT SUITABLE FOR
LEGAL, ENGINEERING, OR SURVEY PURPOSES

SECTION 5 T.2N. R.9W. W.M.
Tillamook County

1" = 400'

02N09W05

CANCELLED:
1400



02N09W05
REVISED 3/17/15, WS

TILLAMOOK County Assessor's Summary Report

Real Property Assessment Report

FOR ASSESSMENT YEAR 2020

August 10, 2021 1:26:03 pm

Account # 72904	Tax Status ASSESSABLE
Map # 2N09050001100	Acct Status ACTIVE
Code - Tax # 5606-72904	Subtype NORMAL

Legal Descr See Record

Mailing Name SMITH, NANCY M TRUSTEE

Deed Reference # 2014-6403

Agent

Sales Date/Price 11-21-2014 / \$0.00

In Care Of

Appraiser KARI FLEISHER

Mailing Address PO BOX 399
NEHALEM, OR 97131-0399

Prop Class 301	MA	SA	NH	Unit
RMV Class 301	07	AC	RPR	31215-2

Situs Address(s)	Situs City
ID# 1 20805 FOSS RD	COUNTY

Code Area	RMV	MAV	Value Summary AV	RMV Exception	CPR %
5606 Land	91,740			Land	0
Impr.	170,810			Impr.	0
Code Area Total	262,550	308,040	262,550		0
Grand Total	262,550	308,040	262,550		0

Code Area	ID#	RFPD	Ex	Plan Zone	Value Source	Land Breakdown			Trended RMV	
						TD%	LS	Size		
5606	1	<input checked="" type="checkbox"/>		RI	Industrial Site	108	A	4.73	MKT	15,550
5606	1	<input checked="" type="checkbox"/>		RI	Industrial Site	108	A	19.37	MKT	63,690
5606					OSD - AVERAGE	100				12,500
Grand Total								24.10		91,740

Code Area	Yr ID#	Stat Built	Class	Description	TD%	Total Sq. Ft.	Ex% MS Acct #	Trended RMV
5606	1	1981	790	Miscellaneous Industrial	100	0		170,810
Grand Total								170,810

Code Area	Type	Exemptions/Special Assessments/Potential Liability					
5606		SPECIAL ASSESSMENT:					
		<input checked="" type="checkbox"/> SOLID WASTE	Amount	12.00	Acres	0	Year 2020
		NOTATION(S):					
		<input checked="" type="checkbox"/> R P R (COUNTY RESPONSIBILITY)					

PP Account(s): 5606-759

Comments: Real Property Return (RPR) processing. gbs 8/6/02 // RPR processing with new construction as exception for 2003. gbs 8/22/03 // .27 acre partitioned from this site to create TL# 1100S1 (409593) per lease from Nancy M. Smith to the City of Wheeler. No change in value. gbs 9/11/03 // RPR processing for 2004. gbs 7/16/04 // RPR processing for 2005. gbs 4/19/05 7/26/06 RPR Processing for 2006. KF // 8/17/07 RPR Processing for 2007. KF // 4/22/08 RPR Processing for 2008-09. KF 6/2/09 RPR Processing for 2009/10. KF 7/21/09 Adjusted acreage per cartographer and moved 27.44 acres to code 56.01 due to dual fire coverage. KF 4/1/10 RPR Processing for 2010/11. KF 3/18/11 RPR Processing for 2011/12. KF 5/16/12 RPR Processing for 2012/13. KF 5/16/12 RPR Processing for 2012/13. KF 5/16/13 Confirmed farming activity with owner. Moved 8.07 acres of farm land to new S2 account. EJ. 4/23/14 RPR Processing for 2014/15. KF 3/11/15 IPR Processing for 2015/16. Tabled land. KF 6/17/16 RPR Processing for 2016/17. KF 6/5/17 RPR Processing for 2017/18. KF 6/15/18 RPR Processing for 2018/19. KF 5/6/19 RPR Processing for 2019/20. KF 4/22/20 RPR Processing for 2020/21. KF 7/23/20 Removed FP per ODF. LM

Tillamook County Assessor
Personal Property Assessment Summary Report
 For Assessment Year 2020

Account # 759

NEHALEM BAY READY MIX, MSG LLC
 MOHLER SAND & GRAVEL, LLC
 SMITH, BRETT A
 PO BOX 399
 NEHALEM OR 97131

Tax Status Assessable
Acct Status Active
Business Class 765 ROCK/ CEMENT & GRAVEL
Return Mailed
Last Transaction 4/22/2020
Process Code RPR

Code Area	Tax Account	AV	RMV	RMV Exception
5606	282358	\$1,471,780	\$1,471,780	\$15,050
Total		\$1,471,780	\$1,471,780	\$15,050

Real Acct ID	Code Area	Address
72904	5606	20805 FOSS RD COUNTY

Notation	Comments
OMITTED PROPERTY - ADD'L TAX OWING 311.216 - 232	NEW EQUIPMENT RAISED AV FOR 2007, OMIT PROCESSED FOR 2008/AJD

National Flood Hazard Layer FIRMette



123°49'23"W 45°41'43"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
Zone A, V, A59
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with draining areas of less than one square mile *Zone Y*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/10/2021 at 4:24 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



123°48'45"W 45°41'18"N

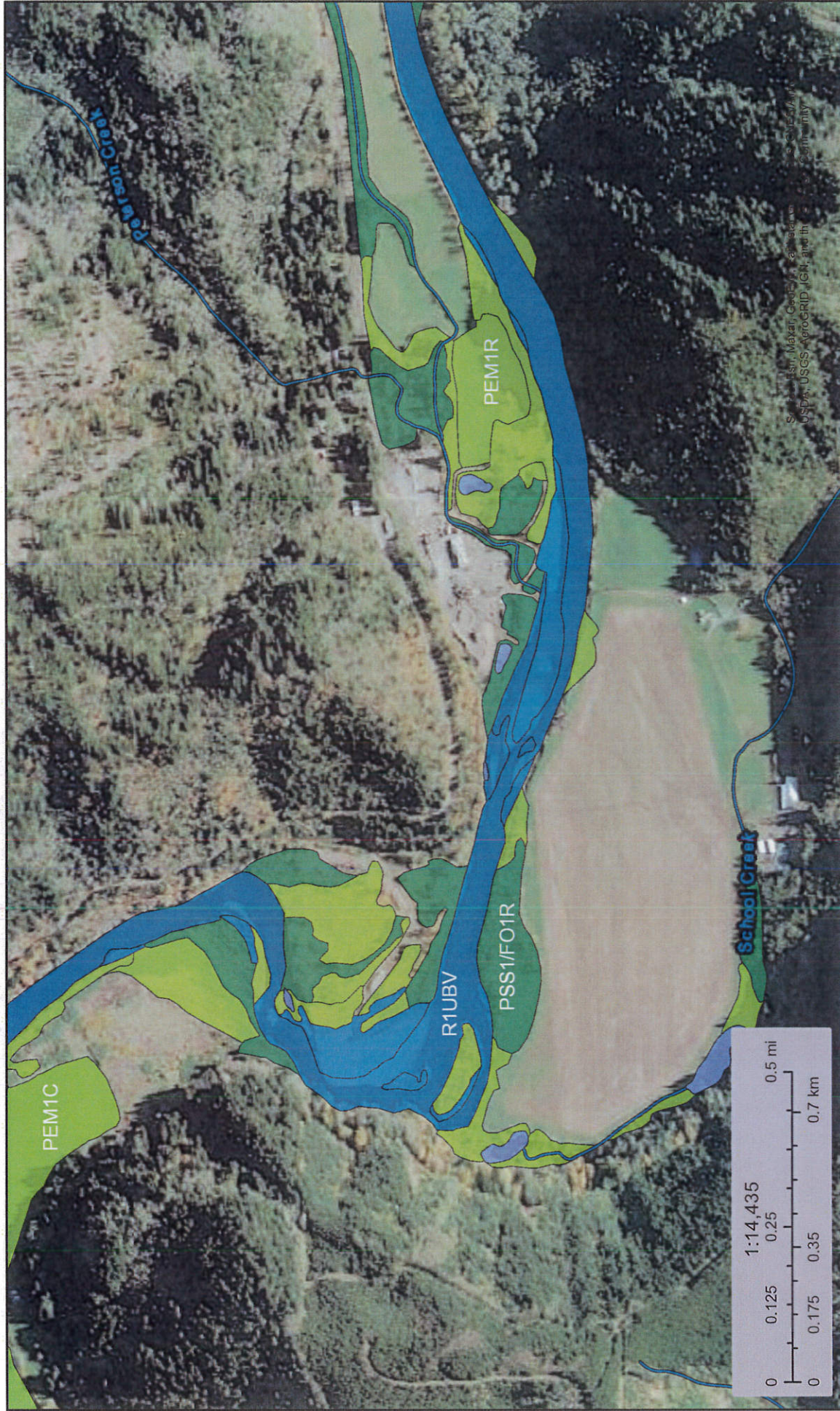




U.S. Fish and Wildlife Service

National Wetlands Inventory

Mohler Sand & Gravel



Source: Esri, Maxar, GeoEye, AeroGRID, IGN, and the GIS User Community
 USFWS, USGS, AeroGRID, IGN, and the GIS User Community

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

August 10, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

EXHIBIT B



Tillamook County Department of Community Development
 1510-B Third Street, Tillamook, OR 97141 | Tel: 503-842-3408 Fax: 503-842-1819
www.co.tillamook.or.us

PLANNING APPLICATION

Name: Todd Boswell (Rep) Phone: 503 686 4470
 Address: 35980 Underhill lane
 City: Nehalem State: OR Zip: 97131
 Email: Boswell.todd@gmail.com

Property Owner Name: Mohler Sand & Gravel Phone: 5033685157
 Address: 20805 Foss Rd
 City: Nehalem State: OR Zip: 97131

Applicant X (Check Box if Same as Property Owner)

Email: mohlersand@nehalem.tel.net

TOFFICE USE ONLY	
Date Stamp	RECEIVED MAR 19 2021 BY: <i>[Signature]</i>
<input type="checkbox"/> Approved	<input type="checkbox"/> Denied
Received by:	<i>[Signature]</i>
Receipt #:	119696
Fees:	983.00
Permit No:	851-21-000096-PLNG

Request:

We are obtaining a Floodway Development permit based on recommendations made from the LUCS type 1 permit process. An H & H study was completed and now the type 2 application process will be review by Tillamook county planning. Mohler Sand & Gravel is not proposing new activities at this time. The gravel extraction process was detailed as an attachment to the LUCS application and is also included with this application as well.

** H & H Study already submitted to Melissa Jenck thru email correspondences w/ Ed Salminen*

Type II

Type III

Type IV

- Farm/Forest Review Conditional Use Review
- Variance
- Exception to Resource or Riparian Setback
- Nonconforming Review (Major or Minor)
- Development Permit Review for Estuary Development
- Non-farm dwelling in Farm Zone
- Foredune Grading Permit Review
- Neskowin Coastal Hazards Area

- Appeal of Director's Decision
- Extension of Time
- Detailed Hazard Report
- Conditional Use (As deemed by Director)
- Ordinance Amendment
- Map Amendment
- Goal Exception

- Appeal of Planning Commission Decision
- Ordinance Amendment
- Large-Scale Zoning Map Amendment
- Plan and/or Code Text Amendment

Location:

Site Address:

Map Number

: 2N Township 9W Range 5 Section #201,200,1000,1100 Tax Lot(s)

Clerk's Instrument #: _____ **Authorization**

This permit application does not assure permit approval. The applicant and/or property owner shall be responsible for obtaining any other necessary federal, state, and local permits. The applicant verifies that the information submitted is complete, accurate, and consistent with other information submitted with this application.

Fred A Smith, L
Property Owner Signature (Required)

3-15-2021
Date

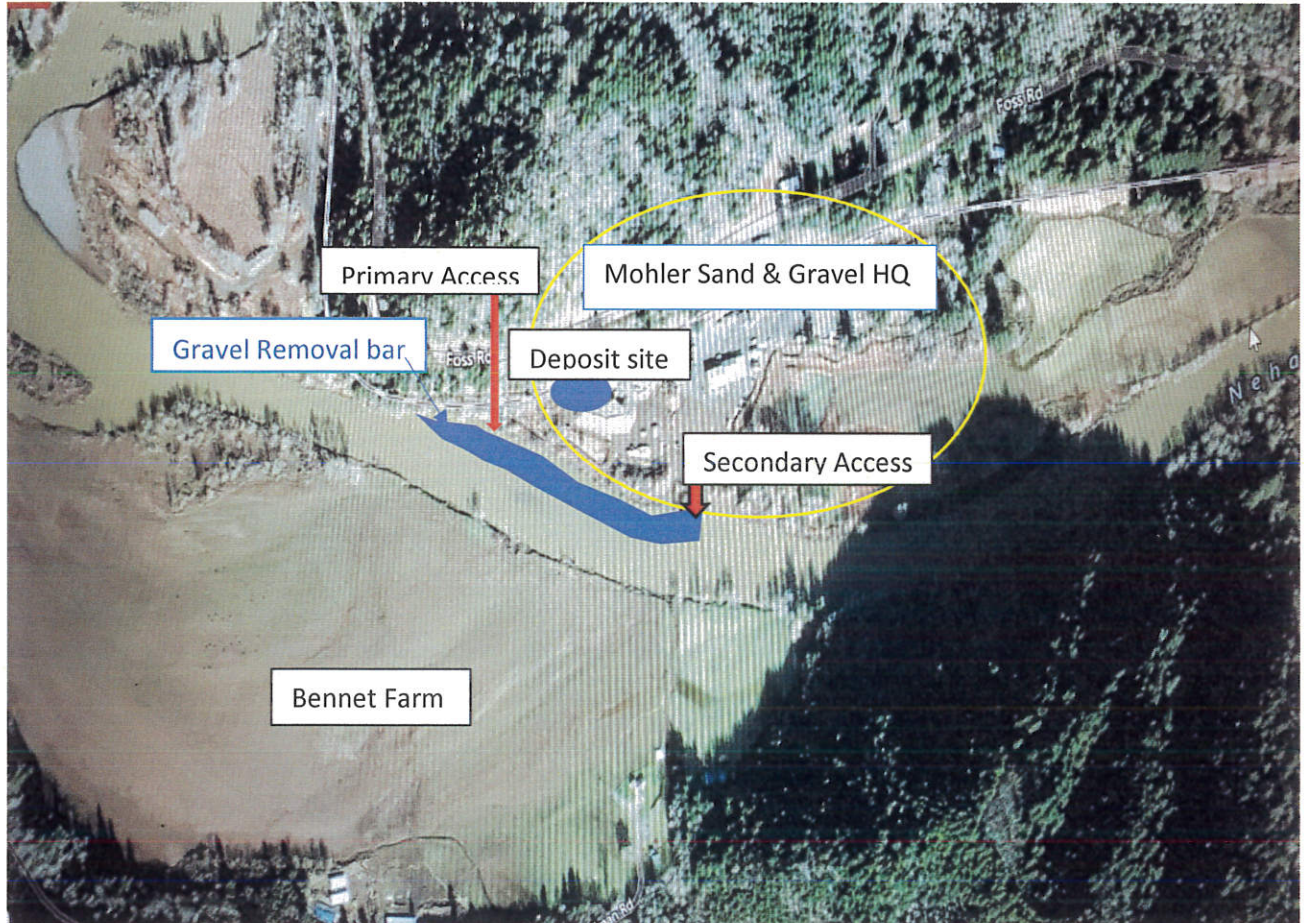
Jobl Borell
Applicant Signature

3-16-2021
Date

Map of Nehalem River

Surrounding the Mohler Sand and Gravel Company Property

Details of Gravel Removal Operations



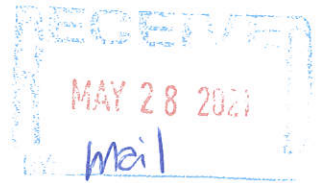
Scale =====

500m

Map points of interest

- The Bar where Gravel Removal is conducted is conveniently located adjacent to the Mohler Sand & Gravel Company Headquarters
- One single access point to the gravel bar for excavators, dump trucks, and vehicles.
- None of the operations from access to bar sculping require contact with the water
- All activities for gravel removal are conducted during the lowest flows of the year when the bar is high and dry
- Buffer strips are located on both side of the removal area to protect the river water on one side and the stream bank on the other
- During low flows the Nehalem river is a narrow single channel and runs along the terrace next to the Bennet farm

ENGINEERING "NO-RISE" CERTIFICATION



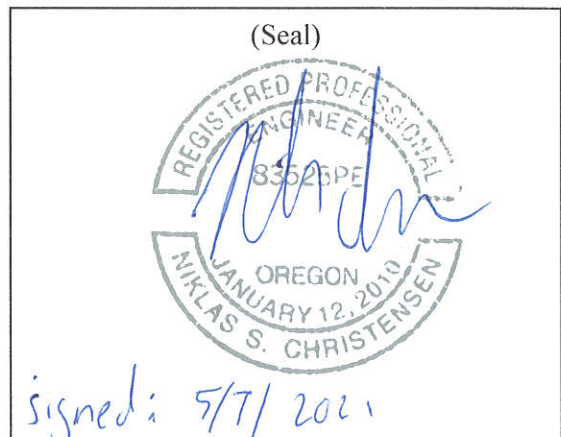
This is to certify that I am a duly qualified engineer licensed to practice in the State of Oregon.

It is to further certify that the attached technical data supports the fact that proposed Mohler Sand and Gravel LLC gravel extraction will not impact the 100-year flood elevations, floodway elevations and floodway widths on the Nehalem River at published sections in the Flood Insurance Study for Tillamook County, Oregon, And Unincorporated Areas dated 9/28/2018 and will not impact the 100-year flood elevations, floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Attached are the following documents that support my findings:

- Mohler Sand and Gravel Hydrologic and Hydraulic Analysis, September 21, 2020
- Appendix 1 – Original FEMA models (PDF documents)
- Appendix 2 – Reconstructed Original FEMA model (HEC-RAS model)
- Appendix 3 – Modified FEMA model – pre gravel extraction (HEC-RAS model)
- Appendix 4 – Modified FEMA model – post gravel extraction (HEC-RAS model)

Date 5/7/2021
Signature *Niklas S. Christensen*
Title engineer / partner
Address WPN
701 June Street
Hood River, OR
97031



TLCUO SECTION 3.510(14)(b) Development Permit Review Criteria:



(1) The fill is not within a Coastal High Hazard Area.

No, it is not.

(2) Fill placed within the Regulatory Floodway shall not result in any increase in flood levels during the occurrence of the base flood discharge.

Gravel is extracted from the floodway and stockpiled primarily outside of the floodway. The net is a decrease in material within the floodway and no increase in flood levels are modeled during the base flood discharge.

(3) The fill is necessary for an approved use on the property.

Yes, the fill is gravel (round rock aggregate) extraction to be used to create concrete

(4) The fill is the minimum amount necessary to achieve the approved use.

Yes, the USACE permit details a maximum removal is 10,000 to 15,000 cubic yards- minimum would be 3,000 to 5,000 cubic yards-average would be 8,000 cubic yards. Looking back last decade the average gravel extraction is right around 5,000 cubic yards looking at pre and post survey data completed each year.

(5) No feasible alternative upland locations exist on the property.

There is no feasible alternative. USACE has worked with Mohler S & G to develop an alternative analysis document to investigate this. It was concluded that no feasible alternative upland location exists on the property or within a local area.

(6) The fill does not impede or alter drainage or the flow of floodwaters.

No

(7) If the proposal is for a new critical facility, no feasible alternative site is available.

This is not a new facility. This facility has been in operation for over 50 years. No new sites or methods are being proposed for gravel extraction.

(8) For creation of new, and modification of, Flood Refuge Platforms, the following apply, in addition to (14)(a)(1-4) and (b)(1-5):

i. The fill is not within a floodway, wetland, riparian area or other sensitive area regulated by the Tillamook County Land Use Ordinance.

ii. The property is actively used for livestock and/or farm purposes,

iii. Maximum platform size = 10 sq ft of platform surface per acre of pasture in use, or 30 sq ft per animal, with a 10-ft wide buffer around the outside of the platform,

iv. Platform surface shall be at least 1 ft above base flood elevation,

v. Slope of fill shall be no steeper than 1.5 horizontal to 1 vertical,

vi. Slope shall be constructed and/or fenced in a manner so as to prevent and avoid erosion.

Conditions of approval may require that if the fill is found to not meet criterion (5), the fill shall be removed or, where reasonable and practical, appropriate mitigation measures shall be required of the property owner. Such measures shall be verified by a certified engineer or hydrologist that the mitigation measures will not result in a net rise in floodwaters and be in coordination with applicable state, federal and local agencies, including the Oregon Department of Fish and Wildlife.

Mohler Sand and Gravel Company

Gravel Removal Site Plan

2019

Site Description

The Nehalem River is the longest coastal river in Oregon with a mainstem length of 126 miles. The site used for gravel extraction is located approximately ½ mile above the head of tide water. Gravel extraction activities have been conducted at this location by Mohler Sand and Gravel Company for over four decades. The site's valley and channel geomorphology located 5 river miles below a major reach change is a major reason why it's been so successful in being a renewable resource for so long. This location is where the Nehalem River transitions from a narrow steep valley with a constrained channel to a broad valley that is unconstrained and floods over its banks during high water flood events usually every 10 years or so. This significant change in river habitat characteristics can also be observed by a decrease in the river's gradient. By the reduction in stream gradient the substrate changes from being dominated by bedrock in the steep valley (upstream of the Foss road bridge (MP 7.5)) to a gravel dominated reach in the broad valley, which continues to the Hwy 53 bridge (Approx. 10 river miles in length).

The extraction site for Mohler Sand and Gravel is approximately 500 yards in total length and is located within the last two river miles of this broad valley reach. The site selection for gravel removal is an ideal location to take advantage of gravel deposition just before the river becomes tidal. In the winter during high flow events the river at this location flows back over this gravel bar and stays underwater for months at a time, which enables it to deposit a significant amount of gravel to be harvested annually. Historically, since operations have begun if precipitation is abnormally low or below average then less or no gravel is extracted that year. Below the extraction site the river continues to have a gravel dominated substrate for another 1.5 miles until the river gradient reduces further. As this occurs the substrate then changes to be dominated by Silt/Organics common in lowland river and estuary ecosystems. Another important characteristic to be highlighted is the lack of historical Salmon spawning observed surrounding this area of the river. This is based on ODFW Spawner Survey data (ODFW Corvallis research lab) within this stream reach for Chinook, Coho, steelhead, and Chum. Three factors that attribute to historical lack of spawning here are: 1) River reach is very low in the system 2) River Velocities are too strong for successful spawning and redd survival 3) This river reach is considered more of a migration corridor for adult salmon traveling further up river to get to major tributaries for spawning.

Extraction Plan and Need

Every year the site of gravel removal is graded back to the level from the last years dry season after operations are complete. Mohler Sand and Gravel Company hires a qualified/licensed survey team to survey the bar before removal and again afterwards to ensure consistent levels are guaranteed year after year. These survey results are submitted to DSL for review. This process of collecting pre and post data points of contour and elevation allows for consistent and limited activities so it is sustainable for future decades to come.

Activities for gravel removal is done with dump trucks and excavators during the lowest flows of the year, which is typically in the mid to late summer season. Working during this time frame allows the operators to not go near the low flow wetted width and disturb water quality while operations are under way. Obviously by removing gravel and sand the bar on site will be disturbed. However, grading and buffer strips performed the day of completion or the day after to lessen disturbance impacts when water flows rise again in the fall season. It is also important to note that the bar is completely high and dry during operations. No damming occurs on the river as the river is free flowing above and below the site.

The access for industrial equipment (dump trucks and other vehicles) to the site follows one access point, so to not disturb the river banks natural vegetation of trees and shrubs. All fueling of trucks and equipment is done off bar above the high-water mark where the Mohler Sand and Gravel Company Headquarters is located (less than 1 mile away). Spill kits are readily available for anything which may occur. The extensive experience the Mohler Sand and Gravel team has had at this location allows them to use proven methods that have been refined and acceptable by USACE and DSL to conduct the most efficient extraction methods with minimal disturbance for this site.

River Rock and Sand are a very much needed commodity in the landscape, construction trades, and road/bridge building projects. This type of rock is a very hard source and the operators need to have access to this site to extract this valuable resource and provide it to the state, county, and public as needs arise. Everything removed is processed for sale and there is no waste. Continued gravel extraction in a responsible way allows this resource to be readily available for projects throughout Tillamook County. Without this operation to obtain this valuable resource there would be a huge negative impact on the feasibility to conduct basic infrastructure jobs throughout Tillamook county.

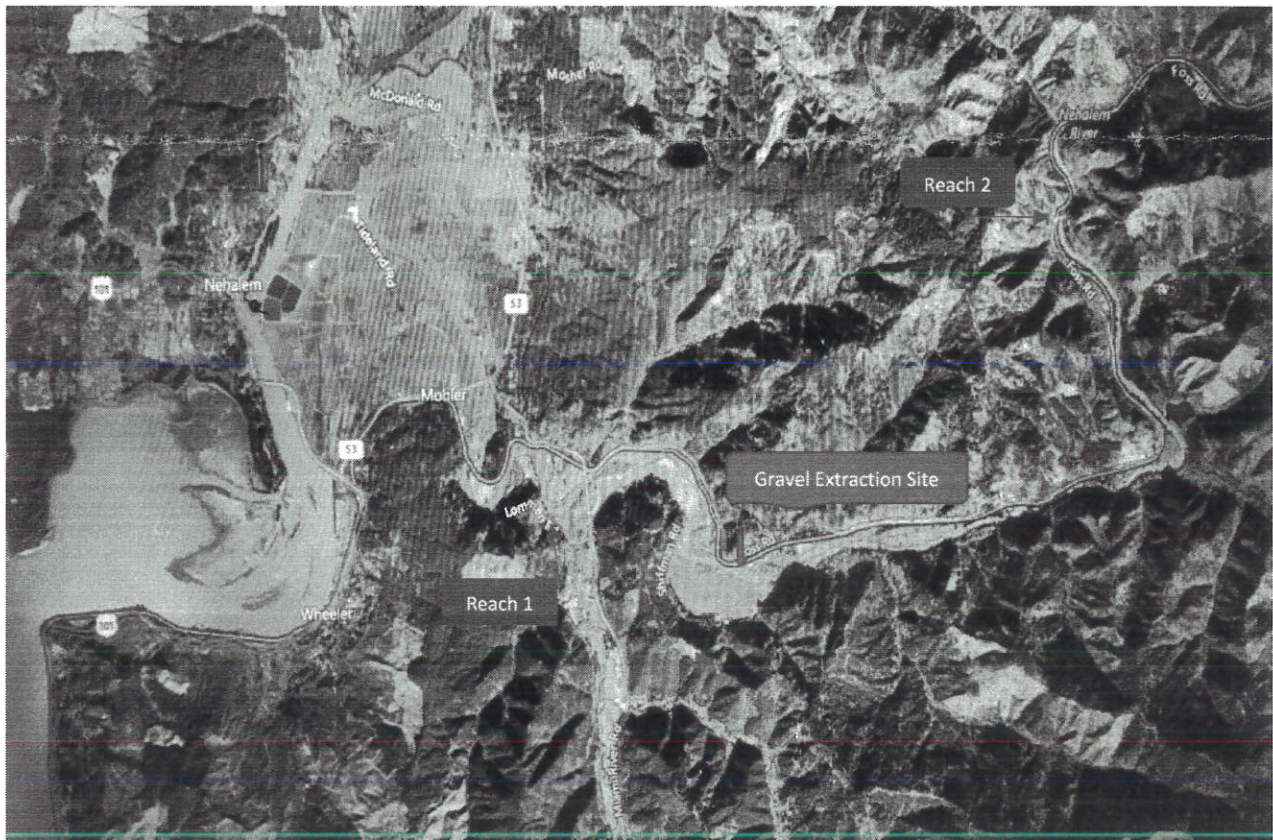
*Two maps are included to illustrate site location and removal plan.

Map of Lower Nehalem

Basin Overview with Gravel Extraction Site

&

Changes in Channel and Valley Geomorphology



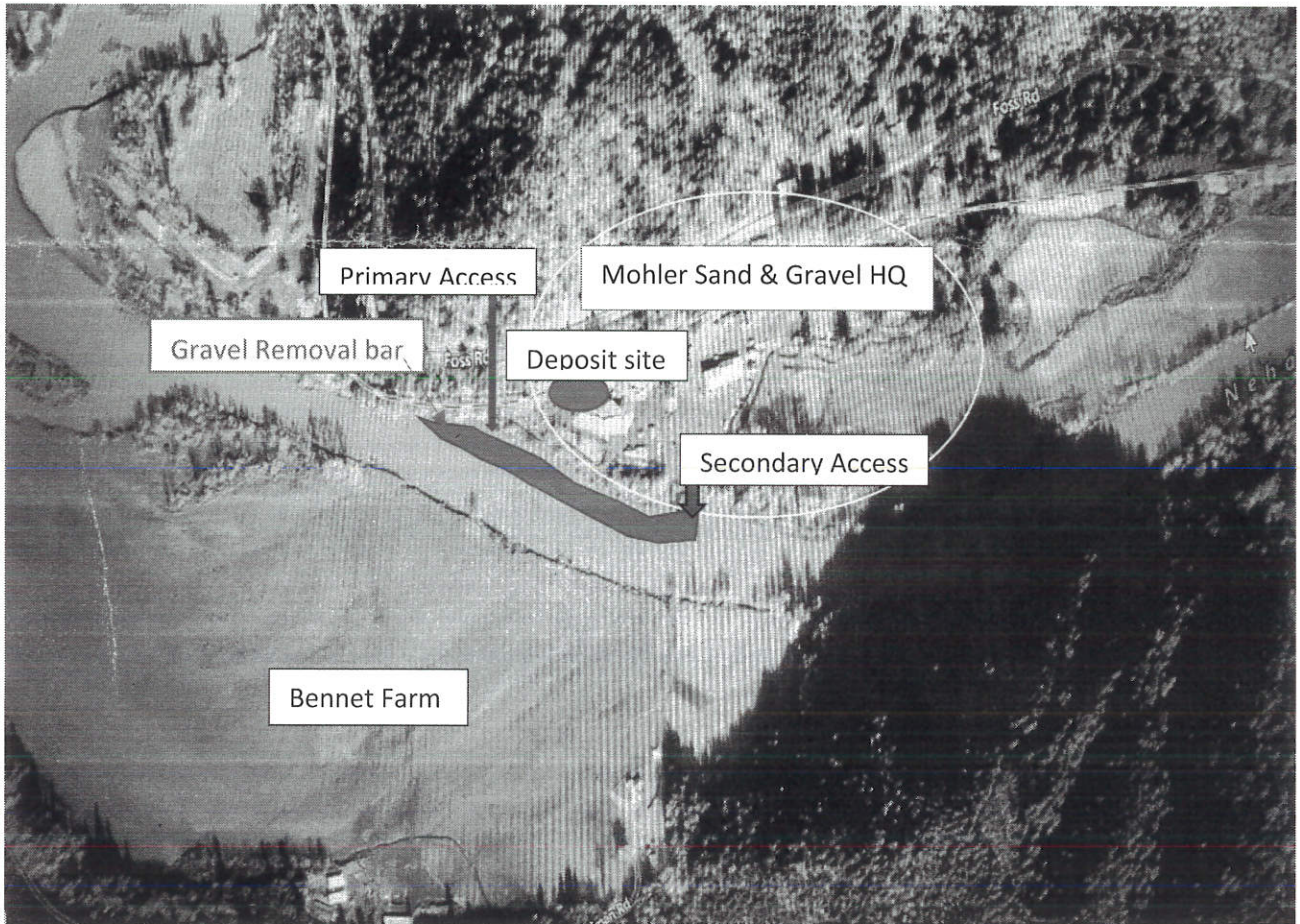
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Below Reach 1-Tidally influence lowland river ecosystem in a single channel with a wide active floodplain. Minor flooding can occur frequently during moderate rainfalls if there are high tides occurring. The lowland river transitions into the Nehalem Bay just past the Town of Nehalem near the Hwy 101 bridge. The substrate is Fines/Silt Organics typical of estuaries in the PNW.

Reach 1 – Broad Valley with a single channel constrained by high terraces. This reach has a wide active floodplain during extreme high-water events. Begins at the confluence with Foley Creek and is also close to the head of tidewater. Substrate is dominated by gravel

Reach 2 – Narrow Valley with channel constrained by hillslopes. There is no floodplain in this reach due to the steep hillslopes on both sides of the river. Begins at the Foss road bridge just below Nehalem falls. The stream gradient increases in this reach and is dominated by bedrock substrate.

Map of Nehalem River
Surrounding the Mohler Sand and Gravel Company Property
Details of Gravel Removal Operations



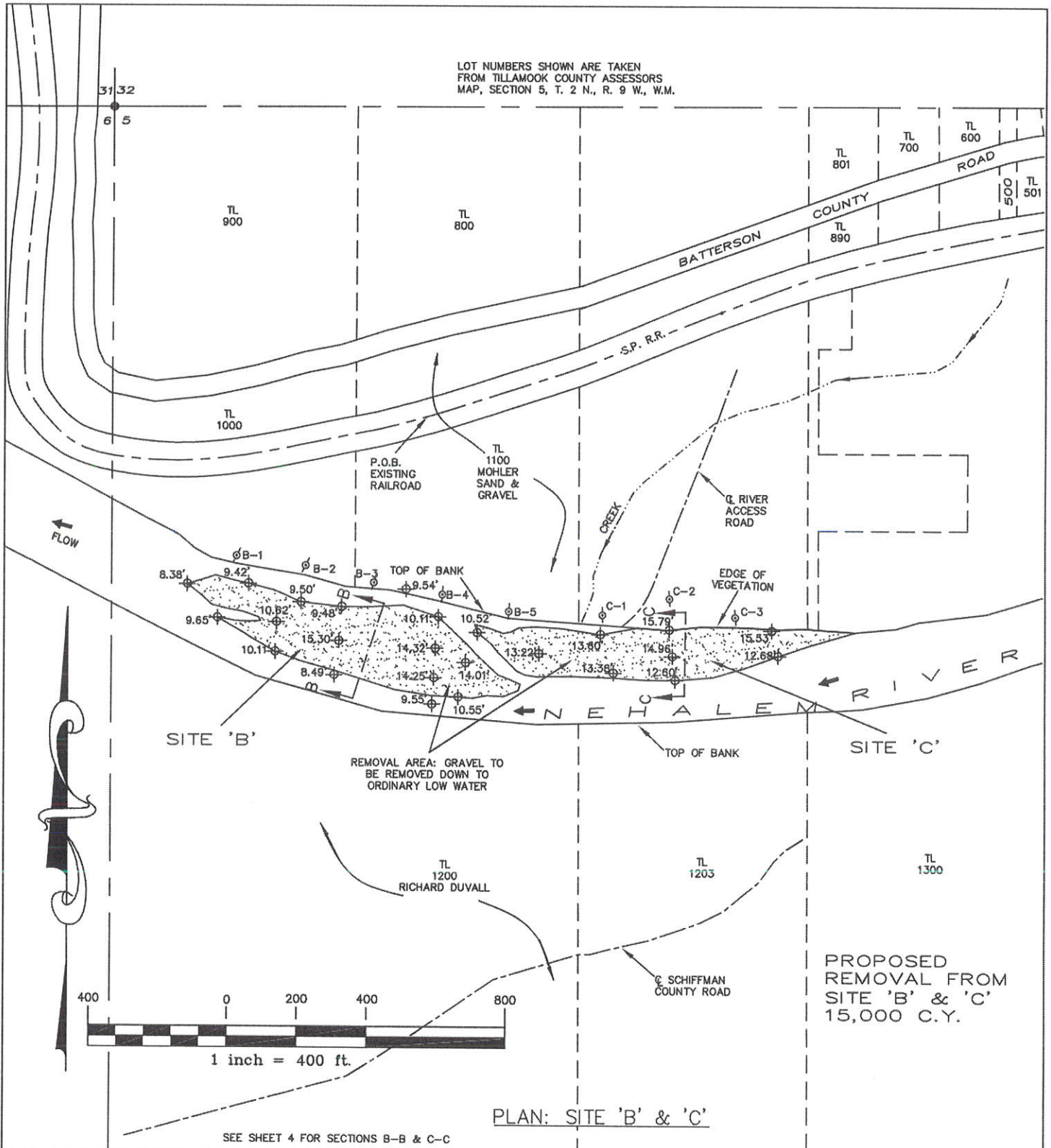
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LOT NUMBERS SHOWN ARE TAKEN FROM TILLAMOOK COUNTY ASSESSORS MAP, SECTION 5, T. 2 N., R. 9 W., W.M.



SURVEY FOR:

MOHLER SAND & GRAVEL
 PROPOSED GRAVEL REMOVAL
 NEHALEM RIVER
 SITE 'B' & 'C' PLAN
 SECTION 5, T2N, R9W, W.M.
 TILLAMOOK COUNTY OREGON

"S-BAR4"
 0367-1181-02.DWG

DATE AUGUST 28, 2002	JOB NO. 0367-11814	FIELD JPR/PJG	DRAWN KKA	CHECKED RGL
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SURVEY BY:

HLB & ASSOC., INC.
 HANDFORTH LARSON & BARRETT
 SURVEYING • ENGINEERING • PLANNING

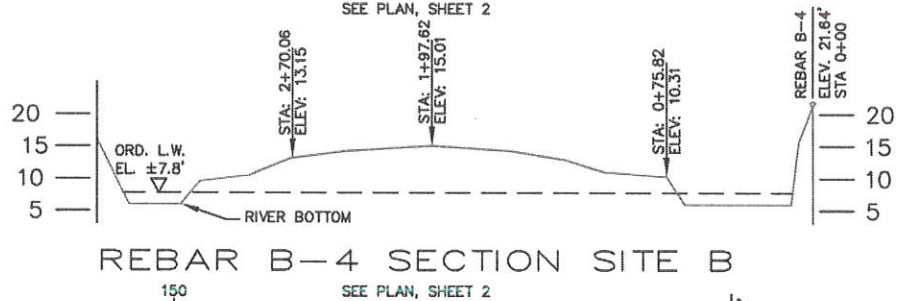
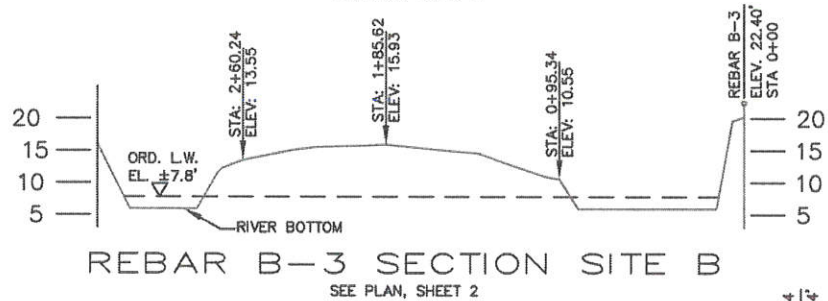
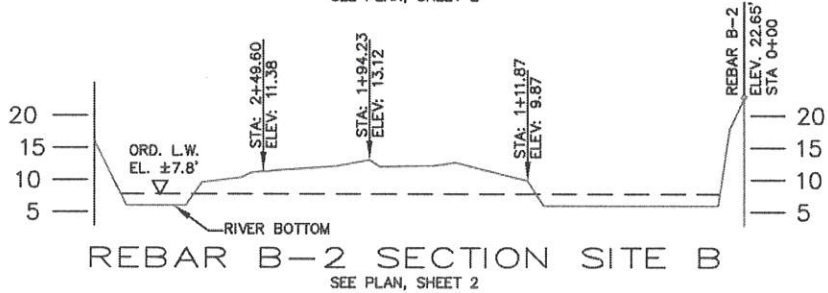
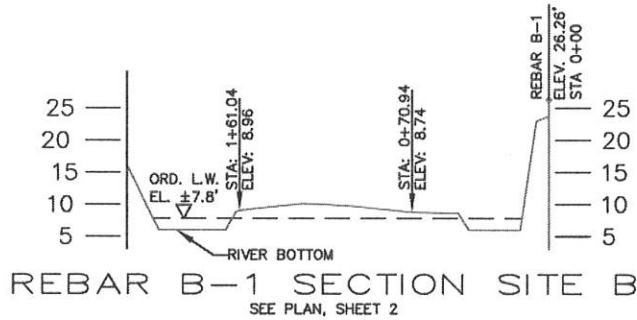
TILLAMOOK COUNTY
 160 LANEDA AVE.
 MANZANITA, OR 97130
 (503) 368-5394
 FAX: (503) 368-5847

CLATSOP COUNTY
 4253A HWY 101 N.
 GEARHART, OR 97138
 (503) 738-3425
 FAX: (503) 738-7455

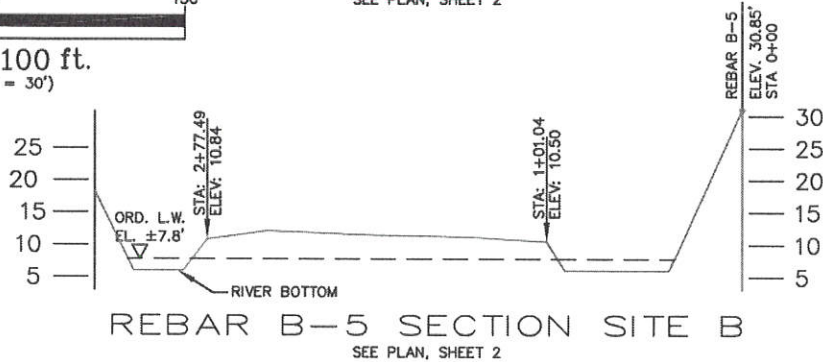
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OF 5



1 inch = 100 ft.
(VERTICAL SCALE: 1" = 30')



SURVEY FOR:

MOHLER SAND & GRAVEL

PROPOSED GRAVEL REMOVAL

NEHALEM RIVER

SITE 'B' & 'C' PLAN

SECTION 5, T2N, R9W, W.M.

TILLAMOOK COUNTY OREGON

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SHEET

2

OF 5

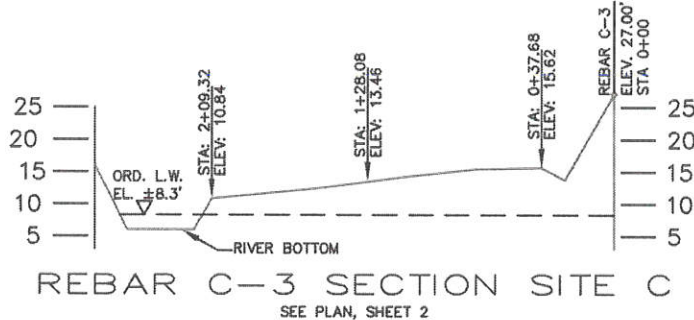
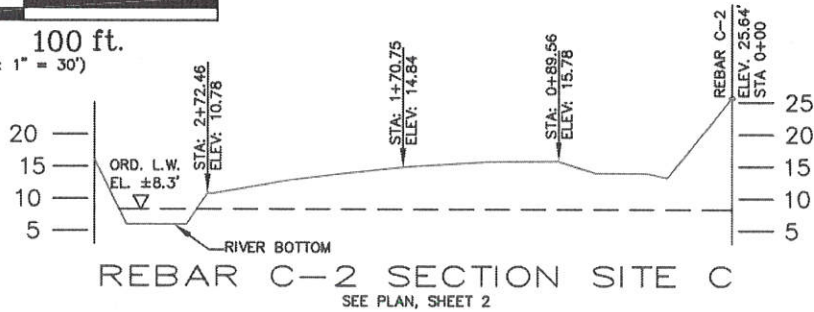
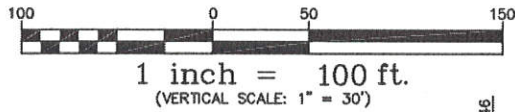
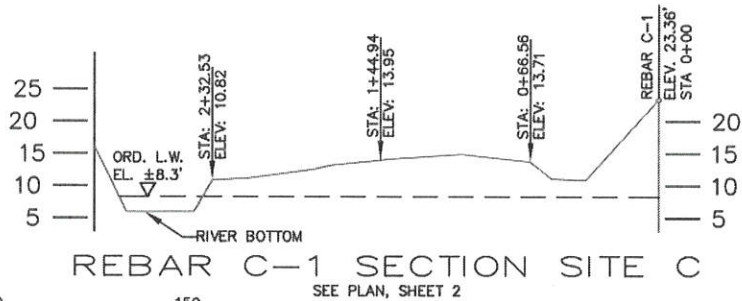
DATE
AUGUST 28, 2002

JOB NO.
0367-11814

FIELD
JPR/PJG

DRAWN
KKA

CHECKED
RGL



SUPPLEMENTAL INFORMATION

TO ACCOMPANY JOINT APPLICATION FOR GRAVEL REMOVAL AT RIVER MILE 9.3 (SITE 'A'), AND RIVER MILE 9.8 (SITE 'B' & 'C') ON THE NEHALEM RIVER
 MOHLER SAND & GRAVEL, APPLICANT.

THE WORK OF THIS PROJECT CONSISTS OF THE REMOVAL OF GRAVEL FROM TWO LOCATIONS ON THE NEHALEM RIVER. ALL OF THE OPERATIONS OF THIS PROJECT ARE LOCATED ABOVE THE HEAD TIDE OF THE NEHALEM RIVER. THE TILLAMOOK COUNTY PLANNING DEPARTMENT HAS DETERMINED THAT HEAD OF TIDE IS LOCATED AT RIVER MILE 8.7.

GRAVEL REMOVAL

GRAVEL REMOVAL WILL BE ACCOMPLISHED WITH A RUBBER TIRE FRONT-END LOADER AND 10 YARD DUMP TRUCKS. GRAVEL WILL BE REMOVED ONLY TO THE LEVEL OF THE ACTUAL SUMMERTIME ORDINARY LOW WATER. NO IN WATER WORK WILL BE DONE. NO DREDGING OF GRAVEL WILL BE DONE. NO ACCURATE DATA EXISTS REGARDING THE TRUE ELEVATION OF THE ORDINARY LOW WATER, THEREFORE, THIS ELEVATION HAS BEEN ESTIMATED BY THE APPLICANT, BASED UPON OBSERVATIONS OF APPARENT LOW WATER IN PREVIOUS YEARS. THE APPROXIMATE ORDINARY LOW WATER LINE VARIES FROM ABOUT 7.4 FEET NEAR RIVER MILE 9.3 TO ABOUT 8.3 FEET NEAR RIVER MILE 9.8. EXISTING ACCESS ROADS, LOCATED OUT OF THE WATERWAY, WILL BE USED AS SHOWN ON THE PLANS. GRAVEL WILL BE HAULED BY TRUCK TO THE APPLICANT'S PROPERTY, TAX LOT 1100.

SURVEY FOR:

MOHLER SAND & GRAVEL
 PROPOSED GRAVEL REMOVAL
 NEHALEM RIVER
 SITE 'B' & 'C' PLAN
 SECTION 5, T2N, R9W, W.M.
 TILLAMOOK COUNTY OREGON

"S-BAR4"
 0367-11814-02.DWG

SURVEY BY:

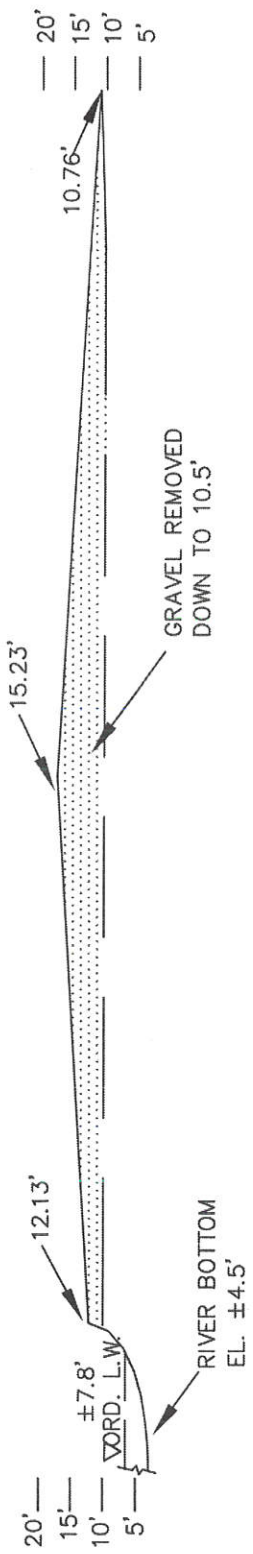
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SHEET

3

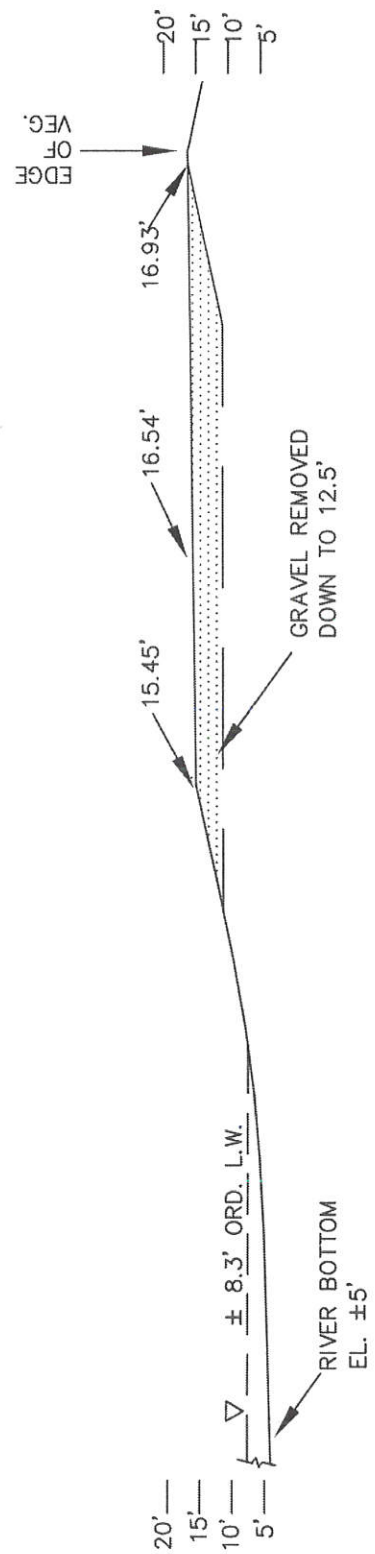
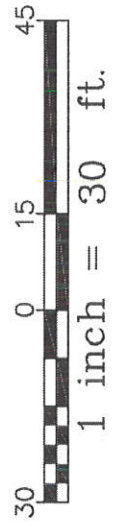
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DATE	JOB NO.	FIELD	DRAWN	CHECKED
AUGUST 28, 2002	0367-11814	JPR/PJG	KKA	RGL



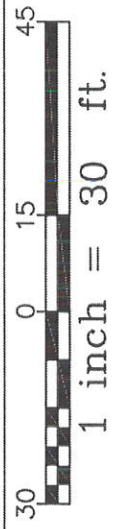
SECTION B — SITE B

SEE PLAN, SHEET 1



SECTION C — SITE C

SEE PLAN, SHEET 1



SURVEY FOR:
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SHEET
4
 OF 5

DATE AUGUST 28, 2002	JOB NO. 0367-11814	FIELD JPR/PJG	DRAWN KKA	CHECKED RGL
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"S-BAR4"
 0367-11814-002-02.DWG

SURVEY FOR:

MOHLER SAND & GRAVEL

PROPOSED GRAVEL REMOVAL

NEHALEM RIVER

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SECTION 5, T2N, R9W, W.M.

TILLAMOOK COUNTY OREGON

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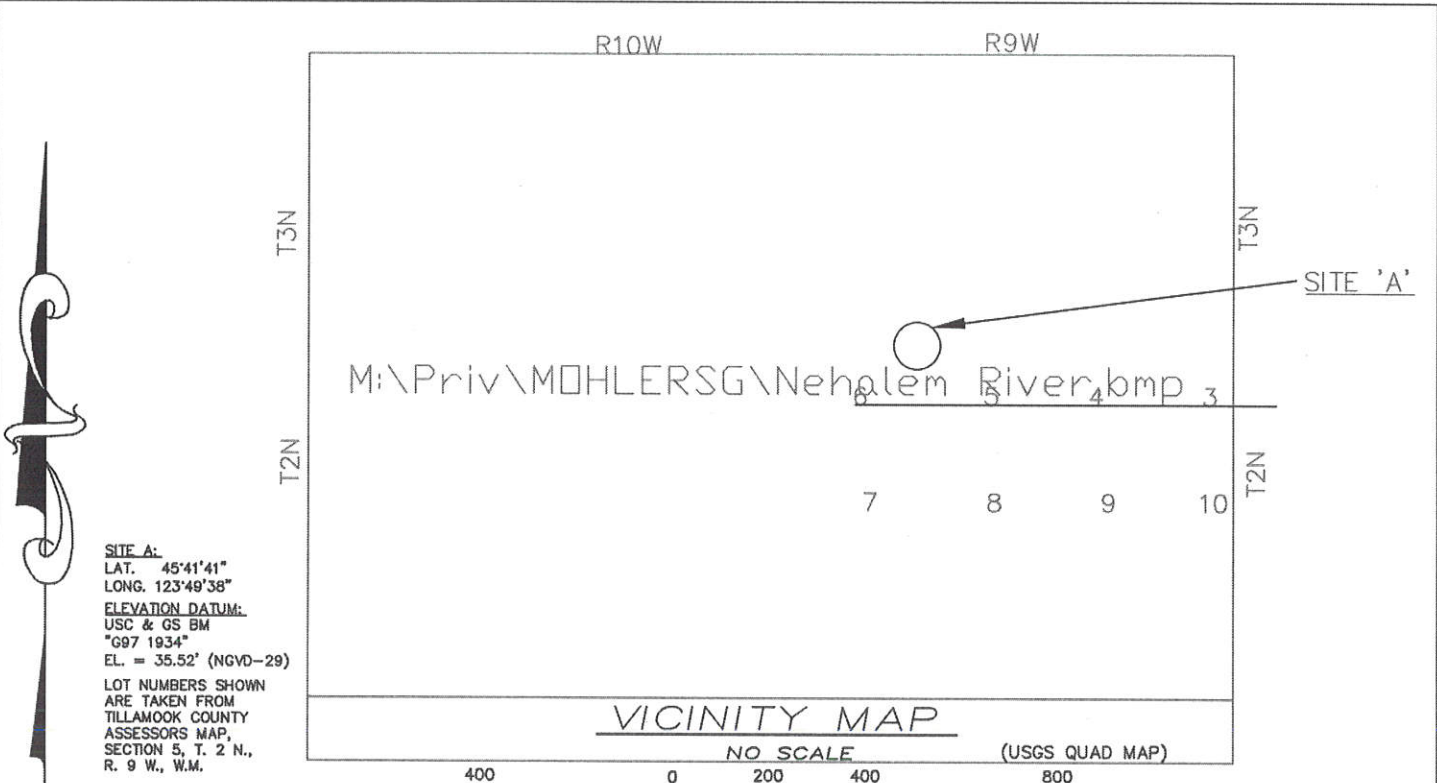
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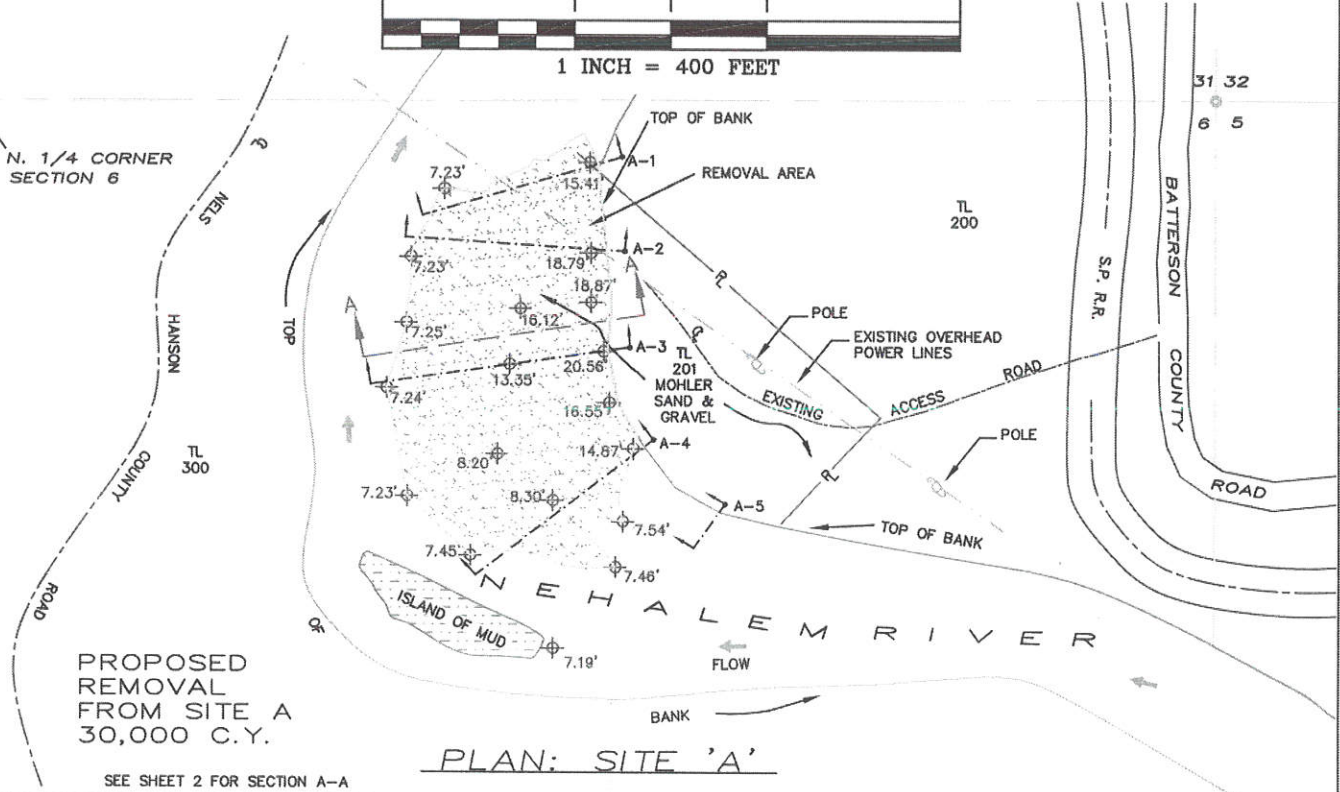
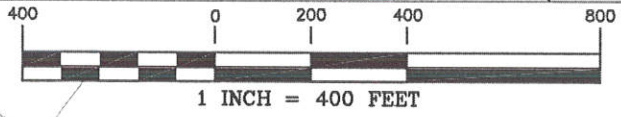
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OF 5

DATE	JOB NO.	FIELD	DRAWN	CHECKED
AUGUST 28, 2002	0367-11814	JPR/PJG	KKA	RGL



SITE A:
 LAT. 45°41'41"
 LONG. 123°49'38"
ELEVATION DATUM:
 USC & GS BM
 "G97 1934"
 EL. = 35.52' (NGVD-29)
 LOT NUMBERS SHOWN
 ARE TAKEN FROM
 TILLAMOOK COUNTY
 ASSESSORS MAP,
 SECTION 5, T. 2 N.,
 R. 9 W., W.M.



SURVEY FOR:
MOHLER SAND & GRAVEL
 PROPOSED GRAVEL REMOVAL
 NEHALEM RIVER
 SITE "A" PLAN
 SECTION 6, T2N, R9W, W.M.
 TILLAMOOK COUNTY OREGON

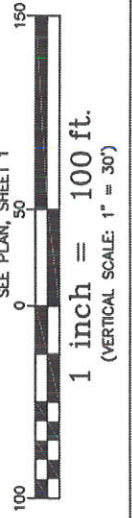
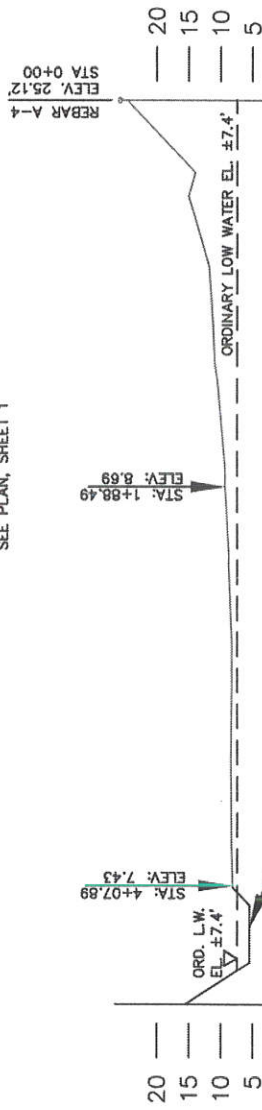
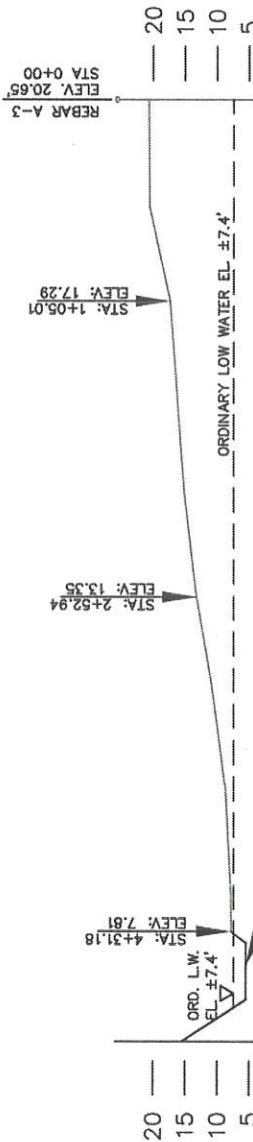
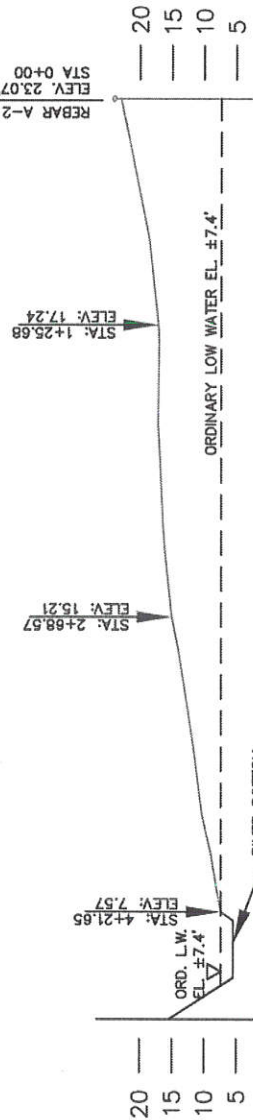
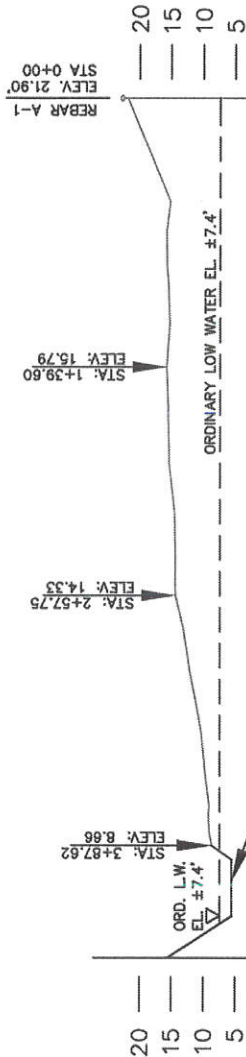
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 0367-1181-001.DWG

DATE	JOB NO.	FIELD	DRAWN	CHECKED
AUGUST 06, 2002	0367-11814	JPR/PJG	KKA	RGL

SURVEY BY:
HLB & ASSOC., INC.
 HANDFORTH LARSON & BARRETT
 SURVEYING • ENGINEERING • PLANNING
 TILLAMOOK COUNTY
 160 LANEDA AVE.
 MANZANITA, OR 97130
 (503) 368-5394
 FAX: (503) 368-5847

CLATSOP COUNTY
 4253A HWY 101 N.
 GEARHART, OR 97138
 (503) 738-3425
 FAX: (503) 738-7455

SHEET
1
 OF 4



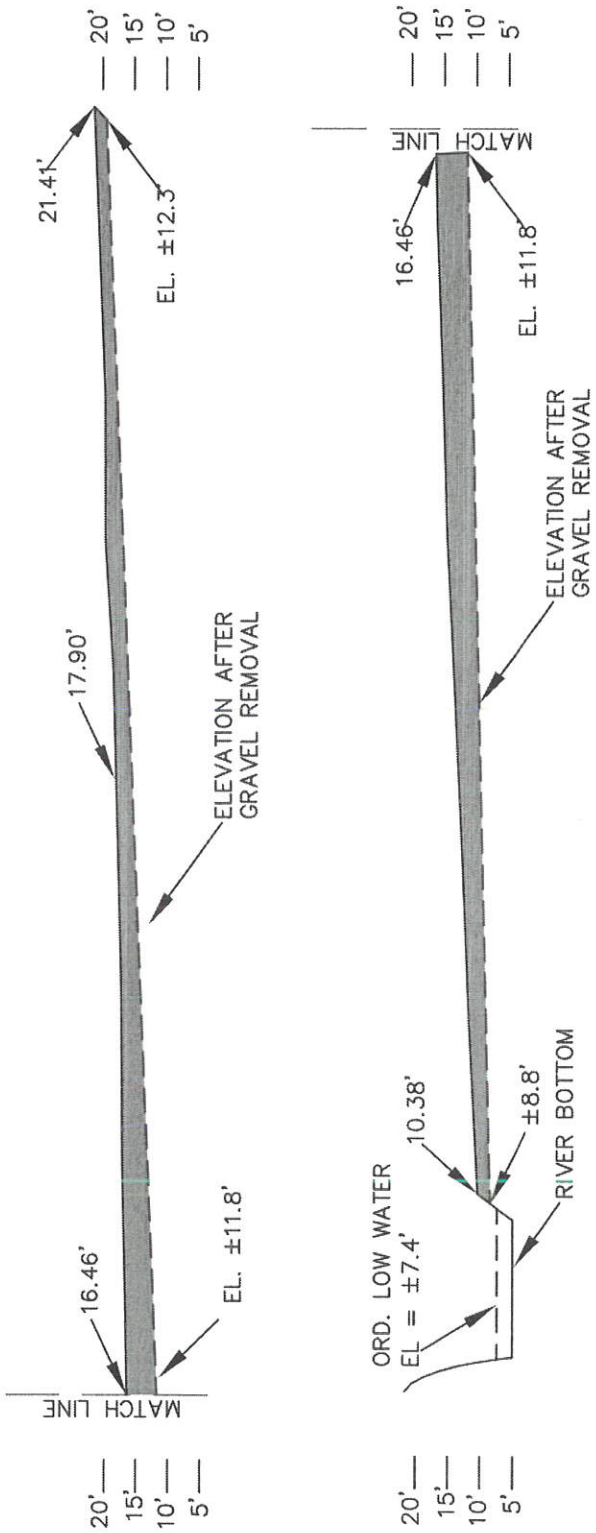
SURVEY FOR:
MOHLER SAND & GRAVEL
 PROPOSED GRAVEL REMOVAL
 NEHALEM RIVER
 SITE "A" PLAN
 SECTION 6, T2N, R9W, W.M.
 TILLAMOOK COUNTY OREGON

"C-BAR4"
 0367-11814-002-01.DWG

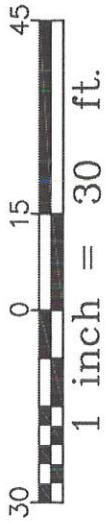
DATE	JOB NO.	FIELD	DRAWN	CHECKED
AUGUST 08, 2002	0367-11814	JPR/PJG	KKA	RGL

SURVEY BY:
HLB & ASSOC., INC.
 HANDFORTH LARSON & BARRETT
 SURVEYING • ENGINEERING • PLANNING
 TILLAMOOK COUNTY CLATSOP COUNTY
 160 LANEDA AVE. 4253A HWY 101 N.
 MANZANITA, OR 97130 GEARHART, OR 97138
 (503) 368-5394 (503) 738-3425
 FAX: (503) 368-5847 FAX: (503) 738-7455

SHEET
2
 OF 4



SECTION A-A SITE A
SEE PLAN, SHEET 1



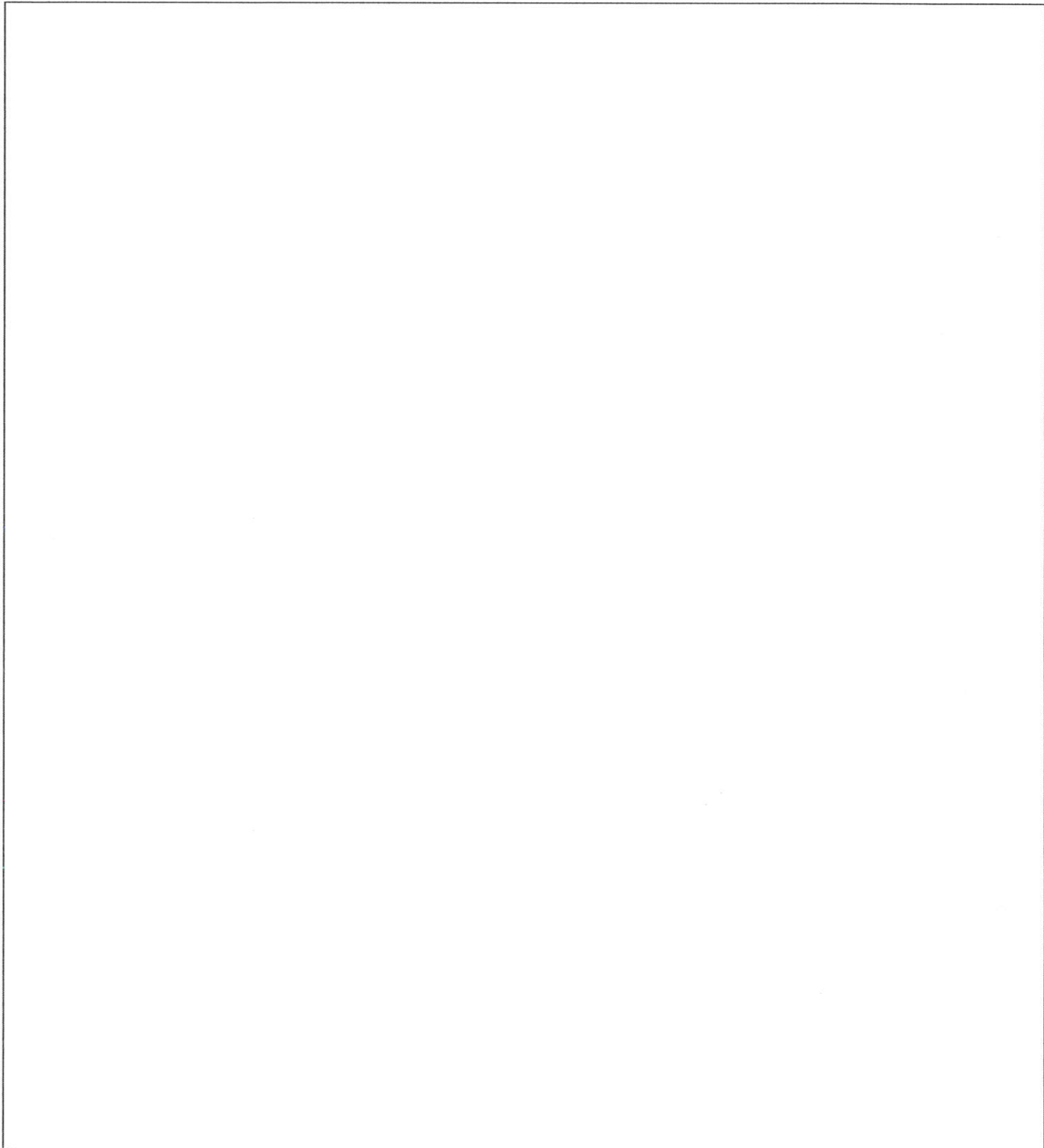
SUPPLEMENTAL INFORMATION

TO ACCOMPANY JOINT APPLICATION FOR GRAVEL REMOVAL AT RIVER MILE 9.3 (SITE 'A'), AND RIVER MILE 9.8 (SITE 'B') ON THE NEHALEM RIVER MOHLER SAND & GRAVEL, APPLICANT.

THE WORK OF THIS PROJECT CONSISTS OF THE REMOVAL OF GRAVEL FROM TWO LOCATIONS ON THE NEHALEM RIVER. ALL OF THE OPERATIONS OF THIS PROJECT ARE LOCATED ABOVE THE HEAD TIDE OF THE NEHALEM RIVER. THE TILLAMOOK COUNTY PLANNING DEPARTMENT HAS DETERMINED THAT HEAD OF TIDE IS LOCATED AT RIVER MILE 8.7.

GRAVEL REMOVAL WILL BE ACCOMPLISHED WITH A RUBBER TIRED FRONT-END LOADER AND 10 YARD DUMP TRUCKS. GRAVEL WILL BE REMOVED ONLY TO THE LEVEL OF THE ACTUAL SUMMERTIME ORDINARY LOW WATER. NO IN WATER WORK WILL BE DONE. NO DREDGING OF GRAVEL WILL BE DONE. NO ACCURATE DATA EXISTS REGARDING THE TRUE ELEVATION OF THE ORDINARY LOW WATER, THEREFORE, THIS ELEVATION HAS BEEN ESTIMATED BY THE APPLICANT, BASED UPON OBSERVATIONS OF APPARENT LOW WATER IN PREVIOUS YEARS. THE APPROXIMATE ORDINARY LOW WATER LINE VARIES FROM ABOUT 7.4 FEET NEAR RIVER MILE 9.3 TO ABOUT 8.3 FEET NEAR RIVER MILE 9.8. EXISTING ACCESS ROADS, LOCATED OUT OF THE WATERWAY, WILL BE USED AS SHOWN ON THE PLANS. GRAVEL WILL BE HAULED BY TRUCK TO THE APPLICANT'S PROPERTY, TAX LOT 1100.

SURVEY FOR: MOHLER SAND & GRAVEL PROPOSED GRAVEL REMOVAL NEHALEM RIVER SITE "A" PLAN SECTION 6, T2N, R9W, W.M. TILLAMOOK COUNTY OREGON				SURVEY BY: HLB & ASSOC., INC. HANDFORTH LARSON & BARRETT SURVEYING • ENGINEERING • PLANNING TILLAMOOK COUNTY GLATSOP COUNTY 150 LANEDA AVE. 4253A HWY 101 N. MANZANITA, OR 97130 GEARHART, OR 97138 (503) 368-5394 (503) 738-3425 FAX: (503) 368-5847 FAX: (503) 738-7455				SHEET <div style="font-size: 48pt; text-align: center;">3</div>	
DATE	JOB NO.	FIELD	DRAWN	CHECKED					
AUGUST 06, 2002	0367-11814	JPR/PJG	KKA	RGL					
					OF 4				



SURVEY FOR:

MOHLER SAND & GRAVEL

PROPOSED GRAVEL REMOVAL
NEHALEM RIVER
SITE "A" PLAN

"G-BAR4"
0367-1181-01.DWG

SECTION 6, T2N, R9W, W.M.
TILLAMOOK COUNTY OREGON

SURVEY BY:

HLB & ASSOC., INC.

HANDFORTH LARSON & BARRETT

SURVEYING · ENGINEERING · PLANNING

TILLAMOOK COUNTY CLATSOP COUNTY
160 LANEDA AVE. 4253A HWY 101 N.
MANZANITA, OR 97130 GEARHART, OR 97138
(503) 368-5394 (503) 738-3425
FAX: (503) 368-5847 FAX: (503) 738-7455

SHEET

4

OF 4

DATE	JOB NO.	FIELD	DRAWN	CHECKED
AUGUST 06, 2002	0367-11814	JPR/PJG	KKA	RGL

Mohler Sand and Gravel Hydrologic and Hydraulic Analysis

Prepared for

Mohler Sand & Gravel, LLC

PO Box 399

Nehalem, OR 97131

Prepared by

Ed Salminen

Niklas Christensen, P.E.

Watershed Professionals Network

PO Box 8, Mount Hood Parkdale, OR 97041

www.watershednet.com

September 21, 2020

Contents

Overview 1

 Purpose and Scope 1

 Approach.....2

Original Model Reconstruction2

Modified Model6

 Pre gravel extraction6

 Post gravel extraction.....6

Results and DiscussionError! Bookmark not defined.

References8

Appendices.....9

 Appendix 1 – Original FEMA models.....9

 Appendix 2 – Reconstructed Original FEMA model9

 Appendix 3 – Modified FEMA model – pre gravel extraction.....9

 Appendix 4 – Modified FEMA model – post gravel extraction9

Tables

Table 1. Crosswalk between FIRM lettered cross-sections, river stations from original and modified HEC-RAS models. 3

Table 2. Cross-section water surface elevations (W.S.El.) and differences for the original, reconstructed, and modified models. 5

Figures

Figure 1. Project location map showing project area and extent of FEMA models. 1

Figure 2. Model reach showing cross sections from original model (red), and add-in cross-sections (yellow). 4

Figure 3. Pre- and post-gravel extraction cross-sections used to represent gravel extraction activities. 7

Overview

Purpose and Scope

Mohler Sand and Gravel LLC has extracted gravel from gravel bars within the active channel of the Nehalem River for over four decades. The operation occurs on and adjacent to company-owned property on the north (right) bank of the Nehalem River from approximately river mile (RM) 9 - 10 (Figure 1). The operation is located at a natural geomorphic break between the relatively steep and confined upstream transport reach, and the lower gradient unconfined downstream reach, at or close to the head of tide. Gravel is extracted from gravel bars during the summer months and stockpiled outside of the mapped floodway, with year around transport offsite. In-channel gravel deposits are replenished by winter and spring storm events. No change is planned in ongoing operations. The purpose of this analysis is to evaluate likely changes in base flood (100-year recurrence interval flood) elevations associated with ongoing annual operations.

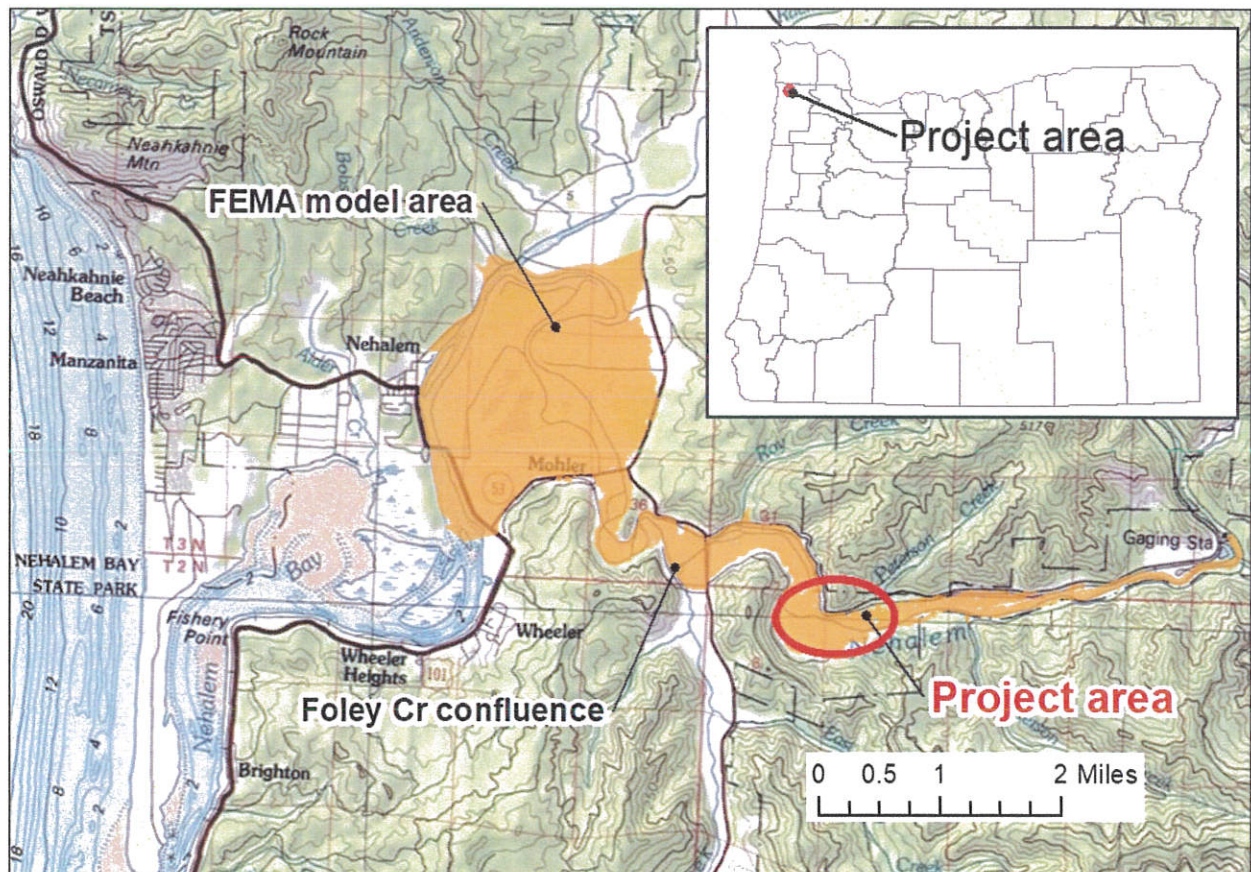


Figure 1. Project location map showing project area and extent of FEMA models.

Approach

The Federal Emergency Management Agency (FEMA) has developed hydraulic models of the Nehalem River, including the project area, for the purpose of mapping flood elevations and extent. The FEMA mapping was based on the US Army Corps of Engineers (USACE) Hydrologic Engineering Center River Analysis System (HEC-RAS)¹. Our approach was as follows:

1. The original hydraulic model files were acquired from FEMA in scanned digital (i.e., PDF) format. The original model was reconstructed in HEC-RAS and verified against reported results from the original model,
2. The verified original model was modified by adding additional cross-sections in the vicinity of Mohler Sand and Gravel operations. This was done to improve the model resolution for evaluation of gravel impacts,
3. The modified model was adjusted to represent post-gravel extraction conditions, rerun, and compared against pre-extraction conditions to evaluate any changes in flood elevations associated with operations.

Original Model Reconstruction

The original models, archived in FEMA's Mapping Information Platform (MIP), were provided in Adobe Portable Document Format (PDF) by Atkins Global². The original model was dated 1978 and covered the Nehalem River mainstem from approximately RM 0.5 to RM 14 (Figure 1). The portion of the model near the Highway 101 bridge was revised in 1982. We used the portion of the 1978 model from immediately upstream of the Foley Creek confluence (RM 8 to the upstream end at RM 14) (Figure 1). The original models are provided as Appendix 1 to this report.

The portion of the original 1978 model from RM 8 to RM 14 was reconstructed in HEC-RAS. This consisted of 20 cross sections with associated model parameter values. Four flood profiles corresponding to the 10-, 50-, 100-, and 500-year flood events were included in the reconstructed model, however only the 100-year flood elevations are discussed here. The reconstructed original model is provided in Appendix 2 to this report.

Table 1 provides a crosswalk between the lettered cross-sections shown on FEMA Flood Insurance Rate Map (FIRM) for the Nehalem River (FEMA, 2018), river stations (in miles) from the original HEC-RAS model, and river station (in feet) for the reconstructed and modified HEC-RAS models. Figure 2 displays the model reach showing cross sections from

¹ <https://www.hec.usace.army.mil/software/hec-ras/> Note that the original models were developed using the HEC-2 model which was the precursor to the current HEC-RAS model.

² Josha Crowley, personal communication, 8/5/2020. Josha.Crowley@atkinsglobal.com

original and reconstructed models (red), and add-in cross-sections (yellow) used in the modified model. Four cross-sections not shown on the FIRM maps occur at the Miami-Foley Bridge crossing located between FIRM cross-sections T and U.

Table 1. Crosswalk between FIRM lettered cross-sections, river stations from original and modified HEC-RAS models.

FIRM cross-section letter	Original HEC-RAS model river station (miles)	Reconstructed HEC-RAS model station (feet)	Modified HEC-RAS model station (feet)	Notes
S	8.000	0	0	Approximately 400' upstream of Foley Cr confluence
T	8.187	989	989	
-	8.225	1189	1189	Immediately downstream of Miami-Foley Rd. bridge
-	8.226	1190	1190	Downstream edge of Miami-Foley Rd. bridge
-	8.232	1219	1219	Upstream edge of Miami-Foley Rd. bridge
-	8.233	1220	1220	Immediately upstream of Miami-Foley Rd. bridge
U	8.260	1320	1320	
V	8.750	3940	3940	
W	9.000	5440	5440	
X	9.340	7080	7080	
Y	9.680	8880	8880	Location of gravel removal (section "A-A", HLB, 2002a)
Z	10.120	11180	11180	
-	-	-	11890	New cross-section at gravel removal site (section "B-B", HLB, 2002a)
-	-	-	12814	New cross-section at gravel removal site (section "C-C", HLB, 2002a)
AA	10.620	13780	13780	
AB	11.260	17080	17080	
AC	11.830	20060	20060	
AD	12.270	22360	22360	
AE	12.740	24840	24840	
AF	13.190	27240	27240	
AG	13.780	30280	30280	
AH	13.970	31280	31280	

Modeled water surface elevation³ (W.S.El.) associated with the 100-year recurrence interval flood event (Q_{100}) at each cross-section from the original model are given in column 2 of Table 2. Flood elevations from the original model were reported using the National Geodetic Vertical Datum of 1929 (NGVD29). Values from the original model were converted to the North American Vertical Datum of 1988 (NAVD88) using the local conversion factor of 3.54 feet (FEMA, 2018) and are shown in Table 2, column 3. All subsequent elevation values are given in NAVD88.

³ All results presented in this report are for the "without floodway" condition as described in the FIRM report.

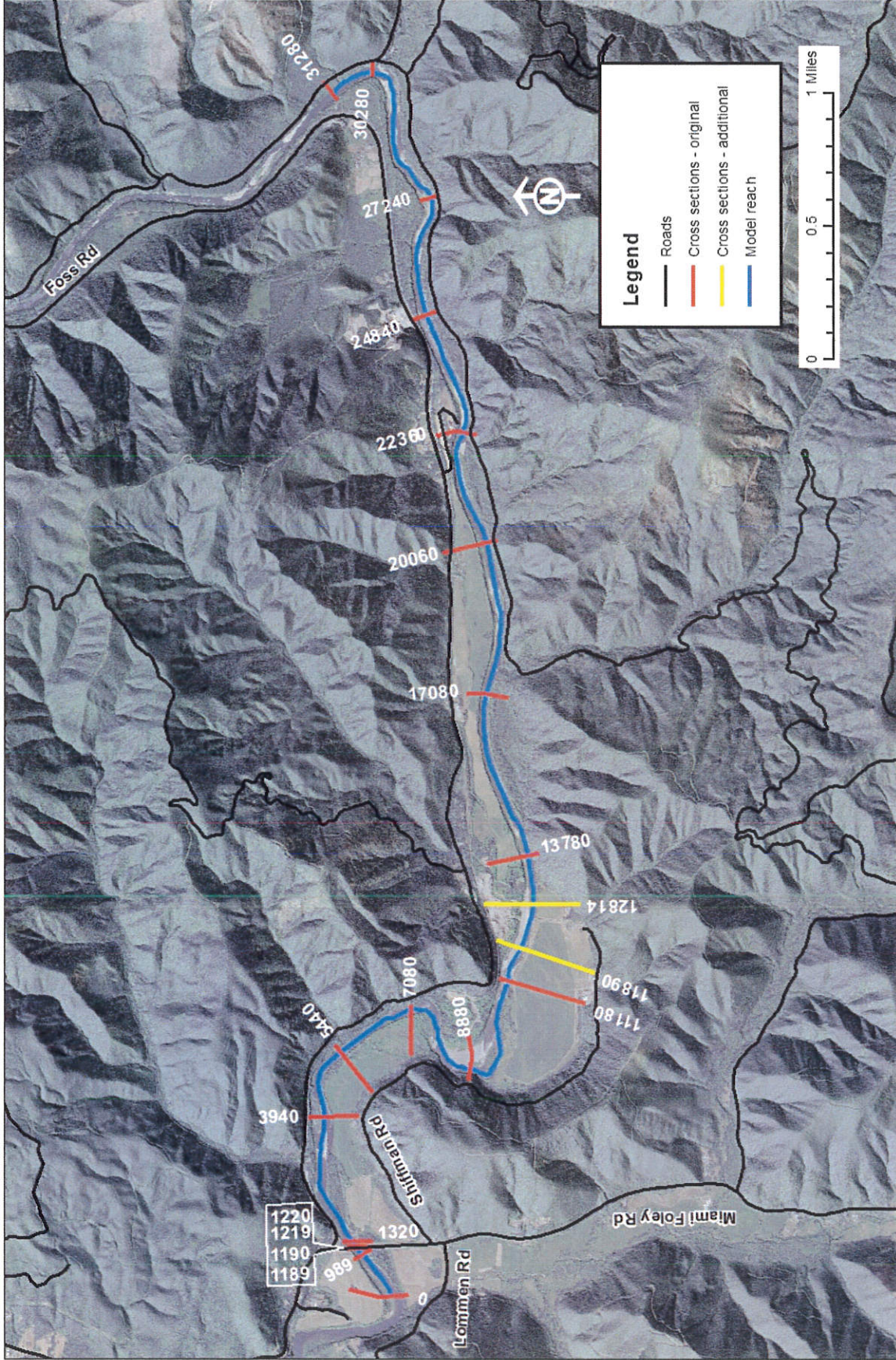


Figure 2. Model reach showing cross sections from original model (red), and add-in cross-sections (yellow).

Table 2. Cross-section water surface elevations (W.S.El.) and differences for the original, reconstructed, and modified models.

[1] River Sta	[2] Original model (NGVD29) Q ₁₀₀ W.S. El. (ft)	[3] Original model (NAVD88) Q ₁₀₀ W.S. El. (ft)	[4] Recon- structed original model Q ₁₀₀ W.S. El. (ft)	[5] Delta: Recon- structed minus original model (ft)	[6] Modified model - pre gravel extraction Q ₁₀₀ W.S. El. (ft)	[7] Delta: Modified model - pre gravel extraction model minus recon- structed model (ft)	[8] Modified model - post gravel extraction Q ₁₀₀ W.S. El. (ft)	[9] Delta: Modified model - post gravel extraction minus pre gravel extraction (ft)
0	25.47	29.01	29.17	0.16	29.17	0.00	29.17	0.00
989	26.03	29.57	29.71	0.14	29.71	0.00	29.71	0.00
1189	26.23	29.77	29.90	0.13	29.90	0.00	29.90	0.00
1190	26.21	29.75	29.88	0.13	29.88	0.00	29.88	0.00
1219	26.30	29.84	29.97	0.13	29.97	0.00	29.97	0.00
1220	26.53	30.07	30.18	0.11	30.18	0.00	30.18	0.00
1320	27.16	30.70	30.79	0.09	30.79	0.00	30.79	0.00
3940	28.94	32.48	32.51	0.03	32.51	0.00	32.51	0.00
5440	29.43	32.97	32.99	0.02	32.99	0.00	32.99	0.00
7080	30.23	33.77	33.80	0.03	33.80	0.00	33.80	0.00
8880	30.31	33.85	33.88	0.03	34.11	0.23	34.11	0.00
11180	31.49	35.03	35.02	-0.01	34.71	-0.31	34.38	-0.33
11890	n/a	n/a	n/a	n/a	35.19	n/a	34.92	-0.27
12814	n/a	n/a	n/a	n/a	35.30	n/a	35.01	-0.29
13780	32.55	36.09	36.08	-0.01	35.68	-0.40	35.24	-0.44
17080	35.50	39.04	39.06	0.02	38.87	-0.19	38.71	-0.16
20060	39.34	42.88	42.89	0.01	42.81	-0.08	42.75	-0.06
22360	42.09	45.63	45.65	0.02	45.61	-0.04	45.57	-0.04
24840	45.76	49.30	49.32	0.02	49.30	-0.02	49.29	-0.01
27240	48.54	52.08	52.08	0.00	52.07	-0.01	52.07	0.00
30280	53.81	57.35	57.35	0.00	57.35	0.00	57.34	-0.01
31280	56.63	60.17	60.17	0.00	60.16	-0.01	60.16	0.00
			minimum	-0.01		-0.40		-0.44
			mean	0.05		-0.04		-0.07
			maximum	0.16		0.23		0.00

Modeled W.S.El. for the reconstructed original model are given in Table 2, column 4, and the delta between W.S.El. for the reconstructed model minus the original model results are given in column 5. The reconstructed original model reproduces the original model results well, with delta values ranging from -0.01 to 0.16 feet, with a mean value of 0.05 feet.

Modified Model

Mohler Sand and gravel operations occur at cross section 8880, and between cross-section 11180 and 13780 (Figure 2). In order to evaluate impacts associate with gravel excavation two additional cross sections were added to the model, at stations 11890 and 12814 (Figure 2, yellow lines).

Pre gravel extraction

Pre-gravel extraction conditions at cross section 8880 was represented using the FEMA cross section data from the original model. Pre-gravel extraction conditions at cross sections 11890 and 12814 were represented as follows:

- Upland elevations for the two new cross-sections were taken from bare earth 2009 LiDAR elevation data for the North Coast area (Watershed Sciences, 2009). LiDAR data were acquired within the April 16 – June 15, 2009 time-period, prior to the gravel extraction season, and as such were assumed to be representative of pre-gravel harvest conditions.
- In-channel bottom elevations were taken from site surveys conducted in 2002 by HLB and Associates, Inc. (HLB, 2002b). Section B-B corresponds to cross section 11890, and Section C-C to cross section 12814.

Modeled W.S.El. for the pre-gravel extraction model are given in Table 2, column 6, and the delta between W.S.El. for the pre-gravel extraction model minus the reconstructed model are given in column 7. The pre-gravel extraction model is similar to the reconstructed original model, with delta values ranging from -0.40 to 0.23 feet, with a mean value of -0.04 feet. The pre gravel-extraction model is provided in Appendix 3 to this report.

Post gravel extraction

Data on gravel extraction at cross sections A-A (HLB, 2002a), B-B, and C-C (HLB, 2002b) were used to modify the pre-gravel cross-sections at cross section 8880, 11890, and 12814 respectively (Figure 3). Post-extraction bar elevations were adjusted such that the cross-sectional area removed as part of the extraction process was equivalent to the area reported in HLB 2002a, an HLB 2002b.

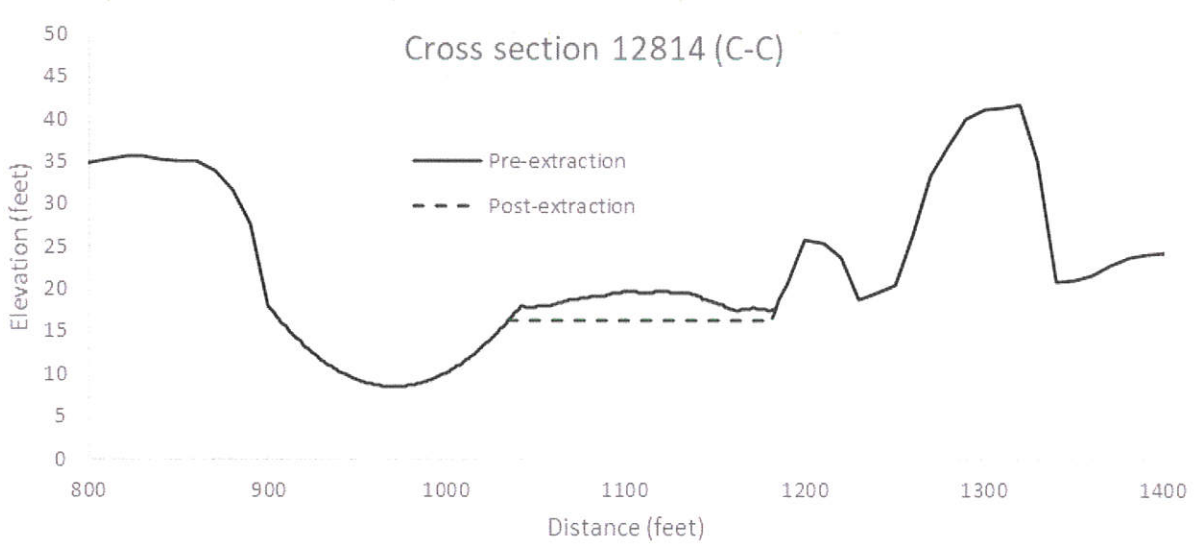
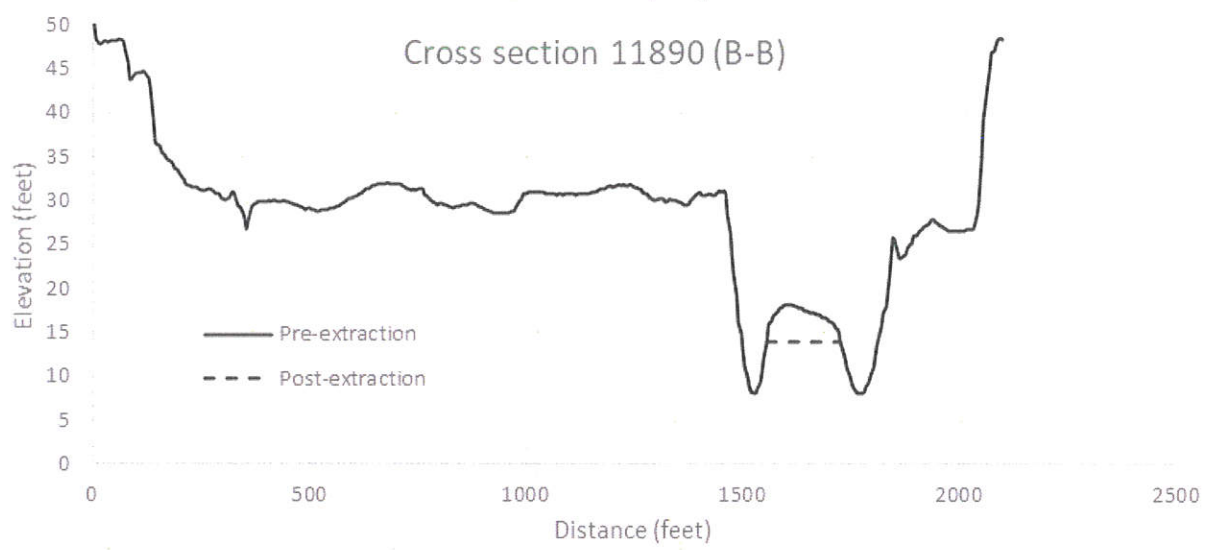
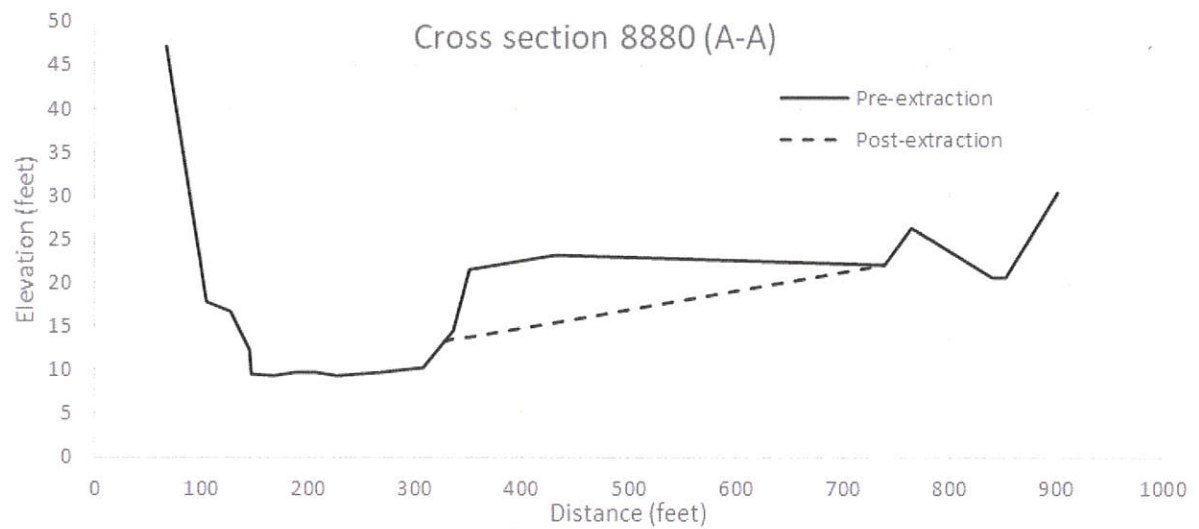


Figure 3. Pre- and post-gravel extraction cross-sections used to represent gravel extraction activities.

Modeled W.S.El. for the post-gravel extraction model are given in Table 2, column 8, and the delta between W.S.El. for the post-gravel extraction model minus the pre-gravel extraction model are given in column 9. The pre-gravel extraction model is similar to the reconstructed original model, with delta values ranging from -0.44 to 0.00 feet, with a mean value of -0.07 feet, indicating that gravel extraction operations result in no increase in modeled 100-year flood elevations. The post gravel-extraction model is provided in Appendix 4 to this report.

Summary

We evaluated the potential impacts of gravel extraction in the Nehalem River by Mohler Sand and Gravel using FEMA-developed HEC-RAS hydraulic modeling.

We first reconstructed the original model and showed that the reconstructed model produced the same results as the original model.

We next modified the reconstructed model by adding two additional cross-sections at one of the Mohler extraction sites. We showed that the modified model produced the same results as the reconstructed model for the pre-gravel extraction condition.

We then modified the pre-gravel model by adjusting three cross-sections to represent post gravel-extraction conditions. The post gravel-extraction model showed that the likely impacts of gravel extraction are to reduce or have no impact on the 100-year flood elevations.

References

Federal Emergency Management Agency (FEMA), Flood Insurance Study, Tillamook County, Oregon, And Unincorporated Areas, Volumes 1 and 2. September 2018.

HLB and Associates, Inc. 2002a. Mohler Sand and Gravel Proposed Gravel Removal, Nehalem River, Site "A" Plan. Handforth, Larson, and Barrett Surveying Engineering Planning, Manzanita, OR. Dated August 6, 2002.

HLB and Associates, Inc. 2002b. Mohler Sand and Gravel Proposed Gravel Removal, Nehalem River, Site "B" and "C" Plan. Handforth, Larson, and Barrett Surveying Engineering Planning, Manzanita, OR. Dated August 28, 2002.

Watershed Sciences. 2009. Lidar Remote Sensing Data Collection, Department of Geology and Mineral Industries, Oregon North Coast. Watershed Sciences, Portland, Oregon. Online linkage: <https://gis.dogami.oregon.gov/maps/lidarviewer/>

Appendices

Appendix 1 – Original FEMA models

PDF documents (electronic attachment).

Appendix 2 – Reconstructed Original FEMA model

USACOE HEC-RAS model (electronic attachment).

Appendix 3 – Modified FEMA model – pre gravel extraction

USACOE HEC-RAS model (electronic attachment).

Appendix 4 – Modified FEMA model – post gravel extraction

USACOE HEC-RAS model (electronic attachment).

EXHIBIT C



Wetland Land Use Notice Response

Response Page

Department of State Lands (DSL) WN#*

WN2021-0891

Responsible Jurisdiction

Staff Contact

Melissa Jenck

Jurisdiction Type

County

Municipality

Tillamook

Local case file #

851-21-000096-PLNG

County

Tillamook

Activity Location

Township

02N

Range

09W

Section

05

QQ section

Tax Lot(s)

1100

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

Tillamook

Latitude

45.692000

Longitude

-123.820000

Wetland/Waterway/Other Water Features

There are/may be wetlands, waterways or other water features on the property that are subject to the State Removal-Fill Law based upon a review of wetland maps, the county soil survey and other available information.

The National Wetlands Inventory shows wetland, waterway or other water features on the property

The property includes or is adjacent to designated Essential Salmonid Habitat.

The property includes or is adjacent to state-owned waters.

Closing Information

Additional Comments

A Wetland Land Use Notice is not required per ORS 215.418 (2) if a permit from the DSL has already been issued. Authorization 20711-RP Renewal was sent to Tillamook County on May 14, 2021. This permit authorizes up to 15,000 cy of extraction until June 30, 2022. Tillamook County Notice 851-21-000096-PLNG indicates that 45,000 cy of materials will be removed, however the applicant's materials included in that package appear to only indicate 15,000 cy of material extraction. If >15,000 cy of materials are to be extracted then 20711-RP Renewal does not apply and the applicant is recommended to contact Dan Cary (DSL, 503-986-5302) to discuss a new permit application.

This is a preliminary jurisdictional determination and is advisory only.

This report is for the State Removal-Fill law only. City or County permits may be required for the proposed activity.

A Federal permit may be required by The Army Corps of Engineers: (503)808-4373

Contact Information

- For information on permitting, use of a state-owned water, wetland determination or delineation report requirements please contact the respective DSL Aquatic Resource, Proprietary or Jurisdiction Coordinator for the site county. The current list is found at: <http://www.oregon.gov/dsl/ww/pages/wwstaff.aspx>
- The current Removal-Fill permit and/or Wetland Delineation report fee schedule is found at: <https://www.oregon.gov/dsl/WW/Documents/Removal-FillFees.pdf>

Response Date

9/8/2021

Response by:

Daniel Evans

Response Phone:

503-986-5271

Melissa Jenck

From: BRADLEY Robert * ODFW <Robert.BRADLEY@odfw.oregon.gov>
Sent: Friday, August 27, 2021 9:13 AM
To: Allison Hinderer; Melissa Jenck
Cc: Sarah Absher
Subject: EXTERNAL: RE: Tillamook County: Administrative Review/ 851-21-000096-PLNG: Mohler Sand & Gravel/Boswell

[**NOTICE:** This message originated outside of Tillamook County -- **DO NOT CLICK** on links or open **attachments** unless you are sure the content is safe.]

This operation should follow the standards and conditions outlined in the 2009 Mediated Gravel Agreement, including grading of gravel bars post extraction to prevent stranding of fish.

USACE, DSL and other appropriate permits need to be obtained (if not already).

Robert

Robert W. Bradley
District Fish Biologist
Oregon Department of Fish and Wildlife
North Coast Watershed District
4907 Third St
Tillamook, OR 97141
503-842-2741 x18613 (w)
503-842-8385 (fax)

Note new email address as of 4/26/21: Robert.Bradley@odfw.oregon.gov

From: Allison Hinderer <ahindere@co.tillamook.or.us>
Sent: Tuesday, August 10, 2021 2:56 PM
To: Melissa Jenck <mjenck@co.tillamook.or.us>
Cc: Sarah Absher <sabsher@co.tillamook.or.us>
Subject: Tillamook County: Administrative Review/ 851-21-000096-PLNG: Mohler Sand & Gravel/Boswell

Hello,

Please see link for Floodway Development Permit:

[851-21-000096-PLNG | Tillamook County OR](#)

Thank you.

))
))

Melissa Jenck

From: Crowley, Josha <Josha.Crowley@atkinsglobal.com>
Sent: Monday, April 26, 2021 8:56 AM
To: Melissa Jenck
Subject: EXTERNAL: RE: Mohler Sand & Gravel No-rise: 851-21-000096-PLNG
Attachments: No-Rise_Floodway_Analysis_Requirements_201402131048335517.pdf

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Hi Melissa – this looks good to me. I don't have any comments on the analysis or report. They are only proposing material removal, so I would have been surprised if there was an adverse impact. The report should be signed and sealed by a PE, however. Alternatively they could submit a certification page (template attached).

No need to run that by me once you get it. Thanks!

Joshua Crowley, PE, PMP, CFM, D.WRE
RSC Lead | STARR II - Region X Service Center
Phone: (425) 329-3679
Cell: (206) 499-2440

From: Melissa Jenck <mjenck@co.tillamook.or.us>
Sent: Friday, April 16, 2021 10:10 AM
To: Crowley, Josha <Josha.Crowley@atkinsglobal.com>
Subject: Mohler Sand & Gravel No-rise: 851-21-000096-PLNG

Good morning Josha,

I hope you're having a good & well deserved Friday!

I've got a no-rise submitted for Mohler Sand & Gravel. They provided the documents to us via a link:
<https://cloud.wpn2.com/index.php/s/B3jJM7gAb9gBXft>

When you have the opportunity, can you please review for completeness and let me know if the modeling is appropriate?

Thank you, Josha!

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(she/her)

The Department is excited to announce that we are OPEN to the public by appointment. To review the list of services provided and to schedule an appointment with us, please visit <https://www.co.tillamook.or.us/gov/ComDev/> to access the appointment scheduler portal.

EXHIBIT D

NATURAL RESOURCES ELEMENT

(Goal 5)

TABLE OF CONTENTS

1.1	STATE PLANNING REQUIREMENTS AND METHODOLOGY	3
1.1a	Goal 5 Requirements	3
1.1b	Requirements of Goal 5 Administrative Rule, OAR 660-23	3
1.1c	Relationship of Goal 5 to the Estuarine Resources Goal 16, and the Coastal Shoreland Goal 17.....	4
1.1d	Methodology of the Natural Resources, Scenic and Historic Areas, and Open Spaces Inventory.....	5
1.2	NATURAL RESOURCES IN TILLAMOOK COUNTY	6
1.2a	Overview.....	6
1.2b	The Coastal Setting.....	7
1.2b1	Climate	7
1.2b2	Geomorphology, Soils, Hydrology.....	8
1.2b3	Ecosystems and Biota.....	8
1.2c	The Coast Range	9
1.2c1	Climate	9
1.2c2	Geomorphology and Soils	10
1.2c3	Ecosystems and Biota.....	10
1.3	INVENTORY OF ENVIRONMENTAL RESOURCES	10
1.3a	Open Space.....	12
1.3b	Fish and Wildlife Habitat.....	15
1.3b1	Wildlife Habitat.....	15
1.3b2	Fish Habitat	25
1.3b3	Wetlands.....	30
1.3c	Ecologically and Scientifically Significant Natural Areas	53
1.3d	Outstanding Scenic Views and Sites.....	59
1.3e	Wilderness Areas	62
1.3f	Historic Areas	64
1.3f.1	Preliminary Inventory of Historic Sites	65
1.3f.1A	Sites and Buildings on the National Register of Historic Places.....	65
1.3f.1B	Sites on the State of Oregon Inventory of Historic Sites and Buildings.....	65
1.3g	Cultural Areas.....	75
1.3h	Potential and Approved Recreation Trails.....	76
1.3i	Wild and Scenic Rivers	78
1.4	INVENTORY OF ECONOMIC RESOURCES.....	81
1.4a	Mineral and Aggregate Resources.....	81
1.4a.1	Significant Aggregate and Mineral Sites	86
1.4a.2	Potential Aggregate and Mineral Sites.....	87
1.4b	Energy Sources	94
1.5	INVENTORY OF WATER RESOURCES.....	97

1.5a	Surface Water.....	97
1.5b	Groundwater Resources	97
1.5c	Lakes	98
1.5d	Watersheds	98
2.0	STATE AND FEDERAL PROGRAMS	98
2.1	Existing State Programs	98
2.1a	Environmental Resources	98
2.1b	Economic Resources	99
2.1c	Water Resources	101
2.2	Existing Federal Legislation	101
3.0	NATURAL RESOURCES FINDING AND POLICIES	101
3.1	Environmental Resources	102
3.1a	Open Spaces	102
3.1b	Fish and Wildlife Habitat	104
3.1c	Significant Natural Areas	105
3.1d	Scenic Views and Sites	105
3.1e	Wilderness Areas	105
3.1f	Wetlands	106
3.1g	Recreation Trails	107
3.1h	Scenic Waterways	108
3.1i	Historic Areas	108
3.1j	Cultural Areas	109
3.2	Economic Resources	109
3.2a	Mineral and Aggregate Resources	109
3.2b	Energy Sources	110
3.3	Water Resources	111

1.1 STATE PLANNING REQUIREMENTS AND METHODOLOGY

1.1a GOAL 5 REQUIREMENT

The overall goal of Statewide Planning Goal #5, Natural Resources, Scenic and Historic Areas, and Open Spaces is: "To protect natural resources, and conserve scenic and historic areas and open spaces."

To achieve this goal, Tillamook County is required to inventory and adopt a program to protect and/or conserve the following twelve types of resources:

1. Riparian corridors, including water and riparian areas and fish habitat;
2. Wetlands;
3. Wildlife Habitat;
4. Federal Wild and Scenic Rivers;
5. State Scenic Waterways;
6. Groundwater Resources;
7. Approved Oregon Recreation Trails;
8. Natural Areas;
9. Wilderness areas;
10. Mineral and Aggregate Resources;
11. Energy sources;
12. Cultural areas.

Local governments are encouraged to maintain current inventories of the following resources:

1. Historic Resources;
2. Open Space;
3. Scenic Views and Sites.

Local governments are required to determine significant sites for inventoried resources, and develop programs to achieve the goal. This process is to be guided by the procedures, standards and definitions contained in the implementing state administrative rules.

1.1b REQUIREMENTS OF THE GOAL #5 ADMINISTRATIVE RULE, OAR 660-23

The administrative rule implementing Goal 5 was amended June 14, 1996. This amended rule replaces OAR 660, Division 16, except regarding Cultural Resources. OAR 660, Division 23 requires local governments to amend acknowledged comprehensive plan or land use regulations during periodic review programs approved after September 1, 1996. Periodic review programs approved prior that date are not required to use the amended administrative rule. The County, in its most recent periodic review has chosen to apply OAR 660, Division 23 to several of the resource categories, as allowed under OAR 660-26-250(8).

The administrative rule establishes procedures and criteria for inventorying and evaluating Goal 5 resources and for developing land use programs to conserve and protect significant Goal 5 resources. This procedure addresses the following elements: how to identify conflicting uses for resource sites and determine their impacts on those resource sites; and how to protect resource sites, depending on the degree to which conflicting uses are to be allowed or limited.

The administrative rule describes the standard Goal 5 process for inventory, significance determination, and program development. The rule also provides specific rules for each of the fifteen Goal 5 resource categories. In some cases, both the standard and the specific rules apply to Goal 5 decisions; in other cases, the specific rules supersede parts or all of the standard process.

The standard Goal 5 process begins with data collection and an evaluation of the quality, quantity, and location of the resource sites identified. Based on the information collected, one of three decisions is made: the resource is determined not to be important enough to warrant inclusion in the inventory; or the available information is inadequate to determine the value of an identified resource; or there is sufficient information on the resource sites' quality and quantity, and the resource site is important enough to include in the inventory.

The standard Goal 5 process continues with the identification of conflicting uses for a given resource or resource site. If no conflicting uses are identified, acknowledged policies and land-use regulations may be considered sufficient to protect the resource site. If conflicting uses are identified, an impact area is to be delineated so as to include the area in which allowed uses could adversely affect the identified resource. Within the impact area, the County shall conduct an evaluation of the environmental, social, economic and energy consequences of allowing the conflicting use(s). The County then makes one of three determinations:

- (a) that a significant resource site is of such importance compared to the conflicting uses, and the ESEE consequences of allowing the conflicting uses are so detrimental to the resource, that the conflicting uses should be prohibited;
- (b) that both the resource site and the conflicting uses are important compared to each other, and, based on the ESEE analysis, the conflicting uses should be allowed in a limited way that protects the resource site to a desired extent;
- (c) that the conflicting use should be allowed fully, notwithstanding the possible impacts on the resource site.

The County must then develop comprehensive plan provisions and land use regulations to implement this decision for each resource site.

The specific rules for some of the individual resource categories contain "safe harbor" procedures. These are an optional course of action that allows the local government to meet safe harbor requirements rather than follow certain parts of the standard Goal 5 process.

1.1c RELATIONSHIP OF GOAL #5 TO THE ESTUARINE RESOURCES GOAL #16, AND THE COASTAL SHORELAND GOAL #17.

Goal #5 lists fifteen types of resources that are subject to inventory and possible protection. A number of these resources are also addressed by the Estuarine Resources Goal and the Coastal Shorelands Goal. Generally, the resource protection requirements of the Estuarine Resources Goal and the coastal Shoreland Goal are more stringent than the requirements of the Natural Resources Goal.

Thus, when one of the Goal #5 resources is located in either an estuarine or coastal shoreland area, the appropriate resource inventory and protection requirements of the Estuarine Resources Goal of the coastal Shorelands Goal are applied. Therefore, these resources are not covered by this element of the Comprehensive Plan.

The following describes the scope of the Goal #5 inventory for each of the identified resources:

1. Riparian corridors, including water and riparian areas and fish habitat - all land areas
2. Wetlands - all land areas
3. Fish/Wildlife Habitat - all areas
4. Federal Wild and Scenic Rivers - all land areas
5. State Scenic Waterways - all land areas
6. Groundwater Resources - all land areas
7. Approved Oregon Recreation Trails - all land areas
8. Natural Areas - all land outside the Coastal Shoreland planning area and estuarine areas
9. Wilderness areas - all land areas
10. Mineral/Aggregate - all land and water areas
11. Energy Sources - all land and water areas
12. Cultural areas - all land areas
13. Historic Resources - all land areas
14. Open Space - all land and water areas;
15. Scenic Views and Sites - all lands outside of the Coastal Shoreland

1.1d METHODOLOGY OF THE NATURAL RESOURCES, SCENIC AND HISTORIC AREAS, AND OPEN SPACES INVENTORY.

The following procedure was used in undertaking the Tillamook County Natural Resources Inventory and in the establishment of a program to protect identified natural resource sites (except in those cases where the County followed the safe harbor provisions or other specific rules for an identified resource as stated in the Goal 5 administrative rule):

1. Determination of the elements of each resource category to be inventoried. The completeness of each resource category to be verified with appropriate State agencies.
2. Selection of inventory sources.
3. Development of a preliminary resource list based on the inventory sources.
4. Evaluation of the elements on the preliminary resource list to determine whether their location, quality and quantity warrant inclusion in the Natural Resources Inventory. In general, an attempt was made to gather sufficient information on the resource at this time, rather than deferring the required decisions to a later date.
5. Establishment of the final inventory lists.
6. Determination of conflicting uses, if any, for the resources on the final inventory list. Where conflicting uses were identified, an evaluation of the environmental, social, energy and economic impact of allowing these conflicting uses were undertaken.
7. Development of a program to achieve the objectives of the Natural Resources Goal. This includes a determination of which resources to protect and the appropriate method of resource protection. Generally, where they were found to

be adequate, existing State or Federal programs and regulations were relied on to protect resources. Additional local protection was developed only for those resources for which existing regulation was found to be inadequate to meet the intent of the Goal.

1.2 NATURAL RESOURCES IN TILLAMOOK COUNTY

1.2a OVERVIEW

The natural resources of a community or region are important factors that critically influence past, present and future land development patterns. This is especially true in an area such as Tillamook County where resource-oriented pursuits such as agriculture, fishing, forestry, recreation and tourism have traditionally played such a large role in the livelihood of its people. Although it is often possible to develop or use land in a variety of ways, there are certain areas which lend themselves better to particular purposes. A general understanding of these factors can help to assure that planning policies are more closely related to the county's physical potential and limitations.

Tillamook County comprises a land area of 713,600 acres. It is characterized generally by rugged mountain terrain that yields to coastal valley and a narrow, discontinuous coastal plain. The coastal strip is an area of great contrast and scenic beauty, where sandy beaches alternate with precipitous headlands and off-shore rocks. Three main valley areas (Nehalem, Tillamook and Nestucca) are largely flood plains, or alluvial terraces associated with river estuaries. These valleys become narrower and elevations increase as they extend inland from the coastal area. Much of the rugged eastern part of the county is over 1,000 feet above sea level and peaks extend to 3,500 feet. Drainage of Tillamook County is through seven principal rivers all of which flow westward to the Pacific and empty into one of the three estuarial bays. Climatic conditions in Tillamook County are relatively moderate, with most agricultural sections having a frost-free season of about 180 days. Rainfall, however, tends to be very heavy. Annual precipitation up to 150 inches occurs in the mountains, and most other parts of the county experience 80 to 90 inches of rainfall annually. In the summer, winds prevail from the northwest, but shift to the south and southwest during the winter. Gale velocities are often reached in the winter season. The combination of wind, rain, and fog during prolonged periods of the year has probably been a limiting factor in the development of Tillamook County in the past, and will continue to be so in the future.

The county can be divided into four broad geological categories that are associated with distinct topographic, soil and groundwater conditions. They include: 1) surficial deposits consisting of dune sand, alluvium, and terrace deposits what occur along the coast and in valley locations; 2) Columbia River basaltic lava that occur at Cape Falcon, Neahkahnie Mountain, Cape Meares, and Cape Lookout; 3) sedimentary formations of shales, sandstone, and other materials of marine origin that occur from the level valleys to moderately rough uplands; and 4) older volcanic formations that occur in the rugged, mountainous interior areas.

Related to the geological characteristics are the covering soils. Five broad areas of soil-types are found in Tillamook County, including Valley Bottom Soils, Alluvial Terrace Soils, Sand Hills, Upland Soils I, and Upland Soils II. Each type has unique qualities in regard to stability, drainage, and fertility conditions. These qualities must be thoroughly understood and appreciated in planning all future development patterns in the county.

The primary natural resource which these natural conditions have provided is the forests. More than 90 percent of the land in Tillamook County is productive of forest cover. Despite repeated fire damage, the resource remains the county's principal source of income. In addition to providing commercially valuable timber, these forest lands are important for watershed purposes, outdoor recreation, scenic values, wildlife habitat, and botanical and ecological study.

Nearly all of the privately owned land affected by the Tillamook fire (about 245,000 acres) eventually reverted to the county, and is now managed by the State Department of Forestry. Federally-owned forest lands are largely in the southern part of the county, and have been relatively unaffected by fire damage.

Although more humanly influenced than the forest and environmental resources, another basic resource in Tillamook County is agricultural land. This land use plays a large role in the county's economy, as favorable climate and soil conditions have combined to form the base for a vigorous dairy farming and dairy products industry.

The physical setting of Tillamook County includes a varied range of environments that have many desirable characteristics both for human as well as for wildlife populations. A high quality, livable environment is as much a valuable resource as forests or minerals. An added dimension of Tillamook County's environmental resource is its special suitability for recreational use. The county is characterized by a wealth of tourist attractions, ranging from sightseeing to hunting and fishing, to boating, etc. A great diversity of wildlife habitat is present in the hills and streams.

1.2b THE COASTAL SETTING

The coast encompasses the smallest physiographic province in the county, but its ecological significance is second to none. This narrow strip defines the junction of two radically different environments: oceanic and terrestrial. Moreover, it is far more than just a meeting and mixing of two environments. The zone of mixing has a form of its own, with different ecosystems and far greater biological productivity than either of its parent systems. Estuaries and marshlands in particular proved critical habitat. It is estimated that two-thirds of the marine and estuarine fish and shellfish harvested each year are dependent on these ecosystems for food and protection. Estuaries, tidal marshes, rocky intertidal areas, spits, eel grass marshes, kelp beds, headlands, and more constitute a critical interacting system that is a biologic, scenic, and economic resource of great importance to the County and one which faces great pressures from varied and often conflicting user demands.

The coast province is bounded by nearshore marine ecosystems to the west, including sea stacks and islands, and extends inland to include the Sitka spruce forest zone.

1.2b.1 CLIMATE

The coast climate is mild under the moderating influence of the Pacific Ocean. The growing season averages about 250 days and neither freezing temperatures nor snow are common. Temperatures are consistently moderate and show less seasonal and diurnal fluctuations than in other parts of the state. Rainfall, on the other hand, is high, ranging from 80 to 100 inches and the frequent cloud and fog cover increase humidity, thus contributing to precipitation.

Storms and winds are frequent and exert a marked influence that can be seen in the dwarfing of vegetation, species and communities adapted to the salt spray zone and estuary salt and fresh water mixing patterns.

1.2b.2 GEOMORPHOLOGY, SOILS, HYDROLOGY

The inland portions of the zone are basically Coast Range and Siskiyou Mountain bedrock and a discussion of the geomorphology and soils is found in the appropriate province overviews. Most of the coast has rocky mountainous shoreline which is punctuated by relatively small bays and estuaries. Distinctive coastal terrestrial features are sand dune formations (including sand spits), sea cut terraces topped by marine sediments in which soil processes have produced blacklock soils and dwarfed forests, and finally fertile river alluvium deposited by floods in the valleys adjacent to the coast. One of the important characteristics of these and other coast features is their dynamic nature. Sand is constantly in motion, forming spits, then blowing away, blocking drainage to form lakes, and burying forests in its path. River flooding and silt deposition, tidal, and storm action of the sea all contribute to every-changing coastal features.

The marine, estuarine, and fresh water coast systems provide much of the biotic diversity in the province. The marine system consists of open and sheltered shoreline having substrate varying from sand to solid rock and diverse bedrock types (basalt, serpentine, marine sediments, etc.). The nature of marine biotic communities differs considerably under varying combinations of these features and under the influence of other variables such as wind strength, tidal action, upwelling characteristics, etc.

1.2b.3 ECOSYSTEMS AND BIOTA

Any natural area analysis of the coast must consider more than its characteristic plants and animals. Fish and shellfish production depend on the healthy functioning of estuaries. These estuaries in turn are dependent upon river sediments and nutrients and on tidal flushing. Logging upstream can increase sediment load and change the nature of an estuary. Industrial effluent can have far-reaching toxic effects. So estuary systems cannot be considered apart from the marine, fresh water and terrestrial systems that determine their characteristics.

Terrestrial plant communities are dominated by forest types. On the north coast Sitka spruce characterizes the fog belt forests, while lodgepole pine forests are common on stabilized sand dunes and some marine terrace sediments. A variety of other conifer and deciduous species are less common associates. Shrub and herb communities on the north coast are prevalent on headlands where salal, evergreen huckleberry and wind-dwarfed spruce and lodgepole pine are shrub dominants. A number of perennial forbs and grasses make up the herb communities.

Sand dunes are a distinctive feature of the coast province. Lodgepole pine, Sitka spruce, Douglas fir, western hemlock, and western redcedar will be in climax forests in varying combinations depending on soil factors, salt spray influence, moisture availability, etc. Much of the vegetated dune area is in early shrub and herb successional stages or had been returned to these stages by fire and sand inundation. European beach grass, introduced in the late 1800's has become an

important pioneer species. It is responsible for the now common foredune with a deflation plain in its lee, which was less widespread prior to the 1930's. On older pleistocene sea cut terraces sandy deposits have in some cases developed blacklock soil, which stunts growth and leads to the development of pygmy forests.

Wetland vegetation includes marine, estuarine, and fresh water types. In the case of the marine and estuarine algal and invertebrate communities, more information is needed to document the composition, location, and extent than is now available. In the meantime, important teaching and research areas that are already identified and utilized need protection from excessive public intrusion. Estuarine wetlands support vital saltmarsh communities that have been well documented by Carol Jefferson. A number of different saltmarsh types are found, depending on substrate types, water regime, and salinity. In the lower Columbia River there are a number of islands subject to major tidal influence. The islands close to the river mouth are characterized by dense tall shrub communities with scattered Sitka spruce. Further up-river the spruce disappears to be replaced by the more typical riparian forests of black cottonwood, willow, and ash. Fresh water herb, shrub, and forest communities are associated with the numerous coastal lakes, ponds, and streams. Acid bogs commonly containing California pitcher plant, sphagnum moss, Labrador tea, dwarfed lodgepole pine, and western redcedar, and a number of rare plants are scattered along the coast. These bogs are highly dependent on water table stability for their continued existence and are threatened by development and water projects that raise or lower the water table.

The coastal waterways and their associated plant communities provide habitat for a multitude of wildlife. Second only to the wetlands of the Klamath Basin, the extensive shorelines of the coastal waterways provide critical habitat for the northern bald eagle and American osprey. Migratory waterbirds are heavily dependent on the open waters for feeding and resting. Offshore rocks provide hauling out areas for seagoing mammals such as seals and sealions and nesting habitat for numerous seabirds.

1.2c THE COAST RANGE

The balance of the county is in the Coast Range province, perhaps the least complex forested province in the State. Both geomorphic and ecosystem diversity are comparatively low. Its ecological value rests in the magnificent Douglas fir-western hemlock forests, the most productive forest in Oregon, and in the many rivers and streams that carry water to the critical coastal estuaries and to the ocean beyond. The range consists basically of uplifted marine sedimentary rock of Eocene and Oligocene ages (30-50 million years old) punctuated by basaltic intrusive rock that is more resistant to weathering and caps many of the higher peaks.

1.2c.1 CLIMATE

The maritime influence produces a cool mediteranean climate with long wet winters and short usually dry summers. The southwest winter winds deliver up to 118 inches of rain annually with rainfall occurring more than 200 days of the year. Much of the precipitation falls on the west slopes and a pronounced rain-shadow effect lessens precipitation on the east slopes and in the interior valleys.

1.2c.2 GEOMORPHOLOGY AND SOILS

The areas drained by the Wilson and Trask rivers, the proportion of steep slopes decreases in the northern section. Mountain passes are generally located on the eastern border of the range due to more rapid headwater erosion by numerous westward flowing streams. Elevations of main ridge summits in the province range from about 1476 to 2461 feet (450-750 meters). Scattered peaks, often capped with intrusive rock, rise well above the surrounding ridges. The shallow soil summits of some of these peaks are fragile islands of herbaceous communities including many of the rare plant species of the province. The sedimentary rock weathers readily to yield deep soils of clay to silt loam texture on gentle slopes. Steep forested slopes tend to have shallow rocky soils.

1.2c.3 ECOSYSTEMS AND BIOTA

The province is a heavily forested region dominated by Douglas fir, western hemlock and other coniferous and hardwood species. Although the province exhibits comparatively low diversity, there is nevertheless considerable diversity in the forest ecosystem types as a consequence of climatic gradients, local environmental differences and historical disturbances - - particularly from fire and logging.


An array of Douglas fir and western hemlock forest types occupy the bulk of the mountains. Western red cedar, alder, big leaf maple and myrtle are found along streams, on moist north slopes and in bottom lands. On a few higher peaks, subalpine forests of true firs occur. Extensive wildfires initiated numerous second growth stands of conifers to young stands of red alder and conifer.

Aquatic systems consist mainly of rivers, streams and marshes, as well as a few bogs, lakes and ponds. Anadromous fish constitute an important biologic feature of many river and stream systems.

1.3 INVENTORY OF ENVIRONMENTAL RESOURCES

Each of the resource categories contained in the goal is discussed and appropriate mapping referenced. The following sources of information are important components of the information base for the environmental resources portion of the Goal 5 Element.

<u>Information Source</u>	<u>Description</u>	<u>Author/ Agency</u>	<u>Date</u>
Sensitive Vertebrates of Oregon	Description, range (delineated on a small-scale map of Oregon), status, habitat, conservation measures and related information for species identified as sensitive by ODFW.	David B. Marshall (consultant) ODFW	June 1992
Oregon Wildlife Diversity Plan	Developed to provide ODFW policy direction for maintenance and enhancement of vertebrate wildlife resources in Oregon. Contains policy objectives, priorities and strategies. Section III includes information on the physical and human geography, off-shore marine wildlife, and inland wildlife of the Coast Range province (which	Claire Puchy & David Marshall ODFW	November 1993

	covers Tillamook County).		
Salmon Habitat Maps	Maps show major streams, indigenous anadromous salmonid habitat, and "Essential Salmon Habitat". Each map also lists the salmon species present in that area. Map 15 covers south and central Tillamook County at a scale of 1:327,000; Map 14 covers north county at a scale of 1:247,000. Maps were created digitally, and so should be obtainable in digital format. 	Division of State Lands	March 1995
Nestucca Watershed Analysis	In-depth description of past and current natural and cultural conditions of the Nestucca Watershed. Trends in these conditions are discussed, and a "desired future condition" is articulated. Management opportunities on federal land and non-federal land are explored. There is a large section of data used in the Watershed Analysis, and associated maps.	US Forest Service, BLM, EPA, NMFS, SCS, USFWS.	October 1994
Environmental Resource Analysis -- Neskowin to Tillamook, Oregon	Broad scale maps of most of south county depicting generalized information on climatology, land use and ownership, physiography, recreation value, biotic resources, historical resources, flood damage, and land value.	Oregon State Highway Division, and Federal Highway Administration Region 8, Oregon Division	June 1970
Oregon Natural Heritage Plan	Prioritized lists of terrestrial ecosystems, aquatic ecosystems, unique geologic types, and special plant and animal species of Oregon. Ecosystems and geologic features lists include location information and potential acting agencies for protection of these areas. Also includes discussion of techniques for preserving Oregon's natural heritage.	Natural Heritage Advisory Council to the State Land Board	March 1981
Oregon Natural Heritage Plan	Update of 1981 plan (see above).	Natural Heritage Advisory Council to the State Land Board	1988
Oregon Forest Practices Act and Oregon Forest Practices Rules	Policy, procedures, and standards for forest management and protection of streams and lakes.	ODF	1996/ 1997

Nestucca River/Walker Creek Scenic Waterway Management Plan	Standards and procedures for management of land use within this State Scenic Waterway corridor. This corridor, which comprises 1/4-mile on either side of the upper Nestucca River, is the only wild or scenic waterway in the county.	Oregon Dept. of Parks and Recreation	1991
Oregon Recreation Trails (OAR 736-09)	Identifies official State recreation trails	Oregon Dept. of Parks and Recreation	March 1993
Stream Classification Maps	Identify fish-bearing streams, domestic water source streams, and stream size.	ODF	1995?
Salmonid Habitat Maps	Identify spawning, rearing and migration habitat for Chinook, Chum, Coho, and Steelhead in the south half of the county.	ODFW	1996
Mediated Agreement for Decision-Making Process for Extraction of Gravel from Tillamook County Rivers and Upland Sites	Agreement to phase out in-stream gravel removal (in order to protect salmonid habitat), and to develop upland sites to mitigate the loss in gravel supply. Signed by representatives of the Oregon Aggregate Producers Assoc., ODFW, DLCD, DSL, Tillamook County, Tillamook County Economic Development Commission, and the Tillamook Soil and Water Conservation District.	Parties to the agreement	October, 1992
Oregon Forest Practices Act and Oregon Forest Practices Rules	Policy, procedures, and standards for forest management and protection of streams and lakes.	ODF	1996/ 1997

1.3a OPEN SPACE

A detailed definition of open space is found in the goal. It states: "Open space consists of lands used for agricultural or forest uses, and any land area that would, if preserved and continued in its present use:

1. Conserve and enhance natural or scenic resources;
2. Protect air or streams or water supply;
3. Promote conservation of soils, wetlands, beaches or tidal marshes;
4. Conserve landscaped areas, such as public or private golf courses, that reduce air pollution and enhance the value of abutting or neighboring property;

5. Enhance the value to the public of abutting or neighboring parks, forest, wildlife preserves, nature reservations or sanctuaries or other open space;
6. Promote orderly urban development."

Open space is considered a non-site-specific resource.

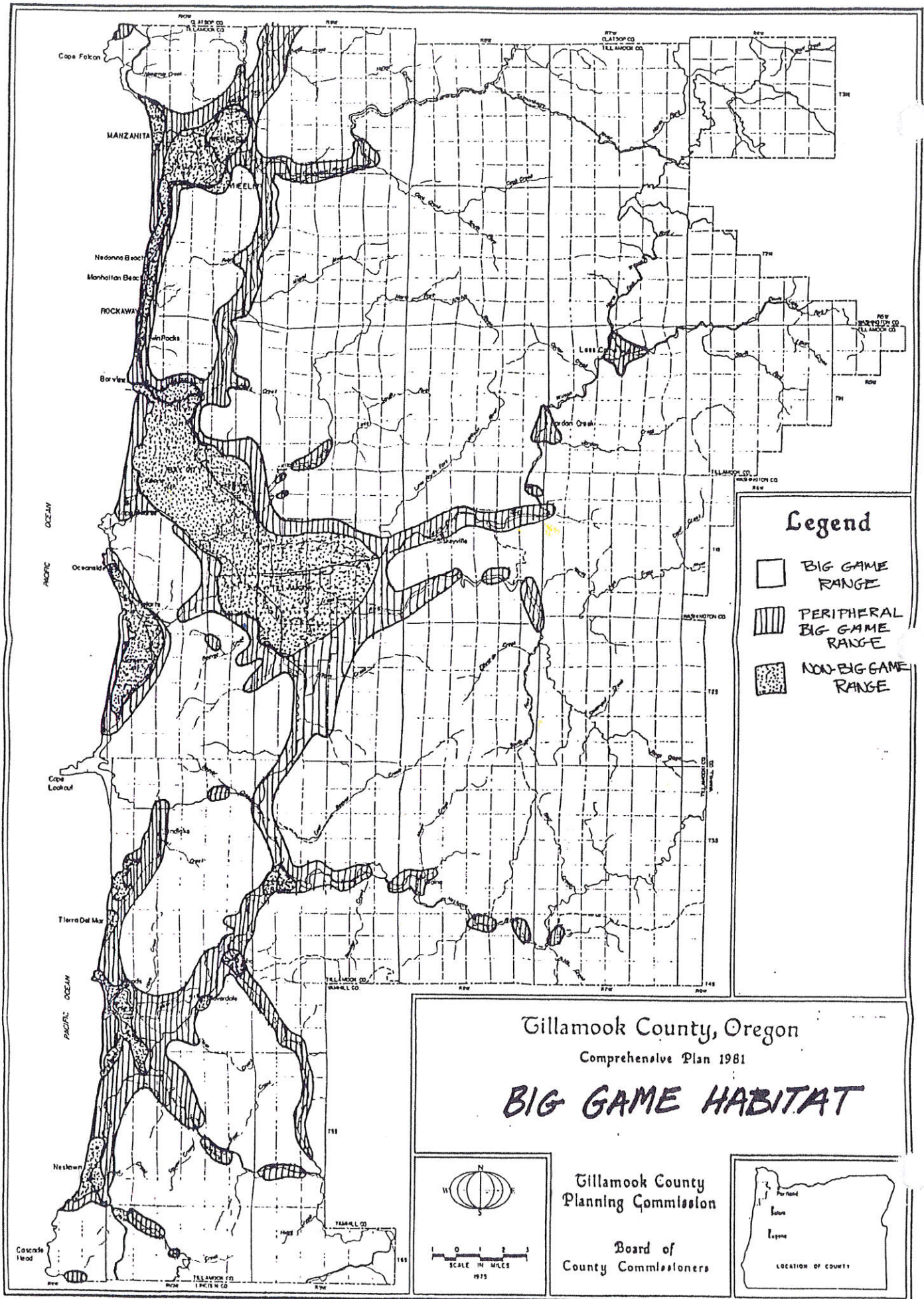
Historically, open space has not been considered to have a utility of its own although it was an important determinant in directing where to build. Today, however, it becomes increasingly apparent that all types of land and water resources are limited. National demand for lumber grows at the same time as the supply of harvestable sawtimber declines; productive agricultural land is becoming more scarce and valuable; and most types of recreational activities grew in the 1970's at a rate more rapid than population growth. In short, open space is necessary to provide for new development; open space is also vital for the county economic base, for aesthetic values, wildlife and many types of recreational pursuits.

Economic analysis of Tillamook County, such as is included in the economic element of the plan, amply illustrates the importance of open space. Combining the economic value of industries which are dependent upon the open space character of the County, including forestry, agriculture, tourism, commercial fishing and construction, it is apparent that use of open space is vital to the local economy. A comparison of the needs of these industries also suggests that each is economically relatively independent of the other economic sectors. In fact, it is possible that the ideal state for a particular industry could partly limit or impact other industries. Therefore, these industries must continue to learn to cooperate regarding the use of open space.

Major emphasis to open space is provided, in addition to the natural resource element, in other sections of the comprehensive plan, including the agriculture, forestry, recreation, natural hazards and urbanization elements. As an overview to these discussions, it should be noted that the majority of lands are and always will be in some type of open space use. Figure 1, for example, demonstrates that 64% of land in Tillamook County is publicly owned, managed by State Department of Forestry, Forest Service or U.S. Bureau of Land Management. Another 28% is in private commercial forest land use and 5% more is in farm use. As a result something in the order of 3% (or about 21,000 acres) in Tillamook County could possibly be considered as other than open space.

However, the health and condition of these open space areas and their associated natural resources does vary. For example, repercussions from the mid-century Tillamook burns are apparent even today because of the extreme sediment loading of the Tillamook and Nehalem estuaries and river systems, accompanied by economic impacts such as those outlined in the Tillamook Bay Drainage Basin Erosion and Sediment Study. Location of open space and other natural resources is indicated by maps found in this document.



Although large quantities of open space do exist, many uses of this space can and are made. One means to conserve this open space (for open space uses) is by encouraging a relatively consolidated pattern of rural and urban development, keeping in mind housing needs and orderly development of public facilities.



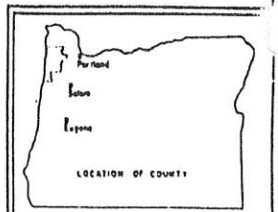
Legend

- BIG GAME RANGE
- PERIPHERAL BIG GAME RANGE
- NON-BIG GAME RANGE

Tillamook County, Oregon
 Comprehensive Plan 1981
BIG GAME HABITAT



 SCALE IN MILES
 1975

Tillamook County
 Planning Commission
 Board of
 County Commissioners



Other programs to accomplish specific uses of open spaces, such as park and recreation areas, can also help to assure that good opportunities are available for each open space use. Local programs for park and recreation uses, wildlife resources, agricultural production, forest production, mineral and aggregate resources, protection of streams and water supplies, and conservation of scenic and natural areas are described in appropriate portions of this plan.

1.3b FISH AND WILDLIFE HABITAT

1.3b.1 WILDLIFE HABITAT

Each bird, mammal, reptile and amphibian has its own habitat, a complex set of environmental conditions to which it is adapted and which it requires for its continued survival. Food, water, vegetative cover and other natural features necessary for shelter, escape, and reproductive needs must be present in the type of quantity and distribution required by a species of animal. Loss of habitat need not be total to exclude an animal from a particular area; at times, the loss of one critical element is sufficient. The key to maintaining a diverse and abundant wildlife is the provision of diverse habitats suited to the needs of a wide variety of species.

All undeveloped land and water areas contribute to the habitat needs of one or more wildlife species. However, certain habitats are of particular importance. The report focuses on those sensitive habitat areas that are important or essential to the maintenance of wildlife populations.

BIG GAME: "The Fish and Wildlife Habitat Protection Plan for Tillamook County", prepared by the Oregon Department of Fish and Wildlife in 1977, includes the following estimate of big game species population in Tillamook County in 1977: Roosevelt Elk, 5,200; Blacktail deer, 35,737; Black bear, 1,550; and Cougar, 40. The Department of Fish and Wildlife estimates that these population figures are still accurate.

The basic habitat requirements of big game include food, water, cover, and freedom from harassment. These requirements are met largely in and adjacent to the forested areas of the County where timber harvest has resulted in mixed stands of mature forest, brushland, and clearcuts. Important habitat areas include forest openings with a southern exposure and bottom lands where adjacent forest and riparian vegetation provide cover. Generally, clearcuts up to about ten years of age are preferred habitat because forage production is highest in these areas. Due to forest management practices, these areas are always shifting. Therefore the pattern of big game use also shifts. Older conifer stands are important in providing cover for escape and from the extremes of weather. Elk in particular, require stands of trees large enough to provide complete concealment.

The Oregon Department of Fish and Wildlife classifies areas within the County as Major Big Game Range, Peripheral Big Game Range, and Excluded Range. Map #1 shows these areas. Major Big Game Range is defined as that portion of the county which supports the majority of big game. In general, these lands are sparsely developed forest lands. These areas provide the majority of big game recreational opportunity. Peripheral Big Game Range consists primarily of the lower reaches of the County's river valleys. These lands support substantial big game populations and serve as a wintering area for animals from Major Big

Game Range areas in severe winters. Conflicts exist between big game and other uses and these conflicts limit management options and recreational opportunities. Peripheral Big Game Range areas had habitat values equivalent to Big Game Range areas prior to their more intensive development. Excluded Range areas are developed areas that are only occasionally used by big game.

In Tillamook County, by far the largest of the three types of habitat is the Major Big Game Range. It corresponds very closely with the forest land of the County. The Peripheral Big Game Range includes the flood plains and adjacent foothills along the lower portions of the Nehalem River, Foley Creek, Kilchis River, Wilson River, Trask River, Tillamook River, Nestucca River, Three Rivers, and Little Nestucca Rivers. Also included are areas around Netarts Bay and Sand Lake. Excluded Range consists of the area around the County's cities and dense unincorporated areas, such as Oceanside, Netarts and Pacific City.

For a majority of the areas in Tillamook County designated as either Major or Peripheral Big Game Range, Tillamook County employs three resource zones: Forest (F), Farm Use (F-1), and Small Farm and Wooldot-20 Acres (SFW-20). All three of these zones permit the propagation and harvesting of trees as an outright use. Generally, forest practices are considered compatible with big game habitat. However, the Oregon Department of Fish and Wildlife has identified a number of forest practices that may, under certain conditions, conflict with big game habitat. The Department of Forestry and the Department of Fish and Wildlife are presently working on a list of problem areas within the Forest Practices Act. Eventually this process may lead to some modification of the Forest Practices Act. Conversely, big game can conflict with forest management by browsing on young trees or making it necessary for forest landowners to tube newly planted seedlings to prevent browse damage. As the big game population increases, so does the potential for this type of conflict. All three of these zones also permit farm uses. Conflict between farm use and big game habitat can occur when big game destroys crops or eats forage that is intended for livestock. The major conflicting use for big game habitat is residential densities that exceed one dwelling unit per 80 acres in Major Big Game Range and one dwelling unit per 40 acres in Peripheral Big Game Range. In addition to the zones mentioned above, some Peripheral Big Game Range areas are zoned Rural Residential (RR). This zone allows residential development at densities greater than those recommended by the Oregon Department of Fish and Wildlife.

In addition, all of the zones allow a range of other uses that could permanently alter big game habitat areas. These uses generally have the following characteristics: the introduction of people into habitat areas on a year-round basis; the permanent introduction of people on a seasonal or weekly basis; or the use of land in a manner which necessitates the removal of large amounts of vegetative cover. Uses contained within the F, F-1, SFW-20 and RR zones that may conflict with Big Game Habitat are:

ZONE	PERMITTED USES	CONDITIONAL USES
F-1	<ol style="list-style-type: none"> 1. Single-family dwelling in conjunction with a farm use 2. Farm building 	<ol style="list-style-type: none"> 1. Mining & processing of minerals or aggregate 2. Schools 3. Churches

- | | | |
|--------|---|---|
| | | <ul style="list-style-type: none"> 4. Community centers 5. Golf course 6. Facilities necessary for Public utility service 7. Airport 8. Facilities for the processing Of forest products 9. Other non-farm dwellings 10. Commercial activities in conjunction with a farm use |
| F | <ul style="list-style-type: none"> 1. Primary wood processing facilities 2. Mineral and aggregate mining 3. Structure accessory to forest management of fish 4. Dwelling in conjunction with a farm use | <ul style="list-style-type: none"> 1. Forest products processing other than primary 2. Parks & campgrounds 3. Sanitary landfill 4. Public utility service 5. Dams & power houses 6. Airplane landing strip 7. One family dwelling 8. Mineral & aggregate mining |
| SFW-20 | 1. Dwelling in conjunction with farm or forest use | <ul style="list-style-type: none"> 1. Same as F-1 2. Private & public parks 3. Aquaculture 4. One family dwelling |
| R-R | 1. One family dwelling | <ul style="list-style-type: none"> 1. Two family dwelling 2. Mobile home park 3. Cottage industry 4. Church 5. School 6. Public utility 7. Golf course 8. Kennel/animal hospital 9. Community facilities |

The major environmental consequence of permitting potential conflicting uses would be the degradation or destruction of additional big game habitat. Big game would be displaced from an impacted area to other non-impacted areas. Depending on the population density in the non-impacted area, this could place additional population pressure on the remaining habitat areas. Loss in habitat may result in a decline in big game populations. Generally, habitat loss is estimated to be relatively small because it will occur almost exclusively in Peripheral Range areas, areas that already experience a degree of habitat degradation. Since the major upland bird habitat corresponds roughly to big game habitat, a loss of big game habitat would also result in a loss of upland bird habitat.

A loss of big game habitat and subsequent reduction in big game population could have an economic impact. According to the "Fish and Wildlife Protection Plan for Tillamook County", the total expenditures in Tillamook County of big game hunters, in 1975, was 3.3 million dollars. This figure has undoubtedly increased substantially since then. If there are fewer animals to hunt, because

of a loss of habitat, one could expect a decrease in the expenditures of big game hunters.

Conversely, the economic consequences on individual land owners and the County, of allowing residential development and other types of non-resource production uses would be substantial, particularly in Peripheral Range areas. A fair portion of the County's rural population is centered in these areas. Not allowing further development, especially in areas that the County has shown to be committed to rural residential use, would result in a reduction of property values, personal savings, and rural housing opportunities that have been traditionally available to County residents.

The major social consequence of allowing conflicting uses appears to be the browsing of deer and elk on ornamental vegetation or the destruction of vegetable gardens. The social consequence of not allowing continued rural residential development was discussed in the previous paragraph.

The energy consequences of limiting the nature of rural development appear to be positive. Trips generated by development located in more isolated portions of the county would be reduced because of density and development restrictions.

In summary, there are conflicting uses for big game habitat. Because of the nature and extent of these potential conflicting uses, they can not be entirely prohibited. The County will develop a program that incorporates policies and standards that will limit the potential impact of conflicting uses on big game habitat.

The County's program for limiting conflicting uses in big game range areas will consist of the following key elements. The County will rely on the enforcement of the Forest Practices Act to insure that forest management activities are consistent with the maintenance of big game habitat. The vast majority of Major Big Game areas are designated F, which requires an 80 acre minimum for dwellings. This standard is consistent with Department of Fish and Wildlife criteria. Structures will have to meet siting criteria to minimize impact on Big Game range. Through notification, the Department of Fish and Wildlife will have an opportunity to make recommendations on the appropriate siting criteria. Both outright and conditional uses in the SFW-20 zone shall be subject to a finding that the use is consistent with the maintenance of big game habitat. Uses that are found to be consistent will be subject to siting criteria and the Department of Fish and Wildlife will have an opportunity to comment on the siting of proposed developments. The Department of Fish and Wildlife will be notified of any proposed Plan change or rezone of areas zoned F or SFW-20 to a more intensive use zone, e.g. Rural Residential. The County will not adopt additional criteria for managing conflicts between rural uses and big game habitat in areas planned and zoned Rural Residential because these areas are already committed to rural development.

The Coast Resort Overlay Zone has been applied to property in the Sand Lake area known as the Beltz Farm site that includes big game and peripheral big game range. The site analysis, consequence and limitations of development are set forth in Appendix 11-A of the Goal 2 element.

UPLAND GAME BIRDS: This group of wildlife includes grouse, mountain quail and pigeons. Tillamook County, like most of western Oregon, has a reduced population of upland game birds. Reasons for this decline are varied and complex, but are believed to include chemical manipulation of insects and vegetation, predator increases and changes in habitat. While upland game birds are a product of forested areas, not a great deal is known about managing habitat to increase populations. However, maintaining a wide variety of vegetation appears to be important. Seed and fruit bearing plants, such as elderberry, cascara, bearberry and hawthorne appear to be especially important.

The "Fish and Wildlife Habitat Protection Plan for Tillamook County" has identified two sensitive habitat areas for upland birds. One, mineral springs and other watering areas are important to band-tailed pigeons. Two, riparian vegetation along streams is important for ruffed grouse.

The band-tailed pigeon returns annually to certain springs in western Oregon. A pigeon "springy" may be a mineral spring, seep, mud flat, or tidal channel in an estuary, ocean beach, or exposed mineral soil near a stream. The birds are attracted to water and soil containing salts which they use to feed their young. They also require an area of tall trees around the spring for roosting and escape. Use is concentrated in August and September. The birds nest in a widely dispersed pattern, but congregate in groups of as many as 800 at the spring during the mornings.

The following two areas have been identified by the Oregon Department of Fish and Wildlife as important watering springs in Tillamook County. Both are in the Coastal Shorelands Boundary and both are protected as Goal 17 resources.

1. Kilchis Point. This site is located in Section 11, Township 1 South, Range 10 West, south of Bay City. Pigeons use the Tillamook Bay mud flats on the south and west sides of Kilchis Point in numbers up to 800. Tall trees along the shoreline are used by the pigeons as roosting sites.
2. Dean Point. This site is located in Sections 33 & 34 of Township 3 North, Range 10 West. The site consists of a large watering area on the mudflats on the west side of Dean's Point.

Generally, upland game habitats occur in areas planned and zoned for agricultural and forest use. Normal forest and agricultural management practices and use permitted in these zones are compatible with the protection of these habitats. The maintenance of riparian vegetation is of particular concern and its protection is dealt with in the section on fish habitat.

Urban and rural development are potential conflicting uses for general upland bird habitat. The Department of Fish and Wildlife considers residential development below a density of one dwelling unit per 20 acres to conflict with the maintenance of upland game habitat. There is no mapping of upland bird habitat.

The main consequence of allowing conflicting urban rural development is that upland game bird habitat may be reduced. Loss of habitat may result in a decline in species population. This may result in reduced hunting activity with reduction in the amount of income that hunting generates in the County.

Conversely, the economic and social consequences of not allowing additional rural residential development, and other types of non-resource production uses, would be substantial. A significant portion of the County's rural population is centered in areas that are upland bird habitat. Not allowing further development of these areas would result in a reduction of rural housing opportunities that have been traditionally available to County residents.

The County is not proposing to develop additional policies or programs for the protection of general upland game habitat. Riparian vegetation on forest land is protected through the Forest Practices Act. The County has developed additional local provisions to protect riparian vegetation on non-forest land.

WATERFOWL: "The Fish and Wildlife Habitat Protection Plan for Tillamook County" identifies the following areas of Tillamook County as being sensitive habitat for waterfowl: Lake Lytle, Cape Meares, and Crescent Lake; Nehalem, Tillamook, Netarts, Sandlake, Nestucca and Salmon River estuaries; and small lakes and potholes scattered throughout the County.

Only a brief summary of conflicting uses for waterfowl habitat is provided here because estuarine areas are treated in the estuarine portion of the County's Plan, coastal lakes and major coastal marshes are covered in the Goal 17 element, and other lakes and their associated wetlands are discussed in the Lake & Wetland portion of this plan element.

The filling or draining of wetland areas, and the removal of riparian vegetation are the main activities which conflict with the maintenance of waterfowl habitat. The consequences of allowing these activities include reduction in habitat vital to maintaining viable waterfowl populations and a possible reduction of recreation activities associated with observing or hunting waterfowl.

There are numerous state and federal programs which limit conflicting uses in sensitive waterfowl habitat. These include Section 404 of the Clean Water Act, the State Fill and Removal Law, and the estuarine and coastal shoreland management program that Tillamook County has developed to implement the Estuarine Resources and Coastal Shoreland Goals. The County will develop a program for protecting riparian vegetation on lands not covered by the Forest Practices Act. The County will also implement a fresh-water wetland overlay zone to protect certain wetlands not otherwise protected by County regulations.

FURBEARERS AND HUNTED NONGAME WILDLIFE: This category of wildlife includes aquatic species such as beaver, muskrat, and mink and terrestrial species such as skunk, bobcat and coyote. "The Fish and Wildlife Habitat Protection Plan for Tillamook County" estimated the County's 1974 population as follows: Beaver 1,870; Muskrat 950; Nutria 480; Mink 2,100; River otter 636; Skunk 860; Bobcat 1,800; Raccoon 2,000; Rabbits and Hares 103,000; Coyotes 3,280 and Opossum 1,500. Department of Fish and Wildlife personnel believe these figure to be reflective of 1983 population as well. Because of the diversity of the species in this category, these animals have a variety of habitat requirements, including various types of forest land, riparian vegetation and wetlands. Generally areas considered to be Major and Peripheral big game habitat are also important for terrestrial furbearers and hunted non-game wildlife.

The conflicting uses described for big game and upland game also apply to terrestrial furbearers and hunted non-game wildlife. The conflicting uses described for waterfowl also apply to aquatic furbearers.

The management programs for limiting conflicting uses in big game, upland game and waterfowl habitats are adequate to resolve conflicts for furbearers habitat.

NON-GAME WILDLIFE: This category of wildlife contains some rather small, but significant populations of wildlife that generally need protection because of their limited numbers. At the time the Comprehensive Plan was written, eagles, owls, and herons were viewed as the most important species in Tillamook County. Since then, the compromised status of numerous species has become apparent, and public concern over non-game wildlife has grown. In addition to eagles, owls, and herons, other species also seen as especially important include: peregrine falcon, osprey, other raptors, marbelled murrelet, snowy plover. The decline of species such as red-legged frog is an indicator of the detrimental effect human development has had on wildlife and ecosystems.

Consultations with staff of the Oregon Department of Fish and Wildlife (ODFW), the U.S. Fish and Wildlife Service, and other agencies has made clear the difficulties in establishing a static list of significant wildlife sites adopted within the Comprehensive Plan and updated only at periodic review. What constitutes important wildlife habitat changes from year to year as nest sites migrate, animals relocate when habitat is altered, or new species are identified as sensitive, threatened, endangered or otherwise "of concern".

The analysis contained within this section establishes a foundation of important wildlife habitat sites. Additional important sites are identified by resource agency staff over time; these sites often require some level of protection.

The Northern Bald Eagle is considered to be a threatened species by both the U. S. Fish and Wildlife Service and the Oregon Department of Fish and Wildlife. A threatened species is defined as any species which is likely to become an endangered species within the foreseeable future through all or a significant portion of its range. The Oregon Department of Fish and Wildlife has identified 8 Bald Eagle nesting sites in Tillamook County. These sites are:

1. Tillamook Bay Nest. This nest is located in Section 16, Township 1 South, Range 10 West on Crown Zellerbach timberland. It is located in a snag which has been anchored with cables and surrounded by a grove of mature conifers. It contained two young in 1982, according to ODFW. It was listed on the Oregon Natural Heritage Program Inventory as Site #66. This site is in the Coastal Shoreland Boundary and is identified in the Goal 17 element.
2. Cascade Head Nest. This nest is located in Section 11, Township 6 South, Range 11 West within the Cascade Head Experimental Forest of the US Forest Service. The first sighting was in 1980, and was active in 1981. This site is in the Coastal Shoreland Boundary and is identified in the Goal 17 element.

3. Salal Flats Nest. This nest is located in Section 3, Township 5 South, Range 10 West on U.S. Forest Service Land, bordering private timber company land. The nest produced young in 1984.
4. Little North Fork of Wilson. This nest is located in Section 12, Township 1 South, Range 9 West on Publishers Paper land. The nest was discovered in 1980.
5. Roy Creek Nest. This nest is located in Section 31, Township 3 North, Range 10 West on private and Crown Zellerbach lands. The nest produced two young in 1979. It was occupied but failed to produce in 1982. This nest was identified in the Oregon Natural Heritage Program Inventory as Site #53, Nehalem Junction.
6. Alder Glenn Nest (Elk Creek Nest). This nest is located in Section 32, Township 3 South, Range 7 West on BLM land. The BLM has prepared a management plan which surrounds the nest with approximately 320 acres of old growth forest. It is thought that the eagles in this area nest in several trees. The Oregon Natural Heritage Program (ONHP) Inventory and ODFW report that there is also an alternate nest at Bear Ridge, approximately 2-3 miles away. The Oregon Department of Forestry OSCUR Maps indicate this nest to be in Section 17, Township 3 South, Range 7 West.
7. Cannery Hill Eagle Roost. The ONHP identified an eagles nest at Porter's Point, at the south end of Nestucca Bay in Section 12, Township 5 South, Range 11 West. This is actually thought by ODFW to be a roost on Cannery Hill, in NE 1/4 of Section 6, Township 5 South, Range 10 West. It is located on private land. This site is in the Coastal Shoreland and is identified in the Goal 17 element.
8. The Miami River Eagle's nest. Identified as Site #110 in the ONHP Inventory, is no longer in existence according to the ODFW. It was reported as being at Section 15, Township 2 North, Range 7 West.
9. The Cape Lookout Nest. This nest was verified as active in 1980, '81 and '82. It is located within Cape Lookout State Park, Township 2 South, Range 10 West. This site is in the Coastal shoreland and is identified in the Goal 17 element.

The U.S. Fish and Wildlife Service has prepared Bald Eagle Management Guidelines for Oregon and Washington. The purpose of these guidelines is to maintain the environmental conditions that are required for the survival of bald eagles in the Pacific Northwest. The emphasis is on preventing human disturbances to eagles, particularly during the nesting season. The guidelines suggest that two zones be considered: A primary zone, which is the most critical areas immediately around the nest, and secondary buffer zone to minimize the disturbance and protect the primary zone. The recommended primary zone should include an area 330 feet from the nest. The size and shape should be adjusted to include frequently used perch trees, alternate nests, flight paths and protection from the wind. The recommended size and shape of the secondary zone is also dependent upon the topography and visibility from the nest. A minimum boundary of 660 feet from the nest is suggested. The guidelines

suggest that there be no timber harvest in the primary zone unless designed to enhance stand characteristics for the benefit of nesting eagles. Other major disturbances are not to occur during the critical nesting period from February 1 to July 31. Within the secondary zone, major disturbances shall be minimized during the same critical period. It is also recommended that an individual management plan be prepared for each nesting site. The plan should consider the role of physical features and human use patterns that are unique to that site, e.g., topography, past land use in the vicinity, remaining habitat, vulnerability to disturbance, and the behavior of particular eagles, flight paths, perching trees, vegetation screens, snags, visibility of feeding areas.

HERONS. Great Blue Herons nest in colonies in tall trees near water, typically a major stream or coastal bay. Colonies can consist of up to 100 nests constructed near the top of the tallest trees available, but rarely less than 80 to 90 feet in height. The nests are used for many years. If a heron rookery is destroyed, the herons may relocate if suitable large trees are available. However, relocated heron rookeries are seldom as large as the original one, and there is evidence to show that nest success in rookeries decreases with a decrease in the size of the colony. Herons have a low tolerance for harassment or disturbances while nesting and will readily abandon their nests.

Great Blue Herons are not considered a threatened, rare or endangered species by either the State or Federal government. Several large rookeries have been destroyed by logging in the last few years. These include the rookeries identified on the Oregon Natural Heritage Inventory as the Wheeler Old Forest and Rookery (Site #4, Township 2 North, Range 10 West), Whiskey Creek Rookery (Site #101, Township 1 South, Range 9 West) and Lake Lytle Rookery (Site #102, Township 2 South Range 10 West).

The following rookeries were identified by the Oregon Department of Fish and Wildlife as being active in the summer of 1982.

1. Three Rocks Rookery. This rookery contains 12-20 nests, and is located within the Cascade Head Research Natural Area (Section 30, Township 6 South, Range 11 West). It has been reported as active within the last year. The site is in the Coastal Shorelands and is identified in the Goal 17 element.
2. Nestucca Rookery (Austin-East Rookery). This rookery is located in the SW 1/4 of Section 36, Township 5 South, Range 10 West on the south creek of the Little Nestucca River. The rookery consists of about 10 nests. The site is under Forest Service jurisdiction.
3. Joe Creek Rookery. This site is located in the NW 1/4 of the NE 1/4 of Section 30, Township 2 South, Range 9 West on Crown Zellerbach land. It contains about 12 nests.
4. Roy Creek Rookery. This site is located in the middle of Section 30, Township 3 North, Range 9 West on Crown Zellerbach land. The rookery contains 25-30 nests, making it the largest rookery in the county.

5. Sank Lake Rookery. This area contains about 25 nests, and is located in the SE 1/4 of Section 28, Township 3 South, Range 10 West in the Siuslaw National Forest.
6. The Garibaldi Rookery. This recently discovered rookery is located on the northeast edge of the City of Garibaldi (Township 1 North, Range 10 West, Section 21, SE 1/4 of the NW 1/4). It consists of approximately 12 nests and is apparently on private lots within the City limits (Kunkel, ODFW, 1982). Since it is in Garibaldi, it is covered by the City's Comprehensive Plan.

Existing Federal law requires that a Heron rookery not be logged while in use. The Oregon Department of Fish and Wildlife has developed guidelines that heron rookeries not be logged during the nesting season, which is between February 1 and July 31.

NORTHERN SPOTTED OWLS. These owls require large tracts of undisturbed lowland old growth forests. Estimates of the area required by one breeding pair range from 100-600 acres. Because of widespread logging of preferred habitat areas, it is estimated that the population of Northern Spotted Owls have been reduced substantially. The Oregon Department of Fish and Wildlife classifies the species as threatened. The U.S. Department of the Interior recently removed Northern Spotted Owls from the Federal list of threatened, rare, or endangered species. There is one know Northern Spotted Owl nest in the NE 1/4 of Section 20, Township 3 South, Range 7 West (Site TI-83 on the Oregon Natural Heritage Program Inventory). The site is located on Bureau of Land Management and is within the secondary protection zone of the Bear Creek bald eagle nest.

The Bald Eagle nests, heron rookeries, and Northern Spotted Owl nest are located in the Forest (F), Recreation Management (RM) zones. Specific potential conflicting uses contained in these zones are:

ZONE PERMITTED USES

CONDITIONAL USES

- F
1. Commercial forest management
 2. Structures accessory to commercial forest management
 3. Primary wood processing facility
 4. Forest tree nurseries
 5. Rock quarries
 6. Farm uses

1. Forest products processing, other than primary products
2. Rock quarries
3. Parks, campgrounds, hunting and fishing reserves
4. Sanitary landfill
5. Public utility facilities
6. Dams
7. Airplane landing strips
8. One family dwelling

- RM
1. Maintenance & operation of existing park facilities

1. Expansion of park facilities
2. Rock quarry
3. Primary wood processing
4. Public utility facilities
5. Golf course
6. Dams

There are two general types of conflicting uses. First are those that result in the destruction of the nest or roosting site. This activity consists primarily of logging. Second are activities which generate a level of disturbance sufficient to cause the abandonment of the nesting site. A broad range of the uses listed above have this potential.

The primary environmental consequences of allowing conflicting uses is the destruction of nesting or roosting sites and the abandonment of nest sites. Loss or abandonment of nest sites would further threaten the survival of species that are already classified as threatened (in the case of Northern Bald Eagles and Northern Spotted Owls). Or, in the case of the Blue Heron, further limit the number of suitable roosting sites. The inability of herons to find suitable nesting sites could, over a number of years, result in a decreasing heron population.

The major social consequence of allowing the conflicting uses would be an increased difficulty in the ability of scientists, naturalists and bird watchers to observe and study these birds. Bird watching is also an important tourist activity.

Reduced tourism in conjunction with bird watching could have an economic impact on the County's tourist-related businesses. No significant energy consequences of allowing conflicting uses have been identified.

The major impact of not allowing the conflicting uses would be economic. This impact would be in the form of restrictions that would prevent certain areas from being logged. Removing certain areas from the timber base would adversely affect the income available to the property owner and decrease the supply of timber available. A decreased timber supply could in turn affect employment, income and available tax revenue.

The major social consequence of not allowing conflicting uses would be a reduction in certain recreation uses within the vicinity of identified nest sites. These uses include camping, hunting and the use of off-road vehicles.

In summary, there are conflicting uses for the identified nesting and roosting sites. Almost all of the identified nest sites are located on forest land. Some are on forest land managed by the Federal Government. Tillamook County will rely on management plans and strategies developed by federal agencies to insure the protection of these sites. For other forest land sites, the county will rely on coordination mechanisms available through the Forest Practices Act and any supplemental agreements entered into by the Oregon State Board of Forestry and the Oregon State Fish and Wildlife.

1.3b.2 FISH HABITAT

The "Fish and Wildlife Habitat Protection Plan for Tillamook County", prepared by the Oregon Department of Fish and Wildlife has identified four sensitive areas for fish and shellfish production. These areas are: rivers and streams, estuaries, lakes and reservoirs, and ocean beaches. Estuarine habitat areas are addressed in the County's Estuarine element. The ocean beach habitat as well as rivers, streams, lakes and reservoirs that are within the Coastal Shoreland Planning areas are addressed in the County's Coastal Shoreland Element. The following discussion describes rivers, streams, lakes and reservoirs that are located outside of the Coastal Shoreland area.

All rivers and streams with a perennial flow are considered to be sensitive fish habitat areas. The most important species that these rivers and streams support are: Coho and chinook salmon, steelhead, sea-run cutthroat and rainbow trout.

Several important stages of a salmon's life cycle occur in freshwater streams. The first is spawning, which occurs primarily between October and January. The next stage, lasting from 90-180 days during the winter months, is egg and larva incubation. Smolt rearing begins during the spring and summer months. This period lasts between two and four months, with half of that period spent in the non-estuarine portions of the stream. The cycle is completed when the salmon returns to spawn, normally at the age of four.

Steelhead are sea-run rainbow trout. Although there are varieties that spawn in both winter and summer, only those that spawn in the winter months are found in Tillamook County. The winter steelhead run begins in November, with the most abundant portion of the run occurring between January and February. Returning adults have usually spent two to three years as juveniles in freshwater, and two or three years in the ocean.

Sea-run cutthroat spawn in the smaller streams between July and September. As with steelhead, sea-run cutthroat spend at least half their lives in freshwater streams.

The principal anadromous fish spawning streams in Tillamook County are: Nehalem River, Salmonberry River, Miami River, Kilchis River, Wilson River, Trask River, Nestucca River, Three Rivers and Little Nestucca River.

There are a number of factors that can lead to a loss of fish habitat or the deterioration of habitat quality. The most significant of these are: low stream flows, elevated stream temperatures, stream sedimentation, chemical or biological stream pollution, and the blockage of a stream through damming by log or debris jams.

Stream quality, and thus its value as fish habitat, is affected by adjacent land uses. For the purpose of this discussion, adjacent land uses that could result in a potential loss or degradation of habitat quality are considered conflicting uses.

There are three major adjacent land uses or activities that can affect fish habitat quality. These land uses are: forest practices, agricultural practices, and residential, commercial and industrial development. Forest practices can affect stream quality in a number of ways. Logging and road building can increase sedimentation which in turn can result in a loss of gravel areas important for the spawning of anadromous fish. High turbidity also affects resident fish populations. The removal of riparian vegetation can result in elevated stream temperature. This in turn affects fish usage and spawning. Removal of riparian vegetation may also speed erosion of stream banks and adjacent areas. The application of herbicides, if allowed to come in contact with the stream, can kill fish. Logging, through removal of forest cover, can aggravate low stream flows during the summer months.

Forest practices in Oregon are covered by the Forest Practices Act. The Environmental Protection Agency, in 1979, certified the Oregon Forest Practices

Act as being a Best Management Practices with regards to controlling non-point water quality problems resulting from forest management activities. Tillamook County is relying on strict enforcement of the Forest practices Act to control forest activities that may adversely affect the fish habitat value of streams and rivers in the County.

Agricultural practices can affect stream quality in a number of ways. Improper grazing and crop planting techniques can result in increased land erosion and sedimentation of streams. Animal manure can increase the level of bacterial pathogens in a stream. Improper application of pesticides, when allowed to enter streams, can injure or kill fish. Removal of water from streams for irrigation purposes can result in aggravated low flow periods that limit a stream's ability to function as fish habitat. Land clearing activities can result in the removal of riparian vegetation.

The State Soil and Water Conservation Commission is the implementing agency for the "208" agricultural non-point source water quality program. Tillamook County is relying on the State Soil and Water Conservation Commission program to address agricultural practices that affect the fish habitat value of streams and rivers in the County.

The State Water Resources Department is responsible for the appropriation of water. The County is relying on coordination between the Water Resources Department and the Department of Fish and Wildlife to insure that water rights granted for agricultural purposes are consistent with stream volume levels necessary to maintain fish populations during low flow periods.

Residential, commercial and industrial uses can affect stream quality in a number of ways. Removal of riparian vegetation can result in elevated stream temperatures and increased stream bank erosion. Removal of water from a stream for residential or commercial purposes can aggravate low flow periods that limit the stream's function as fish habitat. Improper septic tank placement or maintenance can result in stream pollution. The County Sanitarian has established criteria for the placement of septic tanks to insure that septic tank effluent does not affect stream water quality.

The County will establish a program to protect riparian stream vegetation where it is adjacent to residential, commercial or industrial uses.

The construction of dams, by impeding the passage of anadromous fish, can reduce or destroy a substantial amount of habitat. Tillamook County is relying on state and federal regulatory agencies to insure that the construction of new dams does not significantly affect anadromous fish runs.

Activities that affect a stream directly, such as gravel removal occupation of water surface area, or stream channelization, can also affect the stream's quality as fish habitat. These activities are subject to Army Corps of Engineers and Division of State Lands permit regulations. Proposals are fully coordinated with resource management agencies through the permitting process. This coordination insures that conflicts with fisheries resources are minimized.

In addition to the above environmental consequences, conflicting uses that result in a loss or degradation of fish habitat can have important economic

consequences. Salmon is an important commercial and sports fish. Steelhead, sea-run cutthroat and rainbow trout are important sports fish. Lost habitat will result in reduced runs and reduced income derived from commercial fish and sports fishing.

As the above discussion indicates, most land uses that involve activities that could affect stream fish habitat values are subject to a state or federal program that can limit the impact of conflicting activities. The County is relying on these programs. The County will also implement a program to protect riparian stream vegetation when the adjacent land uses are residential, commercial, industrial or agricultural.

Riparian vegetation is defined as vegetation situated on the edge of the bank of a river or other body of water. Riparian vegetation performs several important functions; it maintains water temperature and quality and thus enhances fish habitat; it provides bank stabilization, thus reducing the occurrence of stream bank erosion that can result in increased stream sedimentation; it provides habitat for the breeding, feeding and nesting of aquatic and upland wildlife species; and it protects the aquatic ecosystem from unnecessary human disturbances. Riparian vegetation can consist of any of the following plant communities: trees and shrubs growing on uplands adjacent to the river or stream; trees and shrubs growing in a wetland; and an emergent marsh or low shrub wetland, except when this is managed for agricultural use. Riparian vegetation is not agricultural crops, land managed as pasture, horticultural or landscaped areas, or unvegetated areas.

Tillamook County has inventoried riparian resources by identifying a width of land adjacent to estuaries, rivers, streams, and coastal lakes which could support vegetation that would function to stabilize streambanks and maintain water quality and temperature necessary for the maintenance of fish habitat and spawning areas. The identification of a riparian area recognized the value of existing vegetation within the area, as well as the possibility of restoration or enhancement of riparian vegetation. For this reason, the identification of a riparian area was considered to be a more comprehensive approach than an inventory of existing riparian vegetation and shoreline stabilization structures.

The initial identification of riparian areas was made by the Tillamook branch of the Oregon Department of Fish and Wildlife (ODFW). The ODFW recommendations were then reviewed and approved by the District Conservationist for the Soil Conservation Service (SCS). The following factors were considered during the identification of riparian areas: (a) hydrology of the water body; (b) water quality protection needs; (c) wildlife habitat needs. The hydrology of the water body was the main factor considered by both the ODFW and the SCS in determining the width of riparian areas necessary to reduce streambank erosion. Rivers and streams of Tillamook County were categorized as having low, moderate or high streambank erosion potential.

River segments and streams and creeks with a channel width of less than 15 feet were considered to have low potential for streambank erosion. This category contains tributary streams and creeks (such as Coal Creek, a tributary to the Nehalem River), which have low streambank erosion potential because they have small watersheds and carry relatively small volumes of water. This category also contains the headwater segments of major rivers, since, in addition

to carrying relatively small volumes of water, they flow in well-defined canyons which prevent river meandering. These river segments are also above head of tide, and their streambanks are not subject to the erosive forces of tidal currents.

In rivers and streams with low streambank erosion potential, both the ODFW and the SCS considered a riparian area equal to the width of one or two rows of shrubs (approximately 15 feet) to be adequate to reduce streambank erosion. The ODFW also considered the 15-foot wide riparian area to be adequate to maintain water quality and temperature necessary for the maintenance of fish habitat and spawning area.

River segments with high potential for streambank erosion were identified as the main stems of the Nestucca, Little Nestucca, Three Rivers, Tillamook, Trask, Wilson, Kilchis, Miami, Nehalem and North Fork Nehalem Rivers where the river channel is greater than 15 feet in width.

These river segments were considered to have high potential for streambank erosion for one or more of the following reasons:

1. These rivers have large watersheds and carry relatively large volumes of water;
2. Portions of these river segments (with the exception of Three Rivers) are within head of tide. Streambanks along the tidally-influenced portions of these rivers are subject to the erosive forces of both tidal and river currents;
3. These river segments are more prone to meandering than are the headwater segments which run through well-defined canyons.

In river segments with high streambank erosion potential, both the ODFW and the SCS considered a riparian area equal to two tree canopy widths (approximately 50 feet) to be adequate to reduce streambank erosion. The ODFW considered the 50-foot wide riparian area to be more than adequate to maintain water quality and temperature necessary for the maintenance of fish habitat and spawning areas.

Rivers and streams with moderate potential for streambank erosion were considered to be all other perennial rivers and streams with a channel greater than 15 feet in width. Foley Creek, a tributary of the Nehalem River and Mill Creek, a tributary to the Trask River, are included within this category. In these areas, both the ODFW and the SCS considered a riparian area equal to one tree canopy width (approximately 25 feet) to be adequate to reduce streambank erosion. The ODFW considered the 25-foot wide riparian area to be more than adequate to maintain water quality and temperature necessary for the maintenance of fish habitat and spawning areas.

Along lakes and reservoirs of one acre or more, the wildlife and waterfowl habitat provided by riparian vegetation is extremely important. In these areas, the ODFW recommended a 50-foot wide riparian area to provide a waterfowl nesting area, a travel corridor for wildlife, and a buffer to screen waterfowl and wildlife from human activities. Along lakes, this 50-foot wide riparian area will also help to

maintain water quality, since vegetation within this area will filter out sediment and excess nutrients from water draining into lakes.

The County has developed plan policies and zoning ordinance provisions to protect riparian vegetation within these riparian zones.

The inventory of lakes in Tillamook County shall be those identified in the document titled "Lakes of Oregon, Volume 1, Clatsop, Columbia and Tillamook Counties", prepared by the US Department of Interior, Geologic Survey of 1973. According to this report the following lakes outside the Coastal Shoreland Planning area contain rainbow trout or cutthroat trout: Battle Lake, Blur Lake and Hebo Lake.

Generally, uses or developments that result in, or require occupation of water surface area, removal of riparian vegetation, filling or removal, increased sedimentation, or chemical or biological pollution may conflict with the protection of fish habitat. The extent of potential conflicts is dependent on the characteristics of the area and the design of the development being proposed.

The conflicting uses for lakes that are in forest lands (Battle Lake, Blue Lake and Hebo Lake) are most likely to be the removal of riparian vegetation and increased sedimentation. Allowing conflicting uses without adequate management could result in a loss of fish and fish habitat, with a resultant decrease in recreational fish activity and a decrease in economic activity that is associated with recreational fishing. Conflicting uses may also be expected to result in decreased water quality which in turn could affect such non-fishing forms of recreation as swimming. No energy impacts are foreseen.

Forest management activities are covered by the Forest Practices Act. Tillamook County is relying on strict enforcement of the Forest Practices Act to control forest management activities that may adversely affect the fish habitat values of adjacent lakes.

1.3b.3 WETLANDS

The Statewide Planning Goals define a wetland as "an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions".

Goal 5 and OAR 660-23 adopted pursuant to Goal 5 require local jurisdictions to do the following. For areas inside urban growth boundaries (UGBs) and urban unincorporated communities (UUCs), the county shall conduct a local wetlands inventory (LWI) using the standards and procedures of OAR 141-86-110 through 141-86-240, and determine which wetlands on the LWI are significant using DSL criteria. The county shall then adopt the list of significant wetlands as part of the comprehensive plan. Outside UGBs and UUCs, the county is not required to amend the acknowledged comprehensive plan and land use regulations, but should the county choose to do so, it must conduct an LWI. Both inside and outside UGBs and UUCs, the county is required to adopt land use regulations requiring notification of DSL concerning applications for development permits or other land use decisions affecting inventoried wetlands. The inventory for

purposes of notifying DSL includes all wetlands on the statewide wetlands inventory (SWI).

The SWI as of March 3, 1997, consists of the National Wetlands Inventory (NWI) plus any LWIs that have been completed to date. The cities of Tillamook, Bay City, and Rockaway Beach have or are in the process of completing LWIs.

Tillamook County has an acknowledged wetland inventory and significance determination (below), which will remain the inventory of significant Goal 5 wetlands until a county-wide LWI is conducted. As LWIs are completed inside UGBs and UUCs, the existing inventory will be updated. In addition, ordinance language will be developed requiring notification of the Division of State Lands concerning land-use decisions affecting wetlands identified on the SWI.



Tillamook County's wetland inventory and significance determination was undertaken to determine the location, quality and quantity of wetlands in the County. Wetland soils are prevalent in Tillamook County. Of the 135,828 acres of the County mapped by the USDA Soil Conservation Service, Soil Survey Tillamook Area, Oregon, which includes the major river valleys, 13,800 acres of wetland soils were identified. The following table shows the acreage of the various wetland soils.

INVENTORIED WETLAND SOILS

Brailier peat	236
Brenner silt loam	3,311
Coquille and Brenner silt loams	6,264
Hebo silty clay loam	2,580
Nestucca silt loam	1,539

Source: Soils Survey, Tillamook Area, Oregon Table 5

If we exclude the estuarine area from this soils survey, we find that 12,520 acres, or 9.3% of the non-estuarine survey area is characterized by wetland soils.

This survey did not include the coastal portions of the County north of Cape Lookout. However, the entire coastal strip of the County is mapped in Beaches and Dunes of the Oregon Coast, a report also by the Soil Conservation Service. The Goal 18 element includes maps of this area from this report. Wetland type soils in this area include wet deflation plains, wet interdunes and wet mountain fronts. (Some of the areas mapped as wet flood plains and wet surge plains are also wetlands but are inventoried in the SCS soils survey or in the County's estuarine element.) Of the 10,800 acres inventoried (not including flood and surge plains), 2,575 acres includes soils where wetness is a predominant factor.

Mapping of wetland soils in other portions of the County has not been done. However, the mountainous terrain of the remaining area limits wetland soils to narrow riparian areas adjacent to creeks and rivers.

It is clear that there is a substantial quantity of wetland areas in the County as defined by soils. The quality of wetlands varies a lot within these wetland areas. In many cases, the original wetland character has been extensively altered by

agricultural or other development. Tillamook County used the U.S. Fish and Wildlife Service inventory for the County as a means of progressing from a very general identification of wetland soils to a more specific identification of wetland areas that could be evaluated for their quality.

Criteria were developed to evaluate wetlands identified in the USFWS inventory. These criteria result from an analysis of the values of wetlands in Tillamook County including flood mitigation, aquifer recharge, pollution abatement and wildlife habitat. It is found from this analysis that wildlife habitat value is the most meaningful indicator of wetland quality.

Flood mitigation is not a good indicator of wetland value because of the pervasiveness of the problem in the County. The value of wetlands in the County for detaining floodwaters is no greater than the value of agricultural land or other open space land that is exposed to flooding. The value of wetlands as a sponge acting to soak up floodwaters is also not great because their soils remain saturated throughout the winter by heavy rainfall. Tillamook County has adopted regulations to assist in preventing future flood damage. The key to these regulations (discussed in more detail in the Goal 7 element) is the reservation of a flood conveyance area that is kept free of buildings, fill and other obstructions. Flood conveyance areas were mapped in the County as a result of detailed engineering studies. Wetlands have no greater importance than non-wetland areas in these conveyance areas.

Aquifer recharge is also not a good indicator of wetland quality. Although some wetlands can be important aquifer recharge areas, many upland areas in the County are equally as good or better recharge areas. Generally, the best recharge areas exist where permeable soils overlay a permeable substratum. For this reason, dune areas comprise some of the County's best aquifers and aquifer recharge areas (See Goal 18 discussion). Beaches and dunes are classified in hydrologic group A, the most permeable of the hydrologic groups. In contrast, the wetland soils of the County are in groups D and C, the least permeable of the hydrologic groups. This is one of the reasons why they are wetlands. According to DOGMI Bulletin 74 the best aquifers in the County are in the Tillamook Valley lowlands as well as the various sandspits on the coast. (See Goal 11 and Goal 18 elements.) In these areas, non-wetland open space plays as significant a role as wetlands do in recharging these aquifers.

Although wetlands can play a role in filtering out surface water pollutants before they reach open water, pollution control is not as valuable a characteristic for inventorying wetland quality in Tillamook County as it would be in other more urbanized areas. Since the community areas of the County are small and include relatively large amounts of open space, they do not generate the large quantities of chemical or other pollutants associated with storm water runoff that occur in larger urban areas. Agricultural related water pollution is not significantly improved by wetlands because pollutants quickly enter rivers and creeks through open drainageways that drain pasturelands. Other management techniques are being pursued to reduce agricultural pollution in these areas. (See Goal 6 element)

Wetlands do provide a valuable wildlife habitat function that is not provided in other ways. Wetlands provide food, cover and other habitat values that are not provided by any other type of habitat. The loss of wetlands inevitably results in

the loss of wetland specific animals in the County. Unlike the other functions of wetlands, habitat functions can not find replacement in other landscapes and can not find substitute in land management practices.

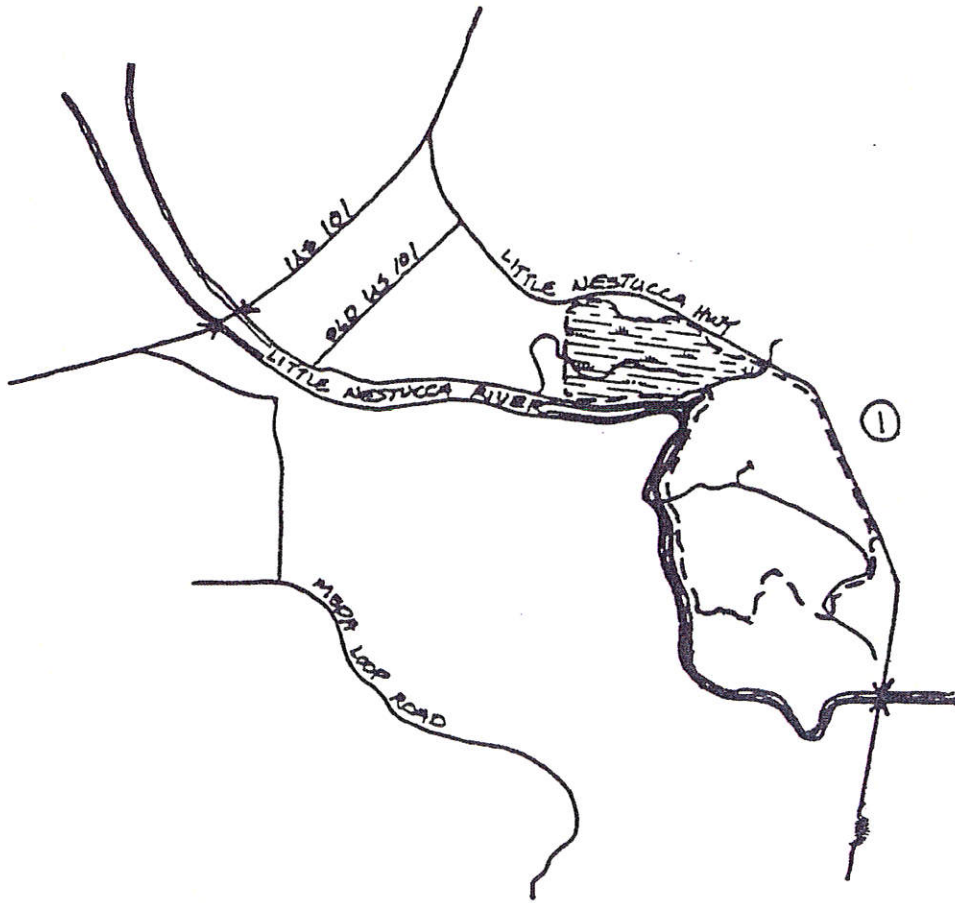
Tillamook County requested assistance from the Oregon Department of Fish and Wildlife to identify wetlands based on their importance to wildlife. A biologist from the local ODFW office prepared a study inventory of wetlands not included in the estuarine and coastal shorelands inventories. This inventory was based on the U.S. Fish and Wildlife Service (1982) national wetland inventory mapping and on field inspections. An additional study site in Neahkahnie not on the U.S. Fish and Wildlife inventory or the ODFW inventory was included in the County's Goal 5 analysis at the request of some of the residents of Neahkahnie.

In evaluating wetland areas to be included in the final plan inventory, four criteria were used: size, location, structure and type of vegetation, and relationship to the food chain.

1. Size. Larger areas are more significant than smaller ones. Generally the larger a wetland is, the more species and numbers within a species are found. Breeding populations can survive and larger animals can find cover and food if enough area is available. Isolation or buffering from outside disturbance is also a function of size. The larger the area, the more the wetland can be buffered from human disturbances.
2. Location. Wetlands near open water, forest, and other associated habitats have increased value due to their diversity. Those located away from human disturbances, pollution sources and disruptive activities generally provide higher densities and more kinds of wildlife. Also, some small wetlands are in key locations which link larger tracts and provide travel lands between various habitat types. Other sites provide specialized food or micro climate conditions essential to the survival of some wildlife. Waterfowl that feed in the estuary prefer to nest in fresh water marshes at the edge of the estuary to avoid tidal action and find cover.
3. Structure and Vegetation. A diverse assemblage of natural wetland and upland habitats increases significance. A wetland with a diversity of vegetation for food, trees and brush for nesting, and cover can meet the needs of not only inhabitants of the site, but other species. Hawks, owls, herons and other predator species utilize wetlands for food sources and nesting. In this respect, some trees or perches can be important at key locations. The more natural or pristine, the greater the significance of a wetland.
4. Food Chain. Most wetlands are rich in organic matter which decays and feeds the grazing micro fauna. This energizes a complex food web which provides a food source for a number of species. Fills and dikes often cut off the source of this food web which results in a loss of productivity in the nearby water areas.

Twenty-three sites totaling 684 acres were evaluated for inclusion in the final plan inventory. Maps 2 through 14 show the boundaries of each area studied and its final plan status. Following is a description of each site.

MAP 2
WETLAND STUDY SITE 1



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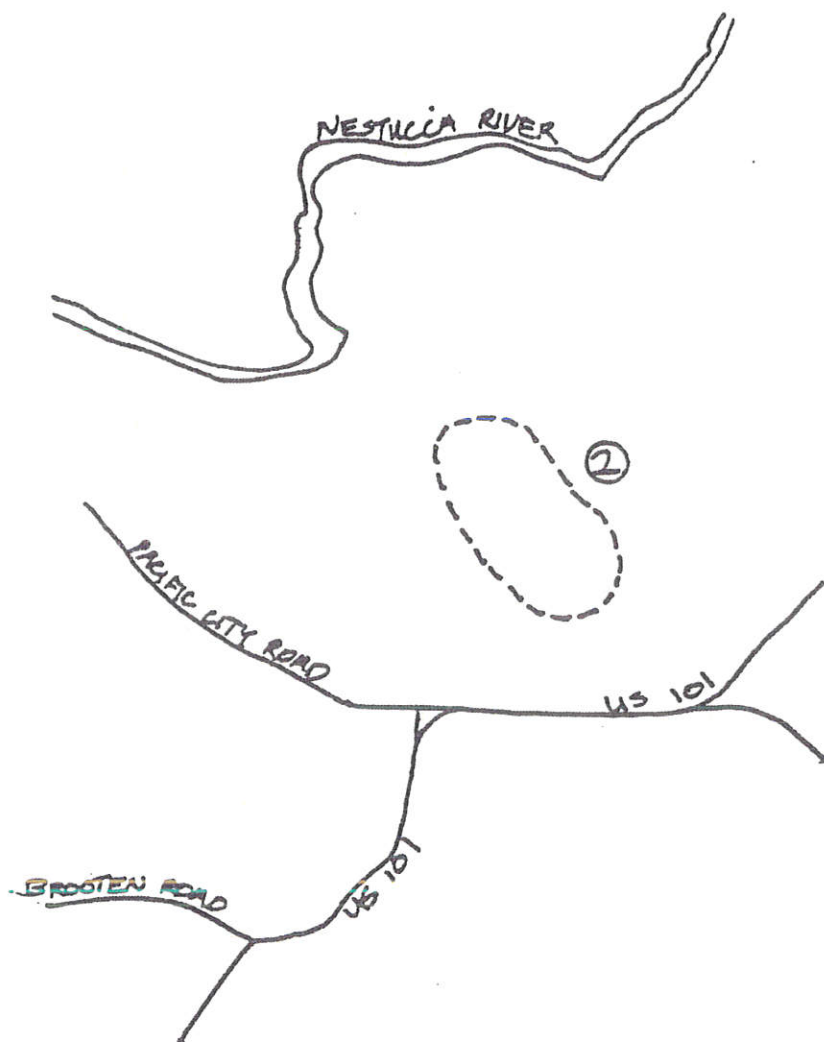


POTENTIAL GOAL 5 WETLAND



PROTECTED WETLAND

MAP 3
WETLAND STUDY SITE 2

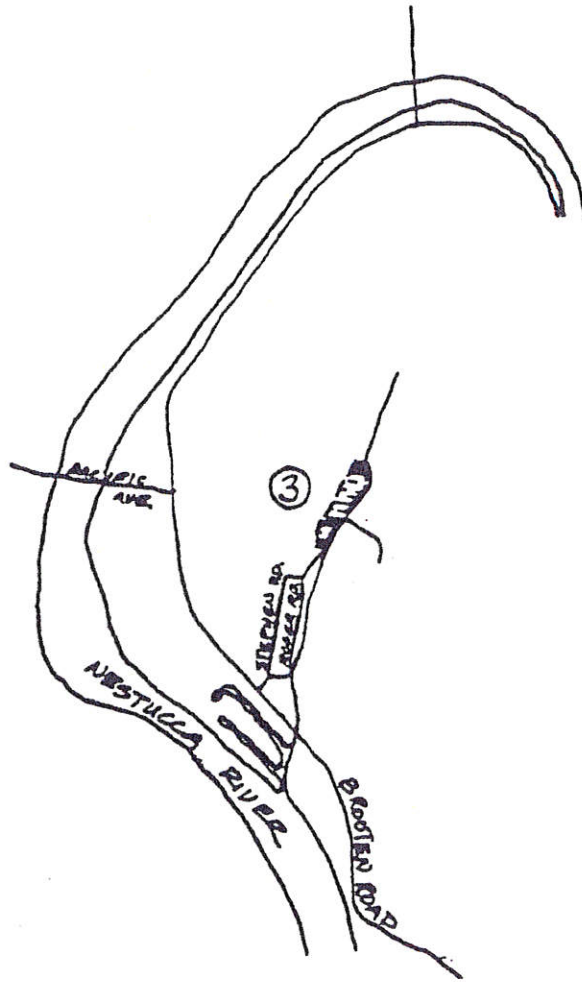


SCALE
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POTENTIAL GOAL 5 WETLAND

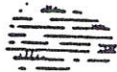
MAP 4
WETLAND STUDY SITE 3



SCALE
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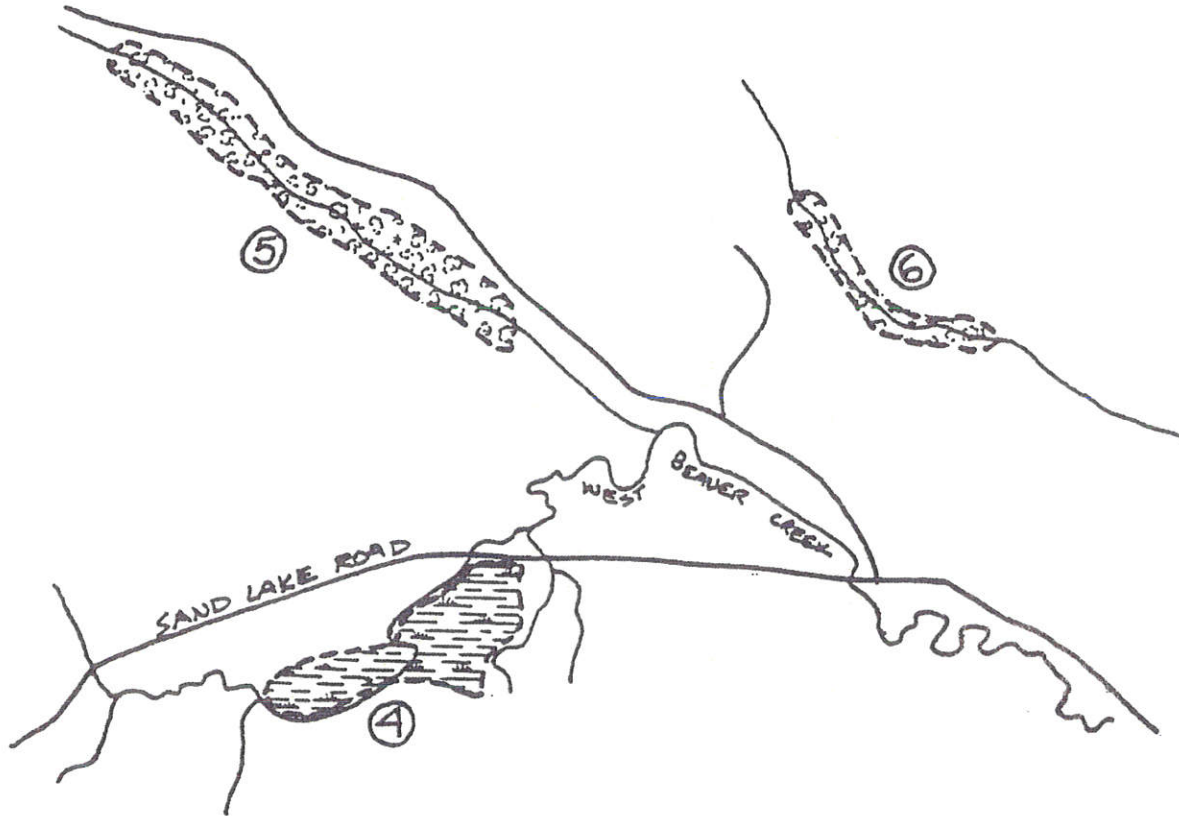
POTENTIAL GOAL 5 WETLAND



PROTECTED WETLAND

MAP 5

WETLAND STUDY SITES 4, 5, 6



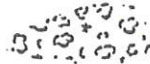
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POTENTIAL GOAL 5 WETLAND



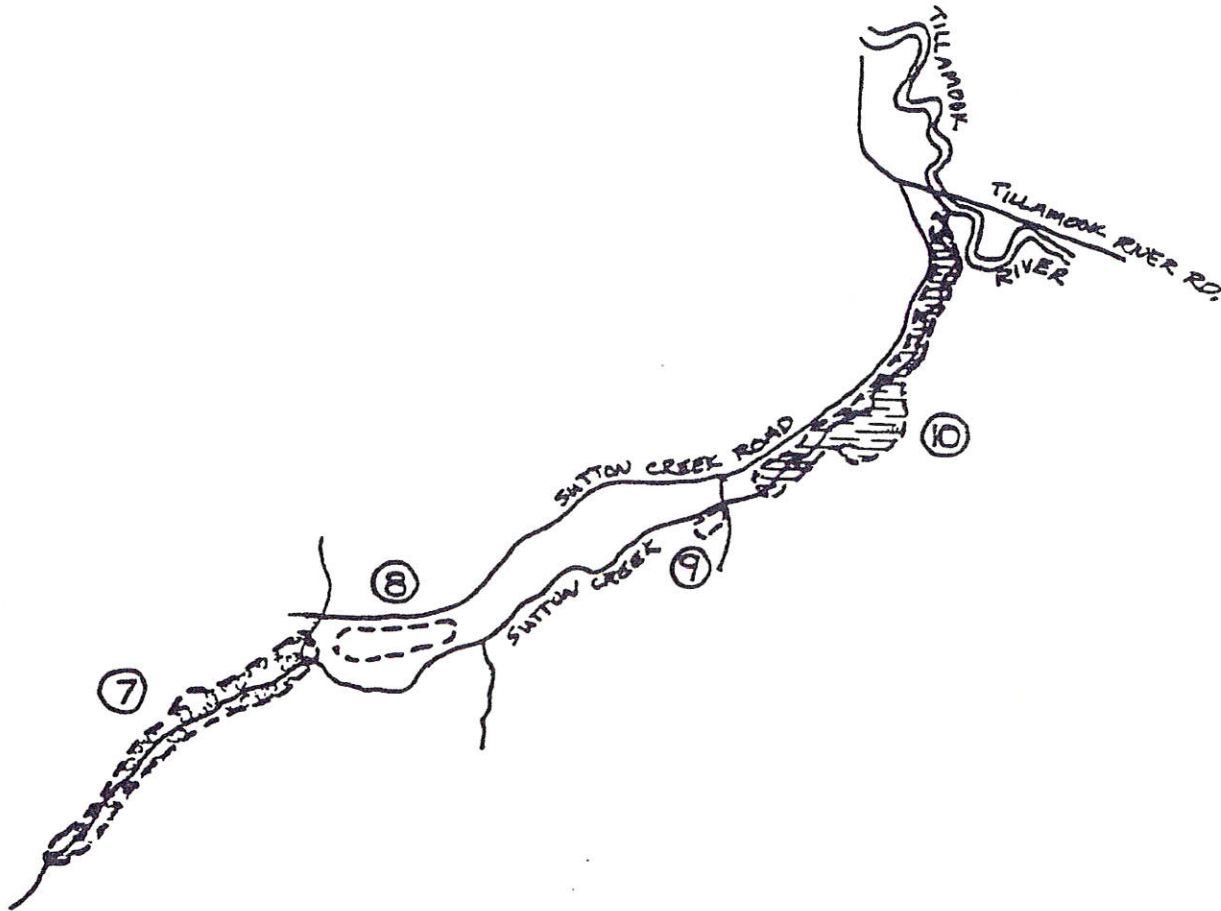
PROTECTED WETLAND



FOREST PRACTICES ACT CONFLICT
RESOLUTION

MAP 6

WETLAND STUDY SITES 7, 8, 9, 10



SCALE
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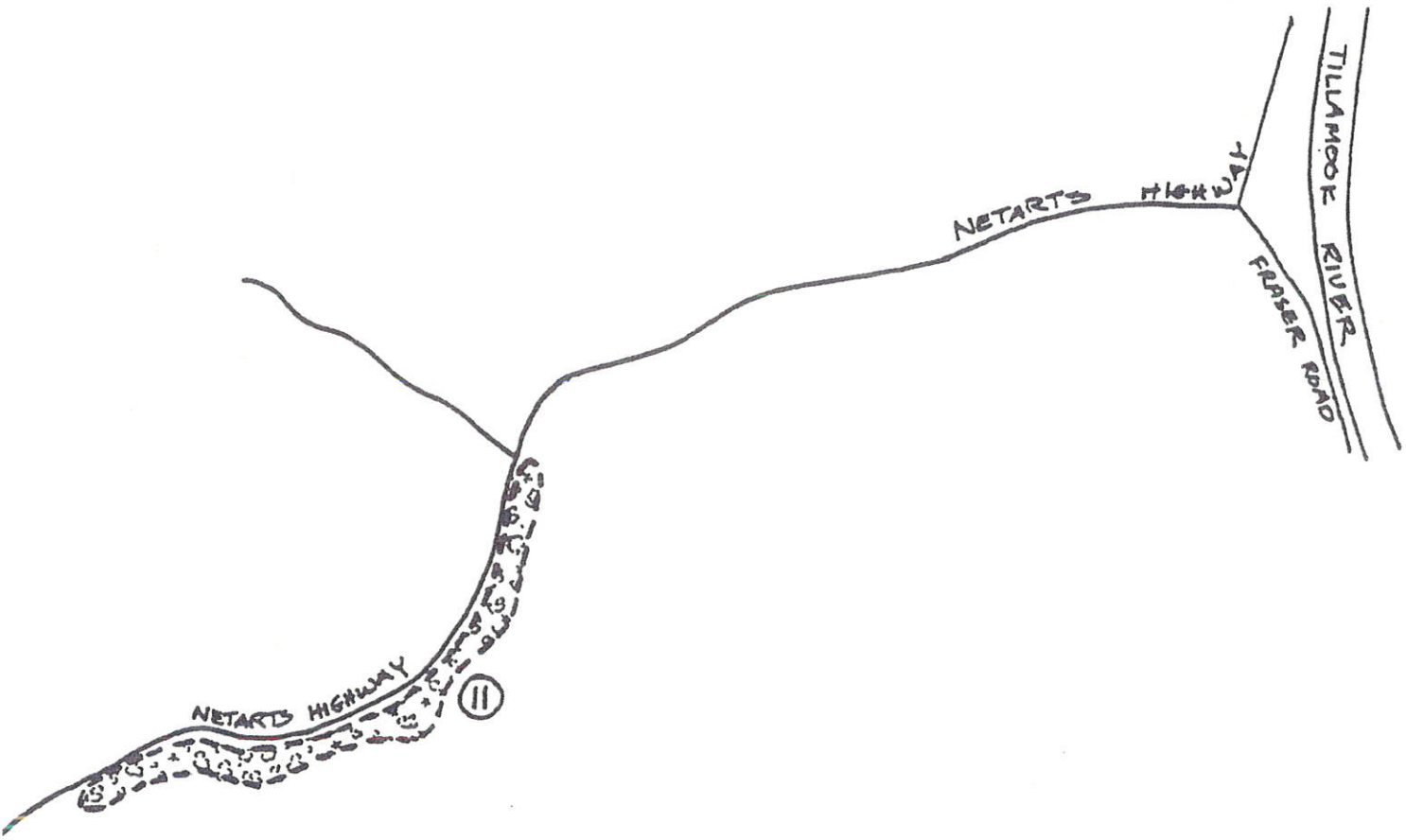
POTENTIAL GOAL 5 WETLAND

PROTECTED WETLAND

FOREST PRACTICES ACT
CONFLICT RESOLUTION

MAP 7

WETLAND STUDY SITE 11



SCALE
1" = 1000'



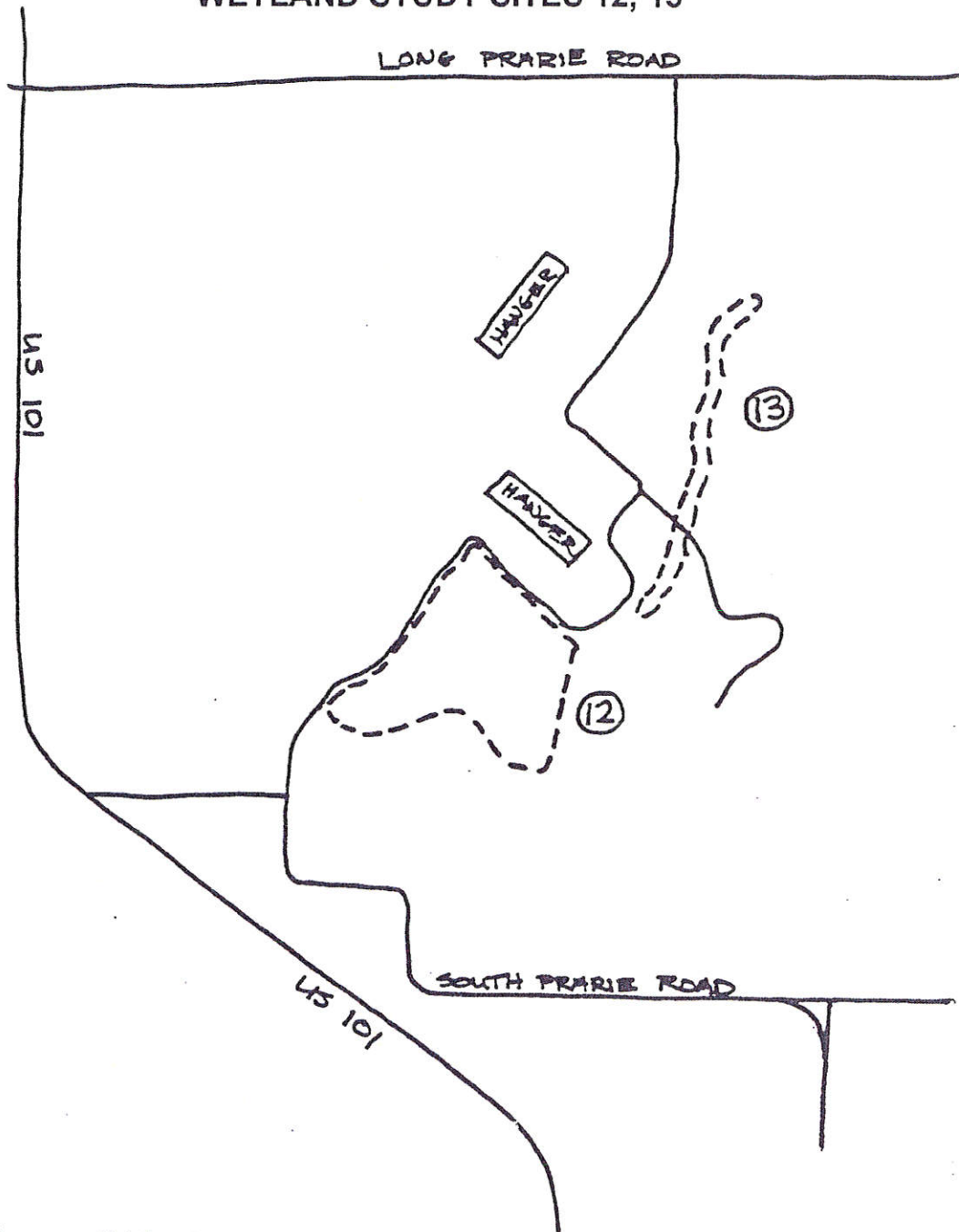
POTENTIAL GOAL 5 WETLAND



FOREST PRACTICES ACT
CONFLICT RESOLUTION

MAP 8

WETLAND STUDY SITES 12, 13



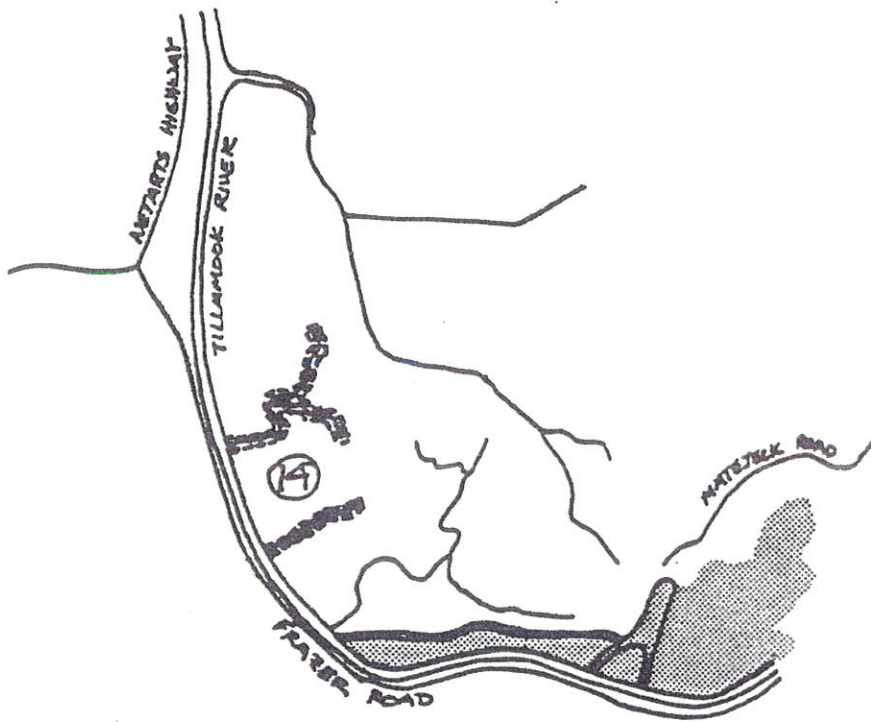
SCALE
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POTENTIAL GOAL 5 WETLAND

MAP 9

WETLAND STUDY SITE 14



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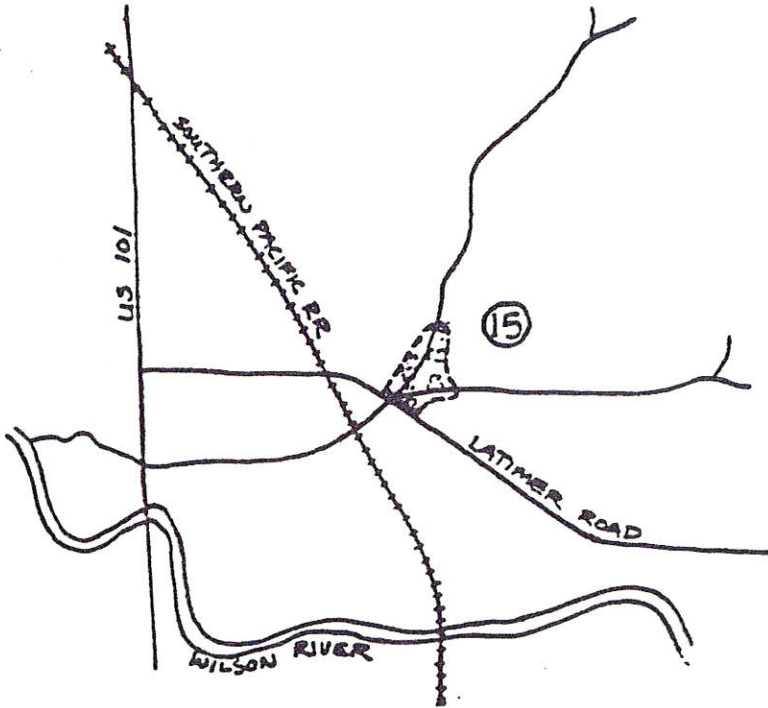
 POTENTIAL GOAL 5
WETLAND

 PROTECTED WETLAND

 SEE GOAL 17 ELEMENT

MAP 10

WETLAND STUDY SITES 15, 16



SITE 15



SCALE
1" = 1667'



POTENTIAL GOAL 5
WETLAND



FOREST PRACTICES ACT
CONFLICT RESOLUTION

SITE 16



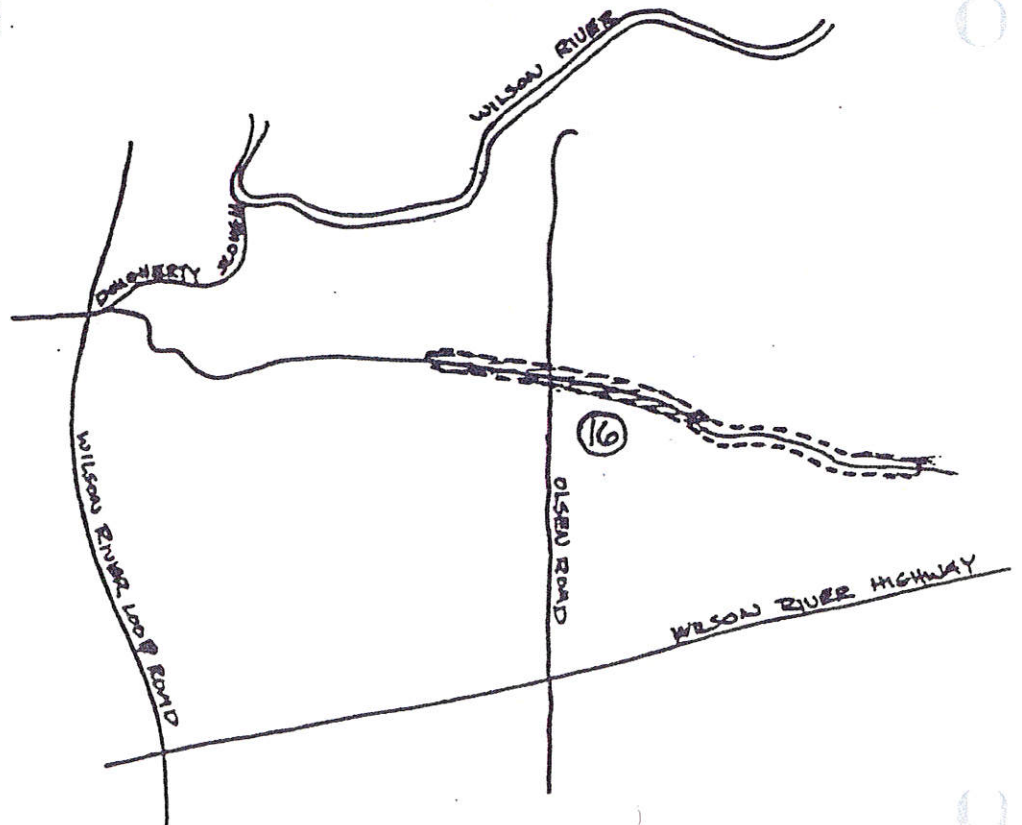
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POTENTIAL GOAL
5 WETLAND

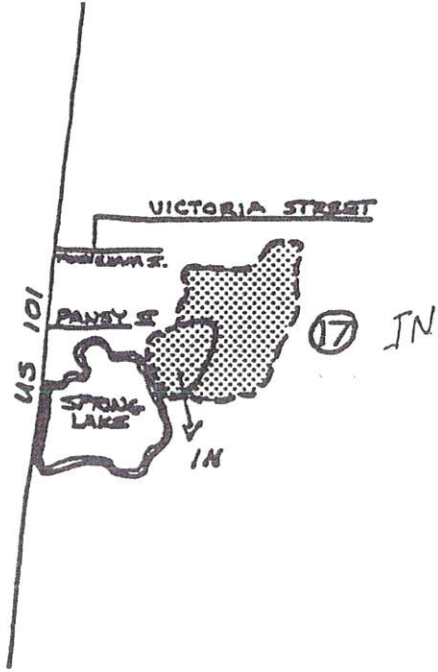


PROTECTED
WETLAND



MAP 11

WETLAND STUDY SITES 17, 18



SITE 17



SCALE
1" = 1320'



POTENTIAL GOAL 5
WETLAND



FURTHER STUDY
REQUIRED

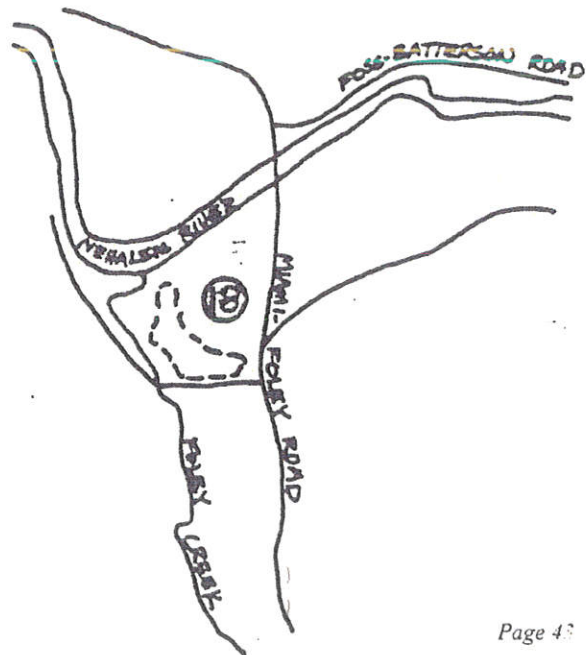
SITE 18



SCALE
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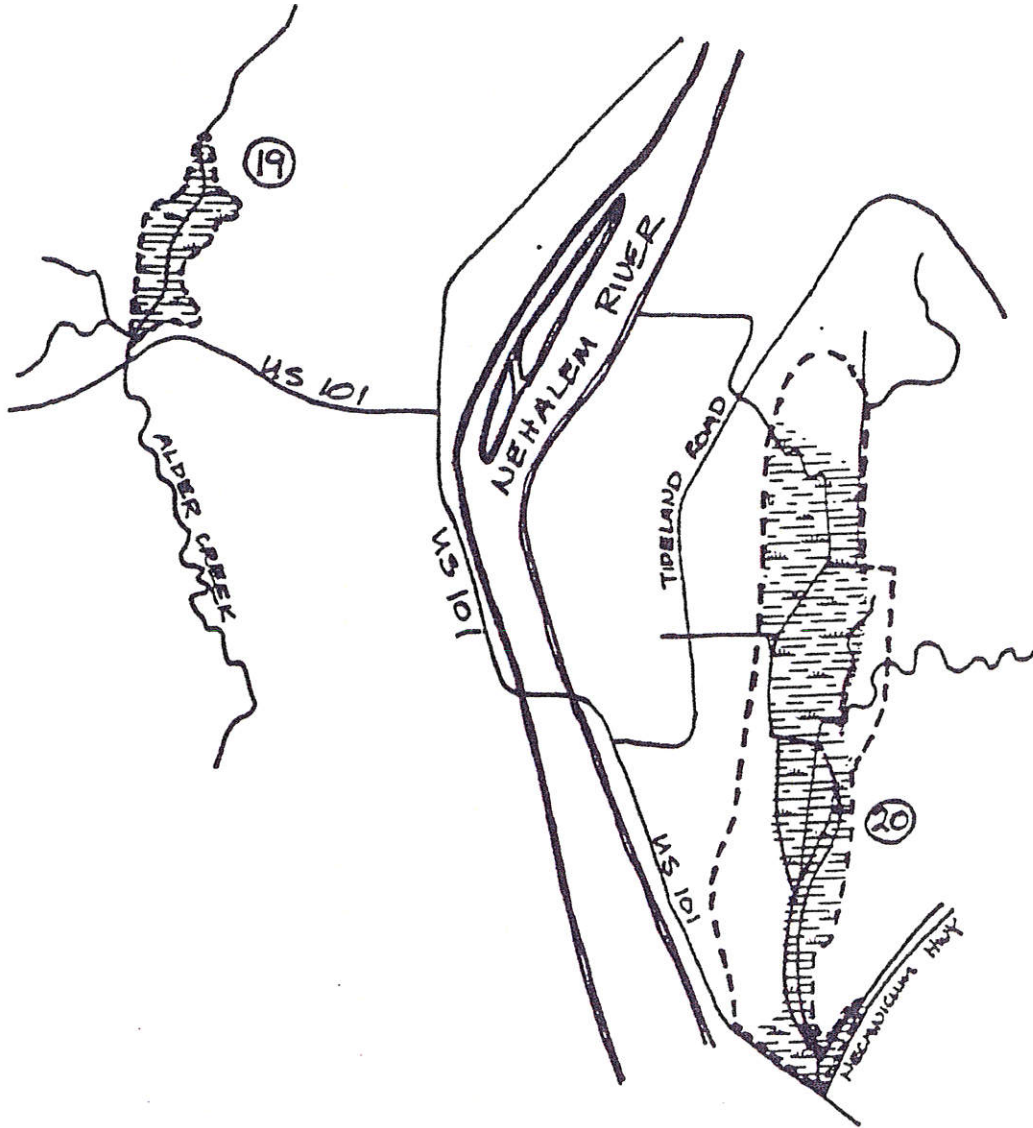


POTENTIAL GOAL 5
WETLAND



MAP 12

WETLAND STUDY SITES 19, 20



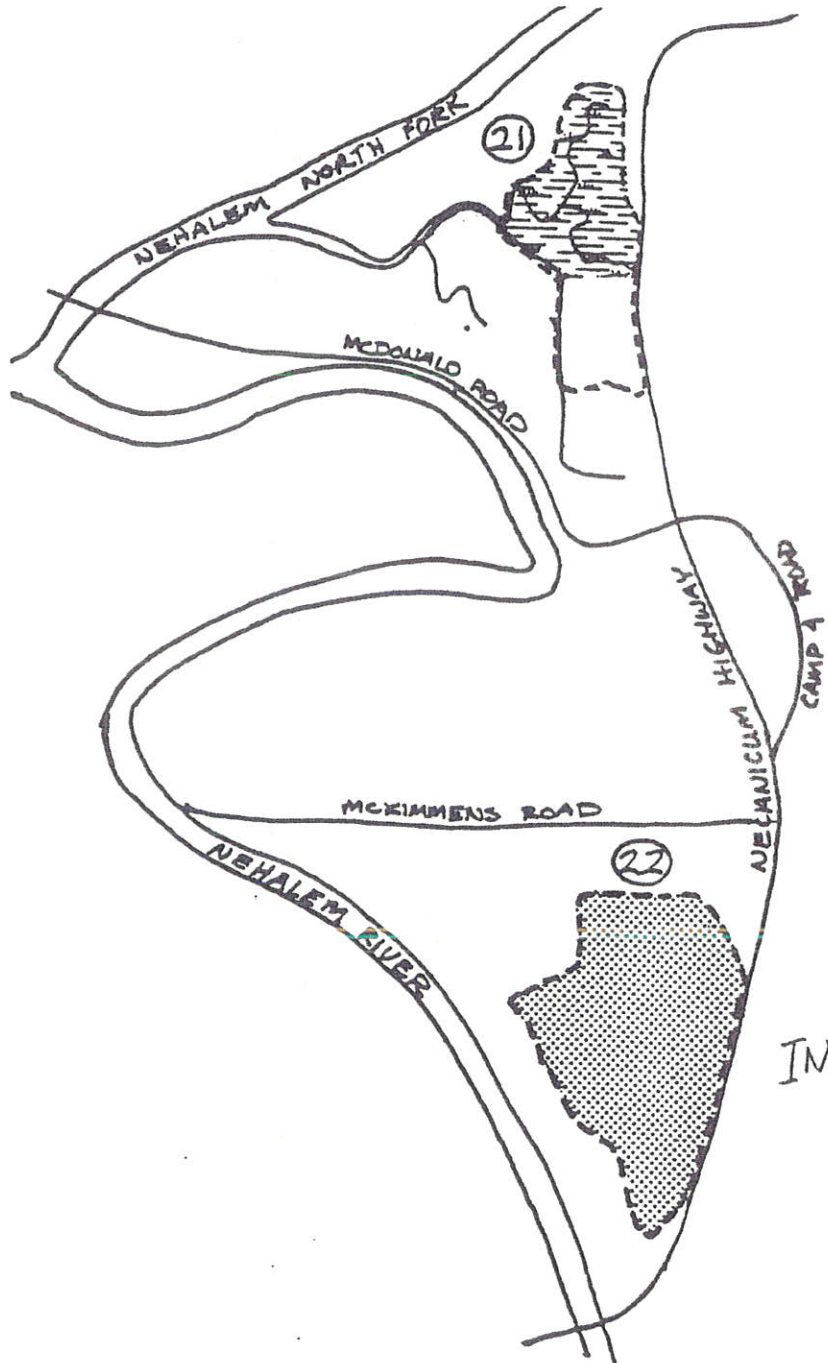
SCALE
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○ POTENTIAL GOAL 5 WETLAND

▨ PROTECTED WETLAND

MAP 13

WETLAND STUDY SITES 21, 22



SCALE
1" = 1667'



POTENTIAL GOALS WETLANDS



PROTECTED WETLANDS Page 45

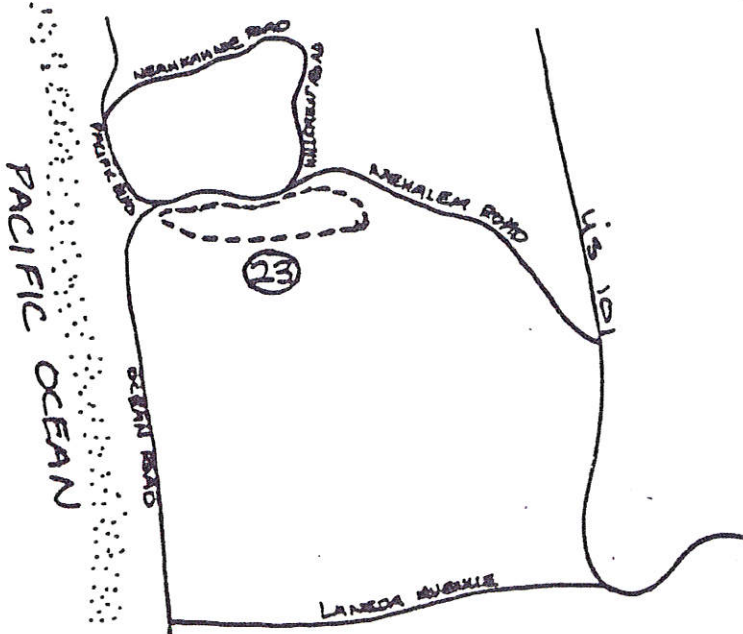


FURTHER STUDY REQUIRED

IN

MAP 14

WETLAND STUDY SITES 23, 24



SITE 23



N

SCALE

1" = 1320'



POTENTIAL GOAL 5 WETLAND

SITE 24 - out



N

SCALE

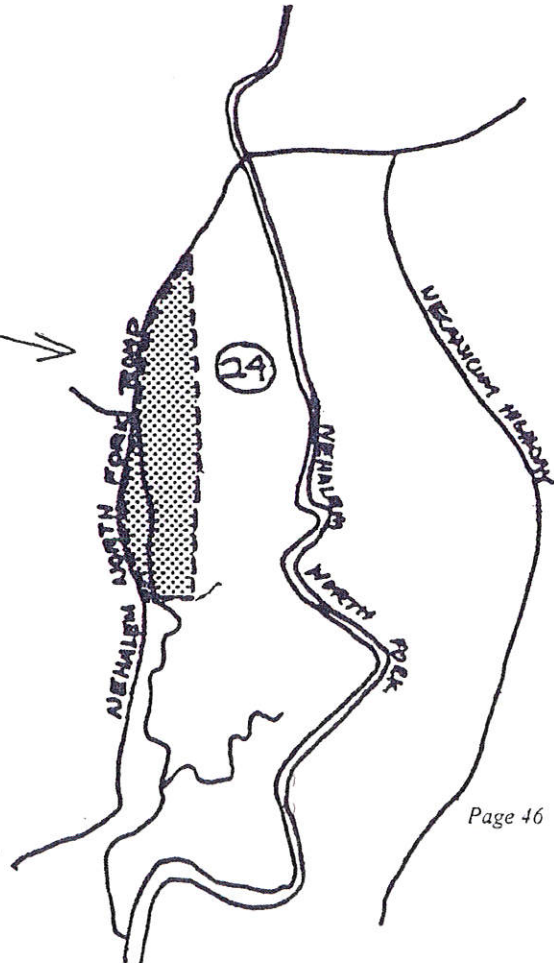
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POTENTIAL GOAL 5 WETLAND



FURTHER STUDY REQUIRED



Site 1: Encompasses an approximately 93 acre area that includes emergent marsh, forested wetland and wet pasture. Approximately 37 acres of the area is managed as pasture. An additional 31 acres are in two discontinuous clumps of forested wetland. The remaining 25 acres are diked emergent marsh.

Agriculture is a conflicting use for the 68 acres which are in pasture or forested wetland. Agricultural practices which conflict with wetland protection include drainage and removal of trees and shrubs to create pasture.

The major consequence of permitting these agricultural practices is the loss of some or all of the wetland habitat values. A reduced amount of wetland area could affect the population of primal species that utilize the wetlands. Some of these species may be hunted waterfowl or upland game animals. Reduced species numbers could affect hunting activity which in turn could have an adverse economic impact on the County. Hunting is an important recreational activity in Tillamook County. No major detrimental social or energy consequences are anticipated as a result of allowing agricultural use.

The 68 acre predominantly farm zoned area has the most limited wetland values on the site. If agricultural practices are not allowed, a number of consequences are anticipated. First, approximately 68 acres would not be available for the grazing of dairy cattle. Dairying is the County's most stable major industry. Second, restrictions on drainage activities in this area could affect the productivity of lands to the south.

No conflicts have been identified for the 25 acres of emergent wetland. This area is in smaller ownerships and in the Rural Residential zone. Further residential development is infeasible because wet soils preclude on-site sewage disposal. Wetland values in this area will be protected.

Site 2: Includes approximately 44 acres of forested land in the EFU zone. The SCS Soils Survey indicates that the soils in this area consist of poorly drained Bremmer silt loam and better drained Knappa silt loam. Agricultural practices are a conflicting use for this site. It is part of the Big Nestucca Drainage District. A drainage channel that is important to the entire district traverses the property.

The consequences of protecting or not protecting wetland values on this site are similar to those considered in the analysis of Site 1. Because the balance of consequences favors agricultural use of the property, Tillamook County will not be protecting wetland values on this site.

Site 3: Is predominantly on emergent marsh with some fringing shrub marsh. It is approximately 4 acres in size. Its value is enhanced by its proximity to a tidal slough that is connected to the Nestucca Estuary. Its value will be further enhanced by a Division of State Lands required marsh creation project on adjacent land.

No conflicting uses have been identified for this area. It is part of a larger ownership that is zoned for development. This portion of the ownership is undevelopable, however, because it is within the Nestucca River floodway. Wetland values will be protected on this site.

Site 4: Is a 32 acre area that includes emergent and shrub wetland.

conflicting uses have been identified. Limited commercial forest values and the infeasibility of drainage make any future attempts at alteration unlikely. Wetland values will be protected on this site.

No Site 5: Includes approximately 41 acres of shrub dominated wetland. The site is in the forest zone.

A number of forest management practices conflict with the preservation of wetland values at this site. These practices include harvesting timber, yarding, road building, and applying herbicides. These practices can conflict with wetland values by removing or altering the vegetation, compacting the soil, or altering existing drainage patterns.

The major environmental consequence of permitting these forest practice operations would be the reduction or destruction of the wetland's habitat values. A reduced amount of wetland area could affect the population of animal species that utilize the wetland. Some of these species may be hunted waterfowl or upland game animals. Reduced numbers of these animals could have an adverse economic impact to the County because of the recreational importance of hunting. No major social or energy consequences are anticipated as a result of allowing forest operations.

If forest management is not permitted to occur on this site, then the economic consequences would be the loss of this area from the timber base. In a County that is highly dependent on the forest products industry for both jobs and tax revenue, it is extremely important to maintain forest land in forest production.

The County will not adopt any additional requirements to protect this site, but rather it will rely on coordination between the Department of Forestry, the Department of Fish and Wildlife and the landowner, utilizing the Forest Practices Act to resolve any site-specific conflicts between wetland values and forest management.

Site 6: Is a 14 acre forested wetland in the Forest Zone.

Forest management is a conflicting use for this site. The consequences of protecting wetland values are similar to those considered in the analysis of Site 5. Tillamook County will rely on the Forest Practices Act procedures to resolve these conflicts.

Site 7: Is a 19 acre forested wetland in the Small Farm and Wooldot-20 Acre and forest zones.

Forest management is a conflicting use for this site. The consequences of protecting or not protecting wetland values are similar to those considered in the analysis of Site 5. Tillamook County will rely on the Forest Practices Act procedures to resolve these conflicts.

Site 8: Is an approximately 7 acre site that includes wet pasture and forest lands site inspection revealed that the area is significantly altered and that wetland values are minimal. For this reason it is not included on the final plan inventory.

Site 9: Is an approximately 1 acre man-made pond. This site is not being included on this final plan inventory because of its small size, its origin, and the protections already afforded by the County's riparian vegetation protection requirements.

Site 10: Includes approximately 20 acres of shrub, emergent and forested wetland. Its wetland values are enhanced by its proximity to the Tillamook River.

No conflicting uses have been identified for this site. It is in several relatively small ownerships and has little commercial farm or forest value. Residential development is infeasible because wet soils preclude on-site sewage disposal. Wetland values will be protected on this site.

Site 11: Is a 13 acre forested wetland in the Forest zone.

Forest management is a conflicting use for this site. The consequences of protecting or not protecting wetland values are similar to those considered in the analysis of Site 5. Tillamook County will rely on the Forest Practices Act procedures to resolve these conflicts.

Site 12: Includes approximately 65 acres of predominantly man-made land as identified by the SCS Soils Survey. Pockets of emergent wetland exist in scattered locations on this site. The dumping of wood waste has reduced the wetland values that do exist on the site.

Industrial development is a conflicting use for this site. It is in the General Industrial zone and part of the Port of Tillamook Bay Industrial Park available for industrial development in conjunction with the Tillamook Airport. The site has been extensively altered in the past to allow development. Industrial development will result in the loss of remaining wetland values through drainage and filling.

The consequences of not protecting wetland values in this area are similar to those evaluated in the analysis of Site 1 although wetland values are not extensive at this site.

The consequences of protecting wetland values in this area include the loss of improved industrial land that can be used in conjunction with existing public facilities including the blimp hanger and the airport. It will decrease the base of land which the Port has available to attract businesses to increase employment and to pay for industrial park infrastructure. For these reasons, the site is not included in the final inventory.

Site 13: Is a narrow strip adjacent to two drainage ditches. It is an approximately 10 acre area. The site was found to have limited wetland values in discontinuous portions. Wetland values are not present in any greater extent than are present along most of the creeks and drainages in the County. The County's riparian protection requirements will protect wetland values that exist at this site. For these reasons, the site is not included on the final plan inventory.

Site 14: Consists of two sloughs and a strip of land 15 feet wide on either side. This approximately 2.5 acre site and the surrounding area is part of the Trask River Drainage District. It is the remnant of a larger forested wetland.

Agriculture is a conflicting use for this site which is in the Farm zone. Free flowing drainage in these sloughs is necessary in order to maintain drainage on surrounding land. This will not conflict with maintenance of wetland values providing that a minimum water level is retained in the sloughs at all times of the year. Protection of the 15 foot fringe will reduce the amount of land available for farm use. This area, however, (*copy missing from original*) vegetation will be temporarily disturbed from time to time by efforts to control noxious weeds such as Tansy Ragwort and by periodic dredging of the sloughs needed to maintain water depth.

Tillamook County will resolve these conflicts through a plan policy that will protect wetland values and allow for essential farm operations such as weed control.

Site 15: Is a 6 acre forested wetland that has been logged.

The site is in the Forest zone and forest management is a conflicting use. The consequences of protecting or not protecting wetland values are similar to those considered in the analysis of Site 5. Tillamook County will rely on the Forest Practices Act procedures to resolve these conflicts.

Site 16: Is a 20 acre area which includes open water, emergent vegetation, shrub wetland and wet pasture. Aerial photo analysis and field inspection revealed that only 10 acres of the area contains sufficient wetland values to merit inclusion in the final plan inventory. In the easterly 10 acres, wetland values are diminished by current agricultural practices and are only present in discontinuous stretches. The westerly 10 acres includes open water and emergent and shrub marsh. This portion is included on the final plan inventory.

Agricultural practices are a conflicting use for this site. Although drainage and use as pasture is infeasible, a degree of drainage is necessary in order to maintain drainage of and access to pastureland to the north. Too much drainage will impair wetland values. The County will protect the westerly 10 acres of this wetland and will provide for necessary drainage that has been approved by the Oregon Department of Fish and Wildlife.

Site 17: Is an 18 acre forested area, some or all of which is wetland. The unpublished SCS Soil Survey for Coastal Tillamook County identifies the soil present as Brenner silty clay loam, a wet soil. The majority property owner in the area contends that the wetland is not as extensive as the area mapped. A site was made to determine the wetland boundary since aerial photos do not adequately show it. Based on the information gathered, this site was included on the final inventory.

Site 18: Is a 6 acre area consisting of a small pond, an equally small area of fringing emergent vegetation and a larger area of wet pastureland. Because of the limited size of the pond and emergent vegetative fringes, the County is not including this site on the final plan inventory. Riparian vegetation that exists will be protected by the County's riparian protection requirements.

Site 19: Includes an emergent wetland along with some open water area in a secluded area that is good bird habitat. The site includes 17 acres of wetland.

A power substation has been planned for the parcel on which this wetland is located. The parcel has sufficient upland area capable of accommodating the substation without encroaching on the wetland. Therefore, the County will protect this wetland.

Site 20: Is a 150 acre area that is predominantly emergent marsh and wet pasture.

Agriculture is a conflicting use for a portion of this site. The remainder of the site has limited agricultural potential because low elevations make further drainage infeasible. The consequences of protecting or not protecting wetland values are similar to those considered in the analysis of Site 1.

Tillamook County will resolve these conflicts by protecting the central 87 acre portion of this site which has the most value as wetland and the least value as agricultural land.

Site 21: Is a 51 acre site that is predominantly forested wetland but includes some wet pasture and emergent wetland.

Agriculture is a conflicting use of this site. The majority of the site is in one ownership that extends south to McDonald Road. A number of agricultural improvements have been made to the ownership including drainage and land clearing. The consequences of protecting or not protecting wetland values are similar to those considered in the analysis of Site 1. Tillamook County will resolve these conflicts by protecting the area that is least useable for farm land and by not protecting the area that has been most heavily altered. The site map indicates the area to be protected in relation to sloughs on the property.

Site 22: Is an approximately 85 acre forested area. Aerial photos provide insufficient information to permit the delineation of the wet (**COPY MISSING**) a district drainage ditch runs through it. Property owners assert that the deteriorated condition of this ditch has created drainage problems around their houses located adjacent to this site. Based on the information gathered, this site was included on the final inventory.

Site 23: Is an approximately 10 acre area that is included in this evaluation at the request of a number of residents of the Neahkahnie area. It was not identified by the Oregon Department of Fish and Wildlife as a site meriting inclusion on the County's final plan inventory. Until recently, beavers have maintained a dam and lived at the lower end of the site. Because of the level of local concern and the implications for the affected property owners, a lengthy analysis of the site has been prepared.

This area is not significant for wildlife habitat. The Oregon Department of Fish and Wildlife does not consider this area as one which merits protection. Because it is located between two urban communities, there are high levels of wildlife conflict. Dense residential development is in close proximity and a road flanks the northern boundary. Wildlife in community areas such as this is subjected to continuous harassment by dogs and children. This greatly decreases habitat values. Such harassment is bound to increase as the surrounding area develops. This development, especially the road on the north, limits animal movement to and from other habitats. Its value is diminished by this isolation.

This site is lacking in several other ways as well. Its small size prevents it from being a home for large animals or large numbers of animals. It lacks a good riparian edge on the north to provide cover and additional habitat. In addition, although freshwater near the ocean is often important to waterfowl, this area is too heavily impacted to provide much attraction.

The wetland does not make significant contributions to the food chain because it is small and temporary and it is not a significant part of a larger ecosystem. The small size limits the amount of primary production within the wetland itself. Importation of organic matter into the wetland is limited by the limited size of the surrounding watershed and by the present and future levels of development. There are no significant sustaining populations of fish in the wetland. Since the wetland is relatively temporary, its long term contribution to the food chain is further limited. The outlet of the wetland drains onto the beach. It does not contribute to a larger riverine or estuarine system.

The main wetland values present in this area are a result of the presence of the beaver pond. Without this dam, the area holds little attraction for water loving animals; especially ducks and wading birds. However, no beaver pond remains in its present state indefinitely. Beaver dams trap silt resulting in the eventual filling in of the pond and the creation of a meadow. This process would occur faster in urban areas than forest areas because the sediment loads of streams are typically greater. Already the pond has filled in significantly. To maintain their habitat, the beavers will have to build their dam higher or build dams further upstream, in either case inundating more property. Other conflicts will arise as the beaver's local food supply is diminished and they begin to do damage to local gardens shrubs and ornamental trees.

Those in Neahkahnie who would like to see the site protected assert that it has significant values for flood prevention, pollution abatement, and aquifer recharge. Although these are not very meaningful criteria for assessing wetland quality in Tillamook County in general, they are none the less addressed here to determine whether they have some overriding significance for this area.

The site has limited value for moderating floods because it is at the very bottom of a watershed. Typically in planning for flood protection the primary concern is that development in wetlands and other higher parts of the watershed will increase the intensity of runoff and will decrease the conveyance area so that developed areas downstream will experience greater flood peaks. The only development downstream of this site is a County road which, according to the County Public Works Director, will need a new culvert regardless of whether the site is developed. Any development that occurs in the area itself can be protected by properly elevating it above the level of flood water. The County's flood hazard maps prepared according to federal requirements indicate that only a small portion of the site is subject to the 100 year flood. This area classified as a zone of shallow flooding, having a flood depth of one foot. Potential for damage can be easily overcome by elevating structures above the level of flood waters. In addition, the County's riparian setback requirements will maintain a 30 foot wide flood conveyance area through the site.

Aquifer recharge values are also not notable. The proponents of protection assert that a valuable aquifer in the older stabilized dune adjacent to the south is

recharged by this site. However, the Oregon Department of Geology and Mineral Industries Bulletin 74 states that groundwater will not accumulate in significant quantity in this area because impermeable bedrock is present above sea level beneath the dune. (DOGMI Bulletin 74, p. 44) In addition, the City of Manzanita has existing surface water supplies that are adequate to meet future needs and could get better groundwater supplies from other dune areas south of town.

Finally, surface water pollution will not be a significant problem in Neahkahnie because development is not extensive (less than 300 permanent and seasonal households in 1980) and development densities are low (zoning allows about 4.5 units per acre net). It is anticipated that this density will be retained for a long time into the future because of strong community resistance to higher densities. Pollution associated with surface water runoff is typically a problem only where watersheds are more highly developed at higher densities than exist in Neahkahnie.

For these reasons, Tillamook County is not including this site on its final plan inventory.

Site 24: Is a 35 acre area in the Farm zone. It includes forested and shrub wetlands. Agricultural uses may conflict with wetland protection but the extent and implications of the conflicts are not known at the present time. Based on a site visit with the affected property owners and the Oregon Department of Fish and Wildlife, this site was not placed on the final inventory.

1.3c ECOLOGICALLY AND SCIENTIFICALLY SIGNIFICANT NATURAL AREAS

The Goal defines a natural area to "include land and water that has substantially retained its natural character and land and water that, although altered in character, is important as habitat for plant, animal, or marine life, for the study of its natural, historical, scientific, or paleontological features, or for the appreciation of its natural features".

This definition overlaps considerably with a number of other Goal 5 inventory elements. These include fish and wildlife areas and habitats, outstanding scenic views and sites and wilderness areas. Therefore, a more restrictive definition of natural area has been developed. The definition of natural area used in this inventory is "areas of the natural landscape that are representative of the full range of natural ecosystem communities and their component native species". A natural area is also defined as "types of geologic features which exist in Oregon and are highly unusual or extraordinary,, and especially those which demonstrate particularly well the geologic processes which have formed the present landscape". These two definitions are derived from the Oregon Natural Heritage Plan, prepared by the Natural Heritage Advisory Council of the State Land Board.

The Oregon Natural Heritage Program has been established as a vehicle for identifying and preserving the unique biological and geological features of the State. To carry out this objective, the Natural Heritage Advisory Council of the State Land Board has developed the Oregon Natural Heritage Plan. The Oregon Natural Heritage Plan seeks to develop a program to assure that examples of the full spectrum of Oregon's natural ecosystems and native species are passed on to future generations. Protected areas are to be used for scientific research, educational purposes and nature interpretation. The natural sites can also serve as environmental reference points.

The key element of the plan is a list of the ecosystems that characterize the State. These ecosystems are divided into four categories: terrestrial, fresh-water aquatic, estuarine aquatic, and marine aquatic. A list of unique geological types is also included. The terrestrial and fresh-water aquatic ecosystems are described according to nine physiographic provinces. The estuarine aquatic and marine aquatic ecosystems are described for the State in general, as are the unique geologic features.

Each ecosystem is evaluated in terms of its need for protection. A high, medium, or low priority is then assigned. The primary factor in establishing the priority for protection is the imminence of danger that all examples of the ecosystems will be lost to other uses. This factor includes three considerations:

- (1) The variety of known, high quality occurrences of the ecosystem. Generally the preservation of now rare, but formerly widespread or common ecosystems is more important than preserving ecosystems which have always been rare.
- (2) The threat to the remaining sites.
- (3) The degree to which existing protected areas cover the ecosystems.

Two criteria were used for establishing the priority of unique geologic types; types that are easily destructible and types that are important for educational or nature interpretation. A higher priority was given to types that are easily destructible.

Tillamook County is located in the Oregon Coast Physiographic Region. Within this area 27 terrestrial and 20 fresh-water aquatic ecosystems were identified. A number of these ecosystems are in the estuary or coastal shoreland planning area and are not covered by this report. This is also true of all the marine aquatic and estuarine aquatic ecosystems.

The following are the priorities for protection of the terrestrial ecosystems in the Oregon Coast Range Region that are outside estuarine or Coastal Shoreland areas.

- A. High Priority
 - 1) Western hemlock/swordfern in northern Coast Range
 - 2) Old growth Douglas Fir - Western hemlock/swordfern in northern Coast Range
 - 3) Old growth Douglas Fir - Western Hemlock/Rhododendron-Oregon Grape in northern Coast Range
- B. Medium Priority
 - 1) Douglas Fir/Salal, 100-150 year old (old burn)
 - 2) Red Alder stand with two perennial streams
 - 3) Hardwood forest on 3rd-5th order stream at low elevation
- C. Low Priority
 - 1) Douglas Fir, 25-50 years old (old burn)
- D. Adequate Representation if Areas Under Study are Established
 - 1) Noble Fir - Western Hemlock forest - Saddle Mountain or Grass Mountain
 - 2) Pacific Fir - Western hemlock forest - Saddle Mountain or Onion Peak
 - 3) Grassbald on Coast Range Mountains - Saddle Mountain or Grass Mountain

- 4) "Rock garden" community on Coast Range Mountains - Saddle Mountain or Onion Peak
- 5) Douglas Fir/swordfern, 100-150 years old (old burn) - Moon Creek

The following are the priorities for protection of the freshwater ecosystems which are not located within the Coastal Shoreland planning area, in the Oregon Coast Range Region:

- A. High Priority
 - 1) Low elevation lake
 - 2) Upland marsh
 - 3) Sphagum bog
 - 4) Darlingtonia wetland
- B. Medium Priority
 - 1) Tule/pond lily marsh on lake or pond margin
 - 2) Vernal pond
- C. Low Priority
 - 1) Waterfowl/pool system on basalt/sedimentary rocks in the Western Hemlock zone
 - 2) Mid to high elevation permanent pond
 - 3) Coast willow wetland
 - 4) Cold springs
- D. Adequate Representation if Area Under Study is Established
 - 1) First to third order stream system originating in the True Fir Zone - Saddle Mountain

The following are the priorities for protection of unique geologic types that may be found in the Oregon Coast Range Region (several of these features are located in the Coastal Shoreland Planning Area):

- A. High Priority
 - 1) Cave with cold spring and cave fauna
 - 2) Fragile mineral location
 - 3) Fragile fossil location
 - 4) Fragile type localities of formations
- B. Medium Priority
 - 1) Marine terrace with fossils
 - 2) Sand spit
 - 3) Major erosion front
 - 4) Late Pleistocene flood deposits
 - 5) Wave-formed pluvial lake features
 - 6) Interior sand dune

Presently there are three major programs that, in combination, provide for the protection of ecologically significant natural areas. These are the federal government's Research Natural Areas, the State's Natural Heritage Conservation Areas, and the Nature Conservancy's Preserves. Tillamook County contains the following areas protected by these three programs:

1. Rockaway Cedar-Sitka Spruce Hemlock Swamp. This 50 acre site (Section T1N, R10W) is located in the southern part of Rockaway. The site represents the Western Red Cedar-Western Hemlock swamp terrestrial ecosystem element. The site is owned by the Nature Conservancy.
2. Neskowin Crest Research Natural Area. This 686 acre tract (Section 2, T6S, R11W) is located in the Siuslaw National Forest and is part of the Cascade Head Experimental Forest. The site contains the following types of terrestrial ecosystems: Sitka Spruce-Western hemlock/swordfern community; coastal headland grassland and herbaceous community complex with red fescue dominant. The site is located within the County's Coastal Shoreland area and is identified in the Goal 17 element.
3. Cascade Head Preserve. This 300 acre site (Section 15, T6S, R11W) is located on Cascade Head. The preserve, along with the Neskowin Crest area is part of a UNESCO International Biosphere Reserve. The site contains the coastal headland grassland and herbaceous community complex with red fescue dominant terrestrial ecosystem. The site is owned by the Nature Conservancy and is located in the County's Coastal Shoreland area and is identified in the Goal 17 element.
4. Moon Creek Research Natural Area. This 1,520 acre site (T2S, & T3S, R8W) is located on Bureau of Land Management land. The area represents the Douglas Fir-swordfern, 100-150 year old (old burn) terrestrial ecosystem. It also contains the threatened plant species, Pao marcida, weak bent grass.
5. Cape Lookout State Park Primary Protection Area. Cape Lookout State Park contains the 560 acre Netarts Sand Spit Primary Protection area, and the 527 acre Cape Lookout Headland Primary Protection area. The sites provide the following terrestrial ecosystem: Sitka spruce/salal community near the Ocean; Sitka spruce-Western hemlock/swordfern community; and coastal headland shrub community. The State Parks Division has designated these areas for "primary resource protection" through its Master Plan for Cape Lookout State Park. The two sites are located within the County's Coastal Shoreland area and are identified in the Goal 17 element.
6. The Rain River Reserve. This 150 acre site (S22 & S23, T1S, R10W) consists of diked tidal marsh which is being managed for waterfowl habitat enhancement. The site is owned by the Nature Conservancy and is located in the County's Coastal Shoreland area and is identified in the Goal 17 element. (A complete description is contained in the Nature Conservancy's Management Plan for the Rain River Nature Preserve, Draft Report, Shea, 1977.)

The report, Oregon Natural Areas, Tillamook County, prepared by the Oregon Natural Heritage program for the Department of Land Conservation and Development was used as the source for establishing the preliminary inventory of possible natural areas in Tillamook County.

The following sites are not included in the County's inventory because they are located within the urban growth boundaries of cities in Tillamook County:

1. Rockaway Relic Forest - City of Rockaway
2. Den Point - City of Nehalem
3. Lake Lytle - City of Rockaway

4. Crescent Lake - City of Rockaway

The following areas are within the Estuary or Coastal Shorelands, and are described in those sections of the plan:

1. Oceanside to Netarts Beach - Coastal Shorelands
2. Sand Lake Peat Bog - Coastal Shorelands
3. Sand Lake Wetlands and Reneke Creek - Estuary and Coastal Shorelands
4. Daley Lake and Marsh - Coastal Shorelands
5. Proposal Rock - Coastal Shorelands
6. Smith Lake and Camp Magruder - Coastal Shorelands
7. Sear Lake - Coastal Shorelands
8. Mile Lake - Coastal Shorelands
9. Neahkahnne Lake - Coastal Shorelands
10. Town Lake - Coastal Shorelands
11. Nehalem Bay Salt Marshes/West Island - Estuary
12. Nehalem Bay Spit (Oregon State Park) - Coastal Shorelands
13. Tillamook Bay Tidelands and High Marsh Estuary - Estuary
14. Bay Ocean Spit, Lake - Coastal Shorelands
15. Cape Meares State Park/Cape Meares National Wildlife Refuge - Coastal Shorelands
16. Netarts Bay/Netarts Bay Spit - Estuary and coastal Shorelands
17. Nestucca Bay Salt Marsh/Spit - Estuary and Coastal Shorelands
18. Cape Lookout State Park - Coastal Shorelands
19. Oswald West State - Coastal Shorelands
20. Cascade Head - Coastal Shorelands
21. Cape Kiwanda State Park - Coastal Shorelands
22. Camp Clark and Camp Meriwether - Coastal Shorelands
23. Falcon Rock, Twin Rocks, Pyramid Rock, Pillar Rock, Unnamed Rock, Haystack Rock, Two Arches Rock, and Three Arches Rock - Coastal Shorelands
24. North Ford Nehalem - Coastal Shoreland
25. Miles Creek Sitka Spruce - Coastal Shorelands

The following sites were covered within the Fish and Wildlife Areas and Habitats portion of the Open Space Element (not all of these sites were found to contain nesting areas):

1. Tillamook Heron Rookery (this site has not been confirmed by Fish and Wildlife)
2. Porter's Point Bald Eagle Nest
3. Nehalem Junction Bald Eagle Nest
4. Tillamook Bay Bald Eagle Nest
5. Elk Basin Northern Spotted Owl
6. Whiskey Creek Heron Rookery
7. Lake Lytle heron Rookery
8. Miami River Bald Eagle nest
9. Alder Glen Bald Eagle nest
10. Bear Creek Bald Eagle nest
11. Three Rocks Heron Rookery

The Salmonberry River site is described in the Wild and Scenic Rivers portion of the Open Space element.

The following is a brief description of the remaining sites listed in the Oregon Natural Areas, Tillamook County Data Summary

- 159-1. Wheeler Old Forest and Heron Rookery. This site has been logged. The potential natural values have been destroyed.
2. Kilchis River Park. This site is Tillamook County's largest County Park. It consists of approximately 900 acres of old growth and section growth Douglas Fir, Western hemlock and Sitka Spruce. The park is essentially a river corridor along three miles of the Kilchis River in Sections 16, 21, 28, and 33 of T1N, R9W. The park is minimally developed. The County has no plans to expand the existing recreational facilities. The park is zoned Recreation Management (R-M).
3. Green Island. This site has been logged. The potential natural values have been destroyed.
- 257-4. Camp Cooper. This site is located in Section 2, T4S, R7W, in the southern corner of the County. The site is owned by the Columbia Pacific Council of the Boy Scouts of America, which maintains a camp there. The portion of the site with potential natural values consists of approximately two acres of old growth forest located adjacent to a ravine that contains a waterfall of Testament Creek. The area's values are scenic, rather than natural. The area is not under intensive use and the Boy Scouts have no intention of disturbing the area.
- 2510 5. Munson Creek Falls County Park. This site is located in Section 27 T2S, R10W, southeast of the City of Tillamook. Within the site, Munson Creek runs through a steep bully and then creates a fall almost 100 meters in height. The adjacent area consists of "old growth" Sitka Spruce, Western hemlock and Douglas Fir. The park comprises 25 acres and is leased by the County from Publishers Paper. Although the site contains some old growth forest, its value is primarily scenic.
- 2N7 6. Blue Lake Lookout Rock Garden. A 25 acre area located in the SE 1/4 of Section 13, T2N, R7W, near the Blue Lake Lookout and the North Fork of the Wilson River, approximately two miles from the Tillamook-Washington County boundary line. The site is a west spur of a generally north-south ridge about 3,200 feet in elevation above the North Fork of the Wilson River. The ridge is steep and narrow, with rock faces, benches, and a talus slope. According to a site report by R. E. Frenkel, dated July 7, 1975, the value of the area is in its "species diversity, concentration of endemics, and existence of a number of rare and threatened plant species". The report "Oregon Natural Areas - Tillamook County" identified the rare plants, smooth douglasia (*Douglasia lae vigata* var. *ciliolata*) and rock garden plants (*Lomatium martindali* association). Many of the plant species found at this site occur only on a few isolated peaks in the Coast Range, such as Onion Peak and Saddle Mountain to the north. The area could fill the "rock garden" community in a Coast Range ecosystem identified in the Oregon Natural Heritage Plan. The area is owned by Crown Zellerbach.
- 659 7. H.B. VanDuzer Forest Corridor Wayside. The H.B. VanDuzer Forest Corridor Wayside consists of two sections located along both sides of State Highway 18 in Polk, Tillamook and Lincoln Counties. The section in Tillamook County (Section 12,14,15, 16, T6S, R9W) begins at the summit of the Coast Range and runs westerly to the Lincoln County border. The corridor varies in width from 400 to 2,000 feet from the center line of the highway. The wayside contains an old-growth Douglas Fir-Western Hemlock forest, largely with a swordfern understory. Although the site is a narrow band along the highway, it is in excellent condition.
- 158 8. Wilson River Beach. This site is reported in the Oregon Natural Areas - Tillamook County report as being located in Sections 17-20 of Township 1S, R8W. However, a more detailed site report done as background to the study describes only the western 1/2 of Section 17 and the eastern half of Section 18. Thus for inventory purposes, the site is assumed to be located only in Section 17 and 18. The site contains isolated islands of older Sitka Spruce/Western

Hemlock forest with most of these islands being less than ten acres in size. The site contains gravel bars that are part of the Wilson River. The site is owned by Publishers Paper.

Sufficient information is available on all sites to determine their quantity, quality and location.

A number of preliminary inventory sites have been determined not to contain sufficient natural area qualities to be included on the final inventory list. The Wheeler Old Forest and Heron Rookery and Green Island sites have been logged. Wilson River Beach contains scattered islands of "old growth" forest. These islands are of insufficient size to warrant consideration as viable natural systems. The open space values at Camp Cooper and Munson Falls are derived from these sites' scenic qualities, rather than their natural values. Thus, these sites will be considered in the Outstanding Scenic Values and Sites Section.

Final Inventory of Ecologically and Scientifically Significant Natural Areas:

1. Kilchis River Park
2. Blue Lake Lookout Rock Garden
3. H.B. VanDuzer Forest Corridor Wayside

Evaluation of Conflicting Uses and Consequences

The final inventory sites were evaluated to determine if any conflicting uses exist. No conflicting uses were identified for the following sites: Kilchis River Park, Blue Lake Lookout Rock Garden and the H.B. VanDuzer Forest Corridor.

Kilchis River Park is a County Park. It is minimally developed. The County has no plans to increase the intensity of recreational facilities. The existing recreational facilities are consistent with the park's natural values. The Recreation-Management plan-zone designation will protect the existing natural values.

Forest practices are not considered a conflicting use for the Blue Lake Lookout Rock Garden. The site is protected through Recreation-Management plan-zone designation.

The H.B. VanDuzer Corridor is in Department of Transportation ownership. The existing uses of the wayside are consistent with the site's natural values. The site is protected through a Recreation-Management plan-zone designation.

1.3d OUTSTANDING SCENIC VIEWS AND SITES

The Goal defines scenic areas as "land that are valued for their aesthetic appearance". This is a very broad definition. A number of other resources listed by Goal #5 would fit this definition, at least in part. These resources include: Land used for agricultural or forest use that are defined as open space; ecologically or scientifically significant natural areas; wilderness areas; water areas and wetlands; historic structures; potential and approved federal wild and scenic waterways and state scenic waterways, and certain fish and wildlife areas and habitat. Numerous parks within the County could also qualify as scenic resources by this definition. However, the sites inventoried here are only those whose value is derived primarily from their aesthetic features rather than sites where

scenic quality may be part of its overall value as a natural area, or historic site or wildlife habitat.

With respect to general scenic character, the County can be defined to consist of two areas, coastal and non-coastal. The coastal area contains a great deal of scenic diversity within a narrow one-half mile to five mile wide strip. Within that area the following types of landscapes can be found: beaches, headlands, ocean rocks and dunes, coastal lakes and deflation plains, spits, estuaries, open ocean, rivers and sloughs, forested areas and farming areas. In contrast, the non-coastal area of the County consists entirely of forested mountain ridges, valleys and river valleys used for various levels of agriculture.

The scenic resources of the County's Coastal areas are addressed in the Plan's Coastal Shoreland Element.

A number of uses and activities can be considered to conflict with the two main types of non-coastal scenic landscapes, timbered uplands and river valleys. The County's timbered uplands correspond with the portions of the County that are in timber production. Clear-cutting, road building and other forest management activities may conflict with the scenic qualities of a particular area. The consequence of allowing these forest management practices would be the loss or disruption of particular view or view corridor. Such a consequence could be considered either social or environmental. No significant energy or economic consequences have been identified. However, by not allowing the conflicting use of forest management, a significant economic consequence could result. The forest products industry is the main component of the County's economic base. Any curtailment of forest practices for non-forest production purposes could have an effect on the level of income derived from the forest industry. Reduced income could result in increased rates of unemployment. Also, the tax receipts of local jurisdictions could be decreased thus possible forcing local government to choose between a decreased level of services or an increase in other types of taxes. Because the timbered uplands of the County are so vast and because the impacts of a particular forest management practice that may affect scenic quality are localized, and not permanent, the overall affect of forest management practices on the scenic quality of timbered uplands as a whole is not significant (forest management may have a significant impact on specific scenic resource sites discussed below).

The scenic character of the County's river valleys is derived from their low density pastoral character. The County is taking a number of "build and committed" exceptions in certain river valleys. These exceptions would allow an increase in rural density. Increased rural density could decrease scenic qualities in certain areas. However, the overall effect of this possible increase in rural density is not expected to affect general scenic qualities because most of the areas are zoned Exclusive Farm Use and Small Farm Woodlot-20. Not allowing the conflicting uses would result in substantial economic and social consequences. Investments in property and rural housing opportunities that have traditionally been available in the County would be restricted or denied.

In addition to the general landscape areas, specific scenic resources have been identified. These sites are derived from two sources: Oregon Natural Areas, Tillamook County, prepared by the Oregon Natural Heritage Program; and sites designated by the Oregon Department of Forestry as Scenic Conservancy.

I. Preliminary Inventory of Scenic Sites.

A. Sites contained in the Oregon Natural Heritage Program study titled Oregon Natural Areas, Tillamook County:

- 2510 1. Munson Creek Falls County Park. This site is located in Section 27, Township 2 South, Range 10 West, southeast of the City of Tillamook. Within the site, Munson Creek runs through a steep gully and then creates a fall almost 100 meters in height. The adjacent area consists of "old growth" Sitka Spruce, Western hemlock and Douglas Fir. The park comprises 25 acres and is leased by the County from Publishers Paper. The lease includes a clause which allows either party to terminate the contract with three years notice. It is the intention of the County to continue its lease agreement with Publishers Paper. Although the site contains some old growth forest, its value is primarily scenic.
- 457 2. Camp Cooper. This site is located in Section 2, Township 4 South, Range 7 West in the southeastern corner of the County. The site is owned by the Columbia Pacific Council of the Boy Scouts of America, which maintains a camp there. Within the site, Testament Creek runs through a steep ravine and creates two waterfalls, the largest one being about 60 feet in height. The adjacent area consists of older growth forest. The site is about 2 acres in size.

B. Sites identified by the Oregon Department of Forestry as Scenic Conservation:

1. Neahkahnie Mountain, T3N, R10W, Section 7.
2. Nehalem River, T2N, 3N, R8W & 9W.
3. Foley Creek, T2N, R9W, Section 7 & 18.
4. Miami River, T2N, R9W, Section 27, 30, 31.
5. Wilson River, T1S, R8W, T1N, R8W, T1N, R7W.
6. Trask River, T1S, R8W, T1S, R7W.
7. Kilchis River, T1N, R9W, T2N, R9W.

The width of the scenic corridors along rivers (Sites 2-6) varies from 100 feet to 1000 feet. The width of the scenic corridor at a particular location is dependent on local topography and timber management considerations. The Kilchis River site consist of 2,500 acres that were conveyed to the Board of Forestry with the stipulation that no clear-cut logging be allowed. Because of the site's terrain, selective logging of the site is not feasible.

Sufficient information is available on all sites to determine whether or not they should be included in the final inventory list.

The final inventory sites were evaluated to determine if any conflicting uses exist.

The seven Scenic Conservancy sites are located on State Board of Forestry land. As part of their land-use classification program (OSCUR) the Department of Forestry has recognized the scenic value of these sites and designated them Scenic Conservancy. A Scenic Conservancy area is defined as one "where scenic values preempt all other uses due to aesthetic reasons". No timber harvesting is allowed in areas that have been designated Scenic Conservancy. The County finds that the existing Department of Forestry management requirements are adequate to protect the scenic qualities of these sites and that no additional County requirements or regulations are needed.

No conflicting uses exist for Munson Falls County Park or Camp Cooper. Their scenic qualities are adequately protected by their Plan/Zone designation of Recreation-Management.

1.3e WILDERNESS AREAS

Wilderness areas are defined by the Goal as "areas where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. It is an area of undeveloped land retaining its primeval character and influence, without permanent improvement or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) may also contain ecological, geological or other features of scientific-educational, scenic or historic value".

There is one wilderness area in Tillamook County, the Oregon Islands Wilderness. This wilderness area is a unit of the National Wilderness Preservation System established under the Wilderness Act. The Oregon Islands Wilderness contains several islands, rock and stacks that are located off the shore of Tillamook County. These islands are: Proposal Rock; Falcon Rock; Twin Rocks; Pyramid Rock; Pillar Rock; An Unnamed Rock in Section 1, Township 3 South, Range 11 West; Haystack Rock; Two Arches Rock, and Three Arches Rock.

The primary purpose of the refuges is to provide undeveloped, undisturbed nesting habitat for sea birds. Access to the islands is restricted to scientific research under special permit. Management is limited to biological study and wildlife protection.

The islands are located within Tillamook County's Coastal Shoreland Planning area.

Within Tillamook County, three potential wilderness areas, all located within the Hebo area, Siuslaw National Forest, were studied in the Rare II planning process. As a result of Rare II, no county area has been recommended for wilderness. Brief descriptions of each of the potential areas studied are as follows:

1. Rare II no. 151
This 16,909 acre roadless area is located in Township 4 South, Range 8 & 9 West of the Willamette Meridian in southeast Tillamook County and northwest Yamhill County within the State of Oregon.

It is long and narrow, averaging about 2 1/2 miles wide, running north and south, and approximately 12 miles long, running east and west. It lies on the north slope of Mt. Hebo, and all streams drain northerly into the Nestucca River.

Elevation varies from 3,100 feet near Mr. Hebo to 300 feet at the National Forest boundary on the north perimeter.

Based on the Forest Service's 1973-74 inventory, the area has 16,600 acres of commercial type timber land that has a merchantable volume of about 381 million board feet of conifer timber and 64 million board feet of hardwood timber for a total of 445 million board feet. Age class distribution ranges from 30 to 100 years, with an average of 70 years. There are also 1,300 acres of non-forest and unproductive land.

The area is entirely surrounded by roads. Part of the area was burned by a 1910 wildfire, but some pockets of residual timber escaped the fire. Transportation planning has identified a need for about 75 miles of road within the area to support timber management activities. Any logging that may be conducted in those areas suitable for management, would be accomplished mostly by suspended cable system, including the use of helicopters and balloons to minimize soil erosion.

There is one abandoned trail within the area and estimates indicate that about 700 visitor days per year may be spent in the area.

2. Rare II No. 152

This 6,617 acre roadless area is located in Township 4 South, Range 9 West of the Willamette Meridian in southeast Tillamook County and northwest Yamhill County within the State of Oregon.

It is somewhat circular in shape and about 3 miles in diameter. In general, it lies southwest of Mt. Hebo and streams drain both southerly and westerly into Three Rivers as well as north into the Nestucca River. Elevation varies from 3,100 feet near Mt. Hebo to 200 feet near State Highway 22.

The area is part of the 1910 Hebo burn and, except for some direct seeding, was almost entirely restocked with hand-planted seedlings between 1910 and 1930. Based on the Forest Service's 1973-74 inventory, about 6,400 acres of commercial type forest land is included in the area which presently supports a merchantable volume of approximately 149 million board feet of conifer timber and about 26 million board feet of hardwoods for a total of 175 million board feet. Age class distribution ranges from 50 to 60 years with an average age of 53 years. There are also 200 acres of non-forest and unproductive forest land.

The area is nearly surrounded by roads and transportation planning has identified a need for about 51 miles of road within the area to support potential timber management activities. Any logging that may be conducted in those areas suitable for timber management would utilize primarily suspended cable systems, including the use of helicopters and balloons to minimize soil disturbance.

There are no maintained trails within the area. Visitor days per year are estimated to be about 500 actually spent in the area.

There are over 7.0 miles of Class 1 and 2 streams within the area.

3. Rare II No. 153

This 8,083 acre roadless area is located in Township 4 & 5 South, Range 9 West of the Willamette Meridian within the State of Oregon.

It is shaped somewhat like a figure 8 and lies in a northeast southwesterly direction with Mr. Hebo near the northern perimeter. It averages about 2 miles wide and is approximately 9 miles long. The headwaters of Three Rivers is included in the northern portion of the area, and the southern portion drains into the Little Nestucca River. Elevation varies from 2,200 feet near Mt. Hebo to 400 feet near State Highway 22.

The 1910 Hebo burn denuded the area, and between 1910 and 1930 the area, except for some direct seeding, was almost entirely restocked with handplanted seedlings. Base on the Forest Service's 1973-74 inventory, approximately 7,940 acres of commercial type forest land lies within the area and presently supports about 196 million board feet of conifer timber and 40 million board feet of hardwoods for a total of 236 million board feet. Age class distribution ranges from 60 to 70 years with an average age of 56 years. There are also 140 acres of non-forest and unproductive forest land.

Roads almost entirely encompass the area and transportation planning has identified a need for about 40 miles of road within the area to support a potential for timber management. Any timber harvest program in this area would use mostly suspended cable systems, including the use of helicopters and balloons, to control soil erosion.

There are no maintained trails within the area and estimated visitor days per year are about 500.

There are approximately 10 miles of Class 1 and 2 streams within the area. Tillamook County concurs with the evaluation that these three sites do not qualify for wilderness status.

1.3f HISTORIC AREAS

The Goal defines historic areas as "lands, with sites, structures and objects that have local, regional, statewide or national historical significance". Oregon's exciting and well-documented history need not be repeated here. Suffice it to say that more than 800 immigrants crossed the Great plains to Oregon in 1843 and in ensuing years they came by the thousands. Some settlers were drawn in the early 1850's to stake their land claims in the isolated coastal areas. Residents of the Tillamook area petitioned the U.S. Territorial Government for county status in 1853.

The early settlers cleared forest areas to create farmland, and steadily moved towards establishing an economy which included (by the 1890's) dairying, sawmill production of lumber, and salmon canning.

Tourist accommodations also grew steadily after 1910. Access to areas in the County has always been relatively difficult, and completion of the railroad in 1911 and the Coastal Highway in 1940 had significant effect on the growth of communities.

Three sources were used for establishing historic areas in Tillamook County; buildings and sites listed on the National Register of Historic Places, building and sites listed on the State of Oregon Inventory of Historic Sites and Buildings, and sites identified as historical sites by the Tillamook County Pioneer Museum.

A total of 38 sites and buildings have been identified; two on the National Register of Historic Places; 36 on the State of Oregon Inventory of Historic Sites and Buildings. A number of historic sites and buildings are within the Coastal Shoreland Planning Area. Where this is the case, a reference is made in the description of the site or building.

I. PRELIMINARY INVENTORY OF HISTORIC SITES.

A. SITES AND BUILDINGS ON THE NATIONAL REGISTER OF HISTORIC PLACES

NKN

1. Wentz Cottage. According to the State of Oregon Inventory of Historic Sites and Buildings, this cottage was the beach cottage of Portland artist Harry Wentz. It was designed by Portland architect Albert E. Doyle and is a fine example of early (built 1914) coastal residences. The residence was the home of Portland artists Albert and Arthur Renquist.

According to the State Inventory, the building has historical significance to the State because of its association with early town development, the arts, and travel and recreation.

The building is located in Neahkahnie on Reed Road, approximately 1/2 mile north of Neahkahnie Road.

2. Cape Meares Lighthouse. The lighthouse was built to provide navigational aid to vessels on the northern Oregon Coast, especially for those near the entrance of Tillamook Bay. The station was established in 1890. The lighthouse is no longer operative and is leased by the State Parks Division from the Federal Government. According to the State Inventory, the site has historical significance for the nation because of its association with transportation, government and travel.

The lighthouse is located in Cape Meares State Park (Township 1 South, Range 11 West). The site is mentioned in the Goal 17 element.

B. SITES ON THE STATE OF OREGON INVENTORY OF HISTORIC SITES AND BUILDINGS.

1. Ison/Fox Cottage. This cottage is one of five or six designed by Albert E. Doyle. It is a one and 1/2 story building with a shake exterior and a wood paneled interior. There have been some exterior modifications. It was built in 1913 or 1914 according to the State Inventory and has historical significance to the County

NKN

because of its association with town development, travel/recreation, and social/humanities and movements. The building is located between Reed Road and 1st Street, south of Neahkahnie Road in Neahkahnie.

2. Cloverdale Cheese Association Creamery. The creamery was built in 1914 to manufacture cheese for dairymen in this part of the County. It was abandoned in the 1960's when the Tillamook County Cheese Association merged the rural creameries. The building is a wooden frame one-story building. According to the State Inventory, the site has historical significance to the County because of its association with agriculture, commerce/industry and town development. The building is located west of Highway 101, just south of Woods Road turnoff.
3. Barview Life Saving Station. This station was built, along with others, on the Oregon Coast to give assistance to mariners crossing river bars, such as that of the Tillamook Bay estuary. The station was built in 1908 and abandoned in 1936 when the operations were moved to Garibaldi. The structures (staff quarters, kitchen and dining room, boathouse) are in private ownership. There has been some alteration from the existing construction. According to the State Inventory, the site is of historical significance to the County because of its association with commerce/industry, transportation/communication, government and travel. The structures are located in the southern portions of Barview, between the Southern Pacific Railroad right-of-way and Highway 101. The site is in the Coastal Shoreland Planning area.
4. Salmon River Toll Gate. This site is the location of a toll gate on the Salmon River Road. The road, six miles in length, was built in 1895 by John Boyer. The road was later turned over to Tillamook County. The road now forms part of Oregon Highway 18. The tollgate is commemorated with a stone tablet. According to the State Inventory, the site has historical significance for the State because of its association with transportation and travel. The site is located along Highway 18, about 400' west of its crossing of the Little Nestucca River.
5. Churchill Cottage. The cottage is one of a half dozen summer residences built in the Manzanita/Neahkahnie area by Portland residents before World War I. This cottage dates from 1913. The structure is in good condition and has not been altered.

NKN

According to the State Inventory, it has historical significance for the County because of its association with town development and travel/recreation.

The building is located along Reed Road, approximately 3 blocks north of Neahkahnie Road in Neahkahnie.

- NKW
6. Morrell Cottage. This cottage was built in 1916 and is one of a half dozen summer residences built in the Manzanita/Neahkahnie area by Portland residents prior to World War I. The structure is in good condition. It has received both exterior and interior alterations. According to the State Inventory, it has historical significance for the County because of its association with town development and travel and recreation. The building is located along Reed Road, approximately 3 blocks north of Neahkahnie Road in Neahkahnie.

- NKW
7. Doyle Cottage. This cottage was the summer residence of the prominent Portland architect Albert E. Doyle. The cottage was designed by Doyle and built in 1914. It has been partially restored. According to the State Inventory, it has historic significance to the State because of its association with town development, travel/recreation and the arts. The building is located on the corner of Neahkahnie Road and 2nd in Neahkahnie.

- NKW
8. Povey Cottage. This cottage was built in 1913 or 1914 and is one of a half dozen summer residences built in the Manzanita/Neahkahnie area by Portland residents prior to World War I. The two story building has been restored to almost its original inside and outside condition. According to the State Inventory, the building is of historical significance to the State because of its architectural merit and association with travel/recreation and the arts. The building is located on 1st Street, south of Neahkahnie Road in Neahkahnie.

9. Catholic Church, Cloverdale. This church was built between 1910 and 1920. It is a one-story structure built in a Gothic style. It is the principal Catholic Church of Tillamook County. The original building had been altered through the addition of a two-story residential wing and new siding. According to the State Inventory, the building is of historical significance to the County because of its association with religion. The building is located on Hill Road in Cloverdale.

10. Hebo Cheese Association Creamery. The creamery was built about 1914 and was used by the Hebo Cheese

Association for making cheese. It was abandoned in the late 1960's when the Tillamook County Cheese Association merged with the rural creameries. The building is a one-story wooden frame structure that has been altered slightly.

According to the State Inventory, the building has historic significance to the local community because of its association with agriculture and commerce/industry.

The building is located along Highway 101 just south of the Three Rivers Bridge in Hebo.

11. John Hudson Residence. This is the residence of an early Tillamook County dairy farmer. The house was built in 1905 by John Hudson and his sons. It is a two-story, wooden frame dwelling that has been altered through the addition of new siding and modification of the porch.

According to the State Inventory, the building has historic significance to the County because of its association with agriculture.

The building is located two miles south of Cloverdale, on the west side of Highway 101 just beyond the Pacific City turnoff.

12. John Hudson Barn. This is the barn of an early Tillamook County dairy farmer, John Hudson. It was built in 1914. The barn has not been altered, but is no longer used for dairy cattle.

According to the State Inventory, the building has historic significance to the local community because of its association with agriculture.

The barn is located two miles south of Cloverdale, on the east side of Highway 101 just beyond the Pacific City turnoff.

13. Adventist Church, Cloverdale. This building was the Union Schoolhouse. It was constructed in 1915 to serve the children living on the north side of Nestucca Bay estuary and south of Cloverdale. It is a none-story building of simple design that has not been altered.

According to the State Inventory, the building has historic significance to the County because of its association with education.

The building is located along Highway 101 south of the Pacific City turnoff.

14. Tillamook Naval Air Station. The Naval Air Station at Tillamook was established in 1942 as part of the World War II defense network for the Pacific Coast. The base housed blimps that were engaged as coastal patrols for Japanese submarines. The station was closed in 1948 and is now the Port of Tillamook Bay Industrial Park.

The two structures for housing the blimps are believed to be the world's largest wooden structures. A 1955 fire damaged one of the hangars.

The buildings have recently been approved for nomination to the National Register of Historic Places.

The hangars are located at the Port of Tillamook Bay Industrial Park.

15. I.O.O.F Hall, Cloverdale. This lodge hall was built in 1905 and was the center of social activity in Cloverdale for many years. The building is in fair condition with southern exposure windows boarded up. According to the State Inventory, the structure has historical significance because of its association with social movements. The building is located in Cloverdale.
16. Oretown Grange Hall. The Oretown Grange was organized in 1905. The Grange Hall was built in 1907 and is a functional wooden frame structure with no external ornamentation. The building is in sound condition and is still being used by the Grange. According to the State Inventory, the structure has historical significance to the County because of its association with social movements. The building is located in Oretown.
17. Condor Farm House. This building was built in 1895 and reflects the growing prosperity of farmers in the Nestucca Valley in the late 19th century. The dwelling is a simple two-story wooden frame building with an ell to the north. The building has been altered through the addition of new windows. According to the State Inventory, the building is of historic significance to the County because of its association with agriculture. The building is located west of Highway 101 just south of the Nestucca River Bridge.
18. Beaver Cheese Association Creamery. The creamery was built in about 1915 and was used by the Beaver Creamery Association. It was abandoned in the 1960's when the Tillamook County Cheese Association merged with the rural creameries. The building is a one-story wooden frame structure. According to the State Inventory, the structure is of historic significance to the community because of its association with agriculture and commerce. The building is located adjacent to Highway 101 and West Creek in Beaver.
19. Airplane Crash Site - Cape Lookout. This is the site where a B-17 airplane crashed in 1943.

According to the State Inventory the site has historic significance because of its association with government and military affairs.

The site is located on Cape Lookout and is identified by a monument. The site is inventoried in the Goal 17 element.

20. Taggart Homestead. This site was homesteaded by James and Jessie Taggart in 1893. They held the land until 1916 when it was sold to Charles Hart. The site consists of about twelve acres on the north side of Cascade Head, three miles south of Neskowin.
21. Army Lookout Post Sites. During World War II the U.S. Army maintained two lookout posts at the northern side of the mouth of the Salmon River. They consisted of semi-subterranean excavations, lined with planks and covered with a shed roof. Little indication of the posts remains.
22. E. T. Allen House. The building was constructed in 1932. It is a one-story wood frame building which stands atop a bluff at the north side of the entrance to the Salmon River. It is located within the Cascade Head Scenic Research Area. The site is inventoried in the Goal 17 element.
23. Charles Ray House. The building was constructed in the 1890's and was one of the first homes in Cloverdale. The building is a wooden, two-story structure that has been altered through modification to windows and the porch.
According to the State Inventory, the building is of historic significance to the State because of its association with town development.
24. Three Arch Rocks Refuge. This site is one of the earliest Wildlife Refuges established in the United States. It was created in 1907. Three Arch Rocks is designated as a historical site by the Tillamook County Pioneer Museum.
The site is located off-shore from Maxwell Point, north of Oceanside. The site is inventoried in the Goal 17 element.
25. Oretown Bible Church. The Church was constructed in 1913. It has been altered substantially through the filling in of a porch, the addition of an enclosed lean-to and a new type of siding.
According to the State Inventory, the church has historic significance to the community because of its association with religion.

The building is located in Oretown, on the east side of Highway 101.

26. Old Trout Cemetery. The Old Trout Cemetery was one of the earliest burial sites in Tillamook County. Among those buried at the cemetery are Webly Hauxhurst, a member of the provisional government; George Fearnside, the founder of Nehalem; and Geoge Webly Miller and Thomas Stillwell, the pioneers whose Donation Land Claims are now the City of Tillamook. The cemetery contains abut 300 burials, primarily from the period 1851-1890.
A substantial portion of the site has been obliterated through the location of a Bonneville Power Administration substation.
According to the State Inventory, the site is of historical significance to the County because of its association with town development.
The cemetery is located two miles east of Tillamook, on the north side of the Wilson River Highway.
27. Old Telephone Building, Cloverdale. The building was built in 1923 and housed the first telephone exchange in southern Tillamook County. The building is a two-story wooden frame building of simple design.
According to the State Inventory, the building is of historic importance to the community because of its association with town development and communication.
The building is located on the west side of Highway 101 in the commercial area of Cloverdale.
28. Cape Falcon. Sometimes known as False Tillamook Head, Cape Falcon was named on August 18, 1775 by Captain Bruno Heceta of a Spanish expedition to the northwest coast of North America.
According to the State Inventory, the site is of historic significance to the County because of its association with maritime exploration.
The cape is located in Oswald West State Park, north of Smugglers Cove. The site is inventoried in the Goal 17 element.
29. Cape Meares. Cape Meares is a headland south of Tillamook Bay. The cape was sighted by Captain John Meares, a former lieutenant in the British Navy, on July 6, 1788. He named the cape Cape Lookout. The name was later changed to Cape Meares. The Octopus Tree, a large sitka spruce, and Cape Meares were designated historical sites by the Tillamook County Pioneer Museum.
According to the State Inventory, the site is one of historic significance to the State because of its

association with maritime exploration and government. The site is inventoried in the Goal 17 element.

30. Nestucca Presbyterian Church, Cloverdale. The Church was built in approximately 1910. The building has been altered through the closing in of porches, addition of shakes, and other modifications.
According to the State Inventory, the building is of historic significance to the County because of its association with religion.
The church is located in Cloverdale.
31. Trask River Toll Road. The Trask Toll Road was a travel route that traversed the Coast Range between Tillamook Bay and the Willamette Valley. In Tillamook County it followed the Trask River to its headwaters. Construction of the road was authorized in 1872. The first stage line using the road began operation in 1884. Operations ceased in 1911.
According to the State Inventory, the site has historic significance to the County because of its association with travel and transportation. The road was obliterated when a new road was constructed along the north bank of the Trask River.
32. Wilson River Toll Road. The Wilson River Toll Road ran east from Tillamook Bay up the watershed of the Wilson River. Its eastern terminus was Forest Grove. The road was constructed to compete with the Trask River Toll Road. Construction commenced in 1890, but the company went bankrupt in 1900. Other private attempts to complete the road also failed. Construction was finally completed as part of the State Highway system.
According to the State Inventory, the site has historic significance to the County because of its association with transportation, travel and town development.
The road followed the route of the existing Wilson River Highway.
33. Cape Kiwanda. Cape Kiwanda is a low promontory jutting out into the ocean, north of the mouth of the Nestucca River. The cape was originally known as Sand Cape.
According to the State Inventory, the site is of historical significance to the County because of its association with travel and recreation. The site is inventoried in the Goal 17 element. The ocean beach at this site is identified by the Tillamook County Pioneer Museum because of its use as a dory launching site.
34. Beeswax Ship Site. This is the site of a shipwrecked Spanish galleon thought to have run aground off

Nehalem spit in the 1500's. Beeswax, thought to be from the ship, has been recovered through the years. According to the State Inventory, the site has historic significance to the Nation because of its association with maritime exploration and transportation. The site is inventoried in the Goal 17 element.

35. Hobsonville Point. Hobsonville was an early community on Tillamook Bay. It was first settled in 1883. At the height of economic activity, the town contained both a lumber mill and a cannery. The mill closed in 1909. There is now no trace of the town. The site is commemorated by a plaque placed by the Highway Division. According to the State Inventory, the site has historical significance to the County because of its association with commerce and industry. The site is inventoried in the Goal 17 element.

36. The Nehalem - Tillamook Railroad Route. This railroad line was the original land rough out of Tillamook County. It followed the Nehalem and Salmonberry River Valleys through the Coast Range to the Willamette Valley. The present Southern Pacific Railroad line follows this route. The Goal #5 Administrative Rule outlines three options for sites on the preliminary inventory list: (1) a determination that a site is not important enough to include on the final inventory; (2) a determination that insufficient information is available at this time on the location, quality, or quantity of the site to ascertain the significance of the site; and, (3) a determination from the information available on the location, quality, or quantity of the site that it is important enough to include in the final inventory.

Sufficient information is available for the sites on the National Register of Historic Places and the State of Oregon Inventory of Historic Sites and Buildings to determine if they are important sites. All the sites on the preliminary inventory were found to be important enough to include in the final inventory, with the following exceptions. The I.O.O.F. Hall in Cloverdale is not included because the building has been demolished. The Old Telephone Building in Cloverdale is not included because its condition has deteriorated to the point where restoration is unlikely. The Cloverdale Cheese association Creamery is not included because the building has been demolished. The Oretown Grange Hall is not included because there is no basis in the Statewide Inventory for including this grange hall while all the other grange halls many built during the same era, in the County are not included in the inventory. The Oretown Bible Church is not included because the original structure has been radically altered through

building additions and its historical significance appears to be limited to the community of Oretown, rather than the County or State.

Generally, the historic elements on the final inventory fall into two categories. The first group consists of sites at which historic events occurred or where historic structures existed, but have now been destroyed. This group includes: the Salmon River Toll Gate, the Airplane Crash Site - Cape lookout, the Army Lookout Post Sites The Three Arch Rocks Refuge, Cape Falcon, Cape Meares Trask River Toll Road, Wilson River Toll Road, Cape Kiwanda, Beeswax Ship Site, Hobsonville Point, Taggart Homestead, and the Nehalem-Tillamook Railroad Route. There are no conflicting uses for these sites. Three Arch Rock Refuge is protected because it is included in the Oregon Island Wilderness. Cape Falcon, Cape Meares, Cape Kiwanda, the Beeswax Ship Site and the Airplane Crash Site-Cape Lookout are considered protected because they are located within State Parks. The Taggart Homestead is considered protected because of its location in the Cascade Head Scenic Research area. The State has placed a marker commemorating the former site of Hobsonville. The Historic significance of the Salmon River Toll Gate, Trask River Toll Road, Wilson River Toll Road and the Nehalem-Tillamook Railroad Route could be enhanced if the State Parks Division were to place markers describing the historic character of each of these sites.

The second group of sites consists of structures that are significant either because the buildings have architectural merit or because the building is associated with significant historical events. This group includes: the Wentz cottage, Cape Meares Lighthouse, Ison/Fox Cottage, Barview Lifesaving Station, the Churchill Cottage, the Morrell Cottage, the Coyle Cottage, the Povey Cottage, Cloverdale Catholic Church, Hebo Cheese Association Creamery, John Hudson Residence and Barn, Adventist Church, Cloverdale, Tillamook Naval Air Station, Condon Farm House, Beaver Creamery Association Creamery, E.T. Allen House, Charles Ray House, Old Trout Cemetery, and the Nestucca Presbyterian Church. Two activities are now conflicting uses for these sites. The demolition of the structure and the alteration of the structure so that its architectural or historic character is significantly altered. In addition, a conflicting use for the Old Trout Cemetery is its conversion to a different use.

The major consequence of not allowing the conflicting uses would be to restrict the ability of the property owner to make "non-historic" building modifications or to replace the structure with a new one. This could create a significant burden on the owner of a historic building.

The Barview Lifesaving Station, E.T. Allen House and the Cape Meares Lighthouse are all located in the Coastal Shoreland boundary and are protected through the requirements of the Shoreland Overlay Zone.

A field inspection of listed sites revealed that many of the structures had been altered from their original condition, or that the structure's importance is not of architectural merit, but rather is derived from events that occurred in the building or its place in the general development of the community. Further, these structures were identified by the Statewide Inventory as being of significance to the community or County rather than the State or nation. The following sites were identified as falling into this category: The Cloverdale Catholic Church, which has been altered by the addition of an attached two story structure at the rear of the building, the Charles Ray House, which has an altered front porch and entry, new storm windows, and a new addition at the rear of the building; the John Hudson House, which has new siding material and an altered porch; the Adventist Church, the northern portion of the building has been redone with vertical siding material and aluminum windows that are completely out of harmony with the rest of the structure. The front of the Hebo Creamery has been altered in conjunction with the residential use of the structure. The Condon Farmhouse has been altered by the addition of new siding, windows and a small addition to the south side. The Nestucca Presbyterian Church has been altered through the enclosure of porches and the addition of shakes. The Beaver Creamery, although in poor condition, has been only slightly altered. However, the structure has no unique architectural characteristics that require protection nor is it of other than community historical significance. The Morrell Cottage has received exterior alterations.

For these structures, the County will develop a program to monitor and review proposed demolitions.

The remaining structures have architectural merit and contain no significant alterations, or are of Statewide or national significance. This group includes: Barview Lifesaving Station, Cape Meares Lighthouse, E.T. Allen House, Isom/Fox Cottage, Churchill Cottage, Doyle Cottage, Povey Cottage, Wentz Cottage, and the Tillamook Naval Air Station. For these structures, the County will establish a procedure for evaluating proposed alterations, as well as a program to monitor and review proposed demolitions.

1.3g CULTURAL AREAS

Add the following paragraphs to the existing material:

Excavation, filling, grading, and other construction activities in or adjacent to an archaeological site are conflicting uses. The consequences of allowing such conflicting uses without proper review and regulation would be the loss of a significant cultural resource that could enhance the knowledge concerning the culture of coastal Indians.

Several states and federal statutes pertain to archaeological sites. Oregon Revised Statute 97-710 prohibits the tampering with Native Indian cairns and graves. Oregon Revised Statute 273.705 - .724 governs the removal of archaeological, historical, and other valuable materials from state lands. The pertinent Federal laws are PL 96-95, the Archaeological Resources Protection Act of 1979, and PL 93-291, Historic and Archaeological Data preservation Act. In addition, the County will review land use activities in the vicinity of known archaeological sites. If it is determined that an action may affect an archaeological site, the State historic Preservation Office shall be notified and consulted on appropriate measures to preserve or protect the site and its contents.

1.3h POTENTIAL AND APPROVED RECREATION TRAILS

There are two trail systems in Tillamook County identified in OAR 736-09 as Oregon Recreation Trails, pursuant to the Recreation Trails System Act. One is in the Oswald West State Park area and includes: Cape Falcon Trail (2 miles between Highway 101 and Cape Falcon); Short Sand Creek-Necarney Creek Loop Trail (0.9 mile between Highway 101 and Short Sands Beach); and Neahkahnie Mountain Trail (1 mile to the summit of Neahkahnie Mountain from its south base). The second Oregon Recreation Trail is Cape Lookout Trail in Cape Lookout State Park (from the picnic area to the tip of Cape Lookout in three sections, totaling 5.6 miles). These trails are significant Goal 5 resources, having been designated as Oregon Recreation Trails by the Oregon Parks and Recreation Commission.

A map showing major recreation trails in Tillamook County as identified in the publication "Trails for Oregon, A Plan for a Recreation Trails System," State Parks Branch, 1979, is found in the recreation element of the plan (Goal 8). These include the coastal bike trail and the coastal hiking trail which has been developed and approved north from Barview and at Cascade Head and Cape Lookout. Potential trails include continuation of the coastal hiking trail south of Barview through the rest of Tillamook County. Also a potential Coast Range hiking and equestrian trail is depicted. Information and mapping regarding trails at other sites, including Neskowin Creek trail, Munson Creek Falls, Cape Meares, Kilchis Park, Neahkahnie Mountain, and Cape Falcon is contained in the recreation element.

1.3i WILD AND SCENIC RIVERS

There are no approved Federal wild and scenic waterways in Tillamook County. There is one State scenic waterway. The Nestucca River from the county line downstream to the confluence with Moon Creek (at Blaine) is designated a Scenic Waterway by the Oregon Department of Parks and Recreation.

State Scenic Waterways are defined to include a river or lake or segment thereof, land within one-fourth of one mile of the bank on each side, and the airspace above. There are six classifications for Scenic Waterways: Natural River Areas, Scenic River Areas, Recreational River Areas, Natural Scenic River Areas, and Accessible Natural River Areas, and River Community Areas.

The segment of the Nestucca River from the county line downstream to the lower end of Alder Glen Campground is designated a Scenic River Area. Scenic River Areas are described in OAR 736-40-040 as waterways and adjacent lands and shorelines "still largely primitive and largely undeveloped, except for agriculture and grazing, but accessible in places by roads....Scenic areas will be administered to maintain or enhance their high scenic quality, recreational value, fishery and wildlife habitat, while preserving their largely undeveloped character and allowing continuing agricultural uses."

The management plan for the Scenic River Area segment of the Nestucca Scenic Waterway requires that new structures and improvements, mining operations and timber harvesting activities shall be permitted by the State Parks Department only when substantially screened from view from the river by topography or existing vegetation. All of the land in this segment is identified on the Tillamook County zoning map as Forest (F) zone.

The segment of the Nestucca River from the lower end of Alder Glen Campground downstream to the confluence with Moon Creek is designated a Recreational River Area. Recreational River Areas are areas "readily accessible by road or railroad, that may have some development along their shorelines and related lands, and that may have undergone some impoundment or diversion in the past....Recreational River Areas will be administered to allow continuance of compatible existing uses, while allowing a wide range of compatible river-oriented public outdoor recreation opportunities, to the extent that these do not impair substantially the natural beauty of the scenic waterway or diminish its esthetic, fish and wildlife, scientific and recreational values."

The management plan for the Recreational River Area segment of the Nestucca Scenic Waterway requires that mining operations and timber harvesting activities and other landscape alterations shall be permitted by the State Parks Department only when substantially screened from view from the river by topography or existing vegetation. New structures and improvements shall be permitted when partially screened from view from the river by topography or vegetation. This segment of the Scenic Waterway contains land zoned by Tillamook County as Farm, Forest, Small Farm Woodlot 20, and Rural Residential.

1.3h.1 OREGON COAST TRAIL

A 370 mile hiking trail along the coast between the Columbia River and the California border was proposed by Professor Samuel N. Dicken in the early 1950's. Such a trail is possible largely because of Oregon's beach law which protects recreational uses of the beaches up to the vegetation zone line. The Trails Council considered the Coast Trail to be its number one priority, so development was begun in 1973. In July, 1975, the northernmost 64-mile segment between the Columbia River and Tillamook Bay was dedicated and opened to the public.

The following is a description of the proposed route, including alternatives, from Barview to the Lincoln County line. A ferry is proposed from Barview, across Tillamook Bay, to Bayocean Spit. The route proceeds along the beach to the community of Cape Meares. From Cape Meares there are two routes. A low tide route which continues along the beach and ties directly into the existing trail system at Cape Meares State Park. The high tide route follows existing streets through Cape Meares then crosses Crown Zellerbach land until it ties into the existing trail network at Cape Meares State Park. An alternative route, not requiring a crossing of Tillamook Bay is also being developed. The trail would

follow Highway 101 to Tillamook and then following existing roads to Cape Meares, along the southern margin of Tillamook Bay. South of Cape Meares State Park the trail follows Three Capes Scenic Highway. At Maxwell Point, the trail crosses Crown Zellerbach land and connects with the street system of the community of Oceanside. From Oceanside to Happy Camp, the trail follows the beach. At Happy Camp a ferry connects to Netarts Bay Spit. The trail continues south along the beach until joining the existing trail system across Cape Lookout. An alternative route, not requiring the use of a ferry, follows existing roads that skirt Netarts Bay.

South of Cape Lookout, the trail crosses the Boy Scout facility at Camp Clark, from whence it follows the beach to Camp Meriwether. From Camp Meriwether south, two options are being investigated. The first would follow existing roads inland from Camp Meriwether proceeding south to Galloway Road and then east to the Three Capes Scenic Highway at Sand Lake. The second route would follow the beach south to the outlet of Sand Lake and then proceed eastward to Galloway Road. From this point, the route would be similar to the first option.

South of the community of Sand Lake, the trail would follow the Three Capes Scenic Highway to Tierra del Mar. From Tierra del Mar the trail follows the beach to Pacific City. At Pacific City there are two routes. The first follows the beach to the southern tip of North Spit where a ferry connects with Porter Point. From Porter Point south to Neskowin the trail follows the beach. The second route, when ferry service is not available, follows existing streets to US Highway 101 and then south on Highway 101 to Camp Winema where the trail rejoins the beach.

From Neskowin to the Lincoln County line the trail follows old Highway 101 through the Cascade Head Scenic Research area. The proposed route passes over four general areas: Ocean beaches, existing trails in State parks, existing streets, road and highways and private property. No conflicting uses are identified for the portions of the proposed trail that follows ocean beaches, existing trails in State Parks, or existing streets, roads or highways. Potential conflicts exist where the trail would cross private property. There are three segments where the Coast Trail is proposed to cross private property. The first is the alternative route between Barview and the Miami River, across Publishers Paper forestland. The State parks Division is working with Publishers paper in selecting a route that will minimize the conflict between hikers and forest practices. The second section is located on Cape Meares and crosses Crown Zellerbach forestlands. The State Parks Division and Crown Zellerbach have completed a written agreement authorizing the location of the trail and limiting the impact of the trail on forest management practices. The third area is the Boy Scout property south of Cape Lookout. The proposed trail is compatible with the existing recreational uses of this area.

Tillamook County will rely on negotiations between the State Parks Division and private and public landowners to insure that potential conflicts between recreational trail use and adjacent land uses are resolved.

1.3I WILD AND SCENIC RIVERS

There are no approved Federal wild and scenic waterways or State scenic waterways in Tillamook County.

The following rivers are listed in the State parks Division's six-year plan (1981-87) as potential rivers for study as scenic waterways:

Nehalem - Highway 26 crossing to tidewater

Nestucca - Lower end of Meadow Lake to tidewater.

Trask - Including its forks to tidewater or confluence with the Tillamook River.

The 1979 Legislature considered a bill to designate two tributaries of the Nehalem River, the Salmonberry River and the North Fork of the Salmonberry River as State scenic waterways, but no action was taken.

The following river segments were identified by a Nationwide Rivers Inventory completed by the US Department of Interior in 1980, as having potential for designation as Federal wild and scenic waterways (portions of these segments are in Tillamook County):

Nehalem - Entire length.

Nestucca - Lower end of Old Meadow Lake to tidewater.

Trask - Including its forks to tidewater or confluence with the Tillamook River.

Little Nestucca - Entire length of river.

The provisions of the Oregon Scenic Waterway Act is contained in Oregon Revised Statutes 390.805 through 390.025. Scenic Rivers are defined as those waterways with "outstanding scenic, fish, wildlife, geological, botanical, historic, archaeological, and outdoor recreation values of present and future benefit to the public".

The Department of Transportation is charged with the administration of the system. Before a waterway can be designated, a study is undertaken to determine the waterway's suitability for inclusion in the system. Before a scenic waterway designation can be placed on a river, the study and its recommendations must be approved by the Transportation Commission, the State Water policy Review Board, and the Governor. A scenic waterway includes the river and adjacent land within one quarter mile of each bank. The only activities prohibited are dams impoundments and placer mining. The level of restriction on other types of uses or activities depends on which of six categories, from primitive to fully developed, of river segments it is located in.

All of the rivers are undammed, free-flowing streams with minimal development along their banks. Only the Nehalem River has any urban impacts upstream from the identified segment, that being the city of Vernonia. Each of the rivers support runs of anadromous fish, the Nestucca and the Trask having large runs of steelhead trout. The banks of the rivers provide habitat for large numbers of animals. Water quality is considered to be high. The recreational use of these streams is heavy.

The potential scenic designations encompass approximately 135 river miles (20 miles Nehalem, 36 miles Nestucca, 42 miles Trask, 17 miles Little Nestucca, 20 miles Salmonberry) and extend one-quarter mile (1320 feet) on either side of the stream. This would, if fully implemented, affect approximately 36,800 acres of land.

The Goal #5 Administrative Rule outlines three options for sites on the preliminary inventory list: (1) a determination that the site is not important enough to include on the final inventory; (2) a determination that insufficient information is available at this time, on the location, quality, or quantity of the site to ascertain the significance of the site; (3) a determination from the information available on the location, quality, and quantity of the site that it is important enough to include in the final inventory.

There is sufficient information available on all five river segments to include them in the final inventory of potential scenic rivers. However, because a complete study and evaluation of the rivers, including designation of river segments from primitive to fully developed, has not been completed, it is difficult to determine what conflicting uses exist or may be permitted by the zoning designations for adjacent land areas. Therefore, the following is only a general discussion of potential conflicting uses.

There are a variety of zoning designations along the identified potential scenic rivers. All the area adjacent to the Salmonberry River is zoned Forest (F). The Nehalem River, from the Clatsop County line to the Foley Creek Road is zoned primarily Forest (F), with

scattered sites Rural Residential (RR), and General Industrial (M-1). The Nehalem River from the Foley Creek Road to Nehalem Bay is generally zoned Exclusive Farm Use (F-1), with some areas zoned Rural Residential (RR) and Commercial (C-2). The portion of the Nestucca River above Blaine is zoned primarily Forest (F). Below Blaine, the areas adjacent to the river are zoned primarily Forest (F) and Exclusive Farm Use (F-1). The further downstream, the more of the area is zoned Exclusive Farm Use. In addition, there are scattered areas that are zoned Rural Residential (RR). The river passes through the communities of Beaver, Cloverdale and Pacific City. These areas have urban type zoning designations, such as Low Density Urban Residential (R-1) and Medium Density Residential (R-2). The portion of the Trask River above the confluence of the North and South Forks is zoned Forest (F) and Exclusive Farm Use (F-1). The further downstream, the more of the area is zoned Exclusive Farm Use (F-1). In addition, there are areas that are zoned Rural Residential (RR). The upper reaches of the Little Nestucca River are zoned Forest (F), further downstream the predominant zoning is Exclusive Farm Use (F-1). There are also smaller areas zoned Rural Residential (RR). Forest practices that are allowed in the Forest zone may conflict with a scenic river designation. According to the provisions of the Oregon Scenic Waterways Act, forest management is permitted "in such manner as to maintain as nearly as reasonably practicable the natural beauty of the scenic waterway". Other uses allowed, permitted either outright or conditionally, in the zone may also conflict with a scenic river designation. These uses include forest products processing and the extraction, processing of, and stockpiling of gravel and minerals.

Generally, the uses permitted in the Exclusive Farm Use (f-1) zone are consistent with the intent of a scenic river designation. The uses permitted or conditionally permitted that are most likely to conflict are forest products processing and the extraction, processing of, and stockpiling of gravel and minerals. Gravel is currently being extracted from bars in the Nehalem, Trask and Nestucca rivers.

The County has taken a number of "built and committed" exceptions to permit rural residential development along rivers. These areas are zoned Rural Residential (RR). These exceptions will permit an increase in residential density, primarily along the rivers. Increasing rural density may conflict with the scenic character of a given river. The RR zone permits a range of other uses that may conflict with scenic values at a given location. However, it should be noted that the rural residential character of these areas has already been established.

Dams are the primary conflicting use of these rivers. A number of low-head hydroelectric projects have been identified on each. These would not be permitted if the river were classified as a scenic waterway. Otherwise, the use character or lands surrounding these rivers is well established and will not change as a result of the County's zoning. Rural residential areas are committed to development and forest areas are being harvested. Most if not all of the potential gravel extraction sites on these rivers are currently being harvested and since the method of gravel extraction in Tillamook County is bar scalping, only removing the gravel that is annually replenished, there is no permanent river alteration. Impacts of these uses is further limited by County riparian vegetation protection standards.

The primary environmental consequence of the County's zoning would come from the allowance of dams which could affect designation as a scenic waterway. This may also have the social consequences of decreasing certain types of recreational uses of the river and the income that recreation would generate. The major energy consequence would be to permit the development of low-head hydroelectric generating facilities. This would have favorable economic consequences as well.

Future designation of these rivers as scenic waterways would have a number of consequences. Dams would not be allowed, thus resulting in the loss of an inexpensive pollution-free energy source. Forest practices, such as clear-cut logging may be

restricted in certain areas, thus decreasing the timber supply available for processing. Given the potential acreage covered, this could have a significant effect on a County that relies heavily on the forest products industry for jobs and income. There may also be restrictions on the type of future residential, commercial, or industrial uses that would be allowed in areas where the County has found the area is already committed to rural residential development. Gravel extraction, a prime source of aggregate in Tillamook County, may also be limited.

The resolution of these conflicts and any further action on the proposed designation of the Nehalem River, Nestucca River, Little Nestucca River, Salmonberry River, and Trask River as a scenic waterway is the responsibility of the Department of Transportation or Department of Interior. The County will cooperate in any such process and make its views known.

1.4 INVENTORY OF ECONOMIC RESOURCES

1.4a Mineral and Aggregate Resources

Sand, gravel and crushed rock are essential factors in any community. These aggregates are used in making Portland cement concrete, asphaltic concrete, foundation for roads, and select fill.

In 1970, 143,500 tons of sand and gravel were produced in Tillamook County for projects other than highway and County construction projects. The volume use of sand and gravel in the County has averaged, and is projected at, about 8 tons per person per year. Based on projected population increases, it is anticipated therefore, that the annual production of 143,500 tons in 1970 should increase to about 170,000 tons in 1980 and to about 230,000 tons in the year 2000.* By comparison, the volume use of quarry rock could, in 1985, conceivably range from 100,000 to 400,000 tons annually, based on Department of Geology statistics.

Quarry rock figures significantly in use of aggregate resources in Tillamook County for two purposes. First is use of quarry rock for riprap in riverbank protection. Tillamook County farmers have been using an average of 30,000 tones of quarry rock per year for riprap. Second, both the County Road Department and State Highway Department use large amounts of crushed rock for road construction, especially in areas where stream gravel is unavailable. The quantity ranges from 100,000 to 300,000 tons of quarry rock annually, depending on construction projects. In the past, most of the potential quarries have been too far from population centers to be of economic use by the private sector, particularly given the abundance of material in local streams.

Good supplies of sand and gravel have been obtained from local streams, and for the private sector sand and gravel production is the major source of material resources. In 1970, more than 145,00 tons were produced locally. Sources of sand and gravel for the private sector include the Nehalem River in the north County and the Miami, Kilchis, Wilson, Trask and Tillamook Rivers in the Tillamook area. However, sand and gravel mining from streams has some deleterious environmental effects. As a result of concerns about impacts to declining salmonid stocks, an agreement was mediated in 1992 which leads to the cessation of commercial in-stream aggregate operations after the 1997 removal season. This, coupled with increasing demand for aggregate resources, necessitated the county undertaking an inventory of potential aggregate sites and the protection of several sites as significant aggregate resources.

Detailed information on potential rock and aggregate sites is not available for Tillamook County. The County will cooperate with the Department of Geology and Mineral

Why
Protect?

Industries in investigating the feasibility of undertaking a study to identify sites, should funding become available.

Tillamook County is using a list of removal permits compiled by the Department of Geology and Mineral Industries (DOGMI) as its inventory of rock and aggregate material sites (the list is current as of June 1982). The following is a summary of those sites.

	LOCATION	NAME	ZONE
1.	3N10-(10)-700	CROWN ZELLERBACH	F
2.	3N10-(17)-2300	ORE STATE HIGHWAY DIVISION	RM
3.	3N10-(10 & 15)-3100	TILLAMOOK COUNTY	F
4.	3N10-(14 & 15)-3100	TILLAMOOK COUNTY	F
5.	3N10-6BB-5500	JAMES MC FARLAND	RR
6.	2N9-(4)-800	ORE DEPARTMENT OF FORESTRY	F
7.	2N10-4-400	LARRY KESTERSON	RR
8.	1N7-(19)-2400	ORE STATE HIGHWAY DIVISION	F
9.	1N9-(9)-100	TILLAMOOK COUNTY	F
10.	1N9-32-300	KEN CHRISTENSEN	SFW-20
11.	1N10-8-100	E.W. ELDRIDGE	F
12.	1N10-14-300	E.R. FILOSI	F-1
13.	1N10-14-400	DENNIS HIXON	F
14.	1N10-22A-100	GLEN MERRIT	F
15.	1N10-35-1700	ORE STATE HIGHWAY DIVISION	F
17.	1S9-6-200, 1801, 2900	COASTWIDE READY MIX	F-1
18.	1S9-7-800	LA FOND CONSTRUCTION	F-1
19.	1S9-22-1000, 1200, 1300	TILLAMOOK COUNTY	F-1
20.	1S9-34-2300	TRASK RIVER GRAVEL	F-1
21.	1S9-35-1702	TRASK RIVER GRAVEL	F-1
22.	1S9-36-500	CROWN ZELLERBACH	F
23.	1S10-(17)-500	CROWN ZELLERBACH	F
24.	1S10-(21)-1200	CROWN ZELLERBACH	F
25.	1S10-(29)-2200	CROWN ZELLERBACH	F
26.	1S10-18-800	CROWN ZELLERBACH	F
27.	1S10-30-500	CROWN ZELLERBACH	F
28.	2S9-2-600	TRASK RIVER GRAVEL	F-1
29.	2S9-17-800	LARRY ZWEIFEL	F-1
30.	2S10-(19)-4100	CROWN ZELLERBACH	F
31.	2S10-(20)-4500	CROWN ZELLERBACH	F
32.	2S10-(32)-6400	CROWN ZELLERBACH	F
33.	4S8-(3)-900	S.S. HERR	SFW-20
34.	4S10-(9)-300	DAN REDDEKOPP	F
35.	4S10-18-1100	FEDERAL HIGHWAY ADMIN.	F
36.	S10-15-502	NESKO ROCK	F
37.	5S11-12-200	WALTER OTZEN	F-1
38.	5S11-36-1201	LESTER FULTZ	SFW-20

The following list is a summary of rock and aggregate material located on Bureau of Land Management and U.S. Forest service land (those sites are included for inventory purposes only).

	BUREAU OF LAND MANAGEMENT	LOCATION
1.	DOVRE PEAK ROCK PIT #2	3S7-15

2.	CLEAR CREEK #1	1S9-10
3.	CLEAR CREEK #2 UNDEVELOPED	1S9-11
4.	BSM #1 QUARRY	2S8-27
5.	BOUNDARY ROAD #1	3S7-5
6.	TUCCA CREEK #1	3S7-10
7.	BEAR CREEK #4	3S7-8
8.	JOE CREEK #1	3S7-33
9.	COAST RANGE #1	3S8-1
10.	CLARENCE CREEK #1	3S8-13
11.	EAST LINE ROCK QUARRY	4S7-1

U.S. FOREST SERVICE - SIUSLAW NATIONAL FOREST

	PIT NAME	LOCATION
1.	JEWEL PT.	3S10-33
2.	ANDY CREEK	3S10-22
3.	HORN CREEK	4S10-4
4.	NEW BUZZARD	4S10-3
5.	NIAGARA WEST	4S8-24
6.	NIAGARA DIVIDE	4S8-28
7.	BIBLE CREEK	4S7-7
8.	CLEAR CREEK	4S9-34
9.	BALD HEBO	4S9-18
10.	GAULDY #1	4S10-36
11.	LITTLE HEBO	4S9-18
12.	YONCALLA-33	4S8-28
13.	GAULDY #2	5S10-12
14.	GAULDY #3	5S9-19
15.	STILLWELL	5S9-32
16.	JIM CREEK	5S10-4
17.	UPPER CASCADE HEAD	6S10-12

The following is a list of all the removal permits issued by the Division of State Lands (DSL) since 1974 for the extraction of gravel from the County's rivers:

	LOCATION	DSL	ZONE
1.	2N9-5-1100	RP448	SFW-10
2.	2N9-6-201	RP448	M-1
3.	1N9-32-600	RP577	F-1
4.	1N9-32-600	RP1154	RR
5.	1N9-32-901	RP717	F/F-1
6.	1N10-11-200	RP3302	F-1
7.	1N10-11-400	RP3302	F-1
8.	1S9-6-200	RP718	F-1
9.	1S9-7-1200	RP3595	F-1
10.	1S9-20-600	RP255	F-1
11.	1S9-20A-200	RP255	F-1
12.	1S9-21-200	RP3274	F-1
13.	1S9-22-1300	RP2637	F-1
14.	1S9-23-600	RP3259	F-1
15.	1S9-23-1100	RP3094	F-1

16.	1S9-33-1100	RP2631	F-1
17.	1S9-34-2300	RP3059	F-1
18.	1S9-34-2400	RP3621	F-1
19.	1S9-35-1702	RP2107	F-1
20.	2S9-2B-900	RP2017	F-1
21.	2S9-5-800	RP3275	F-1
22.	2S9-17-900	RP3280	F-1
23.	4S10-22-2800	RP1453	F-1/EC-1
24.	4S10-22-2801	RP1453	F-1/EC-1

All of the above mentioned sites are included on the final plan inventory.

The County's gravel and quarry stone sites are located in the following zoning categories: Farm (F-1), Forest (F), Small Farm Woodlot-20 (SFW-20), Rira; Residential (RR), and Low Density Urban Residential (R-1). The following are the uses allowed (either permitted outright or permitted conditionally) in these zones that may conflict with the utilization of the aggregate site:

ZONE	PERMITTED	CONDITIONAL USES
F-1	1. Farm dwelling	1. Commercial activities in conjunction with farm use
	2. Farm buildings	2. School 3. Church or community center 4. Golf course 5. Utility 6. Airport 7. Forest product processing 8. Boarding of horses 9. Non-farm dwelling
F	1. Structures accessory to to commercial forest management and fish and game management	1. Forest products processing, other than primary 2. Park, campground, hunting and fishing 3. Sanitary landfill
	2. Forest products processing	4. Utility
	3. Farm use dwellings and buildings	5. Dams and power plants 6. Transmitters and towers 7. Airplane land strip 8. One family dwelling
SFW-20	1. One family dwelling in conjunction with farm or forest use	1. Commercial activities in conjunction with farm or forest use 2. Parks, campgrounds and hunting & fishing preserves 3. Golf courses 4. Utilities 5. Airport 6. Forest products processing 7. Boarding horses 8. Agriculture 9. One family dwelling not in conjunction with farm or forest use 10. School

		11. Church	
RR	1. One family dwelling	1. Two family dwelling	
	2. Utility service lines	2. Cottage industry	
	3. Park and recreation area	3. Church	
		4. Recreation vehicle	
		5. School	
		6. Community meeting hall	
		7. Cemetery	
		8. Fire or ambulance station	
		9. Recreation facilities	
		10. Golf course	
		11. Animal hospital kennel or animal boarding	
		12. Communication facility	
		13. Utility substation	

Generally conflicting uses consist of structural improvements that if established would make it difficult or substantially more expensive to recover the aggregate material. The use of land for farm or forest use is not considered a conflicting use.

The portions of rivers below the head of tide, from which gravel may be removed are zoned Estuary Conservation 1 (EC1), Estuary Conservation 2 (EC2) and Estuary Development (ED). The following are uses allowed (either permitted outright or conditionally) in these zones that may conflict with the utilization of the river or stream as a source of gravel.

ZONE	PERMITTED USE	CONDITIONAL USE
EC1	1. Boat dock 2. Water, sewer and gas line	1. Aquaculture facility 2. Water-dependent recreation 3. Storm water and treated sewage outfall
EC2	1. Boat dock 2. Water-dependent portion of aquaculture facilities 3. Water, sewer and gas line	1. Water-dependent recreation facilities 2. Water-dependent commercial facilities 3. Water-dependent industrial facilities not requiring fill 4. Other water-dependent uses not requiring fill 5. Storm water & treated sewage outfall
ED	1. Water dependent commercial, industrial or recreational uses 2. Water-dependent portions of aquaculture facilities 3. Other water-dependent uses 4. Water, sewer and gas lines 5. Electrical distribution lines	1. Water-related uses not requiring fill 2. Non-water dependent, non-water related uses not requiring fill 3. In-water sorting, storage and handling of logs 4. Storm water and sewer outfalls

Generally, conflicting uses consist of structural improvements that if established, would make it difficult or substantially more expensive to recover the aggregate material. Conflicting uses have been identified for only four of the inventoried aggregate sites. These include sites 5, 7 and 15 on the DOGMI list and site 4 on the DSL list. For these sites, residential development is a use conflicting with aggregate removal.

The primary economic consequence of allowing these conflicting uses will be reducing the potential supply and increasing the price of aggregate available in the County. The magnitude of this impact depends on the relationship between total gravel supply, the proportion of the total present in these sites, and the projected demand. There are no significant negative social, environmental or energy consequences that would result from allowing the conflicting uses.

The primary economic impact of not allowing the conflicting use will be a loss to the owners in being able to use portions of their properties for residential use. Aggregate extraction may also impede the development of the remaining portions of their properties. There will be a social impact on surrounding residences if these sites are protected for aggregate use. All but DSL site 4 are part of larger residentially zoned areas that are committed to development. There are no significant negative environmental or energy consequences that would result from allowing the conflicting uses.

The impact of the loss of these four sites will not be significant. They represent only a small portion of the total number of sites. None of them are particularly large producers. In addition, other aggregate sites are bound to be discovered or rediscovered in the vast area that is in the Forest zone in the County. The impact of protecting these sites for aggregate use will be significant to the property owners and their present and future neighbors. For these reasons, these four sites will not be protected. The remainder of the sites will be protected.

1.4a.1 SIGNIFICANT AGGREGATE AND MINERAL SITES

Inventory of significant mineral and aggregate sites is carried out on a case-by-case basis, since it involves substantial data collection and analysis. A significant aggregate resource site is a site that contains aggregate or stone material which meets modified Oregon Department of Transportation specifications for construction grade material, which meets the three materials tests of abrasion (OSHD TM 211) with loss of not more than 35 percent by weight, Oregon Air Degradation (OSHD TM 208) with loss of not more than 35 percent by weight and Sodium Sulphate Soundness (OSHD TM 206) with loss of not more than 18 percent by weight; and is located within an ownership or long-term lease containing reserves in excess of 100,000 cubic yards; or is located on property owned by, or under long-term lease to a city, county, state jurisdiction for the primary purpose of excavating aggregate or stone materials for road construction and maintenance.

A significant mineral resource site is a site that contains non-aggregate minerals that have been determined to be significant based upon an analysis and findings concerning the commercial or industrial use of the resource and the relative quality and abundance of the resource in Tillamook County.

As of March 3, 1997, six sites have been designated as significant Goal 5 resources. The Goal 5 Analyses, including the ESEE analysis and plan amendment for each site, are included in Appendix B of this element.

Site 1: Ogle Quarry, 5S10-15 Tax Lots 400 and 1800. This site is located off the Little Nestucca River Road. The designated impact area for this site comprises the following tax lots, all in 5S10-15: 400; 402; 403; 1800; 1801; 1900.

Site 2: Alder Creek Quarry, 5S9 Tax Lot 300. This is located on the east side of Highway 22, along Alder Creek. The designated impact area includes the following tax lots, all in 5S9: 100; 200.

Site 3: Lower Nehalem Quarry, 3N10 Tax Lot 3100. This site is located in the forest zone, north of Nehalem. The designated impact area includes the following tax lots, all in 3N10: 700; 3101; 3200; 3900.

Site 4: Clear Creek Quarry, 4S10-34 Tax Lot 1300. This site is located east of Highway 101, off of Jenck Road. The designated impact area includes the following tax lots, all in 4S10-34: 100; 500; 1200; 1400.

Site 5: 190 Pit, 2S10, Tax Lot 6400. This site is located on Bewley Creek Road, two miles east of Cape Lookout. The designated impact area comprises tax lot 6500 in 2S10.

Site 6: Whiskey Creek Pit, 2S10, Tax Lot 4500. This site is located near Netarts Bay, east of Whiskey Creek Road. The designated impact area comprises the following tax lots, in 2S10: 4100; 6000.

1.4a.2 POTENTIAL AGGREGATE AND MINERAL SITES

In 1996, an inventory of potential mineral and aggregate sites was completed. These are sites for which there is currently insufficient information to determine significance. The information in this inventory is from DOGAMI databases, existing inventory information, and any new information available.

SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Cook Creek Jetty Pit	R3N 8 05800	3	F			Stone
Batterson Pit	R3N 9 34 00900	2	F			Stone
Falcon Cove Site	R3N10 6BB 5500	1.25	RR			Stone
Short Sand Rock Pit	R3N10 03200	3	F			Stone
Nehalem Quarry	R3N10 03100	5	F			Stone
Quarry	R3N10 13 00701	2.5	F-1		EST	Stone
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Old Nehalem Quarry	R3N10 03101	>2	F			Stone
Neahkahnie Mtn Quarry	R3N10 2300	1.5	RM			Stone(basalt)
Mohler Pit & Plant						Stone
Pit 443						Stone
Pit 442						Stone
Sturm Pit	R3N10 36 01900	2	F-1			Stone(basalt)
Browns Camp Quarry	R2N 6 02600	4	F			Stone(basalt)
Quarry	R2N 9 00800	1	F			Stone
Gravel Pit	R2N 9 5 01100	12	M-1			Sand & Gravel
Fishery Point Quarry	R2N10 4C 00500	2	SFW-20		SH	Stone(basalt)
Lake Lytle Pit	R2N10 05600	2	F			Stone(basalt)
Gravel Pit	R2N10 35 00200	>1	F-1	SFW-20		Sand & Gravel
Vandecoevering Pit	R2N10 36 00900	2	RR			Sand & Gravel
Gravel Bar	R1N 7 00300	>1	F			Sand & Gravel
Wilson River Quarry	R1N 7 02400	3	F			Stone
Quarry	R1N 9 00100		F			Stone
Darby Bar	R1N 9 32 00600	>1	F-1			Sand & Gravel

Christensen Quarry	R1N 9 32 00300	1	SFW-20			Stone(riprap)
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Gravel bar	R1N10 2 00100	>1	RR			Sand & Gravel
Quarry	R1N10 8 00100	5	F			Stone
Minich Creek Site	R1N10 11 00300	3	F			Stone(basalt)
Gravel Bar	R1N10 11 00200	>1	F-1			Sand & Gravel
Quarry	R1N10 14 00300	>2	F-1			Stone
Miami Pit	R1N10 14 00400	9	F			Stone
Waggerly						Stone
Watseco Quarry						Stone
Benny	R1N10 22A 00700	3	F			Stone(basalt)
4-M Wood Products	R1N10 22A 00100	2	RR			Stone
Quarry	R1N10 35 01700	2	RR			Stone
Basalt Quarry	R1S 8 8DC 01400	>1	RR			Stone(basalt)
Smith Creek Rock Pit	R1S 8 8 00100	>1	F			Stone
Quarry	R1S 8 11 00100	2	F			Stone
N. Fork Trask	R1S 8 25 00300	2	F-1			Stone
Lorens Drift Pond	R2S 9 01400	2	F			Sand & Gravel
Landdolt	R1S 9 6 00204	>1	F-1			Sand & Gravel
Kilchis River Plant	R1S 9 6 00200	>1	F-1			Sand & Gravel
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Clear Creek #1	R1S 9 00200		F			Stone & pit run
Gravel Bar	R1S 9 20 00500	>1	F-1			Sand & Gravel
Barker Bar	R1S 9 20A 00100	>1	F-1			Sand & Gravel

Tannler Bar	R1S 9 20A 00200	>1	F-1			Sand & Gravel
Gravel Pit	R1S 9 21 00800	>1	F-1			Sand & Gravel
Donaldsons Bar	R1S 9 22 01301	25	F-1			Sand & Gravel
Widmer Bar	R1S 9 23 00600	>1	F-1			Sand & Gravel
Jacob Quarry	R1S 9 23 01200	4	F-1			Stone
Mills Bridge	R1S 9 24B 00100		F	RM		Sand & Gravel
Gypo Jersey Farms	R1S 9 34 02300	5.0	F-1			Sand & Gravel
Goeres Site	R1S 9 34 01400	10	F-1			Stone
Clarks Bar	R1S 9 35 01702	6.5	F-1			Sand & Gravel
Burdick Pit	R1S 9 35 01200	4	F-1			Stone
Balcony Quarry	R1S10 00500	10	F			pit run rock
Lighthouse Quarry	R1S10 00800	20	F			Stone (basalt)
Tower Quarry	R1S10 01200	2	F			pit run rock
Sand Bar	R1S10 26 02300	5	F-1	EST	SH	Sand
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Cape Meares Quarry	R1S10 02100	20	F			Stone(basalt)
600 Quarry	R1S10 02200	15	F			Stone (basalt)
Oceanside Quarry	R1S10 30 00500	1.5	F		SH	pit run rock
Quarry	R2S 7 03600		F			Stone
BSM #1 Quarry	R2S 8 03900		F			Stone & pit run
Hanekrat's Bar	R2S 9 01402	>1	F-1			Sand & Gravel
Gravel Pit	R2S 9 2B 00400	6	F-1			Sand & Gravel
Gravel Pit	R2S 9 2B 00900		F-1			Sand & Gravel
Werner Pit	R2S 9 4 00502		F-1			Rock
Gravel Bar	R2S 9 5 00800	>1	F-1			Sand & Gravel
Tillamook River	R2S 9 17 00800	>1	F-1			Sand & Gravel

Gravel						
Quarry	R2S 9 22 00301	1	F			Stone
Vogt Pit	R2S 9 01400	6-7	F-1			Sand & Gravel
Netarts Bay Rock Pit	R2S10 04100	2	F			Stone (basalt)
Whiskey Creek Pit	R2S10 04500	9	F			Stone
Whiskey Creek Pit	R2S10 04500	9	F			Stone(basalt)
190 Rock Pit	R2S10 06400	14	F			Stone
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Tucca Creek #1	R3S 7 01400		F			Stone & marine basalt
Dovre Peak Rock Pit #2	R3S 7 01900		F			Stone & marine basalt
Joe Creek #1	R3S 7 05300		F			Stone & marine basalt
CoastRange #1	R3S 8 00200		F			Stone & marine basalt
Quarry	R3S 8 02600		F			Stone
Clarence Creek #1	R3S 8 02700		F			Stone & marine basalt
Quarry	R3S 8 06400		F			Stone
Davidson						Stone
Doure						Stone
Kostic Quarry	R3S 8 08200	3	F-1	F		Stone(pit run)
Paraguay Pit						Stone
Borba Quarry	R3S 9 27 00200	>.5	F			stone
Andy Creek	R3S10 03600	3	F			Stone
Kimber Pit	R3S10 21 01201	4	F			Stone(basalt)
Stuwe Site	R3S10 05600	20	F			Stone
Jewel Pit	R3S10 05500		F			Stone?

Eastline Quarry	R4S 7 00400	>1	F			Stone(basalt)
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Quarry	R4S 8 3 00200	>1	SFW-20	F		Stone
Bald Hebo	R4S 9 01200		F			Stone?
New Buzzard Creek	R4S10 00300		F			Stone?
Horn Creek	R4S10 00300		F			Stone?
Borrow Pit	R4S10 12B 00501	2	F-1			Sand & Gravel
Clear Creek Quarry 41034						Stone
Baily Drift	R4S10 14 01200	>1	F-1			Sand & Gravel
Sand Pit	R4S10 18 00700	.5	F			Sand & Gravel (sand)
Sand Pit	R4S10 18 00500	6	F			Sand & Gravel (sand)
Hurliman	R4S10 19 00100	5	F-1	F		Stone(basalt)
Molly Fox Pit	R4S10 23 00503	1	F			Stone (basalt)
Cloverdale Pit	R4S10 27 03000		F			Stone
Johnson Wirth Pit	R4S10 28 01600	2	F-1			Stone(basalt)
Basalt Quarry	R4S10 28 01500	?	F-1		?	Stone(basalt)
Clear Creek Quarry	R4S10 34 01300	10	F			Stone(basalt)
Gauldy #1	R4S10 02800		F			Stone?
Gauldy #2	R5S 9 00100	3	F			Stone
Alder Creek Quarry	R5S 9 00300		F			Stone
Palanuk Pit		2				Stone
SITE NAME	TAX LOT	ACRES	ZONE 1	ZONE 2	OVERLAY	COMMODITY PRESENT
Gauldy #3	R5S 9 01600	3	F			Stone
Stillwell	R5S 9 03400		F			Stone?

Jim Creek			F			Stone?
Ogle Quarry	R5S10 15 00400	30	F			Stone(basalt)
Bodyfelt Quarry	R5S10 16 00200	5	F-1			Stone(basalt)
Bodyfelt Quarry	R5S10 16 00200	?	F-1			Stone
East Pit	R5S11 12 00200	1	F-1			Stone
West Pit	R5S11 12 00200	1.5	F-1			Stone
Neskowin Quarry	R5S11 36 01201	5	SFW-20	R-1	SH	Stone
Quarry	R6S10 00800		F			Stone
Upper Cascade Head	R6S10 00300		F			Stone?

1.4b ENERGY SOURCES

All of economic history attests to the critical role of energy consumption in advancing the material well-being of mankind, both by providing an essential input into economic growth and by satisfying a wide range of wants made possible by the resultant increases in real income. Therefore, energy must be considered a resource of indispensable value to the future of the County.

In recent years, the cost and availability of energy, including fossil fuels and hydro-electric power, has become a matter of considerable national, as well as local, interest. The Oregon Department of Energy, for example, has projected that electrical demand will rise at a rate of slightly more than two percent per year statewide. At the same time, the local electrical utilities have been notified by Bonneville Power Administration that by 1983 there will not be enough low-cost federal hydropower to go around.

As a result of such uncertainty about energy supplies, local jurisdictions can be expected to give greater future consideration to energy as a resource. The following questions, for example, suggest potential for actively coping with energy supplies at a local level: (1) How can supplies of energy be conserved? (This issue is addressed in detail in the Energy Conservation Element.) Related questions which are addressed in this section include: (2) Within the County, what are the interrelationships of energy to the economy? Furthermore, how will different kinds of economic activity impact energy requirements? (This issue is addressed in the Economic Element.) (3) What prospective energy facilities would be feasible and could be promoted in the County?

Tillamook County, like many other sections in the nation, is heavily dependent upon fossil fuels and hydro-electric power to supply energy needs. Since there are presently no major energy producing facilities in the County, essentially all energy is imported.

The following section will identify and discuss the possibility of energy facilities within the County. Potential sources that will be summarized are fossil resources (natural gas, oil and coal), nuclear, hydro-electric, ocean power, geothermal, solar, organic waste, wind and biomass (wood).

FOSSIL RESOURCES

No significant sources of coal, oil or gas are known to exist in Tillamook County. Only traces of oil or gas have been found thus far in test drillings. The thickness of sedimentary rocks is estimated at 5,000 feet in the Tillamook embayment, and oceanographic studies have established that sedimentary rock increases in thickness on the continental shelf.

Theoretically, structural elements required for entrapment of oil and gas reserves appear to be present in Tillamook County. For example, the only economic discoveries of natural gas in the State of Oregon were reported near Mist, Oregon in Columbia County in the spring of 1979, in a portion of the geologic unit called Nehalem unit. In fall-winter of 1979-80 Reichold Energy Corporation did test drilling for natural gas on Crown-Zellerbach Corporation land southwest of the City of Tillamook but again no discovery was made.

NUCLEAR POWER PLANTS

The probability of siting a nuclear power plant in Tillamook County is remote, chiefly because it would be unlikely that such a facility could meet environmental and geologic hazard safety standards set forth in state and federal rules. As an example, the Oregon Energy Facility Siting Council has designated certain areas of the state as off limits for possible siting of nuclear power plants, based on protection of select streamwater areas against thermal pollution. Areas designated as unsuitable for potential siting of nuclear power plants include areas in the vicinity of Tillamook Bay and Nehalem Bay. (See Table 4 for a summary of other energy facility impacts.)

HYDRO-ELECTRIC RESOURCES

Hydroelectric projects are generally categorized based on size. Micro-hydro projects have capacities of 100 kilowatts (KW) or less. Small hydroelectric projects are those with capacities larger than 100 KE, but

not larger than 25 MW. Small hydro frequently is interpreted to also include micro projects. Large projects are those with capacities larger than 25MW.

There are few remaining sites available for multi-megawatt hydroelectric projects, but there are many places where smaller projects can be developed. Almost any location where a stream falls more than 10 feet on a regular basis is a potential hydroelectric site. Existing non-power dams which were built for flood control or water supply can also be adapted so that they produce hydro-electric power. Water conveyance systems also offer opportunities for power generation. These existing facilities should be identified and consideration should be given to installation of generating equipment, particularly at pressure-reduction valves and sewage treatment plant outfalls.

Many of the projects which are being developed today are highhead projects which use a small amount of water. A high dam is not used to develop the head for these projects. Instead, water is diverted into a long pipeline where it flows down to and through the turbine and is discharged back into the stream. The major impacts from this type of project are caused by the reduction of flows in the stream between the diversion and the powerhouse.

There are presently no hydro-electric generation facilities in Tillamook County.

Inventories of potential hydro-electrical sites have been compiled by a number of governmental agencies. Since the agencies generally did not do any field work, the data in the inventory is often inaccurate. Nevertheless, the inventories can serve as a basis for identifying areas which may be considered for hydro-electric development.

A study concluded in April, 1979 by the Water Resources Institute at Oregon State University made a reconnaissance for possible hydro-electric power sites. Over 1,400 "reaches" or theoretically developable site in Oregon were studied for their potential, a total of 56 sites were recommended for further, more detailed examination in the near future. A total of 118 possible "reaches" were studied in Tillamook County. Of the 118 reaches, 43 were in the Nehalem Basin, 3 on the Miami, 7 on the Kilchis, 19 on the Wilson, 15 on the Trask, 4 on the Tillamook, 15 on the Nestucca, 3 on the Little Nestucca and 2 in Neskowin. One reach, located at River Mile 3.0 to 8.0 of the Miami River, passed the preliminary screening criteria used to determine sites warranting in-depth evaluation (see map of energy facilities).

In 1981, the US Department of Energy compiled a data base inventory of small scale hydro-electric resources in the Pacific Northwest. Site data in the inventory includes project name, location, stream, net head, average annual flow, installed capacity, annual power production, investment costs, average energy costs, and environmental and social acceptability. The report is titled Pacific Northwest Small Scale hydro-electric Resource and Site Ranking Information.

"The National Hydro-electric Power Resource Study" by the US Army Corps of Engineers was completed in 1982. The Corps determined that 557 sites in Oregon have the physical characteristics necessary for development of projects of 1 MW or larger. Of these preliminary sites, 84 were found to be economically feasible and relatively free of non-economic constraints to development.

Three of these sites were located in Tillamook County. The Oregon Department of Energy evaluated the sites for potential environmental constraints. All were found to have environmental constraints: the Fox Creek on the Wilson River site because of steelhead, chinook and coho habitat; Ginger Peak on the Trask because of fish habitat and potential designation as a state scenic river; site T-61 on the Trask River because of fish habitat and potential designation as a state scenic river.

Hydro-electric sites can conflict with a number of other in-stream water uses. The most important of these is fish habitat. Hydro-electric sites can restrict upstream fish migration. They can also impact stream flow characteristics, thus indirectly affecting the suitability of a stream as fish habitat. Fish habitat is an important consideration in Tillamook County because almost all the major streams support a strong run of anadromous fish.

Dams can conflict with the scenic character of a river. For example, hydro-electric dams are not allowed on rivers that have been designated by the State or Federal government as wild or scenic rivers. Dams would generally be located in portions of the County zoned for forest use. If the hydro-electric project involves impoundment, some timber land could be replaced by a reservoir.

For the purposes of Goal 5, these dam sites are considered "1B sites".

The County will rely primarily on State and Federal regulatory procedures to fully address the economic, environmental, social and energy consequences of a hydro-electric project on other in-stream water users. The County will participate in any such process.

The Oregon Department of Energy is developing a recommended procedure and standards for counties to evaluate small-scale hydro projects.

When this information becomes available, the County will review it for possible incorporation into the Zoning Ordinance.

OCEAN POWER

Most energy experts seem to agree that power generated from ocean waters or ocean tides is an extremely experimental proposition. Technology is not yet advanced to the point where a facility could be developed, although some research projects can be expected in the future to test model prototypes. Other limiting constraints to ocean power are apparent environmental constraints, both in terms of building a system which stays together, and also because a successful large-scale generative facility will require covering or utilization of large areas of the open ocean. In summary, development of an ocean power generative facility serving Tillamook County is improbable in the foreseeable future.

GEOHERMAL RESOURCES

The County is not within an identified geothermal resource zone.

SOLAR POWER FACILITY

Although a largely untapped potential exists for small-scale solar development projects, a large-scale solar generative facility is very unlikely. Known constraints include lack of technology, system costs, climate, and environmental and aesthetic impacts. Attention to individual and small-scale solar projects is an excellent and necessary step towards conserving other forms of energy. The energy element addresses this.

ORGANIC WASTE

Many thousands of tons of cow manure are produced by the County's dairy farms each year. As oil and petrochemical prices rise, this "resource" may become increasingly attractive as a fuel source. A dairy farm owned by the State of Washington has produced methane gas from cow manure for several years. The gas is used to heat the dairy buildings and provide process heat. The future of this energy source is dependent on the development of usable technology.

WIND POWER

Year around, as a raw source of potential energy, wind is a conspicuous candidate for the development of energy facilities.

Studies of wind flow patterns indicate that the strength of wind flow should be capable of providing a significant amount of energy on a fairly reliable basis, particularly if units are distributed systematically over a larger, statewide basis (Baker and Henson).

At present, known possible constraints on the use of wind energy include: expected price of generative machines, the problem of building the system securely so that it can withstand severe stormwinds, equipment reliability, and some of the best possible sites such as headlands, are also important aesthetic resources.

At the present time there are no identified wind generation sites in Tillamook County. (The Tillamook PUD has recently decided to discontinue the operation of the test wind generation facility at Agate Beach in Lincoln County.) This project was a joint venture between several PUDs and Alcoa Aluminum.

The Oregon Department of Energy is presently (1982-83) conducting an inventory of potential wind generation sites on the Oregon Coast. Should sites be identified in Tillamook County, these sites would be included in the inventory at the time of the Plan's first update. A complete Goal 5 evaluation would be completed at that time.

BIOMASS (FOREST PRODUCTS) ENERGY POTENTIAL

Interest Has also been expressed locally in the possibility of biomass potential, and it is likely that at least small-scale facilities could be developed in the future. Although a large quantity of raw material such as alder exists in the woods and is currently treated as a nuisance plant growth, it may prove to be economically difficult to bring large quantities of this material to a generating facility.

Additional research of biomass potential will undoubtedly be carried on at a federal level, and some continued local interest and involvement in this research and its implications for Tillamook County may be warranted.

1.5 INVENTORY OF WATER RESOURCES

1.5a SURFACE WATER

Except for valley bottoms along coastal streams and around estuaries, the topography in the County consists of generally rugged, water-cut, and deeply dissected mountainous terrain. Many of the stream systems are hydrologically mature, having eroded back into their headwater areas to short steep slopes, with sharp divides between adjoining stream systems.

Streams drain into the Pacific Ocean. Drainages include the following major streams: the Little Nestucca and the Nestucca Rivers flowing into Nestucca Bay; the Tillamook, Trask, Wilson, Kilchis, and Miami Rivers flowing into Tillamook Bay; and the Nehalem River flowing into Nehalem Bay.

The County has heavy precipitation resulting from the temperature moderating influence of the Pacific Ocean and from intensification of rainfall induced by the Coast Range. The average annual precipitation ranges from 90 inches along the coastal area to a high of over 150 inches in headwater areas. The precipitation is extremely seasonal, with 75 to 80 percent of the annual precipitation occurring during the months of October through March.

The average monthly discharge patterns for the major streams closely follows precipitation patterns. Once the late fall rains have saturated the soil, runoff varies directly with precipitation. Peak flows occur during the months of December, January and February. After February, streamflows begin to recede, reaching their lowest point in August and September.

The following graphs indicate both the natural flow for the major drainages and the maximum potential consumption based on all legal claims for water. This information indicates that potential water consumption on all drainages is at or already exceeds water resource availability. Potential overappropriation of water is most serious on the Little Nestucca, Tillamook and Miami Rivers. More detailed information regarding water quality is presented in the Air, Water and Land Resources Element.

1.5b GROUNDWATER RESOURCES

Accumulation of the rainfall into the ground and movement, quantity and quality of groundwater are determined in large part by the geology of the region in which it occurs. In general Tillamook County is poor in groundwater because most of the County's geology consists of "tight" fine-grained marine sedimentary and volcanic rocks.

Only in areas not dominated by the upland topography's rock formation of either marine sedimentary or volcanic rock can one reasonably hope to locate groundwater resources. Production of groundwater in Tillamook County is greatest in the floodplains surrounding Tillamook where a high rate of recharge is provided by the heavy rainfall and the several rivers. Productive wells have been developed to supply community water systems. Information regarding the well water yields and groundwater resources in the Tillamook area is discussed in Bulletin 74 by the Department of Geology and Mineral Industries.

Reprinted is a map indicating well yields and depth to aquifer for the Tillamook area. The groundwater potential of the Tillamook basin could be developed to yield much more water than is now withdrawn wells.

Other regions of lesser potential include the floodplains of major rivers, small dune fields, dune sand south of Tillamook Head on the Nehalem Spit, and in areas west of Sand Lake and south of Pacific City, containing sufficient groundwater to be developed. Dune sand areas where impermeable bedrock is present above sea level beneath dune sand areas, such as north of Manzanita and north of Sand Lake toward Cape Lookout, will not accumulate groundwater in significant quantities.

Records of 124 county wells are found in the 1972 Bulletin 74 and records are kept of well information by the State Water Resources Department. Of the 124 wells listed for the county, 53 produce in the 5 to 24 gallon per minute (GPM) range, and 24 (all in the Tillamook basin) yield more than 100 GPM.

Most successful wells produce groundwater quality that has satisfactory odor, taste, color and temperature characteristics. Iron, sulfur and salt are the principal undesired elements that occasionally do occur in county groundwater. Wells developed in dune fields, in general can anticipate the greatest risk that the water quality will not be satisfactory for consumption.

Four communities in the County, Manzanita, Rockaway, Garibaldi and Bay City, have established wells for their public water supplies. The water in these wells meets the requirements of the Federal Environmental Protection Agency in terms of turbidity, suspended solids, biological purity and mineral content. The Manzanita and Rockaway wells are located in sand dunes, while the Garibaldi and Bay city wells are drilled into the alluvium of the Miami and Kilchis Rivers, respectively. Dune wells previously used by the City of Rockaway are not presently in service because of pollution problems.

1.5c LAKES

The inventory of lakes in Tillamook County shall be as published in "Lakes of Oregon, Volume One, Clatsop, Columbia and Tillamook Counties", prepared by the United States Geological Survey in 1973. This inventory included 24 bodies of water ranging in size from 65 acres down to .5 acres. The material contains a complete description of each lake's location, size, and characteristics. Conflicting uses are discussed in the Fish Habitat section.

1.5d WATERSHEDS

Map 15 shows the location and extent of watersheds in Tillamook County. The primary use in most of these watersheds is forestry. Some watersheds are also important because they are the source of domestic drinking water. Tillamook County is relying on the Forest Practices Act to moderate the impact of forestry on other watershed values.

2.0 STATE AND FEDERAL PROGRAMS

2.1 EXISTING STATE PROGRAMS

2.1a ENVIRONMENTAL RESOURCES

1. The Department of Fish and Wildlife acquires and manages land for deer and elk winter ranges, upland game and waterfowl management areas, fish management areas, public recreational uses, fish hatcheries and operational facilities. It also obtains control of land through agreement with other public agencies and private individuals. The department's programs in fish and wildlife management include protection and enhancement of the environment, protection and enhancement of habitats and acquisition of key habitats. Technical assistance provided by the department consists primarily of identifying commonly found fish and wildlife species, outlining important habitats and identifying the compatibility of various land use practices with habitat types. Assistance is provided to local governments through county coordinators.

2. The State Marine Board issues permits for boating on State Scenic Waterways and Federal Wild and Scenic Rivers.

3. The Division of State Lands is responsible for management of submerged and submersible lands underlying navigable waterways in Oregon.
 No person or governmental body can remove any material from this area or fill in any waters of the state without a permit from the division. Permit applications are referred for local review and comment and are generally issued with conditions which minimize or mitigate adverse environmental impacts.
 The Natural Heritage Advisory Council studies state lands which might fulfill the need for certain types of natural areas to be preserved. Suitable state-owned areas are brought to the State Land Board for possible designation as Natural Area Preserves. The first Oregon Natural Heritage Plan was issued by the Council in March, 1981.
 Special use permits are issued by the Division for certain activities on any state-owned land including archaeological excavation and treasure trove searches. The division provides information and technical assistance to local governments.

4. The State Parks Branch administers the state scenic waterways system. Along the waterway, a corridor extending one-quarter mile on each bank of the river is subject to a land use permit issued by the Transportation Commission. Landowners in the corridor apply to the branch for permission to make land use improvements or changes. no scenic waterways have been designated in Tillamook County.
 The state recreation trails program involves planning, acquiring, and developing trails, right-of-way or easements for hiking, horseback riding and bicycling. Officially designated trails in Oregon and Tillamook County are the Oregon Coast Trail between the Columbia River and Tillamook Bay and Cape Lookout State Park.
 The branch serves as the historic preservation office for Oregon. The program consists of a statewide survey and inventory of historic properties and processing of nominations to the National Register of Historic Places, an environment review process for federal or federally sponsored projects to ensure protection of properties listed in or determined to be eligible for the National Register and administration of the state law enabling special tax assessment for historic properties listed in the National Register. It administers the 50% federal matching assistance for local government surveys and for acquisition or restoration of historic properties listed in the National Register. It also administers the state museum aid program which encourages the acquisition, development, maintenance and use of historic museums by county governments and provides grants of up to 50% of expenditures.
Copy missing out of recreation trails and for site inspections relating to the development of local historic areas and archaeological sites.

5. Under the State Forest Practices Act, the Department of Forestry maintains a program of harvest operation inspections to encourage forest management, road building, and logging practices which enhance forests, air, land and water resources within the state's forest lands. A systematic inspection program is conducted and priority efforts have gone to monitoring reforestation, roads, and harvesting near important streams. Continued emphasis on maintaining water quality is pursued as well as regular contact with industrial users to achieve compliance with regional regeneration rules and to maintain problems prevention efforts.

2.1b ECONOMIC RESOURCES

1. The Department of Economic Development provides technical assistance to local governments for economic planning and development activities. It has prepared a

manual and visual materials to aid communities in economic development planning and maintains an economic data clearing house for use at the local level.

2. The Department of Energy provides technical assistance to local governments by means of a guidebook and visual materials. It will respond to information request, meet with local officials and provide other energy-related services when possible.
3. Siting standards use by the Energy Facilities Siting Council (EFSC) are summarized below. EFSC has jurisdiction over major oil and gas pipelines and over large electrical generation transmission facilities. For facilities not governed by EFSC standards, site suitability must be derived from management or regulatory standards of interested state authorities.

EFSC STANDARDS FOR ELECTRIC POWER PLANTS

1. There must be a need for the proposed facility.
2. Risk of injury to the public health and safety will be reduced to the extent which is reasonably practicable.
3. Disruption or adverse impacts on the environment will be reduced to the extent which is reasonably practicable. Endangered plants or species locations may not be used.
4. Beneficial use of wastes and by-products will be made.
5. Siting will conform to statewide planning goals and comprehensive land use plans and zoning ordinances of political subdivisions in which the facility is to be located.
6. Historic or archaeological sites are not to be adversely impacted if the facility can be relocated.
7. Water use shall not infringe on existing water rights of others.
- 8-9. These standards refer to the ability of the applicant to complete the project.
10. The project will not severely disrupt the social and economic well-being of affected communities and individuals.

The Energy Facility Siting Council standards and LCDC goals, together emphasize the significance of county planning.

4. The Department of Geology and Mineral Industries issues permits to surface mine operators provided that the proposed mining plan conforms with county laws and also regulates the reclamation of surface mining operations to ensure that mining sites are restored to beneficial uses. The department issues permits to drill operators and oversees the technical and engineering aspects of the placement, drilling and operation of oil, gas and geothermal wells. Permits **must be reviewed** for compliance with the goals by affected local governments. The department responds to requests for information by jurisdictions to the extent that needed information is readily available. Its library is open to the public.
5. The Division of State lands is responsible for issuing exploration permits and leases on all state owned lands whether controlled by the division or any other state agency for sand and gravel, metallic and other minerals, oil and gas, and geothermal resources. Applications for leases require submission of an environmental impact report and consideration of the report by the affected state agencies and local governments. Mineral exploration and development may occur only in areas where permitted by local comprehensive plans.

2.1c WATER RESOURCES

The Department of Water Resources administers the state program. River basin policy statements are formulated by the Water Policy Review Board. These policy statements are similar to land use plans because they define policy for water use and water resource development for each drainage basin. These statements generally include the classification of unappropriated portions of natural streamflow for highest and best uses, the establishment of minimum perennial streamflows to support aquatic life or to minimize pollution and the designation of quantities of water for specific beneficial uses. Specific information on water availability necessary to guide local planning efforts and individual development projects is often not included in the policy statements. Management guidelines are being developed to meet this need for specific information on water use and water availability.

The Director of Water Resources may initiate proceedings for the determination of a critical groundwater area whenever groundwater levels are declining or have declined excessively, wells of two or more groundwater users interfere substantially, the groundwater supply is being or is about to be overdrawn or groundwater is polluted contrary to the public health, safety or welfare. The Director, by order, can declare critical area boundaries and provision for closing the area to further development and groundwater use.

The department provides technical assistance and information to local governments in the form of basin policy statements, drainage basin reports and surface water and precipitation records.

2.2 EXISTING FEDERAL LEGISLATION

The National Environmental Policy Act of 1969 (NEPA) contains an affirmative statement of federal environmental policy coupled with action-forcing procedures, of which the most important is the requirement that an environmental impact statement be prepared in connection with any proposal for major federal action having a significant impact on the environment.

The Endangered Species Act of 1973 may be used to prevent federal agency action which would modify the critical habitat of one of the more than one hundred species of mammals, birds, fish and reptiles which have been officially listed as "endangered" or "threatened". National Wildlife Refuges were first authorized by Executive Order in 1909 and have been authorized through various Federal Acts since that date.

The National Historic Preservation Act of 1966 provides for federal consideration of historic values prior to the alteration or demolition of selected buildings or districts, and provides federal grants for preservation activities.

The National Wild and Scenic Rivers Act of 1968 provides for the study, designation and protection of free-flowing rivers having special scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values.

As listed in Sections 1.24 and 1.25 of this plan element, the Cascade Head Scenic Research Area was established by Congress in 1974, and potential wilderness areas are studied for possible designation in the National Wilderness preservation System under the Wilderness Act of 1964.

The Coastal Zone Management Act of 1972 affirms a national interest in the effective management, beneficial use, protection, and development of the coastal zone, and provides assistance and encouragement to the coastal states to develop and implement rational programs for managing their coastal zones.

3.0 NATURAL RESOURCES FINDINGS AND POLICIES

The County's Goal 5 policies outline its future direction for protecting natural resources values. However, no implementing measures to apply these policies can be instituted for those specific sites which have not been inventoried in accordance with the requirements of Goal 5, OAR 660-16-000.

Some specific sites are already protected through existing state or federal agency programs. County policy supports continuation of state and federal protection for those sites.

County policy also supports existing state or federal agency programs for protection of non-site-specific resources. One non-site-specific resource, riparian vegetation, is protected by a new County implementing

measure, Section 4.080 of the Land Use Ordinance, requirements for protection of water quality and streambank stabilization. This is also an implementation requirement of Goal 17 within the County's coastal shorelands area

3.1 ENVIRONMENTAL RESOURCES

3.1 Open Space

3.1a.1 Findings

a. Open Space Needs

The need for open space in Tillamook County must be considered in the context of the whole Comprehensive Plan. There is a need to maintain lands in agricultural and forest production, a need to establish watersheds and scientific research areas, a need for parks and recreation areas for both the permanent population and the increasing numbers of visitors, a need to prevent construction in areas where public safety is a factor, such as floodways and active foredunes, and a need to separate competing uses such as farms and subdivisions.

The location and specific amount of these lands were established through the planning process, after examination of each area. For example, Tillamook County's five estuaries were divided into estuarine management units, and a management designation assigned on the basis of biophysical characteristics, economic needs and state law. Forest and agricultural lands were similarly evaluated, and protected through the Plan and Land Use Ordinance. The needs for recreation open space were established by examining the growth of the permanent population and the projections of the tourist industry. Needs for the provision of public safety open space were dictated by the actual acreage of floodways or active foredunes.

In total, the various categories of open space constitute most of the lands in Tillamook County (see Figure 1), and will satisfy the needs of the residents and visitors into the foreseeable future.

b. Open Space Tax Assessment

The State Legislature in ORS 308.740 has defined open space land and in doing so has enumerated the public benefits that result from encouraging open space. As defined by the Legislature, open space land is "any land area, the preservation of which in its present state would:

- (1) Conserve and enhance natural or scenic resources;
- (2) Protect air or streams or water supply;
- (3) Promote conservation of soils, wetlands, beaches or tidal marshes;
- (4) Conserve landscaped areas, such as public or private golf course, which reduce air pollution and enhance the value of abutting or neighboring property;
- (5) Enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open space;
- (6) Enhance recreation opportunities;
- (7) Preserve historic sites;
- (8) Promote orderly urban or suburban development; or
- (9) Return in their natural state tracts of land, on such conditions as may be reasonably required by the legislative body granting the open space classification."

The Legislature's reasons for providing a special tax assessment for land retained in pen space are stated in ORS 308.745.

"The legislature hereby declares that it is in the best interest of the state to maintain, preserve, conserve and otherwise continue in existence adequate open space lands and the vegetation thereon to assure continued public health by counteracting pollutants and to assure the use and enjoyment of natural resources and scenic beauty for the economic well-being of the state and its citizens. The legislature further declares that it is in the public interest to prevent the forced conversion of open space land to more intensive uses as the result of economic pressures caused by the assessment thereof for purposes of property taxation at values incompatible with their preservation as such open space land, and that assessment practices must be so designed as to permit the continued availability of open space lands for these purposes, and it is the intent of ORS 308.790 to so provide."

Copy Missing its comprehensive plan. Land so designated, as long as it fits the legislative intent, is eligible to receive open space assessment (ORS 308.740). Land which has not been designated as open space assessment if the Planning Commission and Board of Commissioners decide, after public hearings, that it fits the definition of open space listed above (ORS 308.755). Land which is designated as open space in the County's Comprehensive Plan does not have to undergo a separate hearings process in order to receive an open space assessment. By designating land as open space in the Comprehensive Plan, the County will simplify the process for owners of such land to receive an open space assessment. To be approved or disapproved, the granting authority shall weigh the benefits to the general welfare of preserving the current use of the property, which is the subject of the application, against the potential loss in revenue which may result from granting the application.

Land in several County zones fits the definition of open space land included in ORS 308.740. The applicable zones include Farm (F-1), Forest (F), Small Farm and Woodlot 20-Acre (SFW-20), Recreation Management (RM), Estuary Natural (EN0, Estuary Conservation Aquaculture (ECA), and Estuary Conservation 1 (EC1). In addition, lands which are identified within the coastal shorelands boundary as major marshes, significant wildlife habitat, coastal headlands, exceptional aesthetic resources and **copy missing** nition of open space lands in ORS 308.740. By classifying these lands as open space land, the County will be making them eligible to receive an open space assessment if application is made in accordance with ORS 308.750 or ORS 308.755 and other provisions of ORS 3008.760 to ORS 308.790 are met. Any portion of this land that changes use under the open space classification could result in withdrawal of the classification and open space assessment. Examples include selling portions of the land as residential homesites, placement of a commercial building on the land which is not part of the open space use or allowing an airstrip on a portion of the land.

3.1a2 POLICIES

- a. Tillamook County recognizes the economic and aesthetic value of open space as it relates to planning for agriculture, forestry, estuaries and other open space resources.
- b. Tillamook County designates lands within the Farm, Forest, Small Farm and Woodlot 20-Acre, Recreation Management, Estuary Natural, Estuary Conservation Aquaculture, and Estuary Conservation 1 zones as open space lands. Lands within the coastal shorelands boundary that are identified as major marshes, significant wildlife habitat, coastal

headlands, exceptional aesthetic resources and historical and archaeological sites are also designated as open space lands.

- c. Tillamook County will encourage open space in urban and urbanizing areas by establishment of urban growth policies and development standards. Development standards shall encourage park areas and clustering of development, where appropriate, and shall also establish setbacks for yards and streams.

3.1b FISH AND WILDLIFE HABITATS

3.1b.1 FINDINGS

- a. The economic value of fish and wildlife resources is recognized and described in Section 1.22 of this plan element.
- b. Select areas recognized by the County as critical to fish production are: estuaries, streams, rivers, lakes and reservoirs. Nonaquatic areas recognized by the County as critical to fish protection include unstable headwater areas and riparian vegetation corridors.
- c. Select areas recognized by the County as critical to wildlife protection include: estuaries, streams, rivers, lakes, reservoirs, associated riparian vegetation, deer and elk winter grazing areas, and identified nesting areas for eagles, hawks, herons and western snowy plover.
- d. County land use designations most compatible with critical fish and wildlife habitat are: Forestry, Agriculture, Small Farm and Woodlot, Estuary Natural, Estuary Conservation and Recreation Management.
- e. Rural Residential land use designations, where appropriate, can also provide habitat suitable for certain types of important fish and wildlife species if special precautions and measures to ensure environmental quality, such as open space retention and consideration of water quality, are incorporated into the development.

3.1b2 POLICIES

- a. To ensure that future development does not unduly conflict with major and peripheral big game range, the County will:
 - 1. Designate most of the County's forest lands Forest, which has a minimum lot size requirement of 80 acres.
 - 2. Require that outright and conditional uses in the SFW-20 zone be found to be consistent with the maintenance of big game habitat.
 - 3. Require that conditional uses in the Forest zone and outright and conditional uses in the SFW-20 zone be sited so that conflicts with big game range are minimized.
 - 4. Submit conditional uses in the Forest zone and outright and conditional uses in the SFW-20 zone to the Oregon Department of Fish and Wildlife for their comments on potential impact on big game range.
 - 5. Submit all proposed plan/zone changes of land zoned Forest or Small Farm Woodlot-20 to a more intensive zone, e.g. Rural Residential, to the Oregon

Department of Fish and Wildlife for their comments on potential impacts on big game range.

- b. The County shall rely on strict enforcement of the Forest Practices Act to protect riparian vegetation along Class I streams and lakes and Class II streams affecting Class I streams from potential adverse effects of forest practices.
- c. To protect riparian vegetation along streams and lakes from activities not covered by the Forest Practices Act, the County will require an appropriate setback for non-water-dependent uses.
- d. The County shall rely on the State Department of Water Resources to insure that minimum stream flow standards required for the maintenance of fish habitat are developed and implemented.
- e. The County will rely on the Army Corps of Engineers and Division of State Lands permit processes to insure that proposed stream and lake alterations such as filling, draining, channelization and bridges do not adversely affect the stream's or lake's value as fish habitat.
- f. New development shall not restrict existing public access to rivers, streams or lakes. new developments are encouraged to provide additional public access to rivers, streams and lakes.
- g. The County will rely on coordination provided through the Forest Practices Act between the Department of Forestry, Oregon Department of Fish and Wildlife and affected property owners, and any supplemental agent to protect sensitive nesting habitat (Bald Eagle nests and roosts, heron rookeries and Northern Spotted Owl nests).

3.1c SIGNIFICANT NATURAL AREAS

3.1c.1 FINDINGS

As provided in Section 1.3c, the County is relying on the natural areas data summary of the state heritage program to designate the bulk of the significant areas either requiring protection or further inventory to determine the need for protection.

3.1c.2 POLICIES

- a. Significant natural and scientific areas should be set aside for preservation and managed so as to protect scarce and representative ecosystem types for future generations.
- b. The County will cooperate with appropriate state and federal agencies and private groups to ensure that examples of the full range of Tillamook County's natural ecosystems are preserved for future study and enjoyment.
- c. The County shall protect the three natural sites identified: Blue Lake Lookout Rock Garden, H.B. Van Duzer Forest Corridor, and Kilchis River Park, by placing them in the Recreation Natural zone. Other protection measures which may be used by the County, when appropriate, include acquisition of property in fee simple.

3.1d SCENIC VIEWS AND SITES

3.1d.1 FINDINGS

Areas of scenic importance in the County are:

- a. Areas with strong coastal association, as described in Visual Resource Analysis of the Oregon Coastal Zone, OCCDC, 1974. (This area is covered by the Coastal Shorelands element.)
- b. Cascade Head Scenic Research area. (This area is covered by the Coastal Shorelands element.)
- c. Areas designated by the Board of Forestry as Scenic Conservation and Munson Creek Falls Park.

3.1d.2 POLICIES

- a. The County will rely on the Board of Forestry's Scenic Conservation designation to protect the scenic qualities of sites so designated. The State Department of Forestry shall notify the County of any proposal to change a Scenic Conservation designation for sites listed in the Comprehensive Plan as having scenic values. Any designations change by the Department of Forestry shall be preceded by a full evaluation under the Goal 5 Administrative Rule.
- b. The County supports designation of scenic corridors by federal and state land management agencies for land under their jurisdiction.
- c. The County shall include the study of potential scenic corridor designations as part of its arterial road network improvement program.
- d. It is the County's intent to continue its lease agreement with Publishers Paper for the Munson Creek Falls Park site.
- e. The County will protect the identified scenic resource values at Camp Cooper through the application of the Recreation Natural zone.

3.1e WILDERNESS AREAS

3.1e.1 FINDINGS

The Oregon Islands Wilderness is the only designated wilderness in Tillamook County. The area is covered by the Plan's Coastal Shoreland element. Three areas were studied for potential wilderness status under the U.S. Forest Service's RARE II process. None of these areas were recommended for wilderness designation.

3.1e.2 POLICY

- a. The County supports the efforts of the Federal Government to manage the Oregon Islands Wilderness Area as nesting habitat for sea birds.

3.1f Wetlands

3.1f.1 Findings

The County contains a limited number of significant freshwater wetlands that are located outside of the Coastal Shoreland area.

3.1f.2 Policies

- a. The County will protect identified significant freshwater wetlands, for which no conflicting uses have been identified, from incompatible uses.
- b. The areas identified as Site 14 in Section 1.3b.3 of this Comprehensive Plan element will be managed in a manner consistent with protection of wildlife values and maintenance of agricultural practices on adjoining land. The following requirements will be observed in this area:
 - 1. At least a two foot depth of water will be maintained in the sloughs at all times of the year.
 - 2. The property owner shall, with the assistance of the Tillamook County Soil and Water Conservation District and the Oregon Department of Fish and Wildlife, establish a riparian buffer within the fifteen foot strip along each side of the sloughs. This buffer area shall not be managed as pasture. The control of noxious weeds within this area is permissible.
 - 3. Actions necessary to maintain drainage in these sloughs such as dredging and removal of debris is permissible. Disturbance of the riparian buffer in conjunction with these actions is permissible. The property owner shall consult with the local Oregon Department of Fish and Wildlife and the Soil and Water Conservation District before undertaking these actions.
- c. The Goal 5 process is being delayed for wetland sites 17, 22, and 24 identified in Section 1.3b.3 of this plan element because of a lack of complete information. The Goal 5 process will be completed for these sites by January 1, 1984. The Goal 5 process will be completed before the County approves any land use actions on these sites.
- d. The County will notify the Division of State Lands of any pending permit or land-use decision affecting wetlands identified on the Statewide Wetland Inventory, as defined in Section 1.3b.3 of this plan element.

3.1g RECREATION TRAILS

3.1g.1 FINDINGS

Hiking and biking recreation trails have been identified in Section 1.3h of this plan element.

3.1g.2 POLICIES

- a. Tillamook County will cooperate with the Oregon Department of Transportation in planning for the location of a specific route for the Coast Range Trail. Should a final route be designated by the Oregon Department of Transportation, Tillamook County will amend its plan to recognize the trail. The amendment will include all requirements of the Goal 5 Administrative Rule.
- b. Tillamook County supports the efforts of the Department of Transportation to maintain the existing portion of the Oregon Coast Trail.
- c. Tillamook County encourages the completion of the Oregon Coast Trail in Tillamook County. Negotiations between property owners and the Oregon Department of Transportation are necessary before the location of a final route can be determined. At such time as an exact trail route is finalized and agreed upon by property owners, the County will amend its plan to include the trail route. The amendment will include all requirements of the Goal 5 Administrative Rule.

- d. The County encourages the State Department of Transportation to continue the portion of U.S. Highway 101 used as a bike route, by widening highway shoulders, or where feasible constructing separate bike trails.
- e. The County continues to disapprove of the use of County roads as part of the Coastal Bike Route until such time as the State provides funds for road improvements necessary to establish safe biking conditions.

3.1h Scenic Waterways

3.1h.1 Findings

The Upper Nestucca River has been identified as an Oregon Scenic Waterway by the Oregon Parks and Recreation Commission, and a management plan has been adopted. The Nehalem, Nestucca, Trask and Little Nestucca Rivers have been identified as potential scenic waterways by both the State and Federal government. In addition, the Salmonberry River was considered by the State for scenic waterway designation in 1979.

3.1h.2 Policies

- a. The County will cooperate with the State and Federal agencies during any detailed study, including formal application of the Goal 5 Administrative Rule, of the potential for designating the Nehalem, Nestucca, Trask or Little Nestucca Rivers as wild or scenic waterways
- b. The County is opposed to the designation of the Salmonberry River as a State scenic waterway. It will make its views known during any State study or designation process. (This process shall include formal application of the Goal 5 Administrative Rule.)
- c. The County will, where appropriate, adopt regulations to assist with implementation of the management plan for the Nestucca River Scenic Waterway.

3.1i HISTORIC AREAS

3.1i.1 FINDINGS

- a. The County recognizes its historical and archaeological heritage and supports the efforts of private and public organizations, including the Tillamook County Museum, to preserve this heritage for present and future generations.
- b. Significant historical buildings and sites in addition to those listed in Section 1.26 and 1.27 of this plan element shall be considered for possible nomination to the state historical and archaeological registers by the local chapter of the historical society.
- c. Voluntary conservation, restoration and adaptive use of historical and archaeological sites is encouraged, and may warrant special property tax assessments. (For example, ORS 358.475 concerning rehabilitation of eligible historic properties and ORS 308.740-790 concerning open space conservation of historic or archaeological resources.)

3.1i.2 POLICIES

- a. Should funding become available, Tillamook County will cooperate with the State Historic Preservation Office and the Tillamook County Pioneer Museum in improving the County's inventory of historic buildings and sites. Such a study would re-examine the sites presently on the State Inventory, as well as considering additional sites or structures.
- b. Tillamook County encourages the State Parks Division to place commemorative plaques at identified historic sites.
- c. Tillamook County encourages the private restoration and re-use of historic properties.

- d. Tillamook County will establish a review procedure for historic buildings proposed for demolition.
- e. The County shall review alterations and additions to structures identified in the Comprehensive Plan as bearing significant historic and architectural merit. (Isom/Fox Cottage, Povey Cottage, Wentz Cottage, Doyle Cottage, Churchill Cottage and the Tillamook Naval Air Station). The purpose of the review is to ensure the compatibility of a proposed alteration with the maintenance of a historic building's character. The review shall be carried out by the Planning Director and the Curator of the Pioneer Museum. The following activities shall be reviewed; exterior alterations (except painting); additions to the building; and construction of auxiliary buildings. The criteria used in evaluating the proposed alteration are: a) use of exterior materials and details that are consistent with the building's historical character; and b) maintenance of the buildings predominant architectural features.
- f. The restoration of historical waterfront areas, including the provision for public access, is encouraged where it is compatible with adjacent estuary values and uses.

3.1j CULTURAL AREAS

3.1j.1 FINDINGS

- a. The County recognizes its historical and archaeological heritage and supports the efforts of private and public organizations, including the Tillamook County Museum, to preserve this heritage for present and future generations.
- b. Significant historical buildings and sites, cultural landmarks and archaeological sites in addition to those listed in Section 1.26 and 1.27 of this plan element shall be considered for possible nomination to the state historical and archaeological registers by the local chapter of the historical society.
- c. Voluntary conservation, restoration and adaptive use of historical and archaeological sites is encouraged, and may warrant special property tax assessments. (For example, ORS 358.475 concerning rehabilitation of eligible historic properties and ORS 308. 740-790 concerning open space conservation of historic or archaeological resources.)

3.1j.2 POLICIES

- a. The County will review land use activities that may affect known archaeological sites. It is determined that a land use activity may affect the integrity of an archaeological site, the County shall consult with the State Historic Preservation Office on appropriate measures to preserve or protect the site and its contents.
- b. Indian cairns, graves and other significant archaeological resources uncovered during construction or excavation shall be preserved intact until a plan for their excavation or reinternment has been developed by the State Historic Preservation Office.

3.2 ECONOMIC RESOURCES

3.2a MINERAL AND AGGREGATE RESOURCES

3.2A.1 FINDINGS

The production capability of the mineral and aggregate resources of Tillamook County is described in Section 1.31 of this plan element. The importance to the local economy of the resource is well-documented. Stream-bed sand and gravel is particularly important since this

resource is renewable and its removal is beneficial to maintenance of other resource values of the County's major streams.

3.2a.2 POLICIES

- a. The County recognizes the need for a detailed study of the County's aggregate resources. The County will work with the State Department of Geology and mineral Industries in initiating such a study.
- b. The County will develop an aggregate site protection overlay zone to protect important aggregate resource areas.
- c. Mineral and aggregate resource sites shall be located and designed so that the potential noise, dust, visual and traffic impact on adjacent residential and commercial uses are minimized.
- d. Mineral and aggregate resource sites to be located along State Highway shall be designed to minimize their visual impact.
- e. New mineral and aggregate extraction operations shall include a restoration program as specified by ORS 517.750 to 517.900.
- f. Removal of material from the bed or banks of a waterway shall be governed by the requirements of ORS 541.605 to 541.665.
- g. New residential and commercial development within 1000 feet of established surface mining operations shall be reviewed to insure that their location is compatible with the surface mining operation.

3.2b ENERGY SOURCES

3.2b.1 FINDINGS

Section 1.32 of this element described the potential for new electrical generating facilities in the County. It should be noted that energy facilities are costly to build and require careful advance planning by sponsors. As a result, proposals for siting of energy facilities normally become public knowledge well before formal decisions must be made.

At present there are no impending energy facility projects within the County. However, an application has been made to the Bonneville Power Administration for funds for feasibility studies of fish passage requirements at small scale hydro-electric generation facilities and the utilization of solid waste at the County disposal site for steam electric generation.

Should detailed studies for location of a major energy project begin, and should the County feel that an independent and detailed project impact assessment could be of assistance in reaching a siting decision, the State has indicated that planning support may be available.

It is state policy that local comprehensive plans shall be a basic consideration in issuing permits, including permits for siting of energy facilities. Because Tillamook County is within the coastal zone management area such is also federal policy under the consistency requirements of the Coastal Zone Management Act.

With or without new energy facilities, conservation of energy should remain a priority of comprehensive planning. The plan can also serve to promote necessary energy facilities, in particular if sites suitable for hydro-electric and wind generation facilities are protected from types of development which might preclude future installation.

3.2b.2 POLICIES

- a. Tillamook County shall encourage protection of potential energy resource areas for future development opportunities.
- b. Development shall not be allowed to impair or degrade the feasibility of potential wind generating facilities at sites identified as appropriate for such generation.

- c. Development shall not be allowed to impair or degrade the feasibility of potential hydro-electric generating facilities as sites identified as appropriate for such generation.

3.3 WATER RESOURCES

3.3a FINDINGS

Tillamook County hereby adopts the findings of the Oregon State Water Resources Board for the North Coast Basin, dated may 8, 1981, as the County's findings as follows:

3.31.1 TILLAMOOK SUBBASIN

- a. Existing municipal water use is concentrated among the subbasin's littoral (coastal) fringe.
- b. Out-of-basin diversions to the Willamette Valley for municipal purposes exist in the upper Trask and Nestucca watershed. These diversions are a small part of the average annual yield.
- c. Future out-of-basin diversions could, with adequate storage, be compatible with existing and future downstream uses.
- d. Future municipal water demands will be centered primarily in the Tillamook Bay area and south along the littoral (coastal) fringe.
- e. Flows, in many streams which supply municipal water, are not adequate to meet existing municipal water rights during the low flow season.
- f. Most existing industrial water use is centered in the Tillamook Bay area.
- g. Most of the water supply for industrial use is from municipal water systems.
- h. Future industrial water demands will be centered in the Tillamook Bay area and will be met primarily by municipal water systems.
- i. Existing irrigation water use is concentrated in the Nestucca, Tillamook, Trask and Wilson watersheds with lesser use in the lower portion of the Little Nestucca, Kilchis, Miami and Sand Lake watersheds.
- j. Significant amounts of potentially irrigable land exist in the Nestucca and Tillamook watersheds with lesser amounts in the lower portions of the Trask, Wilson, Kilchis, Miami and Sand Lake watersheds.
- k. Little or no potentially irrigable land exists in the Neskowin, Little Nestucca, and small coastal watersheds.
- l. On most streams existing streamflows during the irrigation season would support little if any increased irrigation withdrawals if minimum perennial streamflows are to be maintained.
- m. Sites for hydro-electric power development exist in the Trask, Wilson, and Nestucca Rivers.
- n. Existing out-of-stream water use for fish life consists of withdrawals for fish hatcheries in the Nestucca and Trask watersheds.
- o. Existing protection of minimum perennial streamflows for fish life consists of two minimum flows established one each on the Trask and Wilson Rivers.
- p. Existing streamflows are not adequate during the low flow season to meet recommended minimum flows for fish life in Neskowin Creek, Little Nestucca, Tillamook, Trask, Wilson, Kilchis, and Miami Rivers.
- q. Legal diversions from Neskowin Creek, Beaver Creek (tributary to Nestucca), Tillamook and Trask Rivers are nearly equal to natural streamflows during the low flow season.

3.3a.2 NEHALEM SUBBASIN

- a. Existing municipal water use is concentrated in the Nehalem Bay and upper Nehalem River areas, and future demands are expected to remain centered in these areas.
- b. Flows in many streams which supply municipal water are not adequate to meet existing municipal water rights during the low flow season.
- c. Existing industrial water use is associated primarily with the wood products industry.
- d. Industrial water demands within the next 15-20 years are not expected to be significantly greater than existing demands.
- e. Existing irrigation water use is scattered, with the largest use being in the vicinity of Birkenfeld, Vernonia, and the lower Nehalem River and Nehalem Bay area.
- f. Significant amounts of potentially irrigable land exist in the Nehalem Bay area, along North Fork Nehalem River, and in the middle and upper Nehalem River watersheds.
- g. Little or no potentially irrigable land exists between Batterson and Lukarilla (between river mile 13 and river mile 32 on the Nehalem River) in the Nehalem River.
- h. Sites for hydro-electric power development exist on the main stem Nehalem River.
- i. Existing out-of-stream water use for fish life consists of withdrawals for fish hatchery operations in the North Fork Nehalem River watershed.
- j. Existing protection of minimum perennial streamflows for fish life consists of a minimum flow established on the main stem Nehalem River.
- k. Existing streamflows are not adequate during the low flow season to meet recommended minimum flows for fish life in either the North Fork Nehalem or Nehalem Rivers.
- l. Between river mile 13 and river mile 32 on the Nehalem River, existing and projected out-of-stream water needs are small.

3.3b POLICIES

Tillamook County hereby adopts the program of the Oregon State Water Resources Board for the North Coast Basin, dated May 8, 1981, as the County's policies as follows:

- 3.3b.1 The maximum economic development of this state, the attainment of the highest and best use of the waters of the North Coast Basin, and the attainment of an integrated and coordinated program for the benefit of the state as a whole will be furthered through utilization of the aforementioned waters only for domestic, livestock, municipal, irrigation, power development, industrial, mining, recreation, wildlife, and fish life uses; and the waters of the North Coast Basin are hereby so classified with the following exceptions.
 - a. The waters of the natural lakes of the North Coast Basin are classified only for utilization of water for domestic, livestock, power development not to exceed 7 1/2 theoretical horsepower, and in-lake uses for recreation, wildlife, and fish life purposes. (Note: Tillamook County does not support recreational use of any man-made lake created for municipal water supply purposes.)
 - b. The waters of all streams tributary to Sand Lake are classified only for utilization for domestic, livestock, use in dairies, irrigation of lawns and noncommercial gardens not exceeding one-half acre in area, power development and in-stream use for recreation, fish life and wildlife purposes.
 - c. The waters of Jetty Creek and its tributaries are classified only for utilization of water for human consumption, livestock consumption, power development and in-stream uses for recreation, wildlife and fish life purposes. In addition, up to one cubic foot per second of the waters of Jetty Creek is reserved for municipal use.
 - d. The waters of Heitmiller Creek are classified only for utilization of water for human consumption, livestock consumption, and in-stream use for recreation, wildlife and fish life purposes.

- e. The waters of the following streams are classified only for utilization of water for human consumption, livestock consumption, power development and instream uses for recreation, wildlife, and fish life purposes.
 - a. All streams tributary to Daley Lake
 - b. All streams tributary to Netarts Bay
 - c. Coleman Creek and its tributaries
 - d. Vaughn Creek and its tributaries
 - e. Doughty Creek and its tributaries
 - f. Patterson Creek and its tributaries
 - g. Larson Creek and its tributaries
 - h. All streams tributary to Lake Lytle

Nehalem Subbasin

- a. Salmonberry River and its tributaries
 - b. Rock Creek and its tributaries
- 3.3b.2 For the purpose of maintaining a minimum perennial streamflow sufficient to support aquatic life, no appropriations of water except for human consumption, livestock consumption, and waters legally released from storage shall be made or granted by any state agency or public corporation of the state for the waters of the following streams and their tributaries for flows below the amounts specified.
- 3.3b.3 The County shall zone most of the land adjacent to its rivers for Exclusive Farm Use. Such designations will assure the protection of recharge areas of groundwater aquifers that have immediate or future potential use.
- 3.3b.4 The County's zoning designations for rural upland areas shall be established, in part, to reflect any restrictions posed by the groundwater potential of the area.
- 3.3b.5 The County will develop detailed information on its water supply system watersheds at its next plan update.

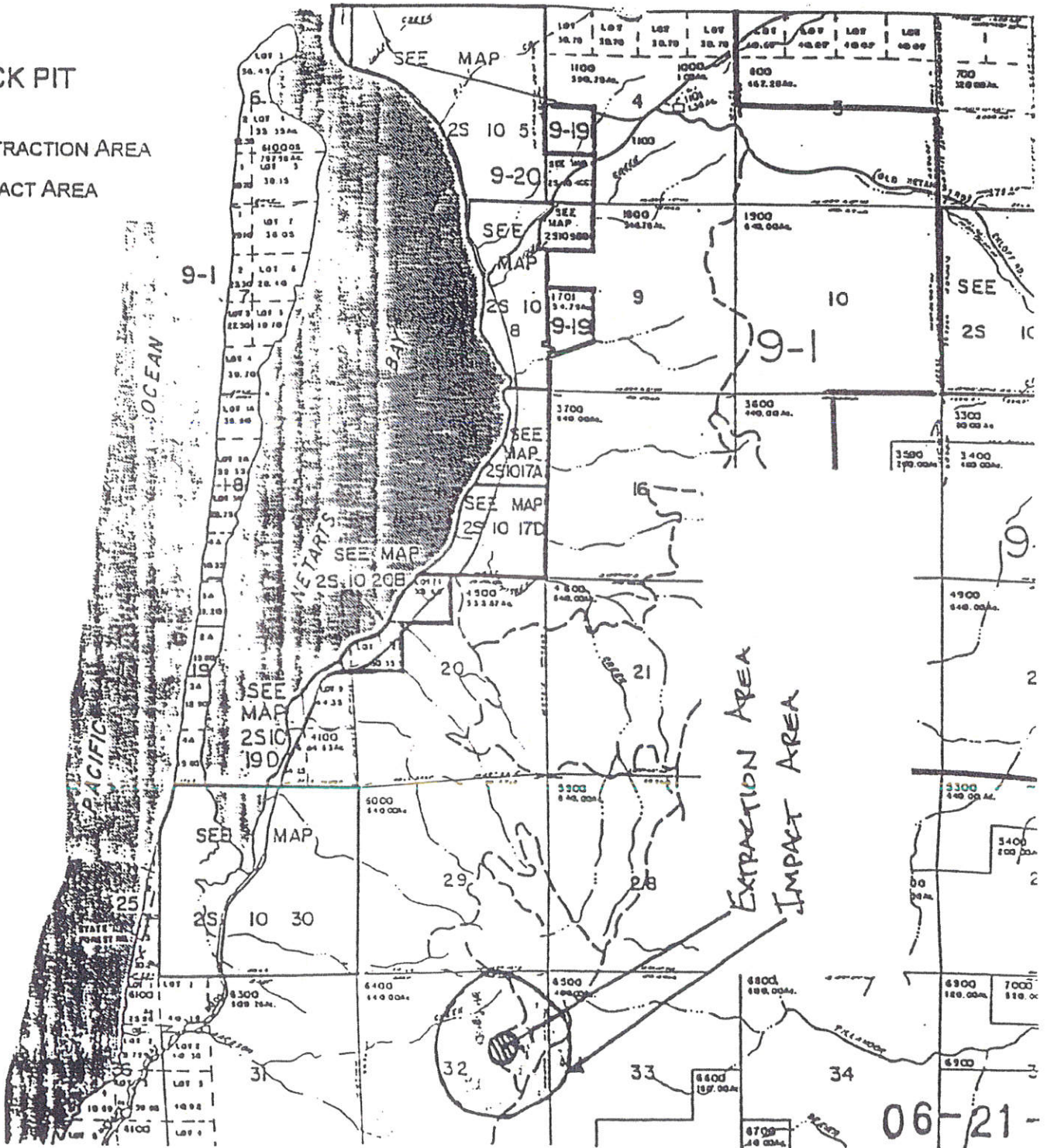
EXHIBIT B
SIGNIFICANT AGGREGATE SITES

190 Pit -- 2S10-6400 --	see map I
Alder Creek Quarry -- 5S9-300 --	see map II
Clear Creek Quarry -- 4S10-34-1300 --	see map III
Ogle Quarry -- 5S10-15-400 & -1800 --	see map IV
Lower Nehalem Quarry -- 3N10-3100 --	see map V
Whiskey Creek Pit -- 2S10-4500 --	see map VI

Map I: 190 Pit -- 2S10-6400

190 ROCK PIT

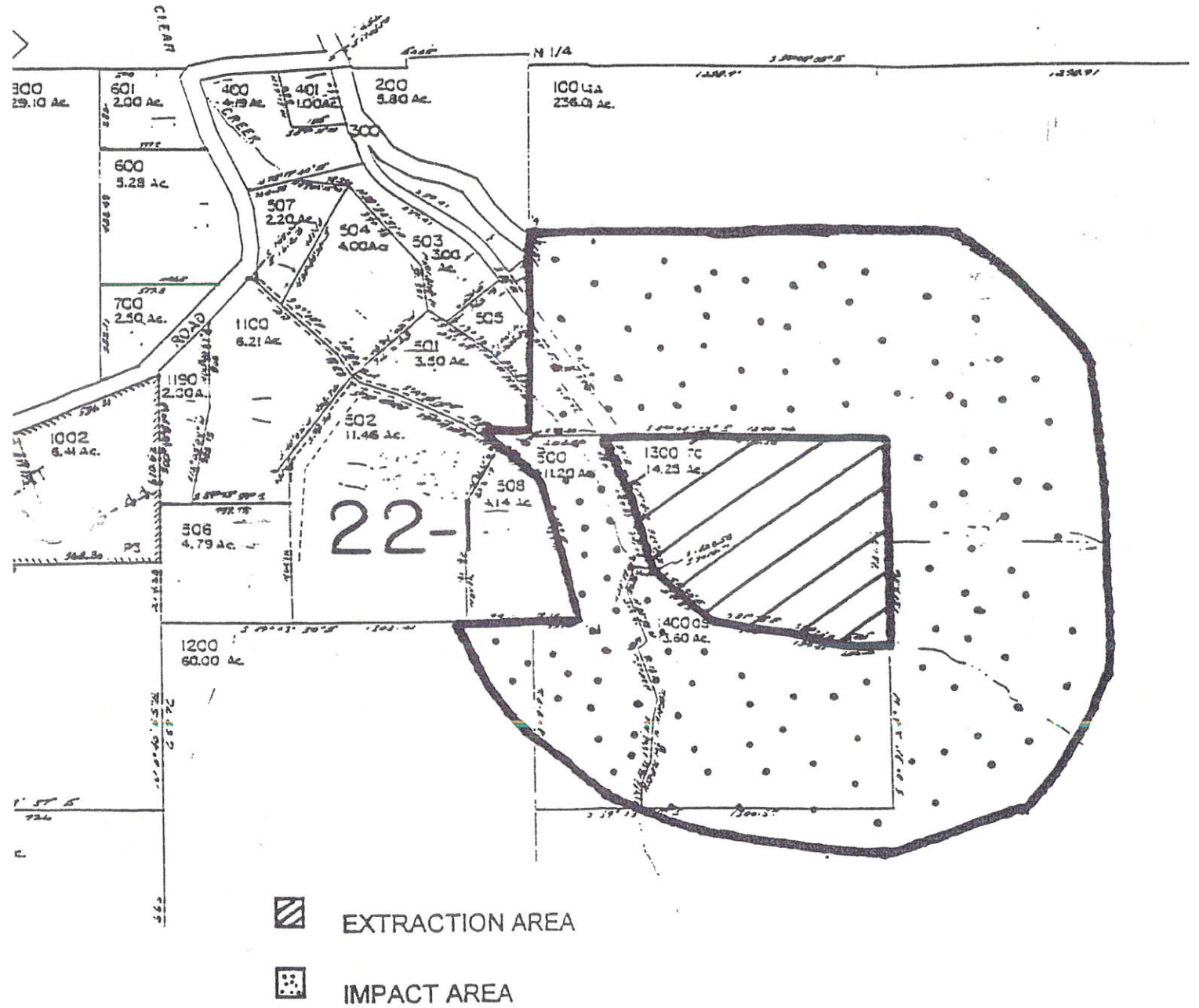
-  EXTRACTION AREA
-  IMPACT AREA



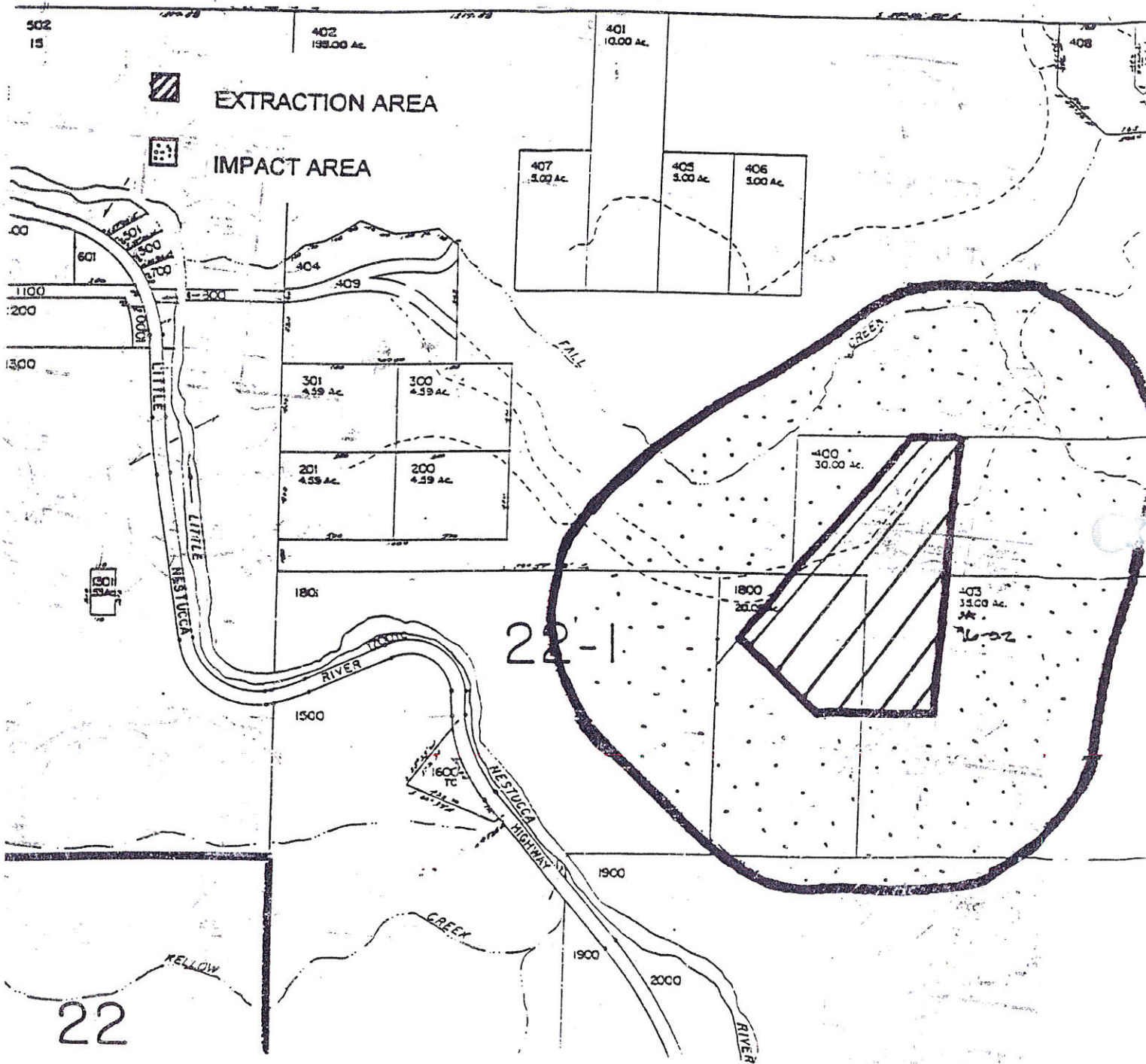
EXTRACTION AREA
IMPACT AREA

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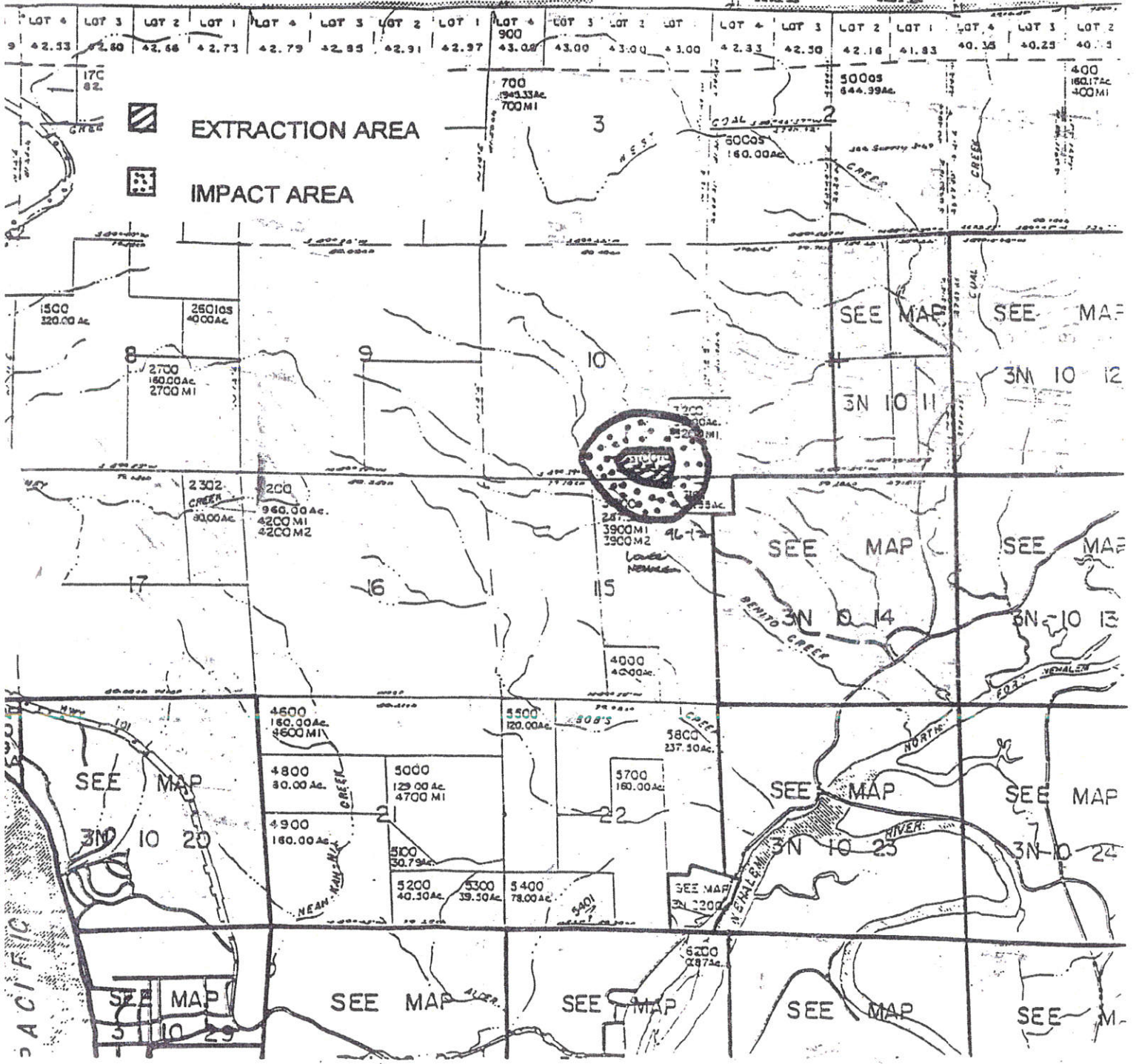
Map III: Clear Creek Quarry -- 4S10-34-1300



Map IV: Ogle Quarry -- 5S10-15-400 & -1800




Map V: Lower Nehalem Quarry -- 3N10-3100



Map VI: Whiskey Creek Pit - 2S10-4500

WHISKEY CREEK PIT

-  EXTRACTION AREA
-  IMPACT AREA

