NATURAL RESOURCES IN OREGON'S

TILLAMOOK COUNTY

Introduction

The name Tillamook comes from the Tillamook (Killamook or Calamoxes) Indians. Tillamook County is located in the USDA-Natural Resources Conservation Service's North Coast Basin located in the northwest corner of the state. The County is bounded by Clatsop County on the north, the Pacific Ocean on the west**,** the Lower Willamette Basin on the east**,** and the Central Coast/Upper Willamette Basin (Lincoln County) on the south. The total county area is 725,120 acres or 1,133 sq mi. There is 142,126 acres of federal land, 349,000 acres of state and county managed lands. There is 178,000 Acres in private timberland including industrial forests in the county.

What follows are comments and observations regarding resource inventories collected for Tillamook County. These inventories are not all encompassing of the issues in Tillamook County, but are merely a starting point that we can build upon. We are dependent on our partners to assist with identifying additional inventories to assist us in better understanding how to assist our clients address their resource concerns on the ground. As additional inventories are identified they will be added to this data base for consideration.

A. Resource concern: Water

The climate is humid with the Pacific Ocean moderating the temperatures and the Coast Range intensifying the precipitation. The annual precipitation ranges 70 to 200 inches depending location on the landscape (Figure 1) and generally contains only a small amount of snow overall. A high percentage of the precipitation falls from October to April and most of it in moderate rain storms. The prevailing winds are generally from the northwest in the summer and from the southwest and southeast in the winter. The average frost-free season varies from 182 to 273 days along the coast.

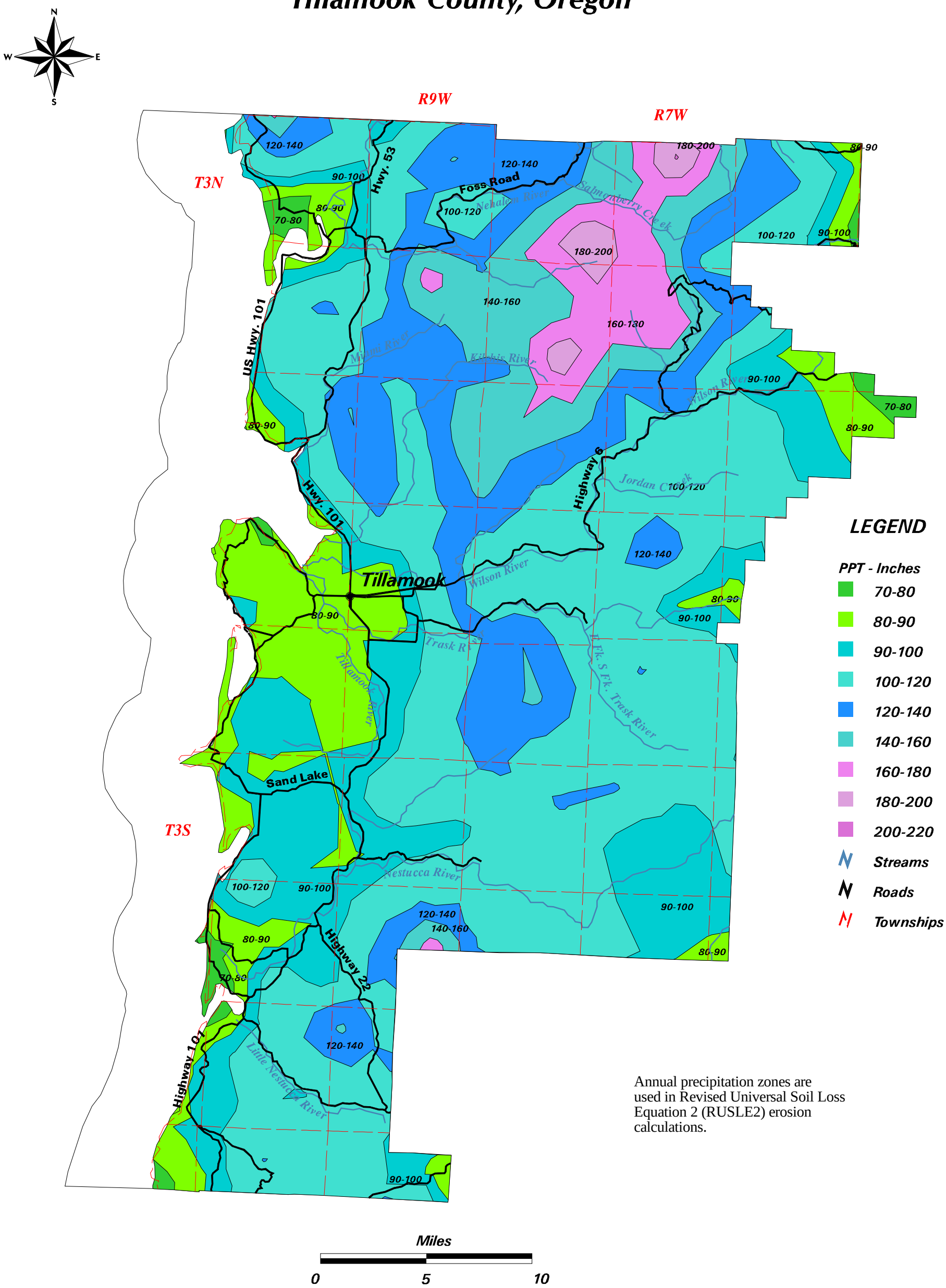
The county's water resources are fundamental to its ecosystems. Water is at the center of much of the scenic and recreational values that attract tourism to the county. The primary rivers are the Nehalem, Nestucca, Wilson, Kilchis and Trask. There are also two smaller rivers the Miami and Tillamook which empty into Tillamook Bay.

Because of the climate and setting, dairies were established early in the settlement of Tillamook County. Even today locations of present permitted Confined Animal Feeding Operation (CAFO) permits (Figure 2), are indicative of how important the lowland areas are to the dairy community. The significant rainfall contributes heavily to the production of pasture and hay land grasses for livestock feed. Heavy rainfall also creates the potential for water quality issues (fecal coli forms), especially where manure accumulates and must be stored until agronomic conditions and soil moisture allow land application. EQIP dollars have been targeted for producers who farm in saturated soil conditions so that they have adequate storage during that period.

Oregon Department of Environmental Quality (DEQ) monitors several water quality parameters in the county. Several streams have been identified with water quality impairments (Figure 3) not meeting with the DEQ criteria, some of these concerns include temperature, fecal coli forms and dissolve oxygen to name a few. Total Maximum Daily Load Plans have been developed for the Counties major watersheds in order to address these resource concerns.

ANNUAL PRECIPITATION RANGES

Tillamook County, Oregon



Annual precipitation zones are used in Revised Universal Soil Loss Equation 2 (RUSLE2) erosion calculations.

NRCS

Source: Map produced by NRCS State Office GIS staff, Portland, Oregon, 2004.
Source scale: streams, roads and townships, 1:100,000.
Source scale: precipitation zones 1:250,000, from PRISM.
This map is for general planning purposes only.

Figure 1

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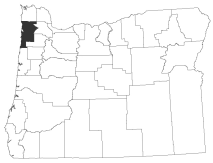
TILLAMOOK COUNTY

US Department of Agriculture
Natural Resources Conservation Service



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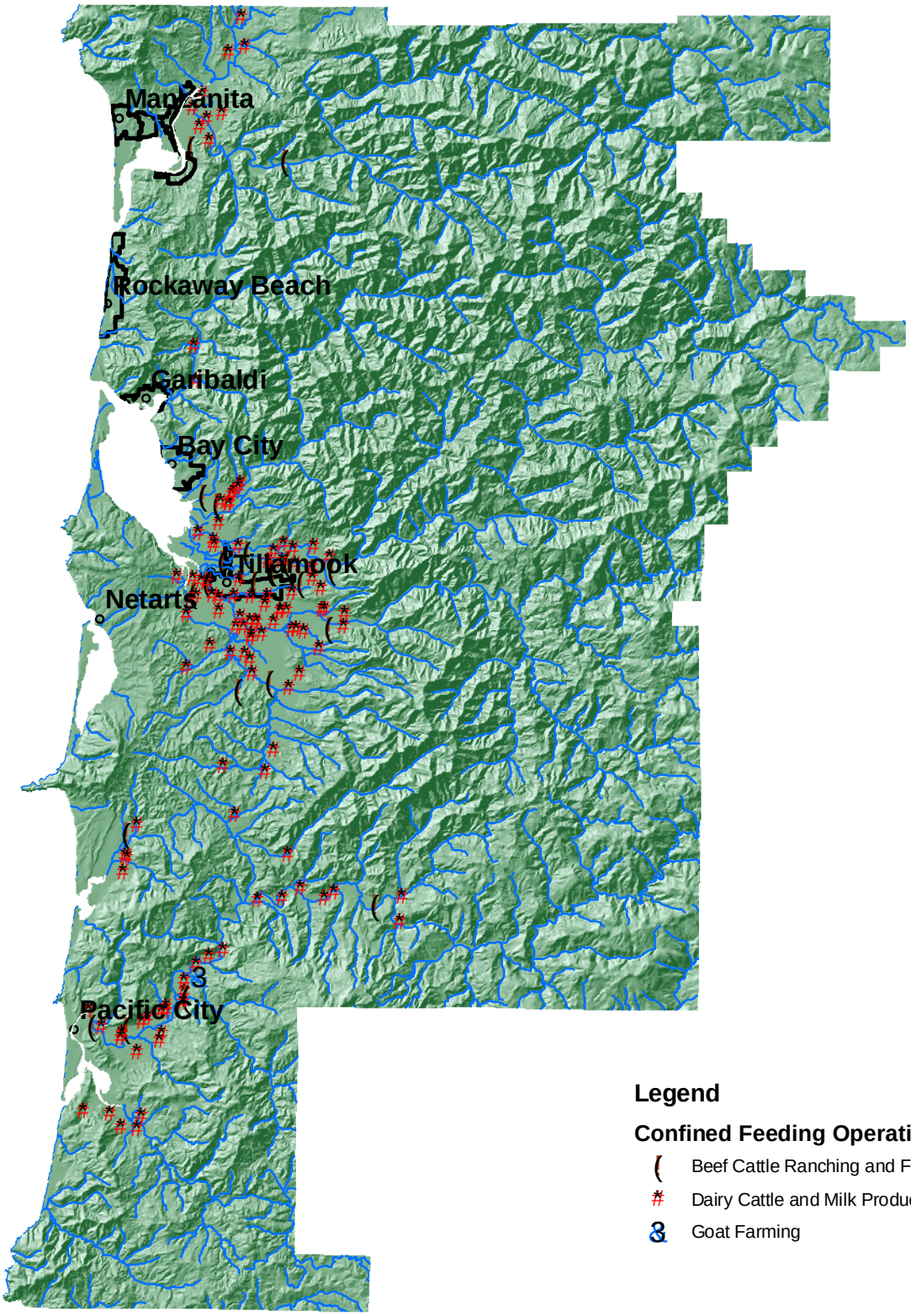

Legend

Confined Feeding Operations

- Beef Cattle Ranching and Farming
- Dairy Cattle and Milk Production
- Goat Farming

0 1.25 2.5 5 7.5 10 Miles

0 1.25 2.5 5 7.5 10 Kilometers

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Figure 2

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TILLAMOOK COUNTY

US Department of Agriculture
Natural Resources Conservation Service

Surface Water Quality Impairment Status

Note: Some streams may have multiple impairments and status.
Flow and Habitat modifications do not require a TMDL to be developed.
These data are from the 2002/2006 Oregon DEQ Report

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Figure 3

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The Oregon Water Master for Area 1 here in Tillamook has maps of potential water catchment sites for potential development in the future. None of these are included in this information at this time. Many interested parties have been involved in that process.

B. Resource concern: Humans

Tillamook County encompasses 1,125 square miles. There are 75 miles of coastline, four bays and nine rivers in the county. The average temperature in January is 42.2 F, in July it is 58.2 F and it rains an average of 90.9" each year. The population is approximately 25,845 according to the 2009 Oregon Blue Book. This number is an increase over the 2000 estimates by 6.52%.

The most significant documented exploration in the North Coast basin was the Lewis and Clark expedition of 1805-06. However, there were explorations in the eighteenth century. The first permanent settlement in the basin began in 1811, but settlement was slow because the dense forested Coast Range served as a barrier to transportation. Early agriculture was dairying and the production of livestock, potatoes, and small grains. The logging and forest products industry has also developed over time.

The four leading industries have been forestry, agriculture, fisheries and recreation. However, because of the economy and environmental concerns, the basin's forestry and fisheries economies have been impacted in the past decades. The basin's main agricultural enterprises are pasture and hay land, associated with dairy and beef operations in the county. There are some small operations specialty crops and nursery operations. There are also a few organic dairy operations and vegetable producers in the county as well.

The economy of for Tillamook County is comprised mainly of agriculture, forest products, fishing and recreation. Dairy farms dominate the county's valleys. The milk from most of these is shipped to the local cheese factory where "Tillamook Cheese" is manufactured. Forest products are harvested from Industrial, Federal, State and County forestlands. Some of the product is harvested as logs for lumber cut within the local sawmills. Salmon fishing is spotty depending on seasons and stock strengths on any particular harvest year. Some very good years have again been experienced recently, even though the Coho salmon is listed federally as a Threatened species which requires additional regulations for its protection from overfishing. Recreation continues to be a large attraction to Tillamook County due to our scenic coastline deep-sea and stream fishing, charter and dory boasts, clamming, crabbing, whale and bird watching, beachcombing and hiking. Our forests also offer excellent opportunities for hunting, backpacking and other recreational activities.

Land cover (Figure 4) shows ~87% of the county covered by forest or associated cover while agricultural Pasture/Hay Lands are only on ~4.3% of the county landscape concentrated in the valley bottoms. The bulk of the remaining land cover is water with a small amount urban land.

Landownership in the county is varied but the largest portion is government owned (Figure 5) and managed timber lands. Government ownership includes Oregon State, US Forest Service, Bureau of Land Management and Tillamook County. Private Industrial forestlands are next in acreage followed by Non-industrial rural agriculture and urban lands.

Information from the 2007 Census of Agriculture-County Data, indicated no farms in the county received dollars from the Conservation Reserve, Wetlands Reserve, Farmable Wetlands or Conservation Reserve Enhancement Programs, while federal government payments from other programs paid out ~$7,236 on average per farm.

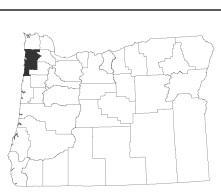
C. Resource concern: Soils

The county is located on the west slope of the Coast Range. It consists of forested mountains, foothills, stream valleys, estuaries, marine terraces and dune areas that drain to the Pacific Ocean by the Nehalem, Miami, Kilchis, Wilson, Tillamook, and Nestucca Rivers. The rock formations consist of marine sedimentary and volcanic rock units. The most common farmlands are associated with the deep deposits of alluvial sediments that are associated with the estuary, stream flood plain, and terraces

OREGON

STRATEGIC PLAN
TILLAMOOK COUNTY

US Department of Agriculture
Natural Resources Conservation Service



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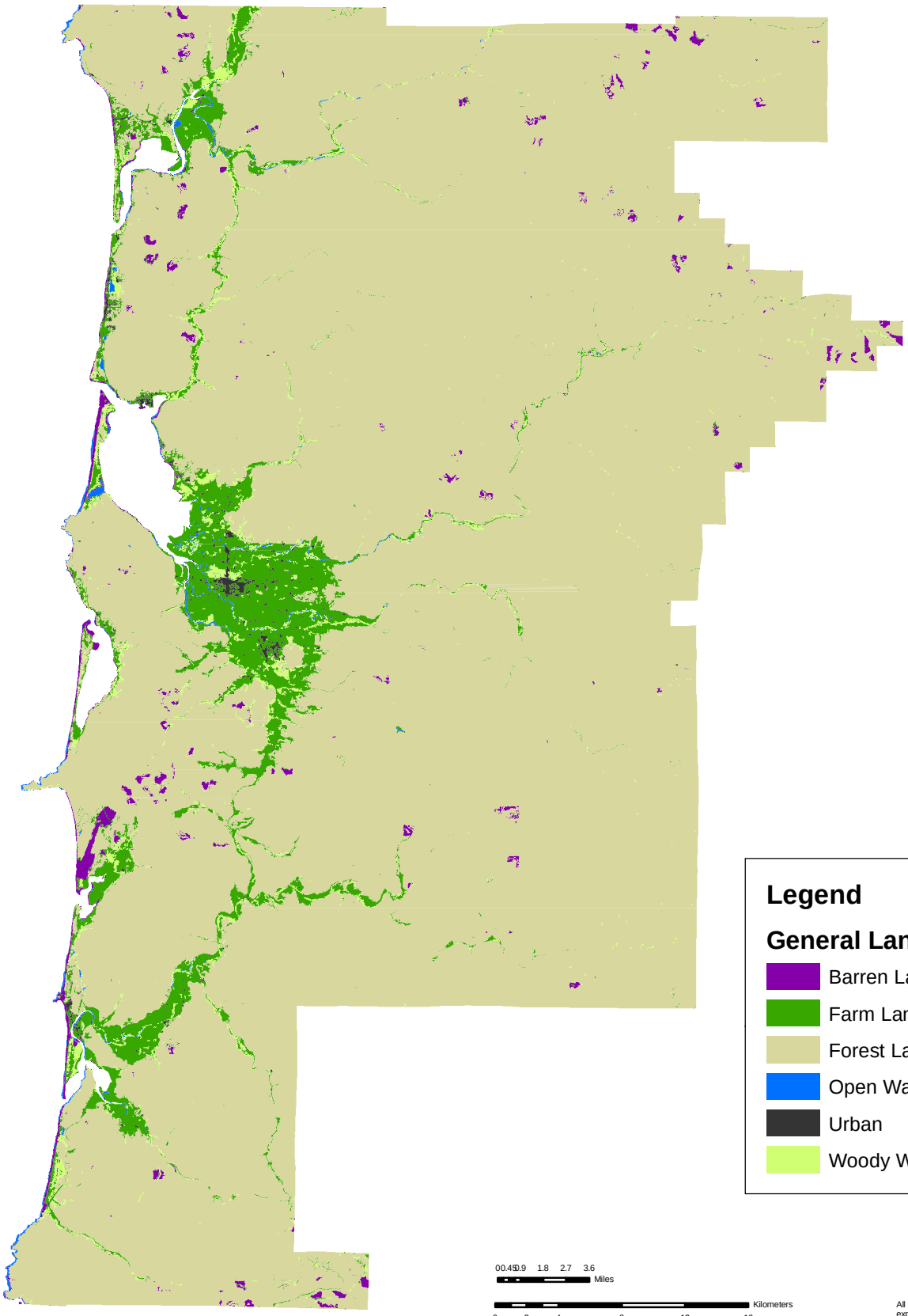

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Figure 4

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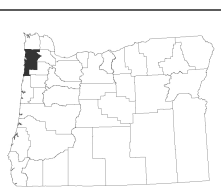
Natural Resources Conservation Service



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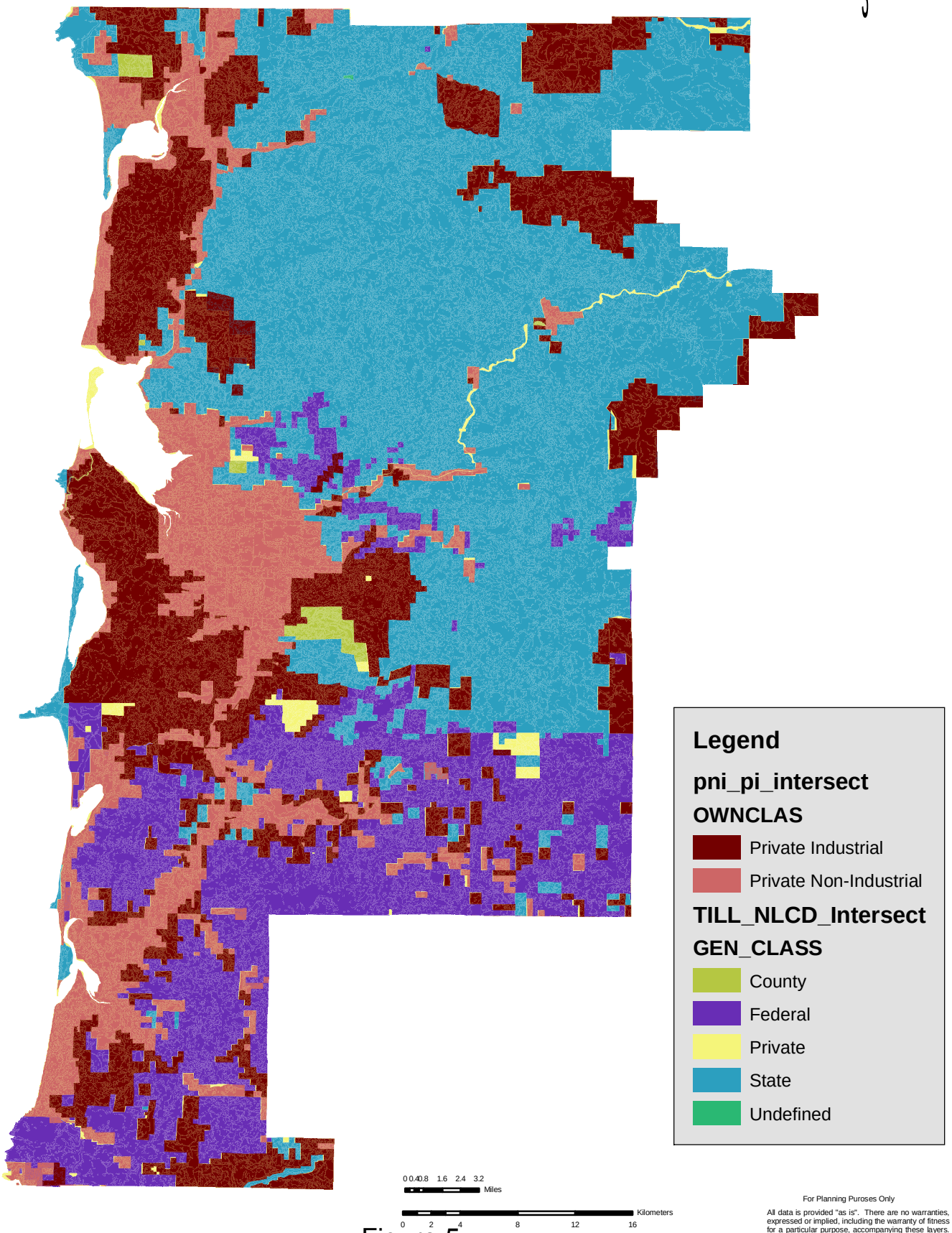

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Figure 5

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associated with CRA map unit 4A.2 and in some cases 4A.1, (Figure 6). The supply of groundwater is considered to be small to medium in the rock formations and to be medium to large in the alluvial deposits.

The soils which formed from weathered sedimentary and volcanic rock formations on the mountains and foothills are moderately developed and suited for timber land (Figure 7). The potential for erosion should be considered on steeper slopes (Figure 8). Soils formed in alluvium are weakly to moderately developed and support most of the agriculture activities in the basin. Wetness and flooding is a hazard in some areas (Figure 9). Soils formed in the recent eolian sandy sediments on dunes adjacent to the ocean are weakly developed and subject to wind erosion when unprotected by vegetation.

D. Resource concern: Air and Energy

There have been no air quality attainment areas identified in Tillamook County. The state of Oregon did work on agriculture air quality standard considerations in previous years but thus far have not instituted these. Presently The Environmental Protection Agency is working on Air Quality standards that will no doubt be handed down to the State of Oregon. At this time it is likely that Oregon will decide on whether these standards are sufficient or require additional restrictions. There has been local concern and comments from the community at large regarding the odors associated with animal waste in Tillamook county. This has only been by word of mouth and there are no known studies in place at this time.

The urban growth boundaries and agricultural activities in Tillamook County as shown in (Figure 10 and 11) often lie directly adjacent to each other, which create the challenges we will face in the future.

Energy standards are becoming a greater issue in the county considering power is brought in by the local Tillamook People's Utility District (TPUD) from sources outside the county. Many of the existing agricultural businesses in county utilize electricity or diesel for power. Many barns have old incandescent bulbs, outdate fans, old electric motors and many operations still use diesel tractor PTO systems to generate power to pump or agitate manure on the farm. This has been proven in many areas to be energy inefficient both in fossil fuels a labor.

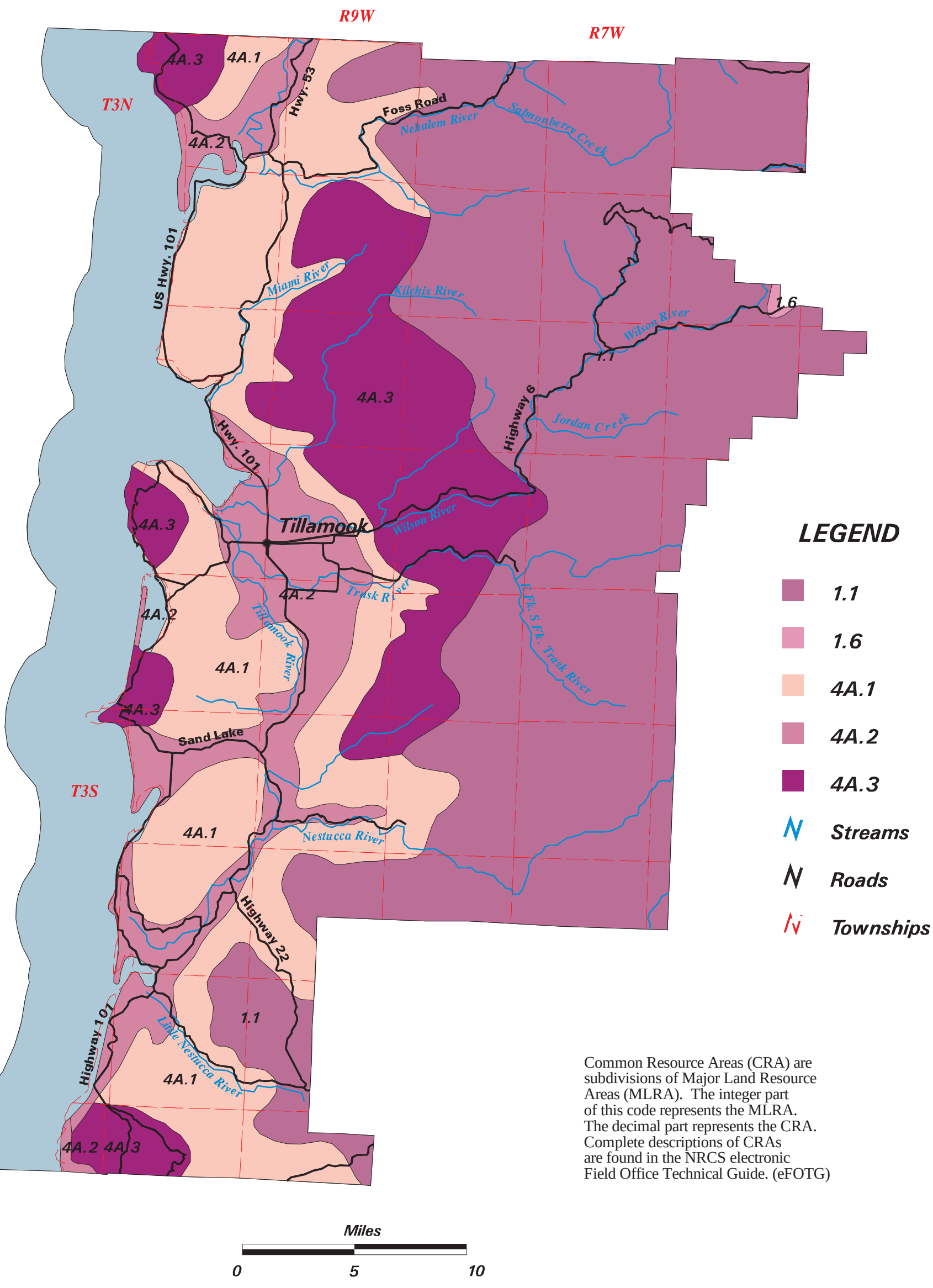
Locally a methane slug digester has also been used for digestion of manure with some limited success.

E. Resource concern: Plants and Animals

Section II of the Field Office Technical Guide (FOTG) has a lengthy list of Threatened and Endangered Species listed in it. In addition to these species there are also species of concern to both Federal and State agencies. All of these species must be considered during our planning process and implementation. In Tillamook County the Species most often found in the planning area is Salmonids. These are often found in the rivers and streams running through the landscapes of the agriculture operations in the county.

Upland habitat issues include historical snagging and clearing of streams by various agencies, as well as forest fire devastation to the area several decades ago. The native Sitka Spruce and Western Hemlock forests are recovering well due to their production potential as seen in Figure 12 and 13, so the watershed is in the process of healing. Wetlands (Figure 14) have been diked (Figure 15) and drained in the area for agriculture purposes, so there has been a variety of habitats lost over the years. The Oregon Department of Fish and Wildlife (ODFW) has conducted Aquatic Habitat Surveys(AHS) of hundreds of miles of streams in Tillamook County to better understand habitat needs of the salmonids utilizing these streams. The survey results are available from the Tillamook Field office or the Research Division located in Corvallis. This information has been used by various entities over the years to develop and prioritize restoration efforts.

COMMON RESOURCE AREAS
Tillamook County, Oregon



Common Resource Areas (CRA) are subdivisions of Major Land Resource Areas (MLRA). The integer part of this code represents the MLRA. The decimal part represents the CRA. Complete descriptions of CRAs are found in the NRCS electronic Field Office Technical Guide. (eFOTG)

NRCS

Source: Map produced by NRCS State Office GIS staff, Portland, Oregon, 2005.
Source scale: streams, roads and townships, 1:100,000.
Source scale: common resource areas, version 1.2 1:250,000.
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Figure 6

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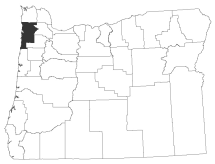
Natural Resources Conservation Service



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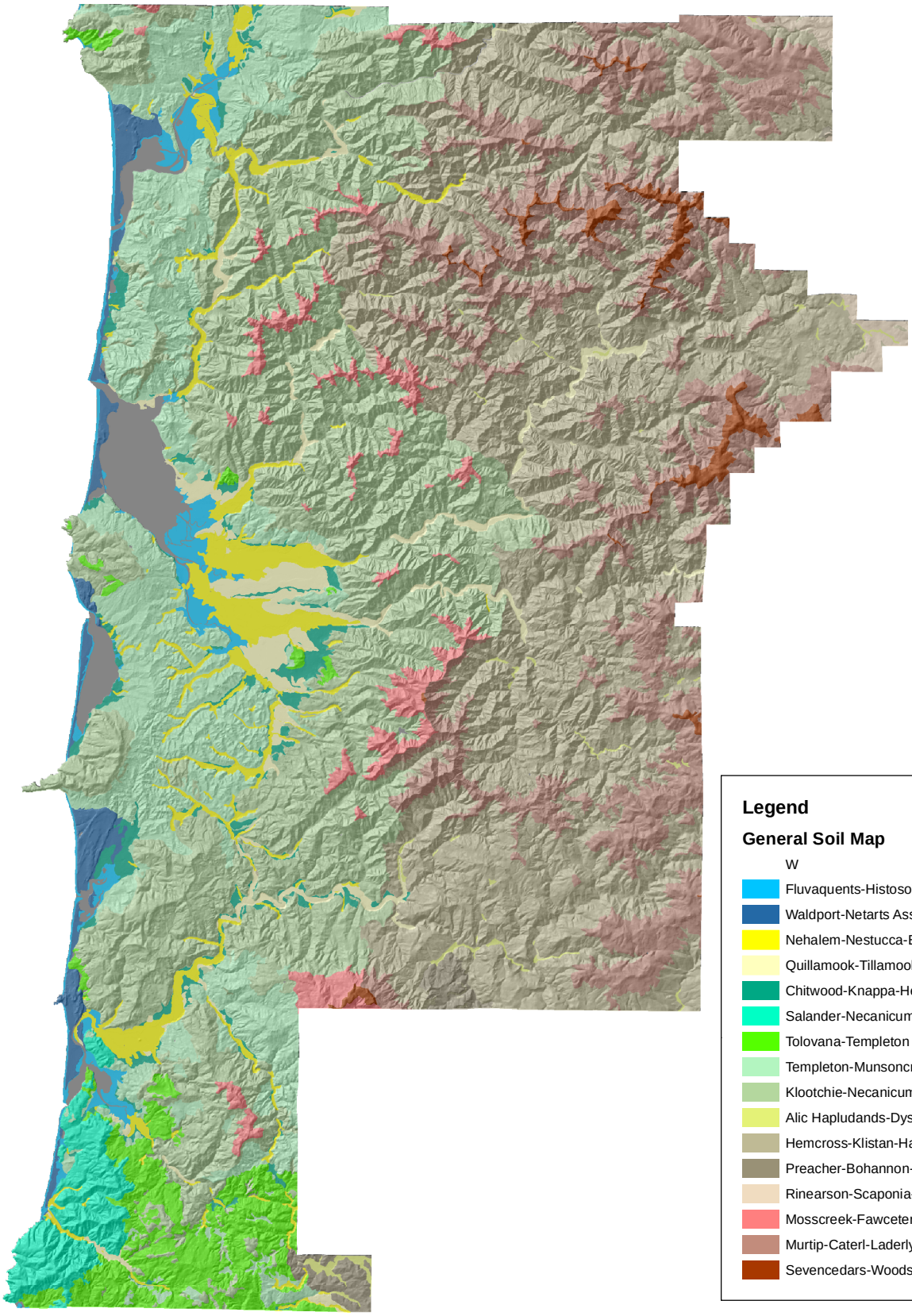

Legend

General Soil Map

W

- Fluvaquents-Histosols-Coquille Association
- Waldport-Netarts Association
- Nehalem-Nestucca-Brenner Association
- Quillamook-Tillamook-Ginger Association
- Chitwood-Knappa-Hebo Association
- Salander-Necanicum-Neskowin Association
- Tolovana-Templeton Association
- Templeton-Munsoncreek Association
- Klootchie-Necanicum-Ascar Association
- Alic Hapludands-Dystrudepts-Aquepts Association
- Hemcross-Klistan-Harslow Association
- Preacher-Bohannon-Astoria Association
- Rinearson-Scaponia-Braun Association
- Mosscreek-Fawceter-Killam Association
- Murtip-Caterl-Laderly Association
- Sevencedars-Woodspoint-Newana Association

0 0.4 0.8 1.6 2.4 3.2 Miles

0 1.25 2.5 5 7.5 10 Kilometers

DRAFT - Advanced Copy - Subject to Change

Figure 7

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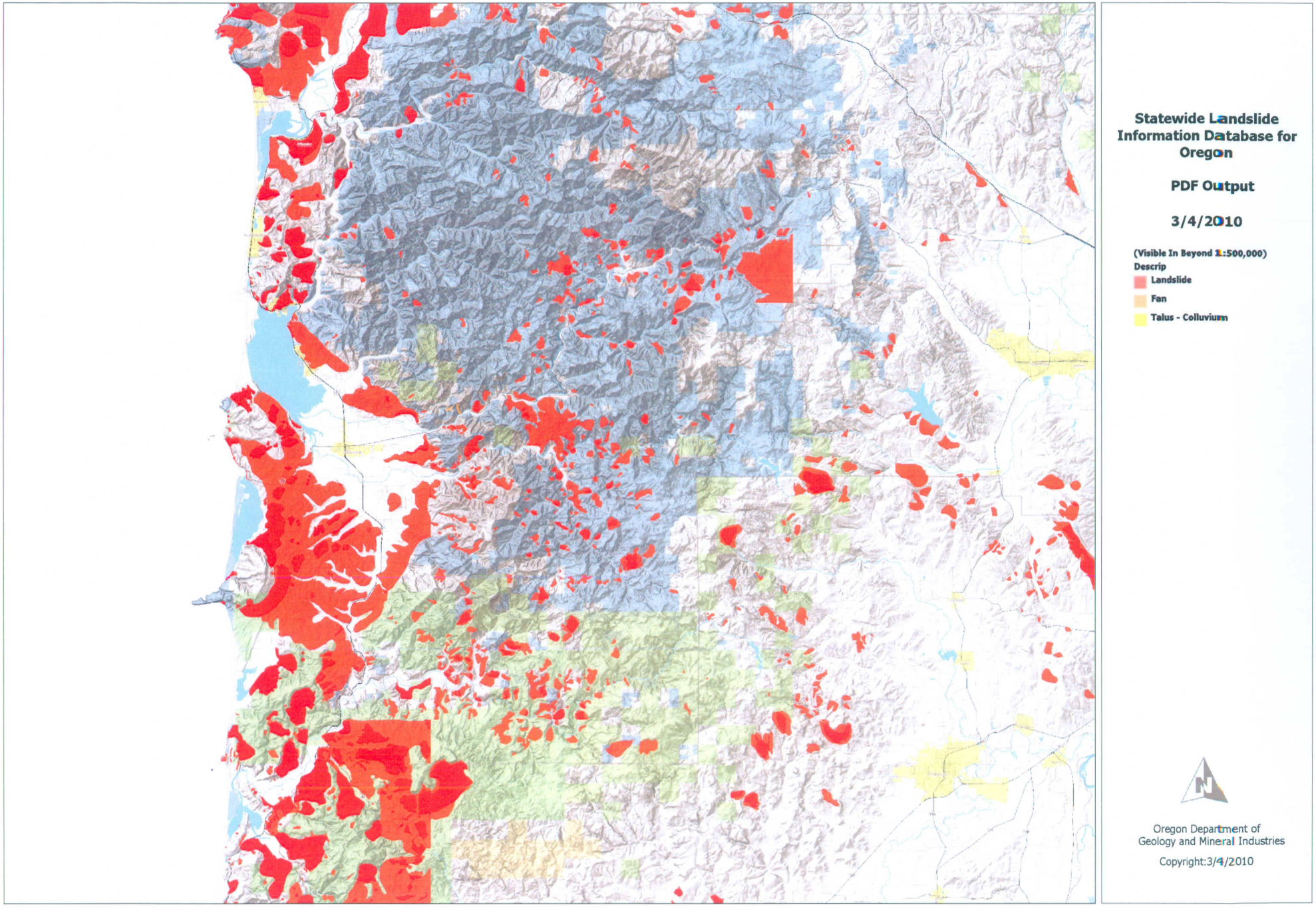
Statewide Landslide Information Database for Oregon
PDF Output
3/4/2010
(Visible In Beyond 1:500,000)
Descrip
Landslide
Fan
Talus - Colluvium
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Oregon Department of Geology and Mineral Industries
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Figure 8

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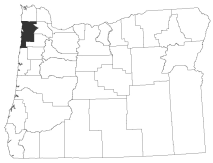

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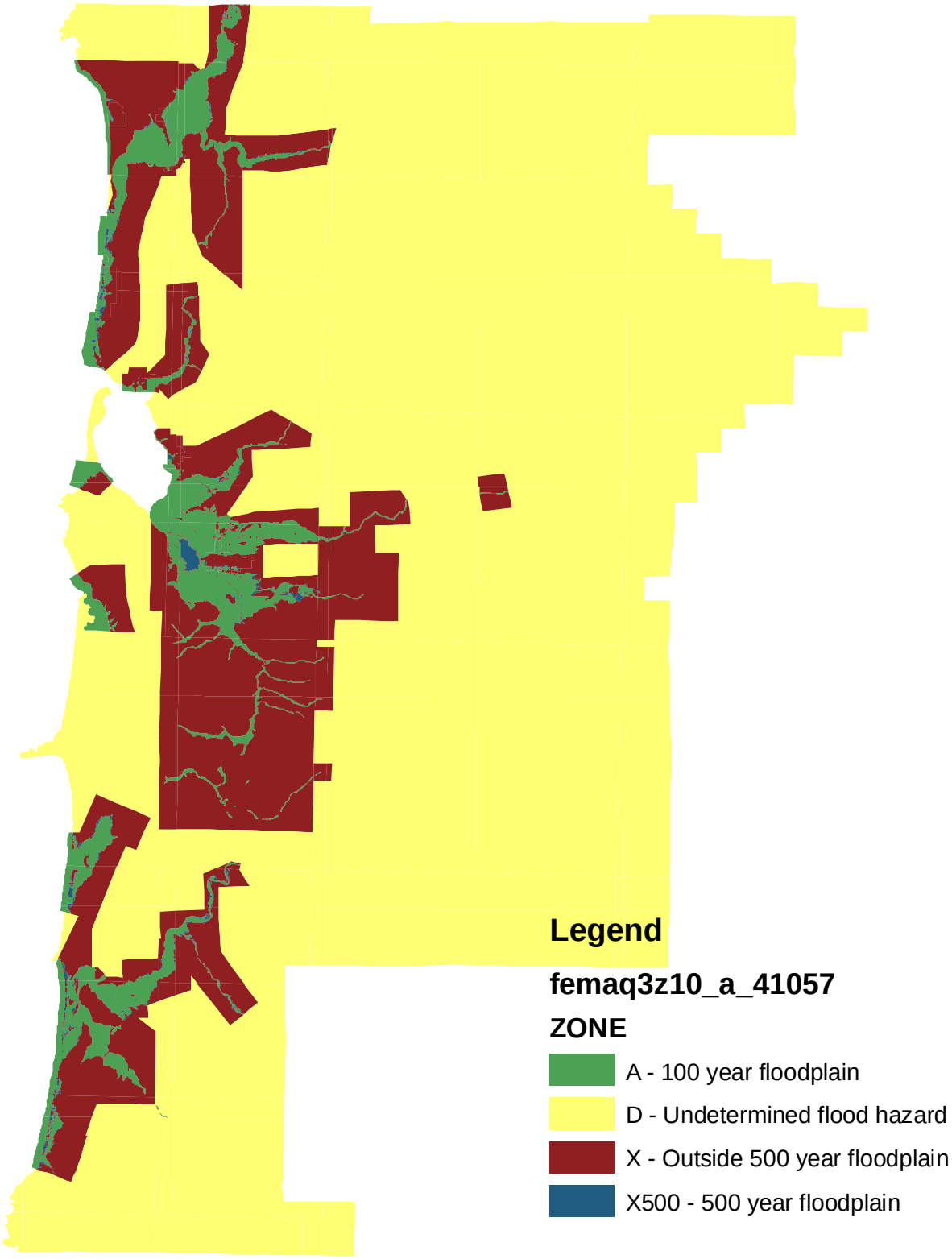

0 2 4 8 12 16 Miles

0 3.75 7.5 15 22.5 30 Kilometers

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Figure 9

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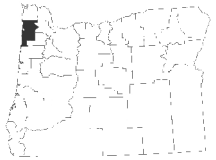
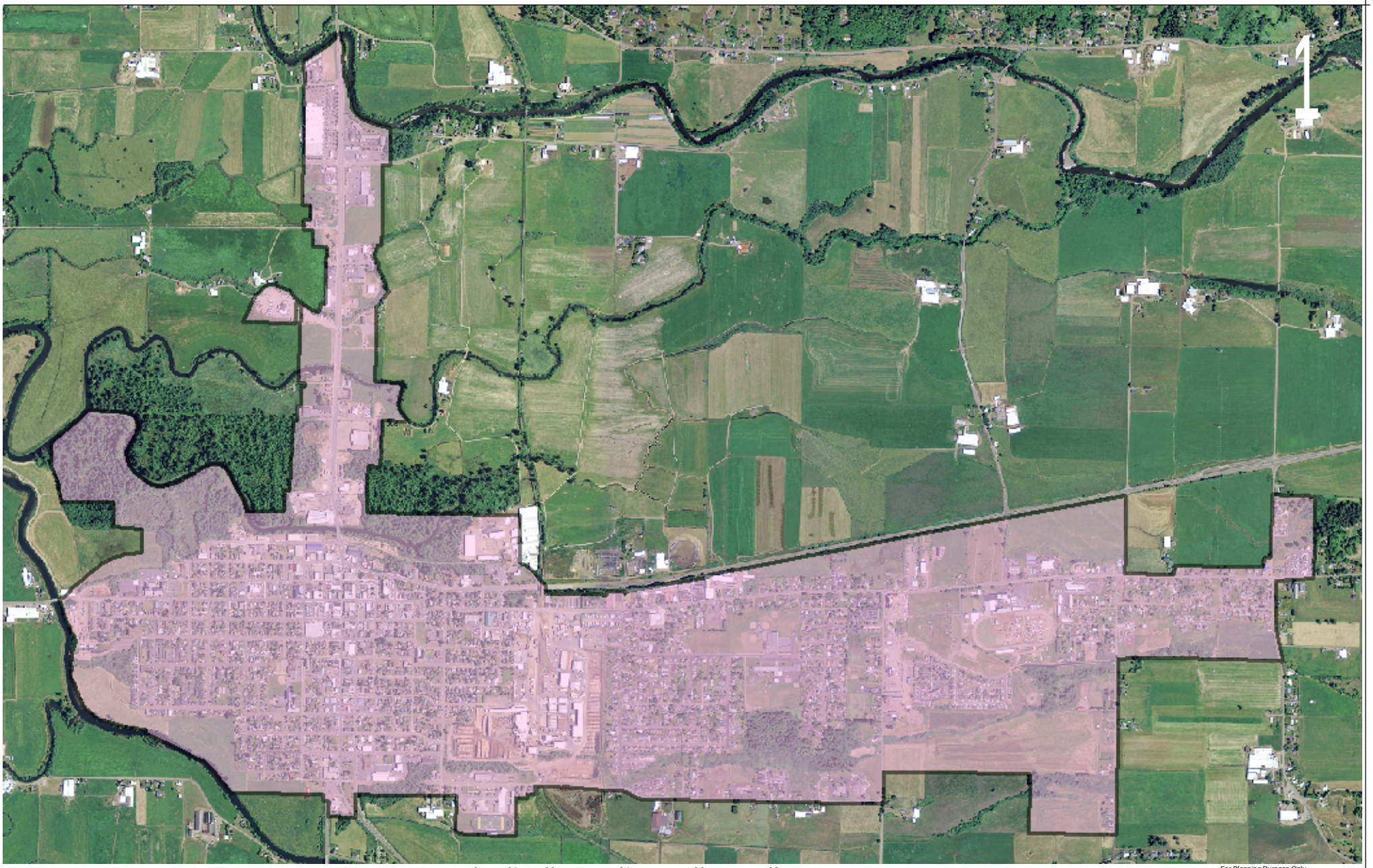
URBAN GROWTH BOUNDARY - TILLAMOOK
TILLAMOOK COUNTY, OREGON

US Department of Agriculture
Natural Resources Conservation Service





Scale = 1:22,000

0 0.1 0.2 0.4 0.6 0.8 Miles

0 0.1 0.2 0.4 0.6 0.8 Kilometers

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Figure 10

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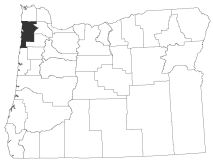

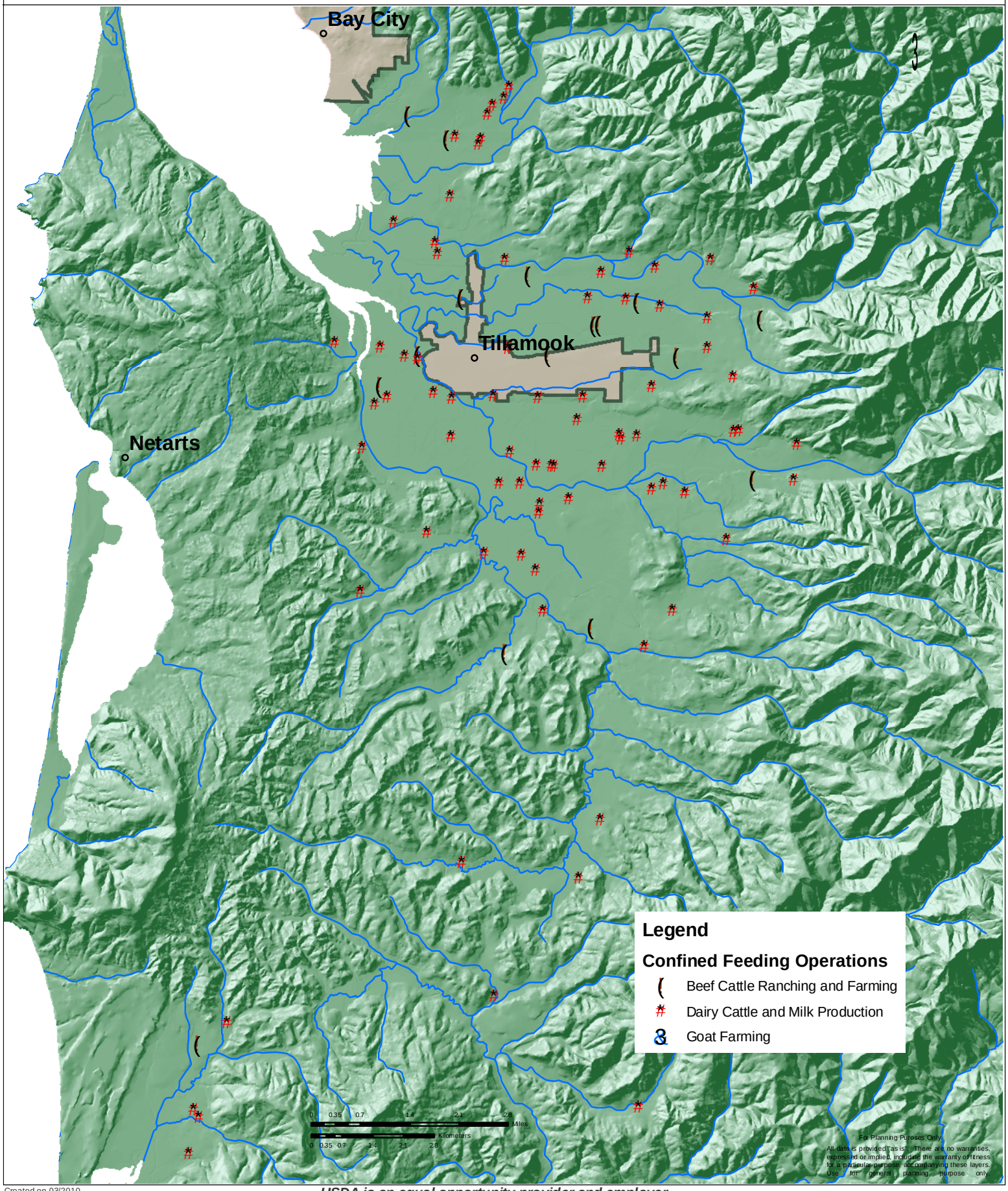

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Figure 11

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For
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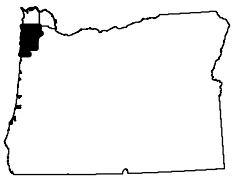
Natural Resources Conservation Service



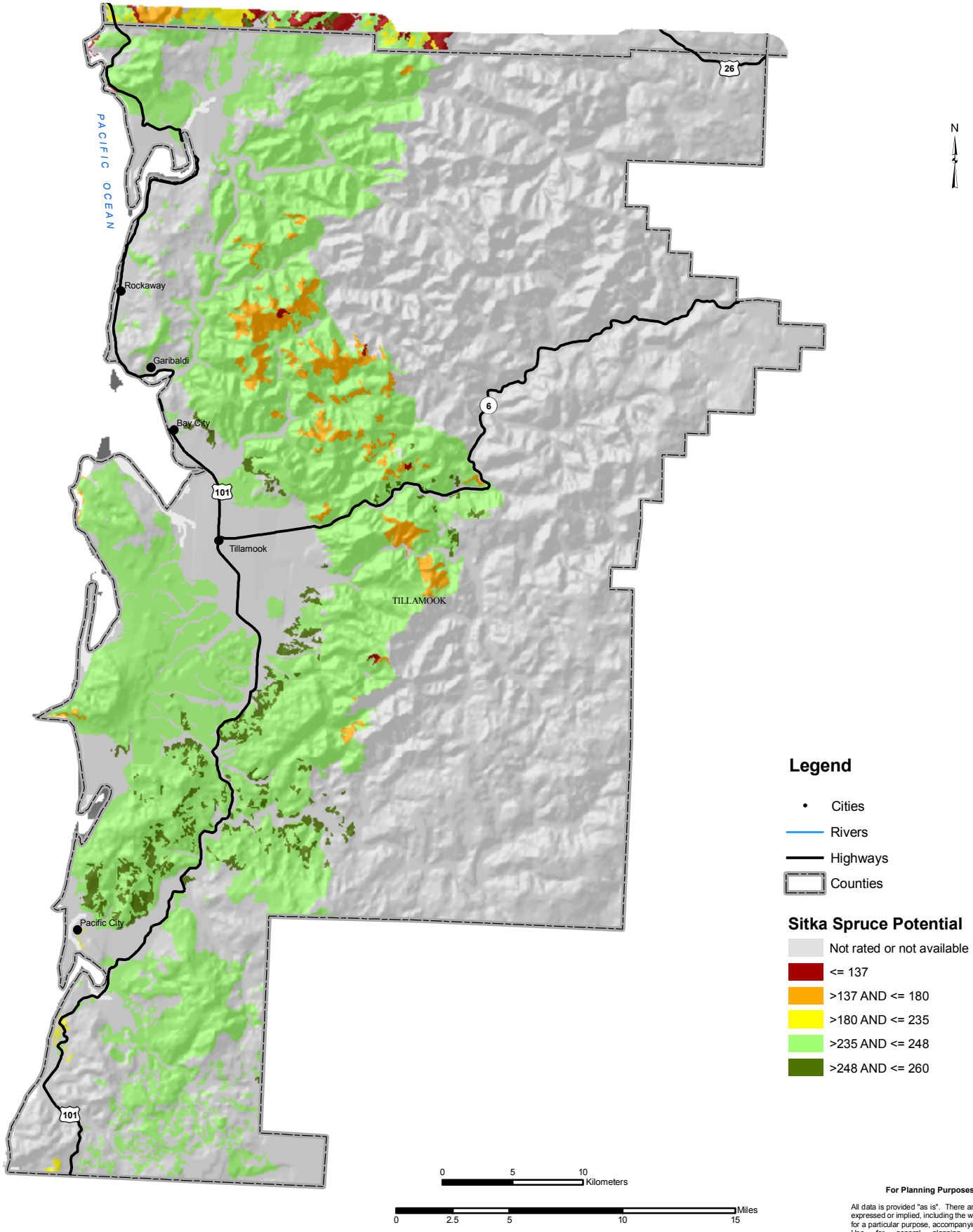


Figure 12

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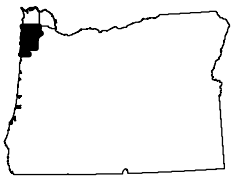

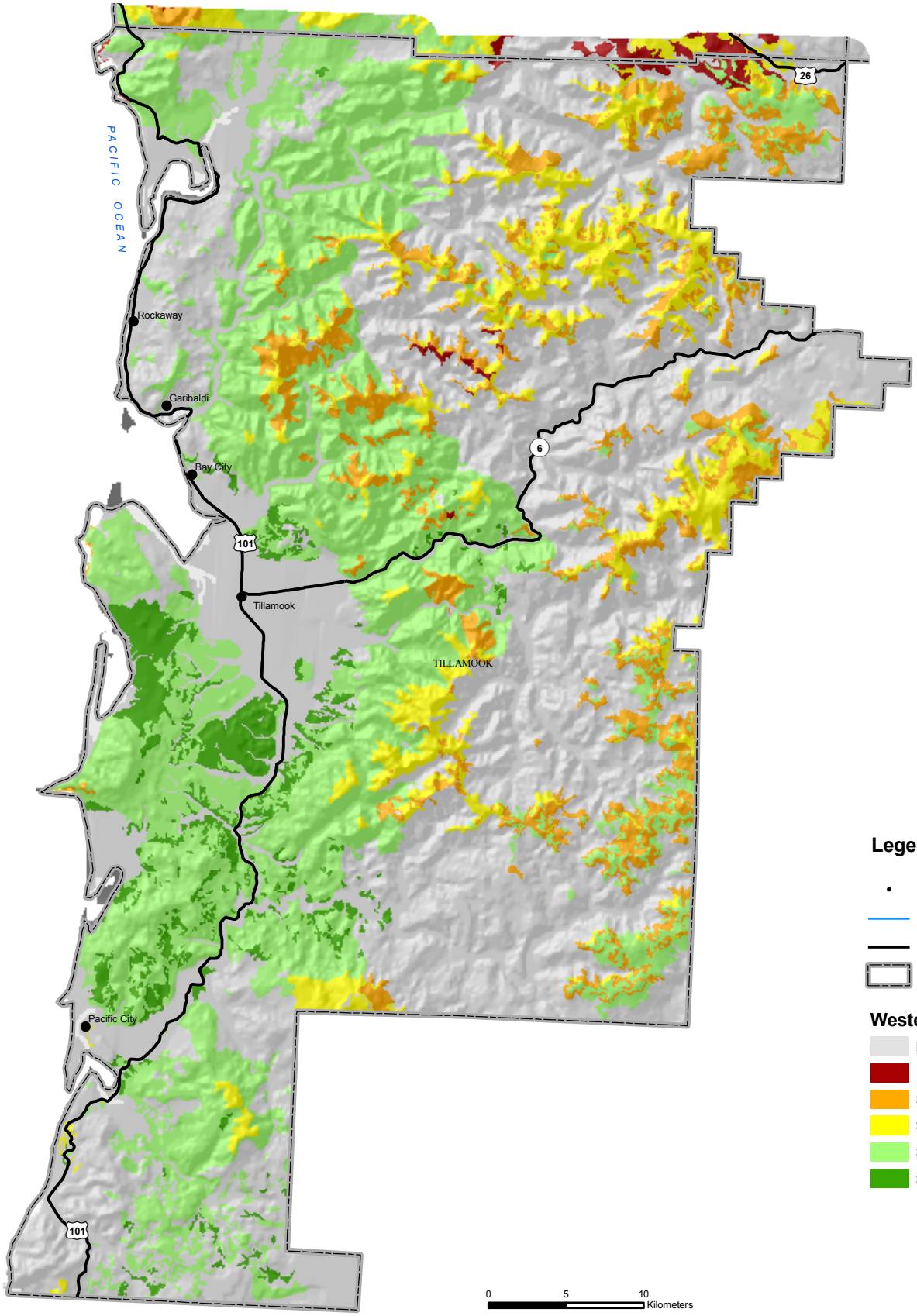

Legend

- Cities
- Rivers
- Highways
- Counties

Western Hemlock Potential

- Not rated or not available
- <= 129
- > 129 AND <= 202
- > 202 AND <= 238
- > 238 AND <= 268
- > 268 AND <= 285

0 5 10 Kilometers

0 2.5 5 10 15 Miles

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Figure 13

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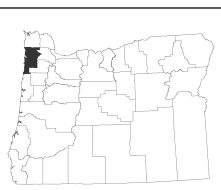

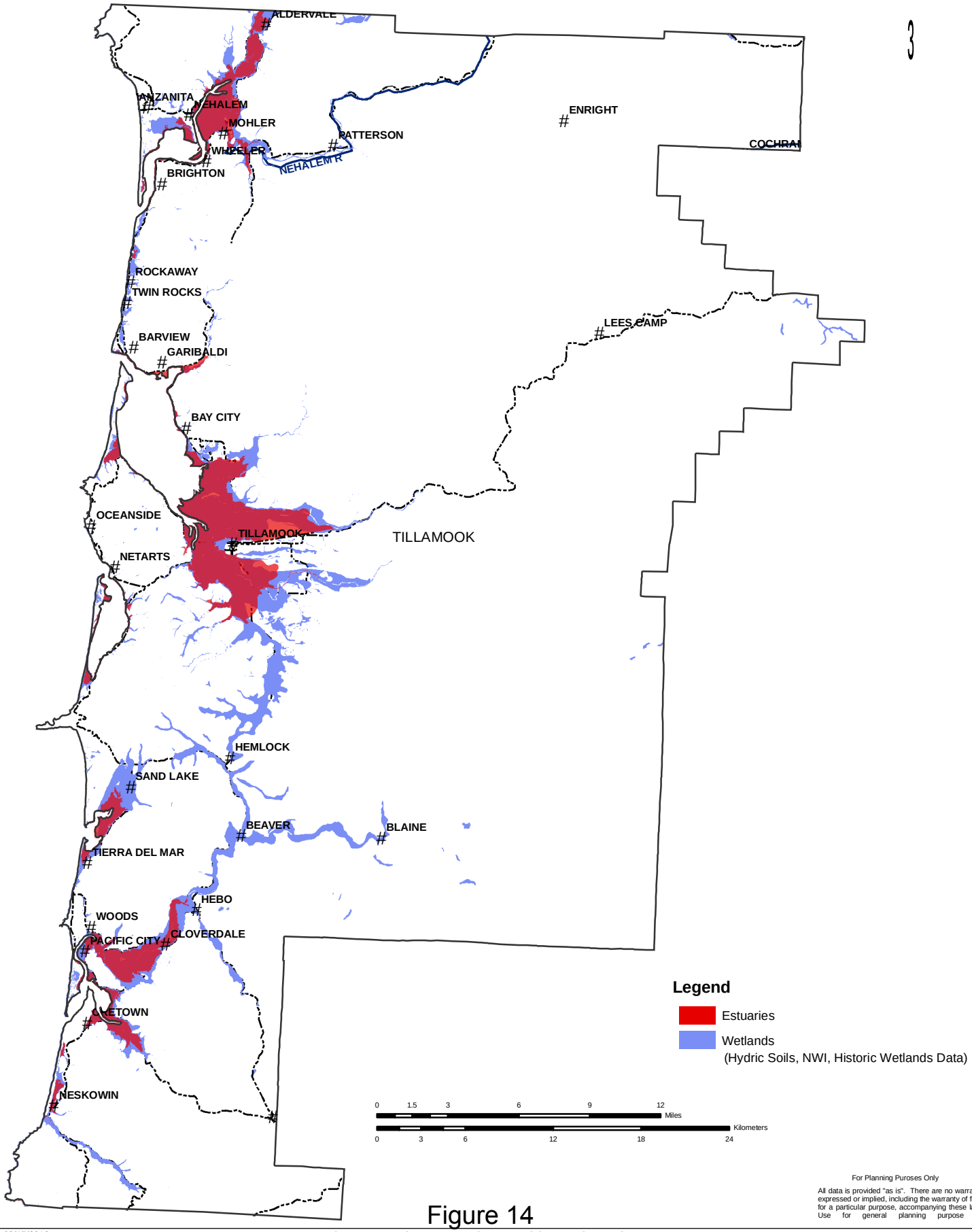

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Figure 14

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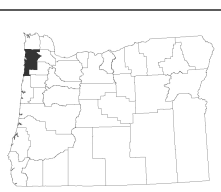

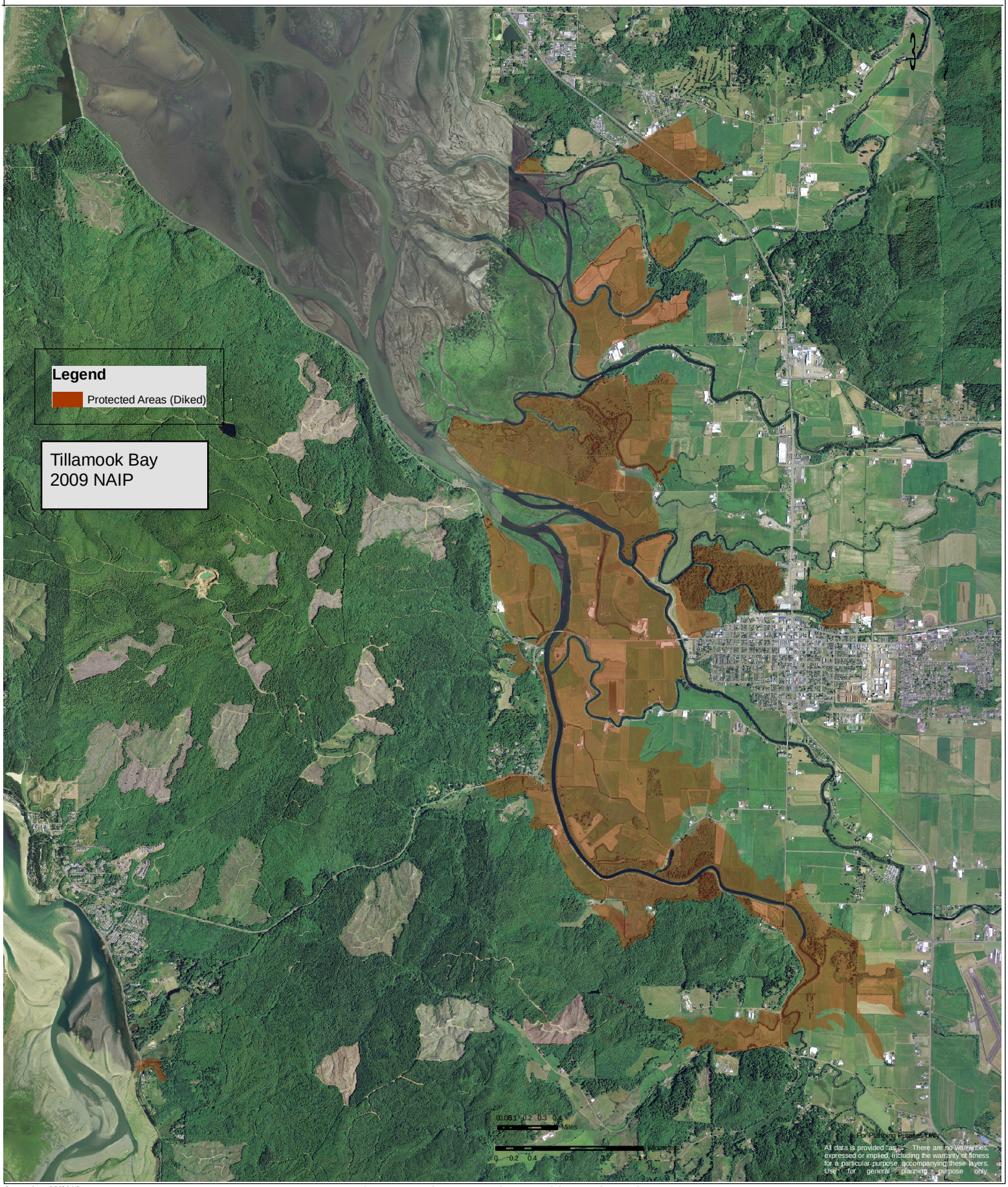

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Figure 15

In addition the AHS, ODFW has developed “The Oregon Conservation Strategy” to help interested parties target conservation and restoration efforts in a coordinated way. This strategy identifies strategic areas for with specific issues to be addressed that helps pinpoint restoration efforts (Figure 16)

Noxious species are another concern in the County and many organizations and agencies are working to create a coordinated effort to address this.

The main plant species of concern include Tansy Ragwort, Scotch Broom, and Japanese Knotweed. Although all of these may not be listed by the Oregon Department of Agriculture they seem to be key species that are getting a lot of attention at this time.

Some additional species of concern include the NZ Mud snail and Varnish Clams with other continually being identified in the area.

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STRATEGIC PLAN
TILLAMOOK COUNTY

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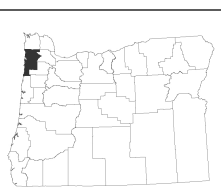

ODFW Conservation Opportunity Areas

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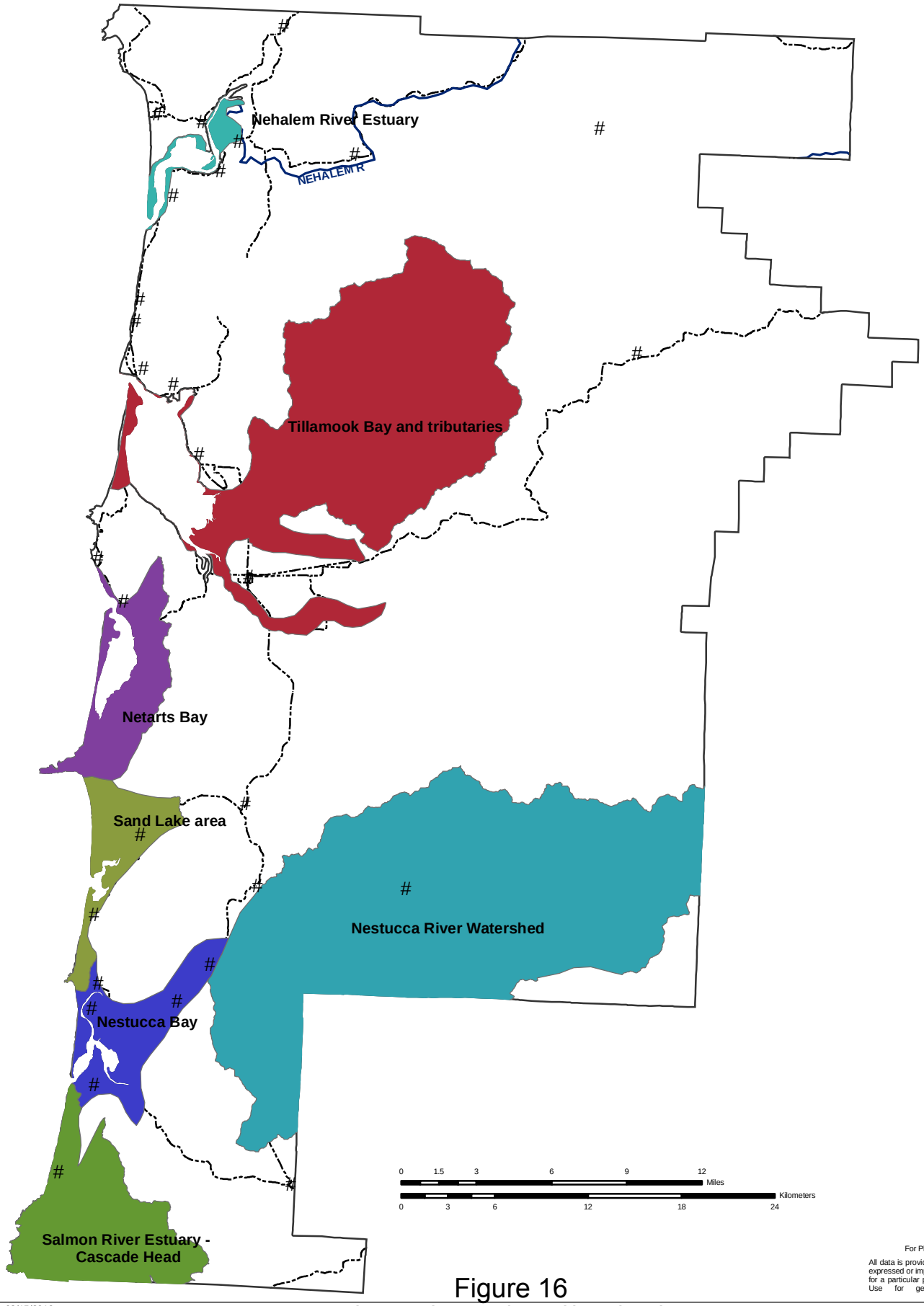

Figure 16

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Section III North Coast Basin

Conservation efforts in Tillamook County over the years have been concentrated on Water Quality and Wildlife Habitat for the most part, with some additional work by partners on invasive and noxious weeds. Some recent efforts have started to focus on air quality. Water quantity has always been monitored by OWRD and it is certainly a concern that will become more important as time goes on in the County.

The unique thing about the current resource concerns is that several of them are intertwined with one another so when work is being done towards one the additional spinoffs help with addressing many other associated concerns. For example when we look at water quality there are several subparts to this that when you address one it affects other associated concerns in a positive manner.

Water Quality - The water quality efforts have been associated primarily with Agriculture, and Watershed health.

Efforts have concentrated on waste storage in order to reduce the potential for surface runoff of Organics and Nutrients providing opportunity to apply manure at the proper time for the agronomic use of forage. NRCS has cost shared on manure storage and associated practices in the county through the Rural Clean Water Program (RCWP) and the Environmental Quality Incentive Program (EQIP) for several years now. Over this time period technical assistance and cost share dollars have been provided to assist the agriculture community to address these concerns through construction of waste storage facilities and development of Waste Management plans. To date there have been 280 known below ground storage and collection tanks installed in the county with 22 of these being installed in the period from 1991 to 2006. Dry storage facilities total 119 with 49 of these being built from 1991 to 2006. Liquid manure above ground tanks known to be installed to date total 108 with 4 additional planned for construction or waiting design, prior to construction. There is only 1 Composted bedded pack in the county that is known. This has been not only for water quality but also has air quality benefits. There are still some operations that are in need of assisting with storage capacity, that we have not worked with in recent history.

Management and storage of waste will continue to be a workload in the county with the ever changing configurations of operation management. Technical assistance to the dairy community to help them to learn the best management and application of their manure for the best agronomic benefits is an ongoing need. As new technologies are made available, these need to be brought to producers to adopt.

Oregon Department of Agriculture (ODA), TCSWCD and NRCS have worked together to help agriculture units that confine animals (CAFO) in the winter to develop waste management plans in order to protect water quality and maximize forage production. NRCS has used EQIP funding in previous years to ensure that all producers with CAFO permits authorized by ODA are current.

The Tillamook Bay National Estuary Project funded by the Environmental Protection Agency (EPA) in the 1990's identified several resource issues that were being worked on by partners and since then by additional partners. The main environmental issues identified by the study included Human Uses, Biological Resources, Water Quality, Sedimentation and flooding. At the end of the project a Comprehensive Management Plan (CMP) was developed with the many partners who participated to identify future conditions and how to get there. Many agencies and organizations (including NRCS) have used these documents to identify and target conservation, restoration and enhancement activities.

The present Tillamook Estuary Partnership (TEP) is the offshoot organization that EPA continues to support to some degree to continue implementation and monitor activities in the county that address the resource concerns identified in the CMP. Presently this group collects information yearly to provide documentation to the EPA regarding progress. TEP often develops and manages conservation projects. TEP has also developed grant funding towards projects and sub-contracts to different groups to implement conservation and restoration projects on the ground. Projects that they have been involved with to date to name a few include Wetland acquisition and restoration, streamside planting and fencing projects, and fish passage projects. There are other partners who help through the grants they provide in support of these projects, but most are not necessarily aimed at agriculture properties.

The grant funding that Oregon Department of Environmental Quality (DEQ) is from the EPA 319 funding pool. This money can and has been used on water quality projects within the county concentrating on riparian restoration. It has helped get projects done associated both with agriculture and non-agriculture. The TCSWCD has worked with DEQ to build dry manure storage for some horse owners along the Miami River in previous years. There remains a great deal of these non agriculture opportunities that could be addressed should funding become available.

DEQ continues to work with watershed councils in the county to collect water samples to monitor trends. Data to date has shown some improvement in some watersheds. Studies have been done in conjunction with Oregon State University to identify fecal coli forms associated with different sources including human and large animals with 4 stomachs.

In the county this partnership of agencies and organizations has worked to fence livestock from streams and water courses then plant with native vegetation in order to restore habitat, reconnect fragmented parcels. Conifers have been a key component of the planting. When these conifer species become large woody debris they are the key to processing river gravels and creating habitat for the Threatened Coho Salmon. The revegetation of riparian areas and reconnection of fragmented habitats are considered to be Key to maintaining and improving water quality in the county. These efforts help maintain and improve temperature, dissolved oxygen and stream bank stability. All of these are interrelated so work on any one of these benefits the other two. There are still many streams and water courses that would benefit from establishment of diversified cover.

Oregon Department of State Forestry (ODF) has been steadily improving their road (also reducing sediment issues) and fish passage in the Tillamook State Forest. There are private non industrial forest owners who are in need of technical and financial assistance to manage and maintain their forest

stands. Many are in need of forest management plans to help guide their maintenance. Service foresters with ODF have reported individuals who would benefit from this type do assistance in the county.

Fish passage surveys have been conducted on both private and publicly owned and managed lands enabling funding to be targeted towards improvement of these.

Stream courses especially major rivers in Tillamook County have had their banks extensively protected by Rip-Rap. This has been successful for stabilization initially, but as time has passed some are in need of maintenance and are beginning to unravel creating new areas contributing sediment to the streams and bays. Gravel removal from bars formed in the river has been a historically acceptable practice. A mediated agreement was developed to further regulate this (beyond Oregon Department of State Lands [DSL] requirements) between industry, Oregon Department of Fish and Wildlife (ODFW), DSL, TCSWCD and Tillamook County. Some gravel removal is still allowed under this mediated agreement under the premise that it will provide stream bank stability and a reduction in further sediment load.

Water Quantity – Each year agriculture operations exercise their water rights from local streams and wells. Yearly, the local Water Master has a time in the summer when he must begin shutting down access to this resource by the "junior" water right holders. No irrigation water management has been conducted in Tillamook County to date as the county has always enjoyed a seasonal precipitation that coincided with the growing season. As operations move to produce more of their own forage, reducing costs and better utilizing manure nutrients the seasonal precipitation has not been enough. Irrigation water management could benefit these operations and additional study with our partner OSU-Extension is needed to better identify how NRCS may be able to help landowners.

Human – The human element in resource use and conservation in Tillamook is intertwined throughout the resource concerns of the county. Most of the resource concerns in the county have some affect on humans and their use and enjoyment of the area. The very nature of agriculture production which was once pasture based has changed in the past three decades, leading to potential conflicts between that sector and the human element.

Air quality odors are being addressed through exploration and implementation of practices in an effort to create more hospitable environments for the communities in the county as well as in support of the tourist industry here.

Water quality and Watershed health are intimately tied to tourism and the community. DEQ, TCSWCD, TEP and Watershed Councils have been working on streamside planting in communities and the developed rural landscapes in an effort to improve water quality, fish and wildlife habitat, and to improve the human environment. Conifer planting along water courses continues throughout the county supported by all resource agencies and non government organizations.

Water contact activities require clean water so recent improvements of municipal waste treatment facilities in county, fencing of livestock from water courses and improvements to county requirements for septic systems in wet soil areas have provided documented trends (DEQ) of improvement.

Energy – Energy use on Tillamook county agriculture can be intensive at times. Many forms of energy on a dairy farm including diesel, gas and electricity are used. Typical uses of this energy include tractor field operations, Tractor driven PTO (Power Take Off) used for pumping and tank agitation, electrical motors for pumps and agitators, coolers, lights, appliances (refrigerators, washers, dryers, pasteurizers) and fans.

Because most dairy operations confine their animals during the winter months, a great deal of power consumption occurs to maintain the livestock and the facilities they are kept in. The waste produced daily must be handled at least once or twice a day. After this is collected the stalls are freshened with new bedding and feed is distributed. During good periods of weather, energy is again used to move waste from storage to out to the fields by various energy using methods including pumps, tank wagons and dry manure spreaders.

Some study needs to be done and partnerships built with Tillamook People's Utility District (PUD) in order to identify suitable NRCS practices that can be called upon to help clients reduce their carbon footprint and energy use. The PUD is presently able to conduct energy audits which will assist in determining practices that landowner s may be eligible for.

There may also be some potential for alternative energy generation in some areas but this will require further study.

Soils – Tillamook County has a variety of soils that occur in both steep forested uplands and agricultural lowlands. Because of the continuous vegetation that is maintained on these surfaces erosion is not typical. Typical erosion and sediment seen in the county are associated with mass failures in the uplands and stream bank erosion.

Oregon Department of Forestry (ODF) maintains with Department of Geology and Mining Industry (DOGAMI) in Oregon have data bases of slips and failures in the county uplands and plan their activities accordingly. ODF in recent years have moved to a mix of clear cutting of forestlands and selective cutting (to speed the successional process). Federal lands in the county have had little known harvest activities.

Stream bank erosion has been addressed historically through hard protection structures such as rip rap. More recently 10 to 15 years 'stream barbs' have been used successful in some applications to take pressure off of the bank to allow reestablishment of vegetation and grade stabilization to protect the toe of the stream bank.

Soft approaches (bank shaping and plantings only) have been few and some of the initial ones were unsuccessful. An improved version used in other NC Basin counties has been successful to date and in the future this may be an option, but it is costly. The most successful projects have had some form of hardened protection at the toe or strategically placed large woody debris, ensuring a successful project.

On small streams and water courses many groups have successfully used 'cutting and sticking' a variety of readily available trees and shrubs that readily root when installed in this manner. This has been used

in combination with hard structures on the large streams as well but has had limited success as the sole method for stabilization on these larger streams. Gravel bars do recruit willow and other shrub seedlings when left undisturbed for a winter by floods or gravel harvest so some stability of the systems occurs in this way. This stability does come with a price as it often encourages the stream to meander during high waters and open additional adjacent or downstream banks to erosion.

Plants and Animals – Primary resource concerns in these areas include Threatened and Endangered (T&E) species and noxious weeds/invasive species.

Federal agencies in the county have recognized T&E species in their planning and implementation for several years under the 'Endangered Species Act (ESA) and the Magnuson-Stevens Act (M-SA). Coho salmon have been listed, unlisted and relisted in the county. They have been listed by the state over the entire time the federal agencies have gone both ways so they have been included in any considerations of projects. Much riparian and in-stream work has been inventoried for needs, planned, funded and implemented by many agencies and non-government organizations. The primary concentration has been the salmonid resource in the lowlands. In the upland forests, salmonids, spotted owls, and murrelets have been major species of consideration for those associated land managers.

Federal, State and NGO sources have worked to address Wildlife issues through programs that work with private and industrial landowners. US Fish and Wildlife Service's Partners for Wildlife program has a broad application of funding opportunities that it has utilized and continues to seek projects for in the Tillamook area. Virtually all State and Federal agencies in the county or state have identified Tillamook County wildlife issues that they are willing to support or fund. The ODFW has developed the Oregon Conservation Strategy which calls out several opportunities in the county that have needs for additional project work. Wetlands in the county are of particular interest to TEP, ODFW, USFWS, NRCS, NOAA Fisheries Restoration Center, Oregon Watershed Enhancement Board (OWEB), and Watershed councils. Locally small groups are taking it upon themselves to be proactive in the acquisition and restoration of wetlands in the county often using existing management plans and studies to help attain financial assistance to do the work.

Since the completion of the Oregon Plan (Coastal Salmon Restoration Initiative) and the federal Report of the Forest Ecosystem Management Assessment Team (done for Bureau and Land Management and US Forest Service lands) these have helped to direct how these public agencies manage the lands under their jurisdiction for of fish and wildlife resources.

A partnership has developed between TCSWCD, DEQ and Tillamook County Creamery Association that fences, established off stream water systems and plants riparian vegetation. The TCSWCD through this partnership and additional help from other partners has installed over 165 miles of livestock exclusionary fencing (30 miles of this was previous to 2003), installed 21 miles of waterlines, 8 livestock crossings, 146 Nose Pumps (watering facility), numerous watering troughs and planted over 890,000 trees and shrubs. Much of this work has been in the agriculture landscape.

A unique partnership has also been developed within the county between agencies and NGOs that propagates low cost native trees and shrubs to restore the counties riparian area and wetland projects.

Seed stock is collected locally, started in a green house then out planted for a year in specialized containers prior to be installed at the project sites.

Private non industrial forestland management has been limited to what help ODF has been able to provide. A healthy forestland program utilizing individual Forest management plans to implement it is a need in the county. The county has been logged and burned many times over the years and forest lands for the most part are made up reforested lands that are mono culture of species, overstocked and/or in need of invasive weed control. Working with ODF to identify practices and a potential client base (size) needs to be conducted to determine the need for program development in Tillamook County.

Weeds/Noxious weeds

The TCSWCD has worked with volunteer groups and for Nestucca-Neskowin Watershed Council to reduce scotch broom in the South County area.

The TCSWCD also provides informational articles to local publications and reminders to address weed concerns in the county. As weeds are sighted or complaints received reminders are sent out to landowners by the TCSWCD regarding their responsibilities to control weeds on their property. The weeds are limited to those that the district felt they can feasibly address. Tansy Ragwort is one of the noxious weeds common to the county. There are biological controls in place at this time for this weed so monitoring of the effectiveness of these controls and moving the insects to where the plants are is a useful tool that has been used in the past.

Not all weeds in the county have a biological control in place so a working group called PRISM (Partnership for Regional Invasive Species Management) has been formed in the county to coordinate different group efforts to address weeds in the county. One of the products that they are working towards is development of an invasive species rapid response program. This is an ongoing process and will take time to get it together.

Invasive species both weeds and animals continue to be found and introduced to the county. State, Federal and County programs continue to bring these to light and work to eradicate or monitor them while means of control are developed.

Strategic Approach to Conservation

NRCS-Tillamook

Water Quality

What is the severity of the problem?
The changing sizes, configuration and management of Dairy operations in Tillamook County contribute to degradation of the quality and quantity of surface and ground water, resulting from contaminants by nutrients and organics. There are over 100 producers for the Tillamook Creamery Association, an unknown amount of heifer operations and many rural residential livestock keepers. To date there have been 280 known below ground/collection tanks installed, 108 above ground liquid storage tanks and 119 dry storage facilities for animal waste. There is only one known composted bedded pack in the county primarily for air quality but, with the added benefit of addressing water quality.

As more animal feeding operations (AFO's) change ownership, management, or are created, the results are that a large amount of producers are unfamiliar with the rules and regulations. Many old and new dairy operations are experiencing challenges following and understanding the comprehensive nutrient management plans (CNMP's) practices that are set in place to guide the owners with proper waste application(utilization), handling and storing the manure generated on the operation. The result is that contributions from these operations and other sources in the county have caused most of the streams and rivers in the county to have total maximum daily loads (TMDL's) to be developed for bacteria, temperature, and dissolved oxygen. The contaminants in the water are affecting the quality of the water for drinking, irrigating, wildlife, and recreation.

In order to address the water quality issues that can result from nutrients and organics contaminating water, CNMP's need to be written for those operations with outdated plans or those that need a new plan. These plans will help the producer to better understand the practices and regulations he must work under and provide him with the knowledge to apply this independently in the future.

Who is willing to help with this resource concern?

- Environmental Quality Incentive Program
- Tillamook County Creamery Association
- ODA
- Tillamook County Soil and Water Conservation District-has worked with the Department of Environmental Quality (DEQ) on Non-Ag dry manure storages

- Environmental Protection Agency-funded the Tillamook Bay National Estuary Project to develop the Comprehensive Conservation and Management Plan (CCMP)
- Tillamook Estuary Partnership-implements and monitors activities in the county that address the resource concerns identified in the CCMP. They also collect and record info annually to provide documentation to the EPA regarding progress
- DEQ-acquires grant funds, works with watershed councils to collect water samples to monitor trends, and has had a grant program that assists in repairs to failing septic systems
- Oregon State University-Extension- have identified fecal coli forms in the water associated with different sources
- Oregon Department of Forestry- steadily has been improving their roads and fish passage in the Tillamook State Forest.
- Oregon Department of State Lands
- Oregon Department of Fish and Wildlife
- USDA Long Term Agreements
- USDA Rural Clean Water Program
- Port of Tillamook Bay MEAD Digester group
- Tillamook People's Utility District

This partnership of agencies and organizations has worked to fence livestock from streams and watercourses to manage forage and access to water courses. Fenced watercourses are planted with native vegetation in order to restore riparian areas reconnecting fragmented parcels. These efforts have assisted in improving habitat for the threatened Coho and other Salmonid species, by maintaining and/or improving temperature, dissolved oxygen, and stream bank stability.

Resource Trends

Efforts in the past have been concentrated on waste storage to reduce the potential for surface runoff of organics and nutrients, providing the opportunity to apply manure during the proper times for agronomic use by the forage. The size of operations has increased in the county over time, and there have been a combined total 388 known above and below ground liquid manure storage and collection tanks installed in the county to. CNMP's are starting to expire and go out of date as time passes. This has resulted in the potential for more nutrients and organics contaminating water sources because plans for proper application of waste are not current to present management of operations.

Stream courses, in the past, stream banks were stabilized and protected by rip-rap with little riparian vegetation retained. This was a successful method initially but has begun wearing out over the years and is in need of maintenance to eliminate this stream bank source of sediment into the streams and bays.

DEQ, TEP and Watershed Councils, such as the Tillamook Bay Watershed Council, are creating awareness about water quality and declaring the rivers with fecal coli forms. The TCSWCD in partnership with DEQ and TCCA along with other partners have been

fencing and planting along water courses, excluding livestock, installing off-stream watering facilities, protecting the stream banks and associated vegetation off has proven very effective. Fish counts have not declined substantially from the water quality; mainly they have been up and down, possibly dependent on river flood cycles, ocean conditions and upwelling.

What are the goals?

- Help all participants learn to properly manage their nutrient applications to maximize its value and reduce contaminations
- Improve stream and riparian health

The NRCS believes that, with the participation of partners, a planned 60 producers county wide that have outdated CNMP's will be able to create updated plans in five years. The hiring of a Technical Services Provider to write the new CNMP's will help reach the goal, along with continued education and outreach to encourage proper implementation of the plans.

The dairy industry took a hard hit from the economy in the past few years and is experiencing high feed prices and low milk prices, resulting in many producers not financially capable enough to participate in the high cost-share assistance programs. This is making the implementation of many of the prescribed practices hard to justify and may present a setback in reaching the goal if additional storage is required in the revision of their CNMPs. The most cost effective means of managing proper waste utilization is in improvements to management of the present systems through education.

How much funding is needed?

The following table shows the estimated costs, both from the NRCS and partners, to help improve the water quality and quantity in Tillamook County for the next five years. The costs will increase and progress advances until the final year, which should have little work remaining.

Year	2011	2012	2013	2014	2015
Funding needed	$106,200	$200,000	$375,000	$450,000	$250,000

Air Quality

What is the severity of the problem?

Unpleasant odors from manure handling facilities are causing public concerns in the county. The problem source is on livestock operations, particularly at headquarters and fields where manure is applied. This problem impacts urban and rural residential citizens and could start to deter tourism to the area, greatly affecting the local economy. There is a strong potential for future regulation of odors at the state or federal level as methane and ammonia levels are studied. The health issues that may be associated with these odors is unknown and warrants further study.

The odor problem worsens during the manure application periods on fields and is heightened by the use of big gun sprinklers that broadcast the manure high into the air, increasing odor potential because, of the increased surface area exposed to the air by the droplet size associated with "big guns" atomizing the waste. This also facilitates the loss of Ammonia from the manure as gas which loses this additional nutrient value for the crops it is being applied to.

Who is willing to help with this resource concern?

- ODA
- Tillamook County Soil and Water Conservation District
- Environmental Protection Agency
- Department of Environmental Quality
- Oregon State University-Extension
- Tillamook County Creamery Association

Resource Trends

This is a recent resource concern that has only become a developing issue within the past few years. Efforts made have proven to reduce odors, however there has not been much work done for awareness and outreach to date. This is a trend that will continue to increase with the expansion of operations, if nothing is done to address the air quality issues.

What are the goals?

- Improve air quality
- Decrease odors for economical reasons

Working with all producers in the county is a high goal and most likely not attainable so the NRCS is focusing on changing the management styles of 50 percent of the operations. The NRCS will start with producers in close proximity to the urban growth areas. The management and vegetative practices that will be used to address the air quality for these operations include: waste utilization, waste treatment, windbreak/shelterbelt establishment, amendments for the treatment of agricultural waste and irrigation water conveyance. The irrigation water conveyance practice is a facilitating practice used to transfer manure under pressure to the fields, drag lines and low pressure application spreader bars used for this odor reducing waste application method.

Composted bedded packs are planned to be added to this list because of the air quality benefits, however they are costly and only one is installed and in use in Tillamook County. Further study is needed by NRCS and partners to identify additional composting materials that can be used successfully for this practice.

Outreach must be continued to inform operation owners and possible partner agencies about the expanding resource concern. Word of mouth will become an effective practice when progress starts to get made and outreach informs all operation owners of the NRCS

cost-share assistance programs. The state NRCS office is helping the Field office on this issue, which is helping further the efforts.

How much funding is needed?
To fund the project and reach the intended goals, the amounts needed are as follows:

Year	2011	2012	2013	2014	2015
Funding needed	$80,500	$90,500	$90,500	$90,500	$70,500

More funding is wanted on top of the requirements to manage air odors. The NRCS and partners would like to experiment with new methods to address air quality such as a large covers for tanks to trap methane. A methane generator would also be very beneficial in the future. If an effective methane digester technology can be identified for Tillamook County then this and potentially a methane burning generator for production of electricity for return to the local power grid can be considered.

Oysters

What is the severity of the problem?
Oysters are a potential new resource concern in the county. Tillamook County once had a large native oyster population that was well documented in at least Netarts Bay. Work has begun to reestablish the native stock by interested individuals including OSU Grad students, ODFW, a local oyster hatchery and at least one NGO. There is still not enough information available yet to determine the best way to assist in this effort. Reestablishing the native oysters will help develop stock that is already adapted to the local conditions and stresses. An additional future benefit might include the harvest of native oysters by the general public once again. Growers are using EQIP successfully in other states to redevelop the native oyster reefs in their bays. NRCS will need to study further the opportunities and benefits of investing in this effort to determine its programmatic feasibility.

Who may be willing to help with this resource concern?

- NRCS
- Tillamook Soil and Water Conservation District
- Oregon State University
- Oregon Department of Fish and Wildlife
- Whiskey Creek Oyster Hatchery
- NGOs
- ODA

Resource Trends
The popularity of fishing and clamming in the area has always been high. The oyster businesses in Tillamook County began with harvesting the slow growing native populations during the mid 1800's. This population began to show the strains of over harvest during the California Gold Rush period when bushels were exported in the shell

to California. It is probably safe to say that for the most part the natives have dwindled drastically to a very residual population if present at all and for the most part been replaced by the faster growing "Japanese Oyster" introduced in Tillamook Bay in 1928 beginning the first commercial effort to rear oysters in the county. People have been working to reestablish the native oysters through artificial propagation of spat and restocking historical sites in Netarts Bay.

What are the goals?
Goals are undetermined at this juncture. Outreach needs to be done to determine the demand and assistance required. More study is needed to understand the potential EQIP might have in the assistance of reestablishing the rearing and reestablishment of the native stock.

How much funding is needed?
Funding and timelines for this project are unknown until more extensive studies are put into this issue to determine what can be done and costs needed.

Energy

What is the severity of the problem?
Energy consumption affects every American private and commercial. The issue of energy has become so important that it has just recently been recognized as an official resource concern. The potential to reduce electrical energy consumption and reducing the American agriculture carbon foot print is a huge opportunity in our food producing sector which has traditionally rested on the use of equipment that just gets it by without properly considering the cost of operating it. Now that the American public has determined that we must address this issue as a nation, including in our agriculture community we have a great opportunity to assist our clientele in making their operations more energy efficient and cost effective.

Who is willing to help with this resource concern?

- Tillamook People's Utility District (PUD)
- NRCS
- Tillamook Soil and Water Conservation District
- NW Oregon and Cascade-Pacific RC&Ds
- Tillamook County Creamery Association

Resource Trends
This is a resource concern that has been given little attention or thought in the past. Little outreach has been done to best determine the methods locally that will use less energy, which will in turn reduce energy costs. The Tillamook PUD has been available to conduct energy audits for businesses in the county. The price of fuels and the need to produce feed stuffs locally has increased the carbon foot print by local farms. Some farms have continued utilizing Power Take Off units to operate pumps and agitators because the cost of getting power to the site where it is needed has been a financial hardship and though this program may not address this, it may help to identify a

partnership that could make it easier for a participant to do. Additional study is needed so that the local NRCS office can develop a successful suite of practices to address energy consumption and production. The hope is that within the next year outreach and a funding pool can be developed to jump start assistance to potential local participants.

What are the goals?

- Encourage energy audits to identify opportunities for replacing inefficient electrical equipment
- Reduce electrical energy use
- Reduce Carbon fuel use and move it to greener technologies where possible.
- Create opportunities for energy self sufficiency through green technologies.

The NRCS hopes to assist with replacement of eligible outdated equipment and pumps in the agricultural industry. Pump systems use high amounts of energy and replacing inefficient motors, pumps and starters will help reduce the industry energy footprint and help air quality as well. Updating 50 percent of the inefficient pumps and systems is a feasible goal to reach in five years if funding becomes designated to the issue.

Another objective, if suitable technology becomes available, is to install digesters within the county to put energy back on the grid. This would help the area become more self-sufficient if energy could be made and sold back to energy companies. This would also reduce the carbon footprint of AFO's and other agriculture industries and would allow them to become more self-sustaining.

How much funding is needed?
Funding is undetermined until the issue is added to a funding pool. Additional work needs to be done with the Tillamook PUD and other partners to better understand the opportunities.

Wildlife Habitat Disconnection

What is the severity of the problem?
Wildlife are having a difficult time assessing the habitats needed for perpetuating their populations due to fragmented riparian habitat, wetlands and continuity of access to habitat on key stream reaches. This has resulted in isolated populations, reduction in genetic diversity, and loss of migration routes and rearing habitat.

This problem exists in areas identified on the Oregon Department of Fish and Wildlife's conservation strategy and isolated wetlands divided by roads, dikes, and other types of development. Rivers and tributaries where the fish passage is obstructed also add to this resource concern as productive spawning habitat access is lost.

Who is willing to help with this resource concern?

- Oregon Department of Fish and Wildlife
- Tillamook County Soil and Water Conservation District
- Oregon Department of Forestry

- Tillamook County Watershed Councils
- NRCS
- Whole Watershed Restoration Initiative
- Private landowners
- Oregon Department of State Lands
- Tillamook County

Resource Trends
Historical forestry and agricultural practices has resulted in the denuding of vegetation all the way to the edge of water courses. The poorly managed remaining riparian areas have resulted in the reduction and/or elimination of plant diversity and ultimately altered the wildlife habitat.

What are the goals?
- Connect and improve wildlife habitat

If all of the partners are compliant to work with the NRCS on the issue, the desired outcome is to address 60 percent of the riparian areas on agricultural or non-industrial private forest land that lacks diversity and habitat connectivity. The NRCS would also like to increase fish passage at a rate of 50 miles per year on stream identified as having significant amounts of available habitat.

How much funding is needed?
The estimated amount of EQIP funding that the NRCS can contribute to obligate new contracts in the next three years is shown, as well as the partner contribution:

	2011	2012	2013
EQIP FA	$25,000	$100,000	$75,000
Partner FA	$25,000	$100,000	$75,000
Partner TA	$15,000	$30,000	$20,000

After three years, funding and progress will be re-evaluated to determine the time and funding needed to complete the project.

Natural Resources Future

The Direction for Conservation Work

Prioritization of resources in Tillamook by order of importance;

1) Water Quality
2) Wildlife
3) Air Quality
4) Energy-At this time, we don't have enough information to address this resource problem, however it has been identified as high priority and will warrant further investigation

Water Quality

Nutrients

A) What are we trying to Achieve?

In Tillamook County we are trying to improve the uptake of nitrogen by forage grown on Confined Animal Feeding Operations (CAFO) to reduce or eliminate the nitrates that reach water and thereby improve water quality. CAFOs are one source, but Nitrates also occur in human waste systems (treatment plants and septic systems).

B) How are we going to achieve it?

In Tillamook County there are over 100 Dairy operations working under Comprehensive Nutrient Management Plans (CNMPs). We want the operators to be able to properly plan and apply waste to their pastures and hay lands based on the nutrients available and crop needs. We further want these operations to have current CNMPs based on the operators new knowledge and understanding of how they can manage their forage production maximizing the nutrients generated on their farm. This will ensure that nutrients produced by the operation are utilized in the forage and not negatively impacting water quality.

In order to achieve this level of management an outreach plan will be developed. This outreach plan will target working with key operators with Technical Service Providers (TSP) to adopt the necessary change in management to properly apply the nutrients generated on their operation. The TSP will provide technical advice initially for proper Nutrient Management and finally a mentor to the producer over the period of the contract. In the end the TSP has worked with the landowner so they can develop a yearly Nutrient Management Strategy and then implement it. The key management practices to be used are as follows;

- Comprehensive Nutrient Management Plans (updating those CNMPs that no longer represent the operation)
- Enhanced Nutrient Management followed by a CNMP when the producer has a better working knowledge of the practice's application on their operation.

Because operations required to have a CNMP are regulated by science based permits, other partners will also assist in operators achieving a working knowledge of Nutrient Management. Education and technical support will be provided by many of the following potential partners;

- Oregon Department of Agriculture
- Tillamook County Soil and Water Conservation District
- Tillamook County Creamery Association
- Oregon State University-Extension

We have developed written educational materials in the "Implementing a Manure-Based Nutrient Management Plan" booklet. This was printed in limited quantity and often still requires some review with an operator by someone knowledgeable with Nutrient Management. Regular contact with a TSP or Certified Crop Advisor will provide the necessary mentoring for operators to gain confidence in their own abilities to successfully plan and implement Nutrient Management.

The development of the conservation implementation strategy for this resource concern will further identify specific numbers of operators. There are approximately 100 dairy producers in the county that operate under CNMPs. Of these 100 operators some do have a working knowledge (maybe less than 15%) of good Nutrient Management.

Using a 300 cow average and 150 Ac average farm size we can estimate a potential cost to work with the remaining 85% of the cooperators in the county as follows;

CNMP development	300+AU Plan Dev. @ $4,500 ea X 85= $382,500
Nutrient Mgmt on Advanced CNMP	150 Ac each @$38.00/Ac/yr X 3yrs or $17,100/contract

85 contracts X $17,100=$1,453,500

Combined est. cost: $382,500+ $1,453,500 = $1,836,000

Because of this large cost additional information based on levels of nitrates will help to better prioritize watersheds to be addressed. Department of Environmental Quality (DEQ) data will be required to prioritize where to focus our efforts.

C) How are we going to know we achieved it?

Measurement of forage volume is highly variable from year to year due to weather patterns. However, we will know that the forage that is produced utilized the planned nutrient applications rates as planned with fall Soils test results. A decreasing residual of key nutrients at end of growing season will provide us with a science based method of measurement on that operation. Reviewing a comparison of soil test results, manure test results, and tissue tests results could also be used to determine nutrient uptake.

Conversations with ODA regarding the results of their annual CAFO operator reports will be based on the farmers actual knowledge of # nutrients applied per acre.

D) What information do we still need?

Work with DEQ to better understand their data to help prioritize watersheds for implementation. Currently (2010) the Fecal Coli form standard is being met on the Wilson River according to local DEQ information, Fecals are associated with manure and this association may be a way to help prioritize the efforts.

E) Where are we now?

FY 2013 the Nutrient Management CIS began measuring success not only through annual records of Nutrient Management working with TSPs, but also utilizing expanded data collection of Bacteria by ODEQ. A total of 20 contracts have been written to date towards this resource concern. These contracts are also considered to address the bacteria resource concern in the next section.

Bacteria

A) What are we trying to Achieve?

Improve Water Quality through proper application rates and timing to reduce or eliminate the loss of fecal coli forms to surface water adjacent to Tillamook County pasture and hay land and therefore improve water quality to acceptable levels meeting State and Federal standards.

B) How are we going to achieve it?

In Tillamook County there are over 100 dairy operations. We want the operators to be able to properly plan and apply waste to their pastures and hay lands based on the nutrients available and crop needs. We further want these operations to have current CNMPs based on the operator's new knowledge and understanding of how they can manage their forage production maximizing the benefits of the nutrients generated on their farm. TSPs and participants will create nutrient management strategies based on conditions and test results associated with waste on their operation. This will ensure that waste and associated nutrients produced by the operations are properly utilized by the forage because proper rates, timing and form have been followed so nutrients and associated bacteria are not available to negatively impact water quality. Clean water through proper utilization of waste applied at agronomic rates.

Our goal is to reduce bacteria in four major rivers to acceptable levels. In order to do this, we need to work with 37 participants over the next four years on ~3616 Acres of Pasture/Hay land to properly implement Nutrient Management, meeting or exceeding Land Grant University (Oregon State University [OSU]) recommendations.

Initial experience with outreach activities in the county has been successful. Additional outreach plans will target working with key operators in the lowland areas where the soils are most likely to be saturated during the early and late growing season. Screening criteria have selected heavily for those applicants farming in these areas.

The further development of the conservation implementation strategy for this resource concern will identify specific numbers of operators. Currently there are approximately 100 dairy producers in the county that operate under CNMPs. Of these 100 operators some are already implementing good Nutrient Management (maybe less than 15%). We already are under contract with 10 operators addressing the proper utilization of NO^3/NO^2 resource concern.

In this funding pool we will target an additional 37 participants (~43% of the remaining 85), using a 250 cow average and 150 Ac average farm size we can estimate a potential cost to work with these cooperators in the county as follows;

CNMP development 250+AU Plan Dev. @ $3750 ea X 37= $138,750

Nutrient Mgmt on Advanced CNMP 150 Ac each @$33.40/Ac/yr X 3yrs or $15,030/contract

37 contracts X $15,030=$556,110

Combined est. cost: $138,750+ $556,110= $694,860

Because of this large cost, observed levels of bacteria will help to determine priority watersheds to be addressed in next year's funding pool. Currently the data shows that bacteria criteria are being met on the Wilson River and upper Kilchis River (Hathaway Slough and Vaughn Creek do not). Continued communications with DEQ regarding existing data and future data collection are required to help make timely adjustments to this determination. Presently the ranking criteria will elevate potential participants in the lowlands where there is the greatest potential of bacteria loss.

Analysis of this information and outreach activities will further help identify any needs for a narrower focus area for future funding pools.

C) How are we going to know we achieved it?

Progress towards the goals and objectives in implementing the project will be monitored annually by nutrient management properly applied as determined by the TSP. Progress in meeting our Bacteria reduction goals will be through long term monitoring by DEQ. Nutrient management if properly implemented will be a reportable item by the Acre. Planned in this funding pool is 1,500 acres per year for the next three years and 1,100 acres in the fourth year.

A decreasing residual of Nitrates at the end of the growing season will provide a science based method of measurement on that operation. Soil, manure, and tissue tests results may be used to determine nutrient uptake. Forage volume can be highly variable from year to year due to weather patterns. However, we will know that the forage that is produced utilized the planned nutrient applications rates as planned by Fall Soils test results and/or crude protein analysis.

Conversations with ODA regarding the results of their annual CAFO operator reports will provide some feedback on the farmers actual knowledge of # nutrients applied per acre. As time goes on anecdotal information gathered from ODA findings of the surrounding farmers (to our participants) making changes in Nutrient application will help determining additional success beyond our documented participants. For program participants annual reports documenting nutrients applied and estimated forage removed will be collected. Annual post-harvest soil samples will be compared to OSU post season recommendations ($\leq$50#/Ac) to determine success of forage utilization.

Continued regular discussions with TSPs regarding the operations they are working with will also provide an indication of success towards the planned implementation goal of proper application to reduce bacteria.

Success will be achieved when annual analysis of DEQ data shows trend data meeting water quality goals in each watershed.

D) What information do we still need?

Work with DEQ to better understand their data to help prioritize additional watersheds for implementation. Currently (2012) the Fecal Coli form standard is being met on the Wilson River and upper Kilchis River according to local DEQ information, Fecal Bacteria are associated with manure and this association is a more reliable tracking measure than random NO2/NO3 sampling efforts.

E) Where are we now?

In FY 2013, there were 13 applicants and 10 contracts developed specifically for this resource concern. Previously (FY2011 and 2012) there were 10 contracts developed for Nutrient Management. In 2013 the Nutrient Management CIS was renewed but the method of evaluation was changed to bacteria since ODEQ has expanded their sampling in the county. It is felt that if proper Nutrient Management is being done Bacteria levels should respond as well. The long term ODEQ bacteria trends in Tillamook County streams will help to document that both resource concerns are being addressed.

Wildlife

A) What are we trying to Achieve?

In Tillamook County we are trying to restore and enhance wildlife habitat to provide connectivity of those areas that have been fragmented. These habitats include riparian, wetland and upland habitats often utilized by Threatened and Endangered species as well as species at risk.

B) How are we going to achieve it?

In the county there are hundreds of miles and of fragmented riparian zones and acres of poorly functioning wetland habitats. Many of these issues have been caused by management activities that did not take into account the habitats fragility or the benefits these areas offer for conserving land that allows for continued use of adjacent areas. Work has progressed to work in these areas but at a slow rate.

An implementation strategy to identify partners who are working in these areas and then develop relationships and opportunities that allow us to work together to address the issues will be developed. In order to work efficiently partnerships will be important to collaborate on the best projects.

The main focus of practices at this time is based on the efficiency of time to develop and implement them. Planned practices include;

- Riparian Forest Buffers
- Tree/Shrub Establishment
- Forest Sit Prep
- Exclusionary Fencing
- Wetland Restoration
- Wetland Enhancement
- Wetland Wildlife Management
- Upland Wildlife Management
- Fish Passage?

Partnerships are key for our success in implementing these practices and helping with the projects. Due to limited time we will be counting on partners for permits and any associated practices outside of our abilities to service. Partnerships where we can assist with practices to make the project complete and the dollars go further are our goal. Some of the existing partners and potential Partners who have been working to improve habitat are;

- Oregon Department of Environmental Quality (DEQ)
- Watershed Councils
- Tillamook County
- Tillamook County Soil and Water Conservation District

- Tillamook County Creamery Association
- US Fish and Wildlife Service
- Oregon Department of Fish and Wildlife (ODFW)
- Tillamook Estuary Partnership
- Oregon Watershed Enhancement Board (OWEB)
- Whole Watershed Restoration Initiative (WWRI) Ecotrust

Restoration work has been done for a number of years in the county on the obvious and accessible properties. A regular outside funding source for these partners is also difficult to achieve because of the competition between geographical areas in Oregon. Because of this we will work with those partners when ever practical that already have assessments of their habitat needs and funding underway for projects that meet our implementation objectives.

Additional work needs to be done in order to capture the amount of resources that need to be treated and the dollars required to do this work. Further work also needs to be done with our partners to explore how they account for benefits to the resource different types of projects so we can work more effectively to a common goal I the future with them.

C) How are we going to know we achieved it?

Primary scientific measurements of improvements will vary based on the specific habitat we are working in. However for riparian areas a stream that has been treated will have a functional diverse riparian area, that contributes to the reduction or moderation of temperature based on DEQ and Watershed Council data collection. The DEQ/Watersheds regular sampling regime will help to document changes in Temperature and potentially Dissolved Oxygen (DO) where they sample. ODFW conduct regular sampling of Salmonids in the County and these accounts are used as production trends which will provide some evidence of improved habitat levels. Further trends collected for Chinook juvenile and adults can help to document improvements to wetland functionality as rearing habitat in the lowlands associated with the estuary.

D) What information do we still need?

Need to develop additional partners who are forerunners in restoration where we can work with them to provide practice criteria and funding as part of their larger projects.

Develop methods of accounting for effects of improvements to habitat with our partners.

United States Department of Agriculture
Natural Resources Conservation Service
OREGON

Nestucca Watershed Water Quality Restoration

Overview

The Nestucca Watershed, located in Tillamook County, is comprised of federal, state, industrial, small woodlot, residential and agricultural ownerships.

The watershed is heavily forested and provides habitat for a number of fish and wildlife species including Steelhead, Coho, Chinook, and Chum. This area also provides recreational and economic opportunities for the local communities.

Currently, the Nestucca River has been identified on DEQ's 303d list as water quality limited for the following: temperature, sedimentation, fecal coliform, ecoli, habitat modification, and dissolved oxygen.

Background

In the Nestucca Watershed, activities on agriculture, residential and forestland as well as loss of riparian buffers have led to higher levels of nutrients in surface waters from direct runoff and livestock access. This has also resulted in increased stream temperatures from lack of shading, and loss of connected habitats that provide corridors for a plethora of wildlife. Stream courses have also been altered with the installation of culverts and other structures that not only limit the passage of fish, but have resulted in an overall loss of habitat.

The following groups have worked to make considerable progress in improving the health of the Nestucca Watershed:
Nestucca-Neskowin Watershed Council Tillamook County Soil and Water Conservation District,
Tillamook Estuaries Partnership, Department of Environmental Quality
Bureau of Land Management
Oregon Department of Forestry
U.S. Department of Forestry
Natural Resources Conservation Service

As a result of their work, many miles of riparian habitat have been restored. Forest land at the headwaters is being managed to restore and maintain late-successional forests and conserve biological diversity. Many agriculture operations have the infrastructure needed to properly manage their nutrients. The Nestucca-Neskowin Watershed Council has also developed an action plan to address the health of the watershed including actions to improve water quality.

In addition to all the restoration activities already completed, further opportunities exist on private non-industrial forest land, agricultural lands, and residential lands to connect riparian habitats, improve water quality, and remove barriers to increase access for upstream habitat.

Objectives

The goal in the Nestucca Watershed is to strategically put together multiple partner resources to reduce fecal coliform and ecoli levels, increase dissolved oxygen levels, stabilize temperatures, and improve connectivity of

wildlife habitat resulting in improved water quality and wildlife habitat in the Nestucca River.

The objectives of this strategy are as follows:

1. Restore remaining riparian habitat to provide shading, large wood recruitment, filtering of nutrients, and connected wildlife habitat.
2. Further improve management of agricultural lands to ensure livestock remain out of surface waters and wastes are managed with the proper rate, form, and timing to eliminate runoff into surface waters while maintaining productive working lands.
3. Develop a template for successfully integrating NRCS into the Whole Watershed Restoration Initiative (WWRI) process in priority watersheds to enhance restoration efforts.
4. Ultimately, delist the Nestucca River for the following water quality limited factors: fecal coliform, ecoli, temperature, habitat modification, and dissolved oxygen.

Implementation

Implementation of sound conservation to meet these goals and objectives will include the following practices:

Riparian Buffers: Planting trees and shrubs along water courses

Fencing and Water Facilities: Fencing livestock out of water courses and providing watering facilities that eliminate the need for livestock to water in streams

Grazing and Waste Management: Conducting rotational grazing to better manage forage production and manage waste applications to eliminate nutrient and organic runoff

Fish Passage: Replacing or removing culverts, installing bridges or addressing other means to open access to upstream habitat

Partners

Tillamook County SWCD: Conducts outreach and provides direct technical assistance to landowners, secures funding, acquires supplies, constructs fence, completes plantings, and follows up with maintenance.

Nestucca Neskowin & Sand Lake Watershed Council: Conducts outreach and provides direct technical assistance to landowners, seeks funding, and administers grants.

Tillamook Estuaries Partnership: Provides funding, conducts outreach , provides direct technical assistance to landowners, and provides funding for maintenance.

Department of Environmental Quality: Provides funding, conducts outreach, provides direct technical assistance to landowners, and monitors water quality.

Bureau of Land Management and the Native Plant Co-op: Grows local stock of riparian vegetation and provides technical assistance.

Tillamook County Creamery Association: Provides funding for materials to their members through the Stewardship Program

US Fish and Wildlife Service: Provides funding for a variety of needs through various programs.

Whole Watershed Restoration Initiative (WWRI): Provides funding for in stream work and habitat restoration

Natural Resource Conservation Service (NRCS): Provide funding through EQIP, WHIP and /or CCPI, conducts outreach, and provide technical assistance.

Outcome Measurement

Success of this strategy will be measured by:
Monitoring the miles of stream that have connected riparian buffers.
Assessing ag land for the proper rate, form, and timing of grazing and waste management. Testing the Nestucca River for the identified water quality parameters WWRI/NRCS partnership will have a template that successfully integrates NRCS and WWRI and can be replicated throughout Oregon .

Air Quality

A) What are we trying to Achieve?

In Tillamook County we are trying to reduce the odors associated with manure application to the pasture/hay lands and on the headquarters. Because farms are associated with urbanized areas in Tillamook odors are very noticeable to the general public. The public includes local residents and tourists to the area. By addressing this issue we may also preclude State and National regulations dictating manure handling techniques.

B) How are we going to achieve it?

In order to achieve a reduction in odors an outreach plan will be developed. This outreach plan will target working with key cooperators to adopt key management practices reducing odors by;

- Waste Utilization (change application method from big gun to low heads spreader bars),
- Manure management at the headquarters,
- Wind Breaks and
- Composting Bedded Packs
- Facilitate distribution of manure (pipeline) for newly adopted Waste Utilization practice

We will need to work with regulatory and educational partners to further identify technologies and its transfer to producers. These potential partners include;

- Oregon Department of Agriculture
- Tillamook County Soil and Water Conservation District
- Tillamook County Creamery Association
- Oregon Department of Environmental Quality
- Oregon State University-Extension
- Environmental Protection Agency

The Conservation Implementation Strategy will further identify specific numbers within the targeted priority areas (operations within a 3.5 mile radius of downtown). We have begun implementing these solutions on 14 farms and 2300 acres in the Tillamook Bay basin. At this time, we estimate that to treat the remainder of the entire issue in the county it will cost $1,224,000 (based on average previous cost/participant). This is based on the number of operations in the target areas that haven't implemented air quality practices (68 operations) multiplied by the average cost per operation to implement these practices $18,000 (based on previous participation) Due to the high dollar figure, we plan to stage the Conservation Implementation Strategy according to the following prioritization:

a) Priority #1 Tillamook (44 operations)-

a. Highest priority will be given to operations that are applying manure using a big gun b. Second priority given to all other CAFOs in a 3.5 mile radius

b) Priority #2 Nehalem (7 operations)

a. Highest priority will be given to operations that are applying manure using a big gun b. Second priority given to all other CAFOs in a 3.5 mile radius

c) Priority #3 Cloverdale (17 operations)

a) Highest priority will be given to operations that are applying manure using a big gun b) Second priority given to all other CAFOs in a 3.5 mile radius

As we develop a better understanding of the cost requirements for establishing composted bedded packs the estimated costs will rise. We will be able to account for this better in the implementation strategy as this is better understood.

C) How are we going to know we achieved it?

Due to the difficulty in obtaining solid science based measurements, we plan to measure our outcome based on a combination of public feedback and the % and distribution of producers in the targeted area that adopt the solutions.

D) What information do we still need?

In order to ensure success, we will continue to research alternate materials for compost bedded packs , bedded pack costs and a science based measurement tools for odor.

Energy

A) What are we trying to Achieve?

In Tillamook County we want to improve the energy use on agriculture operations to reduce inefficiencies. Because agricultural operations utilize energy in many ways energy audits are planned to determine where efficiencies can be made. These audits will prescribe where energy savings can be made on the operation.

B) How are we going to achieve it?

In order to achieve efficient use of energy on agriculture operations an outreach plan will be developed. This outreach plan will target key energy efficiencies we seek to improve. Common energy efficiency practices can include;

- Energy Audits to qualify a participant for further assistance
- On Farm Equipment Efficiency Improvements
- Pumping Plant
- Composting facility
- Feed management
- Nutrient Management, proper
- Pipeline
- Prescribed grazing for less confinement and associated manure
- Solid/Liquid Waste Separation Facility

The cost and breath of need is yet to be determined and will require.

C) How are we going to know we achieved it?

This will require additional study to determine how to measure success. Kilowatt energy saved by replacing inefficient equipment is commonly documented by power companies and this may be one method that we can use for this. Replacement of other equipment and practices will still further understanding to be successful.

D) What information do we still need?

Dollars and cents of how and what we need for resources to address the problem. Contacting the local Public Utility District and discussing their local knowledge and experience on agriculture operations will be good starting point.

Understanding how the following practices will work in the county may offer further opportunities for savings if they can be successful;

Anerobic Digestors

Roofs and covers

Waste utilization

2019 Tillamook County Local Work Group Meeting

February 19, 2019
10:00am-12:00pm

Location: **Port of Tillamook Bay Conference Room**
4000 Blimp Blvd
Tillamook, Oregon 97141

Purpose

The Local Work Group provides a forum for partners, farm, ranch, forestry representatives and conservation groups to share conservation activities and discuss natural resource problems. These collaborative discussions with our partners help NRCS develop a local strategy to guide farm bill funding to address resource issues in the future.

Agenda

1	Welcome and Introductions	Informational
2	Local Work Group	Informational
3.	Current programs	Informational

Initiatives
- Organic
- Tunnel Houses
- Animal Feeding Operation

Tillamook Strategies
- Nutrient Management/CNMP – Contracts Finishing
- Water Quality/Fish Passage – Two Chiefs
- Forest/Soil Health – Two Chiefs

3	Discussion of the 2017/2018 EQIP sign ups	Informational

- Summary sheet, past and present
- Funding

4	Future CIS and Initiatives;	Discussion

- Future LW/NC AFO
- Tidegate progress
- Forestry

5	Partnerships Projects/ Your Projects, focus areas,	Participants

Current/Future focus?
- What kind of help could you use?
- What kind of help can you provide?

7	Other current Tillamook issues of interest to the group	All

Are there opportunities – Future direction

Wrap-up communication-Thanks

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Tillamook County Local Work Group Meeting - 2/19/2019

Tillamook Service Center Conference Room

NAME	REPRESENTING	ADDRESS	PHONE	EMAIL
Michele Long	ODFW/NRCS	POTB office		
Ann Meyer	~~SWCD~~ TBWC	On Record		
Rob Russell	TBWC	on record		
Nilda Jones	TBFLD	—	—	—
RAY MONROE	SWCD			
Jon Wehage	Stimson	6115 Hangar Rd		
MARK MAIN	ODF			
Jasen McCoy	ODF	3rd St.		Jasen.r.mccoy@oregon.gov
Gershaw Amidi-Abraham	NNSL WC			
Troy Downing	OSU	4506 3rd St. Tillamook		
Tami Kerr	ODFA	on file		
Mitch Cunning	NRCS			
Troy Laws	ODFW-NCWD	onfile	—	—
Scott Bailey	TEP	on file		
Wm MATTHEWS	ODA	Salem		
DEE ROBINSON	NRCS	ST. HELENS		
TOM THOMSON	NWAC			
DAVID YAMAMOTO	BOCC			
Hannah Zsuag	NRCS			

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Tillamook County Local Work Group Meeting
February 19, 2019 POTB Conference Room

MINUTES

The meeting was called to order by Mitch Cummings at 10:10 a.m.

Welcome and Self Introductions

There were 19 participants in attendance representing:

NRCS
ODA
ODF
Tillamook Co. Commissioner
Tillamook SWCD
NW Ag Consulting
ODFW
ODFA
ODFW/NRCS Liaison
OSU Extension
TBWC
Stimson
NNSLWC
TBFCD
TEP

Mitch welcomed everyone to the meeting and stated that the purpose of this meeting is to provide a forum for NRCS to work collaboratively with our partners and landowners, so we can develop a plan that strategically utilizes limited resources in a way that benefits all of us. This is an annual meeting to gather input on the future direction of our NRCS programs.

Mitch gave an overview of the current CIS's available for Tillamook County. March 16, 2019 is the tentative cutoff date for applications for FY19 EQIP funding – however, we can take applications all year long.

- Salmon Super Hwy Project - funded by Two Chiefs funding. Set up to fund forest practices, forest management plans, fish passage, and additional practices associated with water quality and riparian work. The handouts provide information about this CIS along with practices included. In 2018 we contracted with 13 people out of 15 applicants, expending $444,920. This year we have 1 application to date and additional in process but not turned in. This is the last year for this CIS.

In addition, there are two older CIS programs we are just finishing up contracts on.

- Water Quality Nutrient Management CIS/CNMP: the last year for applications in this CIS was 2016. We have one year left in the implementation of those contracts. We were able to contract 43 out of the 55 total applications. We used $739,245 in this CIS.

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- Nestucca Water Quality CIS: This was short-lived. Mostly fish passage projects; 8 culverts and 2 bridge installed. Contracted 6 out of 8 applications, totaling $339,349.

NRCS Statewide Initiatives Available in Tillamook County:

- EQIP Seasonal High Tunnel Initiative – This program has been continuous since 2013. This year we have 1 application so far. In previous years we have contracted with 11 landowners for high tunnels, totaling $67,069.

- Organic Initiative – We had 2 applications in 2015 that were both contracted, but no applications since.

- AFO Initiative - 12 applications last year, some applications were deferred, others fell out due to ineligibility and remaining applications were screened/ranked and competed for the limited state-wide funding. We contracted 1. So far this year, we have received 9 applications.

- Energy Initiative - Last year we received 7 applications and contracted all of them. This year, we have received 1 application so far.

Historical Tillamook Program Participation Summary

Water Quality Nutrient Management CIS/CNMP (included Nut Mgmt. and CNMPs)

		Applications	Contracts	Dollars
2011 - 2016	FINAL TOTAL	55	43	$739,245

Nestucca Water Quality CIS (Fish Passage/WQ)

		Applications	Contracts	Dollars
2013 - 2016	FINAL TOTAL	8	6	$339,349

Nestucca/Tillamook Watershed Function (Two Chiefs/Salmon Super Hwy)
(Fish Passage/WQ)

	2017	17	15	$237,216
	2018	15	13	$444,920
Taking Applications	2019	1		
	TOTALS	32	28	$682,136

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High Tunnel Initiative

	Year	Applications	Contracts	Dollars
	2013	5	3	$ 9,485
	2014	2	0	0
	2015	3	3	$19,606
	2016	1	1	$ 7,732
	2017	2	1	$ 7,080
	2018	4	3	$23,166
Taking Applications	2019	1		
	TOTALS	17	11	$67,069

Energy Initiative

	Year	Applications	Contracts	Dollars
	2018	7	7	$22,720
Taking Applications	2019	1		

Organic Initiative

	Year	Applications	Contracts	Dollars
	2015	2	2	$34,447

AFO Initiative

	2018	12	1	$ 8,930
Taking Applications	2019	9		

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Tide gate Progress - last year there was a great deal of interest in tide gates throughout the county. The challenge NRCS is facing is adequate available funding for tide gates. How much would the average cost be for each tide gate? There is no definitive answer because each tide gate is unique. Permitting is unique for each one as well, which becomes challenging. We have great partners we can work with. Ray Monroe (TCSWCD) asked if NRCS could pay for a portion of a tide gate such as relining pipes. NRCS Oregon has a working group that is discussing what pieces we can do/provide funding for and developing the framework for a potential funding pool. We are still going to need partners for permitting. Need engineering that is current on tide gate designs. Possibility of using a TSP for engineering. Gus Assoc Director (TCSWCD) asked if there are emergency funds available to assist farmers in emergency situations to protect their land. Mitch stated that FSA has had disaster relief funding available for that when a disaster has been declared. They may have loan program funding available as well. County Commissioner Yamamoto suggested that NRCS focus on farm-operated tide gates that are not used for fish-passage. Engineering and Permitting support – OWEB/AOC task force are working on creating a program that will help with this and provide assistance. Looking at NRCS to be one of those partners in the task force. Tami Kerr (ODFA Exec Director), mentioned that ODFA is partnering in the task force as well and is very optimistic about the progress they are making. Mitch mentioned there was a field trip to Coquille where NRCS saw several muted tidal regulator (MTR) tidegates. Tillamook County has high value farmland that needs to be protected year-round. Tilda Jones (TBFCD) asked if there were funds available for the smaller projects for tide gate replacements, each project costs approximately $30,000 which would also address fish passage and help with flood and drainage control. Wym Mathews (ODA) mentioned that on the CAFO/AFO perspective, these need to be permitted properly. Could these tide gate repairs be defined under the AFO program? We could identify it in a local funding pool, but as long as it's a tide gate, we still need to address the permitting and engineering issues. Local county people have been saying year after year that tidegates are a crucial resource concern that needs to be addressed. It is the hopes that farm bill funding will become available to help address this issue in the future. NRCS in Oregon is in the process of looking at how we can be involved to help address this, which is a step forward. Ray stated that permitting needs to be included in the funding because the landowners can do the work, but they cannot do the permitting. Hydro-dynamic modeling is also a high dollar piece of the puzzle when doing the engineering.

It was mentioned that The Tillamook Bay Flood Control District (TBFCD) is having their quarterly meeting today at 11:30 a.m. at the Five Rivers Roasters.

Garshaw (NNSLWC) stated that they are going to conduct a tidegate inventory in their watershed including location, type, condition, etc. Landowner permission is one of the biggest hurdles. A referral was made by one of the participants that Garshaw contact Meta at OWEB to get a copy of the existing inventory maps.

AFO state wide Initiative - identifies a handful of practices – trying to add additional practices this year to address storage. In all cases there is a prerequisite to have a current updated CNMP prior to addressing structural storage practices. This initiative is state-wide, so we don't have local control over the ranking or practices.

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We are working on developing a separate AFO CIS program for the North Coast/Lower Willamette basins – we will have some of the same practices as the state-wide initiative with the addition of a few that would be tailored and beneficial for Tillamook County landowners. This may be available in 2020. Concentrates on updating CNMP's and Nutrient Management Plans, but there are other non-management and structural practices planned as well.

One challenge we face in our programs is to get potential participant landowners to maintain eligibility through FSA. What is the best way to get the word out to all the landowners? In many areas landowners contact FSA at the beginning of each Fiscal Year October 1st to update their eligibility for any available programs offered that year.

Michele (ODFW/NRCS) stated that she is seeing an increase of hobby farmers in the county – and asked how we could get them involved in these meetings. People are diversifying operations beyond dairy animals to include sheep, chickens, etc. These folks may still need to comply with CAFO regulations or Clean water requirements.

Question as to why landowners are missing at these meetings? How do we get landowners to the table? Discussion followed. Landowners can't easily get away from the farm.

Wym (ODA) asked about the CStP program in the county. No CStP signups in this county last year. CStP is included again in the new farm bill, will pay for maintenance enhancements vs structural practices for highly functioning operations who want to go to the next level. They must implement 2 additional practices or enhancements.

Odor control – still a high priority but it is challenging to find practices that would address odor control that fit program criteria. It is important for some products to have Oregon Land Grant University recognition in order to add them to the Practice Payment Schedule.

Forest Management Plans (FMP) – we have funding for the development of FMP's, but fewer landowners are signing up. Why? Is it possible to have a broader CIS's that can hold a pot of money for a broader range of practices so the money can be utilized? It continues to be a challenge to create CIS's and programs that local landowners will participate in.

Looking at what types of roof or covers for manure storage are available that will hold up in the Tillamook weather.

Troy (OSU Ext) encouraged Mitch to reach out to the various partners at the table to get help with what is needed, what will work, and what needs to be addressed.

Wym mentioned that he appreciates all the work that NRCS has done to assist with AFO/CAFO issues in the county.

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Two-Chiefs - there has been quite a bit of forestry interest in this program. However, the challenge has been to get the landowners in the door early enough to get their FMP so they can signup for implementation the next year. This is only a three-year initiative and we are in the final year – so this has been challenging. It is a prerequisite to have a Forest Management Plan in place before you can apply for implementation assistance. Mark (ODF) mentioned there is an ODF program that can assist landowners outside of the CIS area to get FMP's developed. Mitch talked about the basin Forestry CIS that we have available for a small portion of the county. Looking at possibly expanding the area so we can assist more people.

RCPP – possibility of bringing this program into the county. The Regional Conservation Partnership Program (RCPP) is a comprehensive and flexible program that uses partnerships to stretch and multiply conservation investments and reach conservation goals on a regional or watershed scale. RCPP projects last up to five years. For each RCPP project, NRCS invests federal dollars and project partners match the federal award with private or local funds or in-kind services. Mitch mentioned that RCPP is a possible program that might work for tidegates. A group can apply, but they would need to bring matching funds plus the people/clients/projects.

The Governor's main objective right now is clean water. We need to stay aware of this.

Partner and Landowner Projects – Mitch invited attendees to talk about projects they are currently involved with and what opportunities there might be to come up with other implementation strategies for the future.

Troy Laws (ODFW) – state forest land is being clear cut now and trying to figure out where/how to get logs in the future that can be used for in-stream work for fish habitat and restoration when logs are no longer readily available. It's a challenge to reach all the small landowners that live along waterways that don't manage their property ideally for stream health.

Tom Thomson (NW AG Consulting)– suggested one possibility is to work with private landowners that would agree to grow trees that are targeted for the in-stream restoration work.

Scott Bailey (TEP) – watershed council is done with data collecting and working on analysis phase. Will be starting the process of engaging teams in monitoring. OWEB dollars are being more widely distributed and spreading thinner. Will need to find additional sources to fund existing programs.

Michele (ODFW/NRCS) – if anyone is working with landowners that show interest in working with NRCS to explore what enhancements could be done on their property, please send them our way.

Rob Russell (TBWC) - looking for federal match money on projects, especially for the $200 million being requested from state funds. Need technical and financial assistance with culvert and tidegate replacement projects. Looking for a pathway for watershed

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council to apply CAFO/AFO dollars to culvert and tidegate solutions. Looking for continued forest stewardship money.

Gus (TCSWCD) – stream erosion control. Abandoned forestry roads are causing sediment in streams. During the 2007 storm, huge sediment loads dumped into the Wilson River. How can we be more concerned and involved in maintaining forestland roads to reduce sediment and runoff in streams? Engineered stream barbs can be used to protect farmland from continuing streambank erosion. Water in our rivers is far below normal which causes low oxygen and kills salmonids. Stream water storage – floodgates allow water to flow out of the area. Aquifer catch basins – very little effort in establishing catch basins for bird and wildlife habitat. Off stream storage impoundments need to be addressed by all groups. Expand the Barney and McGuire Dams for fish release.

Meeting adjourned at 12:20 p.m.
Dee Robinson

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