Revised: Fall 2017

Natural Resource Conservation Service

Long Range Strategic Plan

Marion County, Oregon

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Purpose of the Plan

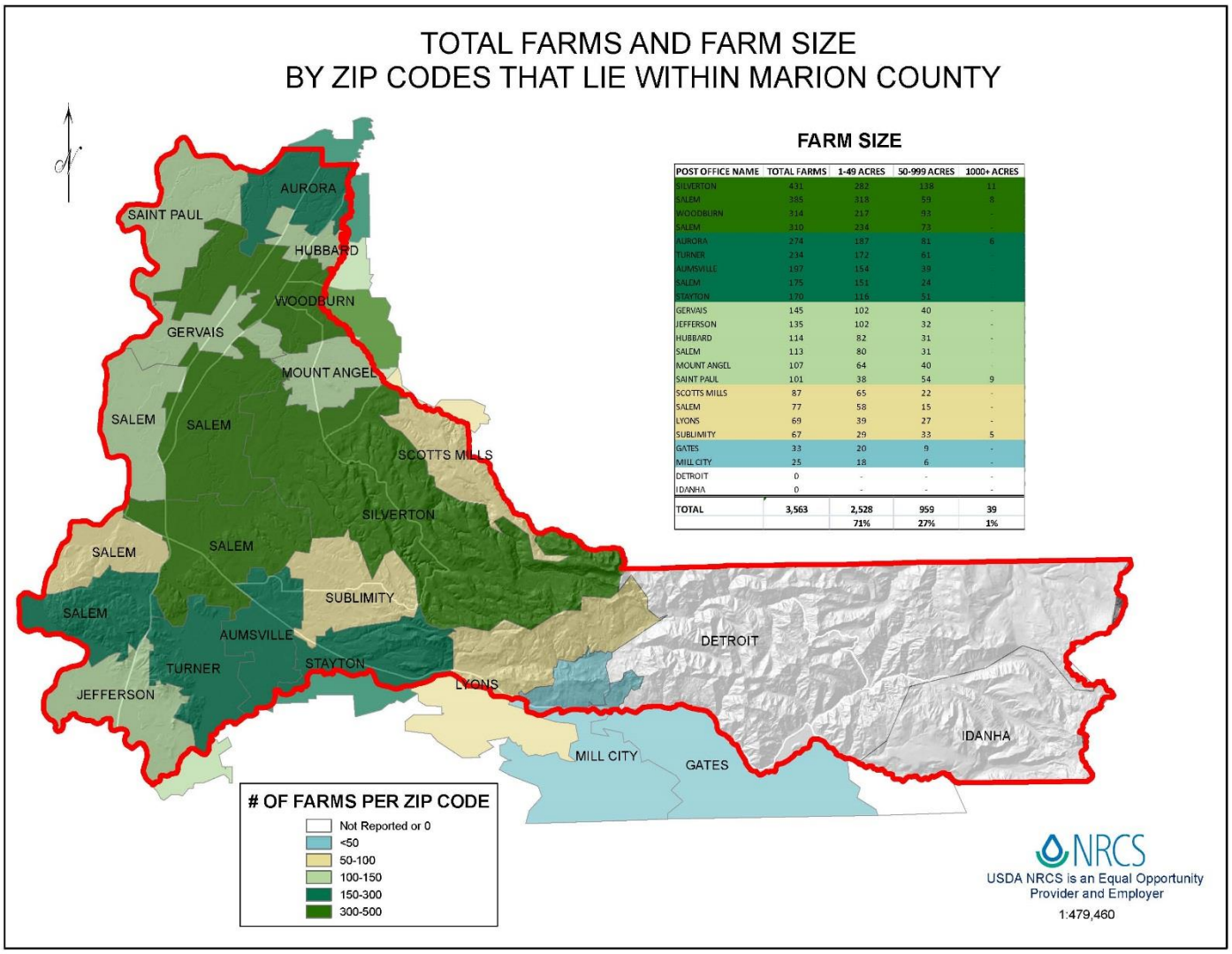
Marion County's long range strategy examines the natural resource inventory in Marion County as it relates to Soil, Water, Air, Plant, Animal+ Human + Energy (SWAPA+HE). This strategy will also examine energy and natural resources concerns related to the inventory within Marion County. The following document is a process developed to help Stakeholders within Marion County inventory and analyze resources to identify problem areas to develop alternative solutions to priority resource concerns.

The NRCS takes a leadership role in Marion County addressing natural resource concerns through both technical and financial assistance. Over time political structures change, as does the way in which the NRCS does its work, so planning for the long term is an important strategy in making sure that NRCS is engaging in projects that will provide beneficial outcomes in the long term regarding priority resource concerns.

Marion County Local Working Group (LWG) is one way NRCS gathers information for identify resource concern. NRCS meets annually, with meetings usually being held in late February. Every year, NRCS will host a LWG meeting where farmers, landowners, conservation partners and other members of the community discuss the natural resource needs for the county. Based on feedback from those meetings, NRCS will update the county's Long Range Plan and develop new Conservation Implementation Strategies (CIS's) to address those resource concerns. You may contact us anytime to express concerns or comments about the conservation needs in the county, and we encourage you to attend the next LWG meeting in Marion County. For more information about the LWG meeting contact our local NRCS office or search the web for Marion County NRCS. You can view success stories and CIS's in Marion County as well as review our agenda and invitation for upcoming LWG meetings.
The Marion County LWG makeup is the Natural Resources Conservation Service, Marion Soil and Water Conservation District, Private Landowners with farming interest, Irrigation Districts, US Fish and Wildlife Service, Oregon Department of Fish and

Wildlife, Oregon Department of Forestry, Oregon Department of Agriculture, Department of Environmental Quality, Watershed Councils, Confederated Tribes of Grand Ronde, Energy Trust of Oregon, Technical Service Provides and other organizations. The LWG provides a forum for dialogue amongst different stakeholders for NRCS to get feedback on their efforts in identifying primary resource concerns and addressing these concerns within Marion County. Since 2011 Marion County moved to a Strategic approach in addressing resource concerns in the County. Conservation Implementation Strategies (CIS's) are now being written with concurrence from the LWG to move forward in specific focus areas to address the resource concerns within the CIS.

Welcome to Marion County: The number one agricultural producing County in Oregon.



Who We Are

USDA Service Center

Natural Resource Conservation Service
NRCS: For recent updates see:

Learn about conservation opportunities in Marion County.

The NRCS is a federal agency that was established by Congress in 1935 as the Soil Conservation Service (SCS), NRCS has expanded to become a conservation leader for all natural resources, ensuring private lands are conserved, restored, and more resilient to environmental challenges, like climate change.

70% of the land in the United States is privately owned, making stewardship by private landowners absolutely critical to the health of our Nation's environment.

NRCS works with landowners through conservation planning and assistance designed to benefit the soil, water, air, plants, and animals that result in productive lands and healthy ecosystems.

Science and technology are critical to good conservation. NRCS experts from many disciplines come together to help landowners conserve natural resources in efficient, smart and sustainable ways. Whether developed in a laboratory or on the land, NRCS science and technology helps landowners make the right decisions for every natural resource. NRCS succeeds through partnerships, working closely with individual farmers and ranchers, landowners, local conservation districts, government agencies, Tribes, Earth Team volunteers and many other people and groups that care about the quality of America's natural resources.

We work at the local level, – in field offices at USDA Service Centers in nearly every county in the Nation. NRCS employees' understanding of local resource concerns and challenges result in conservation solutions that last.

The NRCS is not able to do all of this alone, but also relies upon partnerships amongst the many agencies at both the state and local level for additional funding and technical assistance.

The NRCS is located in the USDA Service Center in Salem that also houses the Farm Service Agency at 650 Hawthorne Ave SE, Suite 130. The Marion Soil and Water Conservation District recently moved their location to 338 Hawthorne Ave NE, just a short distance north of the USDA Service Center. This proximity gives advantage of working closely with other agencies to ensure that the county's natural resource goals are being addressed to their fullest extent.

Marion Soil and Water Conservation District
MSWCD

The Marion Soil and Water Conservation District is a special district that was established in 1971 under the Oregon Soil Conservation Law. The district includes all of Marion County except for a small strip in the north-east part of the county. Please visit the Marion SWCD at www.marionswcd.net

The goals of the MSWCD are to:

- Develop, improve, and prevent deterioration of the renewable resources in the district
- Enhance and protect the environment
- Strengthen the economy of Marion County, through working directly with landowners in addressing natural resource concerns.

The NRCS works closely with the Marion SWCD and others on many projects to provide landowners with the most comprehensive set of options for solutions and funding choices in addressing natural resource concerns on their property. The NRCS has developed partnerships with many other agencies in achieving mutual goals.

Farm Service Agency
FSA

Farm Service Agency is equitably serving all farmers, ranchers and agricultural partners through the delivery of effective, efficient agricultural programs for all Americans. The NRCS utilizes FSA's Conservation Resource Enhancement Program (CREP) to help agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water.

Through working in cooperation with the agencies in the USDA Service Center and the state and federal agencies the NRCS hopes to provide landowners with a comprehensive list of options when it comes to natural resource conservation on their property.

Marion County History

The Willamette Valley 40 million years ago was submerged by a shallow sea from the coastal mountains to central Oregon except for small strips of islands that rose above. Over the following millions of years the land rose pushing the ocean shore west, as volcanic lava flowed over the land, harding into basaltic lava rock. These formations can be seen today in the South Salem Hills. The Willamette Valley's diverse topography, soil types and ecosystems, provide it with its beautiful landscapes, but also as a means to economic prosperity.

Missoula Floods

These events occur over 13,000 - 15,000 years ago during the last ice age shaped and altered the Willamette Valley into what it is today. Signs of this occurrence are still present today. Many of the reasons why the soil and natural topography is the way it is today is because of these floods. These floods are the second largest flood event in Earth's history.

The process started when an ice dam built up on the Clark Fork River and created Glacial Lake Missoula. As the water level in Glacial Lake Missoula increased so did the pressure on the glacier dam until it ruptured, sending massive amounts of water down the Clark Fork and the Columbia at a rate of 10 times the combined flow of all rivers in the world. The flood covered Eastern Washington and the Willamette Valley with water and sediment. As the water receded, it left behind alluvial deposits that over time built up as more flood events occurred. Some believe that these events occurred 40 to 50 times over a period of 2000 years. Signs of these events are still present in the Willamette Valley as glacial erratic or non-native boulders. Glacial erratic can be found throughout the valley, the largest being its own State Natural Site off Highway 18 north of Bellevue.

Political

Marion County was first established July 5, 1843 by the Provisional Legislature, it was originally named Champooick District. In 1845, Champooick District was broken in many different counties, one of them being Marion. Marion County was named after General Francis Marion, who was a revolutionary war hero and is considered one of the fathers of modem guerilla warfare. It wasn't until 1856 that the current geography of Marion County was established. Marion County is located in the heart of the Willamette Valley with Yamhill and Clackamas Counties to the north, Polk County to the west, Wasco and Jefferson Counties to the East and Linn to the South. The county stretches from the Willamette River to the foothills of the Cascades providing a variety of topographical features and soil types. Salem, the county seat and the state capital, is one of the valley's oldest cities.

Settlement

Kalapuya Indians were the first people to settle in Marion County six to 10 thousand years prior to the arrival of early white settlers. They were a semi-nomadic group, establishing permanent housing for the winter months and traveling throughout the Willamette Valley during the warmer months searching for game and other food sources. They were familiar with certain land management strategies like regular field burning, turning densely vegetated fields into open pasture. They found that burning brought elk, deer and other animals to the area while providing ideal habitats for their staple crops. They primarily settled next to rivers and moved once the camp became unbearable or game became scarce. Disease ravaged through the Kalapuya in 1830, killing 90% of the population. Eventually they lost most of their land and their tribe's government designation. The Kalapuyas are now part of the Confederated Tribes of Grand Rhonde. Unfortunately, much of their culture has been lost or destroyed, leaving us with minimal information about their past.

The First Settlers in Marion County were the Metis, who were retired French Canadian trappers that worked out of Fort Vancouver. They settled on small farms in the area with their Native American wives and many children. The earliest recorded contact between a Kalapuya and a white individual was in 1814 by the fur trader Alexander Henry. 1829 marks the year when the first Metis arrived and shortly thereafter, 75 of his compatriots moved to the valley. The Metis had been working the land long before the first Anglo-American arrived in 1843.

Anglo-Americans arrived

Agriculture

Agriculture plays an important role in the history of Marion County and the Willamette Valley, as it does today. Many of the first settlers came and decided to stay here was because of the ideal soil conditions for growing a variety of crops. Many of them have won awards, with the Marionberry being name after this county.

Wheat has been an important crop in this region since the 1840's, when it was used as currency and became the dominant crop in 1870. Wheat Production increased by 252% from 1870-1880, but fell drastically due to the wheat market crash in 1893.

Flax Seed had been produced in the Valley from the 1840's to the 1950's. Many native species of flax existed, but it wasn't 1876 when a farmer from Turner entered his flax in the Centennial Exposition in Philadelphia where he won a bronze metal and a certificate of merit that showed the rest of the country how great this region's soil was for producing Flax. The industry boomed, until competition across from synthetic fibers and cheaper production cost elsewhere.

Marion County History

Many of the problems and processes that altered the natural environment during the 20th century were present during the 19th century. The early settlers arrived with text from the east that prescribed how the natural landscape should be ordered. They were more concerned with making money off the land than trying to understand the natural processes. The new settlers brought with them crops and plants that were new to this environment.

They introduced fields of wheat, barley, rye, and oats and gardens of peas, squash, pumpkins, tomatoes, potatoes, turnips, cabbage, cucumbers, carrots, beets and onions. But there intense agricultural production methods did not address any type mitigation effort which caused the soil to become stressed and compacted which made the natural drainage issues even worse.

Livestock was also prolific in Marion County due to the wonderful pasture lands. The settlers allowed their animals to graze freely which caused much of the natural grasses to be destroyed and lost.
The settlers felt that the issue was inferior grasses and to many animals. This caused the new settlers to bring in domestic grasses which overpowered native grasses because natives had not evolved under pastoral use. By the early 20th century many of the grasses around Salem were not local.

With the increase production of crops and livestock, there become more conflicts between the settlers and the natural wildlife. The protection of private property was very important and lead to what is known as the "war" against predators. These bounties were offered throughout the 19th century and for most of the 20th century. This measure worked well in eradicating most natural predators.

The new settlers' biggest problem was that they were using the text and information that caused these problems for the solutions

Marion County Snapshot

Area	762,128 acres
Population	306,665
#of Cities	20
Largest City	Salem STATE Capital
Demographics	
WHITE	76.49%
LATINO	17.10%
AFRICAN AMERICAN	0.80%
OTHER	5.61%
Median Age	33.7
Median Income	128,700

Climate-Mediterranean

Average Temp. 2009

APR-SEP-62.4°

OCT-MAR-43.7°

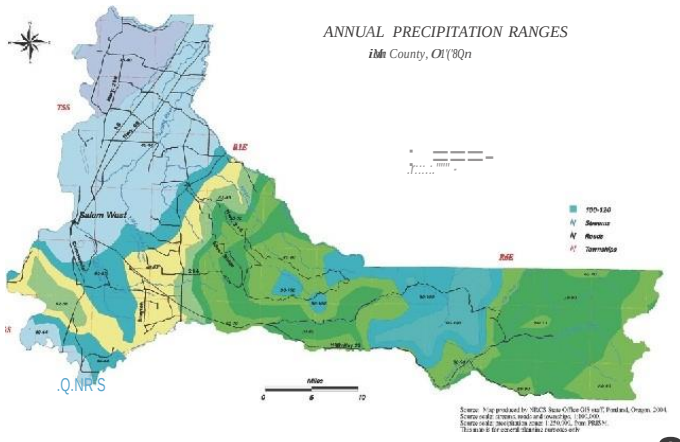
Average Rainfall 2009

APR-SEP-1.2"

Oct-March-47.38"

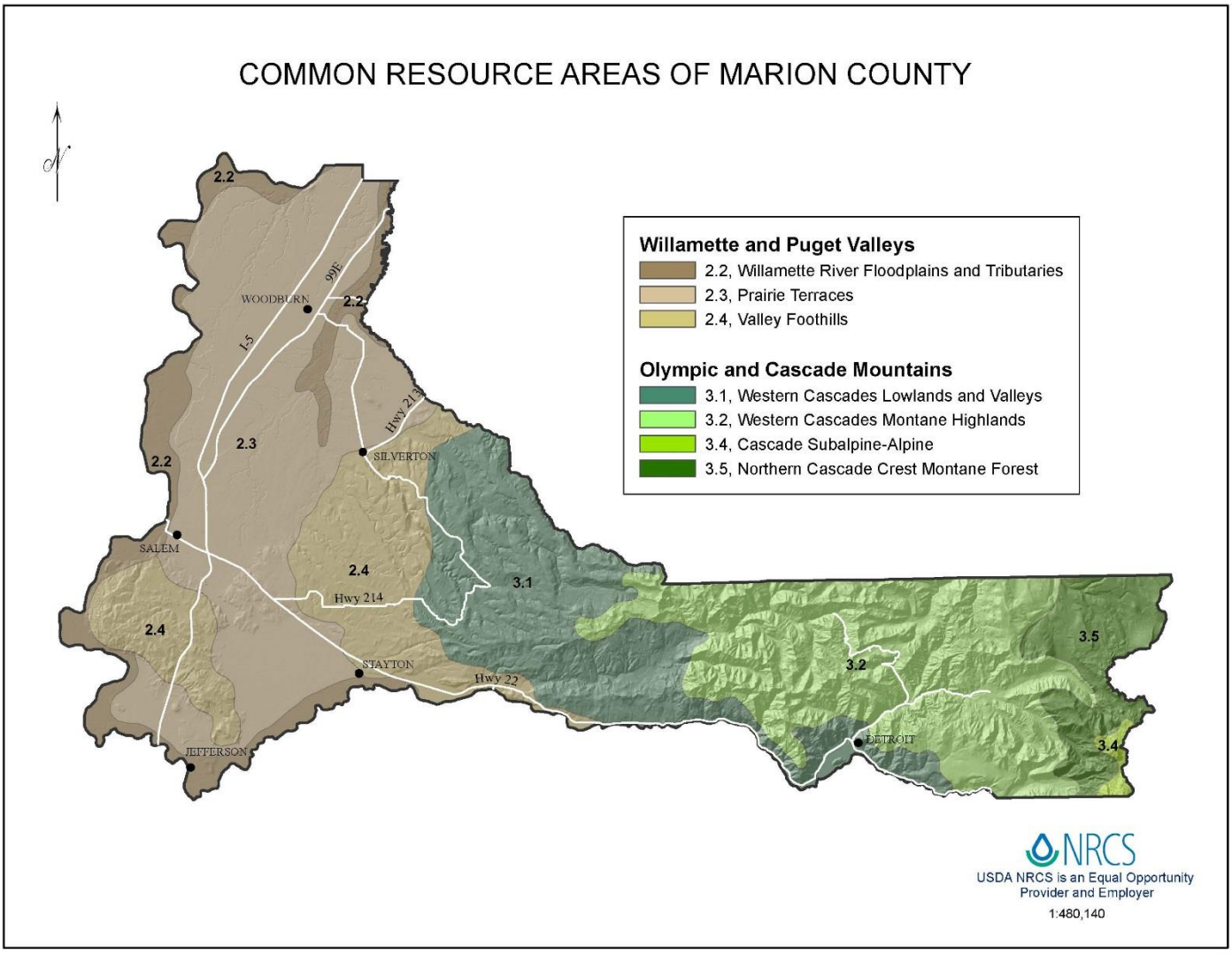
#of Farms	2,670 2007Ag Census 3,203 2002 Ag Census
Average Farm Size	115 2007 Ag. Census 106 2002 Ag Census
#of Organic Farms	>68 and growing
#of Crops Grown	200

Top Agricultural Producing County in Oregon



Common Resource Areas (CRA)

The USDA has developed a method to characterizing geographical areas that share similar natural resource characteristics known as Common Resource Areas.



CRA's are defined as a geographical area where local resource concerns, problems, or treatment needs are similar. These areas are considered a subdivision of an existing Major Land Resource Area (MLRA). Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area.

Marion counties diverse topography and natural ecology contains 7 different CRA classification within 2 major classifications

Willamette River Floodplains and Tributaries

Comprised of the floodplain of the Willamette River and its

major tributaries. It includes historic riparian areas and intensive row crops. Temperature regime is mesic; moisture regime is xeric.

Comprised of the terraces in the Willamette Valley. The soils range from well drained to poorly drained. Land use is variable. Temperature regime is mesic; moisture regime is xeric.
Numerous ponded seasonal wetlands.

Comprised of the foothills of the Willamette Valley. The soils are over basalt and sedimentary bedrock and are typically red and clayey. Vegetation is Douglas-fir and Oregon white oak. Temperature regime is mesic; moisture regime is xeric.
The unit lacks western hemlock which is characteristic of the adjacent units in the Coast and Cascade MLRA's.

Western Cascades Lowlands and Valleys

Comprises the lower elevations of the Cascade Mountains a4Jacent to the Valley Foothills unit {2.4) Bedrock is basalt, andesite and rhyolite. Vegetation is Douglas-fir and western hemlock. It is one of the most important timber producing areas in the Northwest. Temperature regime is mesic; moisture regime is udic.

Western Cascades Montane Highlands

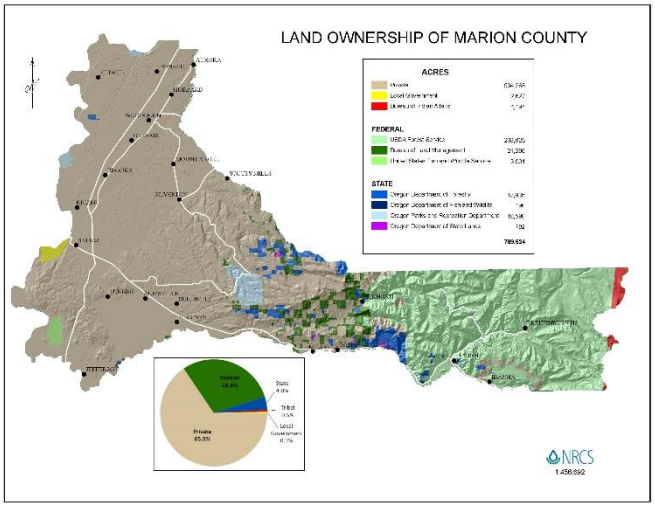
Comprises the mid to high elevation of the Cascades. Vegetation is Douglas-fir, western and mountain hemlock, Pacific silver fir, and noble fir. Elevation is typically above about 3,000 feet. The mountains are highly dissected with steep slopes. Temperature regime is frigid and "warm" cryic; moisture regime is udic. It normally has a deep annual snowpack.

Land Ownership

With 65.5 % of the land being privately owned and 40% of it being designated as EFU there is a lot of opportunity for the NRCS to be working with landowners in addressing local natural resource concerns. Past trends showed an increase in sub-divisions, thus increasing the amount of landowners and farmers in the county which required increased outreaching efforts. But recently, the NRCS has seen an increase in farmers aggregating land to increase the size of their operation. Land Use patterns play a major role in the NRCS's ability to full fill their natural resource goals. As more non-point source pollution is created from increased run-off, it will be more difficult to effectively reduce pollution and contamination.

Measure 37

In 2004, Oregon passed measure 37 which allowed landowners who owned land prior to the implementation of the Growth Management Act to be grand fathered in based on prior land use designations. Since, land use regulations were minimal at these times, it allowed land owners to do pretty much whatever they wanted with their land. Marion County saw a large number of land claims made after Measure 39 was passed. This caused many problems and in 2007 Oregon passed measure 49 which worked to reduce development potential on these lands.



The NRCS has worked over the years in providing information and assisting both the successful fanners as well as the underserved and socially dis-advantage farmers and ranchers. The NRCS has developed many of their documents into other languages and has staff who are able to communicate with different cultures. As farm and non- farm activities come into contact with one another more often, the NRCS will need to work with both developers and fanners in order to make sure that conservation measures are being put in place in order to minimize the negative environmental impacts caused from development.

Education is a key focus in the NRCS efforts to provide land owners with the resources they need to improve land management. The NRCS and the Marion SWCD provide open workshops that are free to the public and range in topics from integrated pest management to irrigation water conservation. The NRCS also works closely with OSU Extensions m developing workshops and conducting outreach.

Soils

Soil is a vital resource for the production of food and fiber, in addition it provides other important functions like natural water filtration, controls runoff, and diverts water into the water table. Soil consist of 3 basic components;

Rock particles
Dissolved minerals
Organic material

The time it takes for soil to be created is measured in thousands of years while the amount of time it takes to destroy soil is measured in years or days depending on the severity of erosion.

The foothills of the Willamette Valley are where the majority of Highly Erodible Land (HEL) is located. Marion County has 189,883 acres of HEL land which equates to 34% of the county and is a major concern for the NRCS. In addition to the soil concerns, there are also water quality concerns due to sediment and run off pollution.

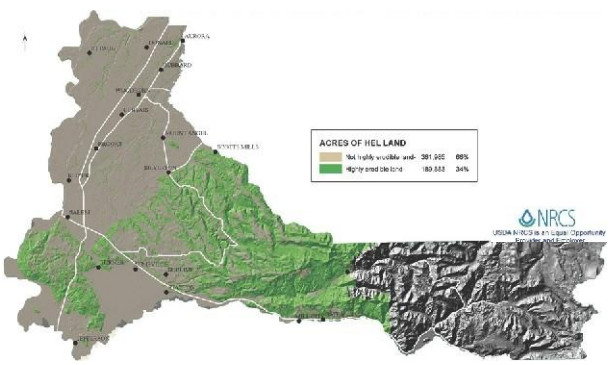
The NRCS has worked on numerous HEL plans each year that use practices such as cover crop and residue management in reducing soil loss. The practice of residue management can come in the form of strip till, no-till, mulch till and seasonal. Other practices that would address these issues are conservation cover and buffers. Landowners who enter into an HEL conservation plan must agree to at least maintain 50% residue cover going into the rainy season which is October 15th-March 15th.

Sheet and Rill erosion have been a priority resource concern in Marion County for many years. Over the last few years Marion has seen a big increase in new Hazelnut orchards being established. Controlling erosion on these new plantings has become a priority issue with NRCS. Farming operations have addressed erosion problems using a variety of NRCS proven practices. Through addressing erosion problems in Marion County the NRCS will also be addressing water quality concerns by reducing sediments and surface runoff of nutrients and pesticides from entering streams and rivers. The high level of rainfall in the Willamette Valley makes leaving enough residue on the land a challenge which correlates with slug problems and the loss of crops. Field burning has been a common practice to control pest and weeds in the Willamette Valley for many years, but the acres for field burning have been drastically reduced in recent years. The NRCS through working with famers and its partners hopes to reduce soil loss significantly in Marion County over the next 10 years.

Soil Types and Highly Erodible Land (HEL)

% of HEL	**34%**
% of Non-HEL	**66%**

POTENTIAL HIGHLY ERODIBLE LAND OF MARION COUNTY



Agriculture

Agriculture is the leading Industry in Marion County and has the most land designated for its use. Marion County is also the leading farm revenue producing county in the state, with Clackamas second. Out of the 240 crops that are grown in Oregon 200 of them are produced in Marion County making the agriculture community not only large in scale but diverse. Hispanic, Russian, Amish and Americans all participate in the agricultural community and live in Marion County.

The USDA classifies a farm as a piece of property that generates at least $1,000 in revenue each year. With roughly 70% of the farms in Marion County being less than 50 acres, it makes the NRCS's efforts more difficult in addressing natural resource concerns on a large scale due to the increased number of landowners they must engage with in order to fully address the issue.

Agriculture provides benefit to a region by providing local food and jobs, but can also result in harm to the environment. Soil depletion, water pollution, water quantity reduction, and soil contamination are just a few of the issues that are related to agricultural production that the NRCS works to alleviate.

The NRCS has been working with OSU's Integrated Plant Protection Center on increasing the awareness and implementation practices of Integrated Pest Management. IPM is an environmentally sensitive approach to pest management that utilizes the natural predators of agricultural pests for control. This strategy also utilizes spray application for pest management, but less frequent and less concentrated than conventional methods.

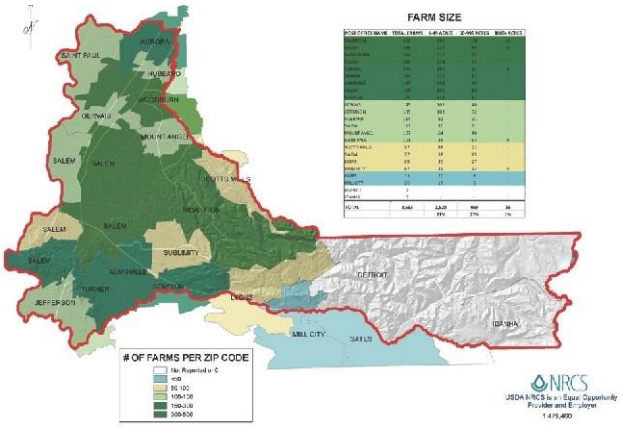
Number of Farms 2,670

The idea that our natural resources are abundant and will always be available is a challenge for everyone. Another goal of the NRCS is to maintain these natural resource lands and help stop the proliferation of residential development on high valued agricultural soils.

Programs that help do this are the Environmental Quality Incentives Program (EQIP) and Agriculture Conservation Easement Programs (ACEP) such as the Wetland Reserve Easement (WRE) previously call (WRP) Wetland Reserve Program. Marion County also has a relative high number of livestock production facilities, some are Confined Animal Feeding Operations (CAFO) and Animal Feeding Operations (AFO). Each of these operations has a high possibility of affecting water quality due to the high concentration of animal waste with the high volume of rain the region receives. In 2001, the Oregon Legislature passed House Bill 2156, directing the Oregon Department of Agriculture (ODA) to regulate all livestock operations to satisfy both state water quality laws and the federal Clean Water Act.

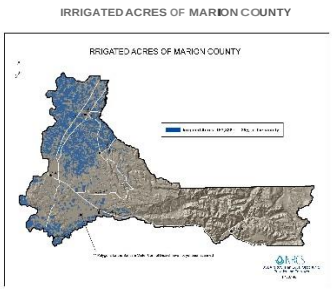
This issues has always been a high priority for the NRCS and Local Working Group to help producers address the Clean Water Act and ODA water quality regulations for AFO/CAFO. NRCS work in partnership AFO/CAFO producers for both the storing and application of manure to fields that has the opportunity to cause harm to the natural environment. The NRCS have and will continue to focus on AFO/CAFO operations that are in close proximity to 303d listed streams as a high priority to address surface water quality and to meet regulatory standards.

TOTAL FARMS AND FARM SIZE
BY ZIP CODES THAT LIE WITHIN MARION



Water Quantity

Marion County's Mediterranean climate provides ample rainfall during the colder months, but is very dry during the warmer months. This makes irrigation a requirement for providing crops with enough water during crop growing and harvesting months. Marion County has the most irrigated acres in Oregon with over 200,000 acres. With the population for the Willamette Valley on a course to double in population by 2050 water concerns are high priority in Marion County.



Farms are being irrigated through a variety of methods with many needing improvement to address inefficient use of irrigation water.

Groundwater Management

Marion County currently has four groundwater limited areas or "Restricted Ground Water Areas" (RGWA) identified by Oregon Water Resource Department.
Mt. Angel, Stayton-Sublimity, South Salem Hills and the newest, Victor Point. These four areas are located in areas where there is a significant amount of agricultural production. Since the 2002 Farm Bill and input from a strong Local Working Group effort, we have continued to identify water quantity as our priority resource concern. NRCS will continue addressing water quantity concerns with farmers on water conservation practices with the replacement of inefficient irrigation systems,

NRCS has been activity involved using EQIP funding to help our producers through the replacement of inefficient irrigation systems to highly efficient irrigation systems & implementing Irrigation Water Management (IWM). Our clients are using more efficient watering techniques and monitoring technology and these areas hope to increase the amount of water that is available. **If** the opposite occurs, they will become classified as critical causing all water uses outside of domestic to be shut off or more restrictive regulation will be put into place.

Water & Irrigation Districts

The North Santiam Water Control District, Lake Labish Water Control District, East Valley Water District and Sidney Irrigation District help provide water and much more to the residents of

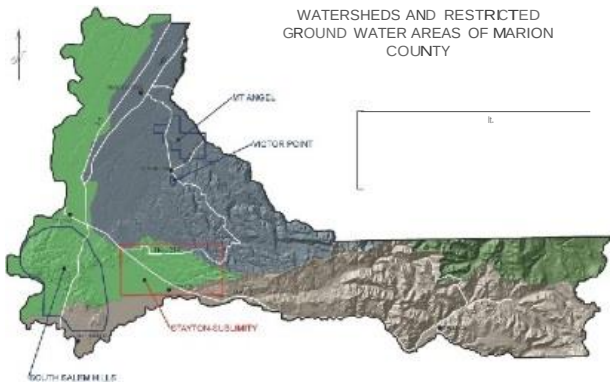
Irrigation

Assisting landowners in making their irrigation system more efficient is a top priority for the NRCS and will provide great benefit to those users and the watershed. The most common irrigation method in the Willamette Valley has been the high pressure sprinkler, such as the "Big Gun" or solid set.

These system can become more efficient by reducing the flow pressure and lowering the application height. There are many methods to achieving higher efficiency rates for irrigation that the NRCS has in its tool bag.

Monitoring and developing a water schedule can also provide increases in irrigation efficiency. Through monitoring the soil for wetness and the weather, water users may be able to reduce the frequency of water.

Irrigation water conservation not only reduces the amount of water one needs for their crops, but it also reduces the amount of energy needed to run these systems. Energy saved from converting inefficient irrigation systems to low pressure systems and replacing old inefficient pumps to new lower horse power irrigation pumps, has not only been a great water savings, but has also been a tremendous energy savings for our clients. An additional benefit of increasing water application efficiency is increases in crop yields. Increasing irrigation efficiencies in Marion County is a win for everyone involved and the environment.



Marion County. Water districts are able to manage much more than just irrigation which makes it different than an irrigation district. The Santiam Water Control District provides water to Salem, Stayton and many agricultural producers throughout in addition to power from the dams, water for fire, industrial uses, and fish and wildlife uses. Developing partnerships with each district has been important for the NRCS in their effort to increase water quantity in Marion County.

Acres of Irrigated Land	**>200,000**
# of Restricted Ground Water Areas	**4**

Water Quality

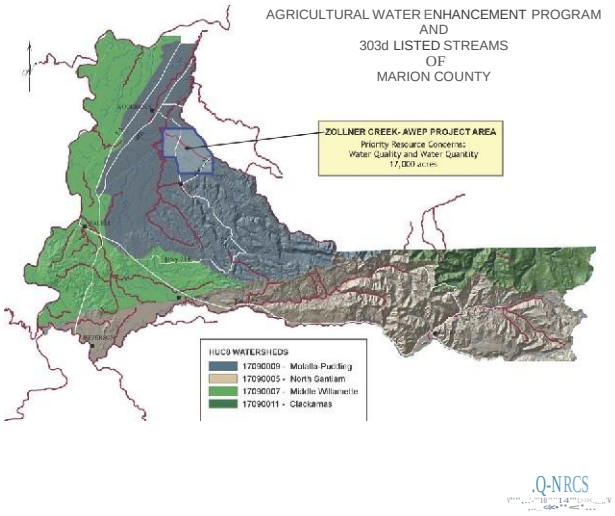
Water Quality and Water Quantity are linked together. Lower water supplies cause waters temperature to increase and toxicity levels increase due to increased concentration. Both natural and human actions are effecting water quality in a negative way; land uses changes, improper crop spray application and the increase of impervious surfaces. But through federal and state wide policies that regulate and set mandates for water pollution, habitat,

CLEAN WATER Act

The CWA was established in 1972 to regulate point source surface water pollution in navigable waters. The waters which fall under this act are still a contentious topic.

The CWA develops a process for which waterways are to be managed and designated if contamination levels are above allowed levels. These waterways obtain the title of 303(d) listed stream and the local agencies must plan a remediation strategy.

The priority list and the sites of highest priority for the NRCS's conservation strategy are in these waterways watershed.



Zollner Creek

Marion Soil and Water Conservation District submitted the Zollner Creek Agricultural Water Enhancement Program (AWEP) application in 2009 and was approved for funding. In the three-year AWEP Zollner Creek Project, NRCS entered into a partnership agreement with Marion Soil and Water Conservation District and approximately 40 landowners voluntarily participated, to improve both surface and ground water quality and quantity along with a reductions in soil erosion.

The 17,000 acres of prime agricultural land along Zollner Creek has become a high priority for the NRCS due to its classification as a 303d stream. Much of this is derived from non-point pollution sources; sediment, bacteria, chemical and others. These factors make the Zollner Creek watershed one of the high priority areas for the NRCS in Marion County. Land use in the watershed are primarily agriculture, with most production in row crops and grass or wheat. It contains a small urban center of Mt. Angel. NRCS identified the Brandy Creek-Pudding River Watershed in 2011 for a National Water Quality Initiative (NWQI) and was one of eighteen NWQI accepted into the program and continue working in the area to address water quality resource concerns. This NWQI was completed in 2017.

Senate Bill 1010 also known as the Agricultural Water Quality Management Act was passed by Oregon legislator in 1993. SB 1010 put the Oregon Department of Agriculture in charge of reducing water pollution from agricultural practices to improve water quality issues throughout the state. Many watersheds in Oregon have been identified as needing a Agricultural Water Quality Management Plan. One in Marion County:

Molalla-Pudding-French Prairie-North Santiam Sub basin

303d Listed Streams are waterways that exceed the allowable nutrient limits set by the CWA. DEQ is assigned to develop a Total Maximum Daily Load and an action plan for these waterways to monitor and reduce contamination levels to meet CWA standards. Marion County currently has 17 waterways on the 303d list. The Willamette River plus;

Champoeg Creek
Bashaw Creek
Boulder Creek
Clark Creek
Chehulpum Creek
Marion Creek
Drift Creek
Mill Creek
Elkhorn Creek
Silver Creek
Zollneer Creek
Patterson Creek
Pringle Creek
Stout Creek
The Little North Santiam
Pudding River

Forestry

Forestry is defined as the science and art of cultivating, maintaining, and developing forests. East Mari- on County is home to expansive forests and is where most of the timber industry is located.

Trees provided many benefits other than economic; clean air, clean water, wildlife habitat, reduces runoff, provides shade, and can help reduce home energy cost. Trees are a dynamic natural resource that re- quires detailed management and monitoring. Forestry activities has the potential of causing tremendous damage to the natural environment from pollution, erosion, and exposing bare soil if not properly managed. Oregon has taken a proactive collaborative approach to developing conservation forestry strategies that are developed at the local level.

The Forest Assessment and Resource Strategy is designed to identify Oregon's current forest resources and develop a strategy for integrating federal, state and private forestry programs with efforts to address issues such as wildfire, keeping working forests as forestland, promoting diversity of forest habitats for fish and wildlife, controlling invasive species and managing climate change. The Forest Assessment will identify high priority areas within Oregon for taking action.

It utilizes/integrates a number of resource data bases, including ODFW's Oregon Conservation Strategy. The project is collaborating with a diverse interest group including The Nature Conservancy, Defenders of Wildlife, and the Natural Heritage Information Center (OSU). This tool will allow us to analyze forest conditions across broad landscapes as well as individual watersheds; the information will inform strategies and enable scarce funds to be targeted to landscapes/habitats at greatest risk.

ODF's Top Priorities

1) Communities at Risk of Wildfire
2) Maintaining the Forestland Base
3) Diversity of Upland Habitats
4) Invasive Species
5) Quality of Aquatic Habitats
6) Climate Change

ODF's Strategies for addressing Priorities

Fire safety: fuel load mitigation, ladder fuels mitigation, non-commercial thinning, slash treatment, fire breaks, pump chance, improved access roads.

Healthy forests: weed control, stocking manipulation [proper density / species mix], non-commercial thinning, and slash treatment.

Diversity/upland habitats: variable density non-com- metrical thinning], stocking manipulation [variable densities / species mix], snag creation, create cavities [nest boxes, roosts, platforms], create forest openings.

Invasive species: noxious weed control, establish native spec1es.

Quality aquatic habitats: water bars, culvert replacement [proper size/design], improve drainage [establish ditch, out- slope/in-slope, etc.], road improvement [relocation / decom- mission, seed cut banks], restore riparian zone [weed control, plant native vegetation]; establish / expand riparian forest buffers [tree planting, weed control, thinning]; improve forest buffers [thinning, weed control, tree planting] .

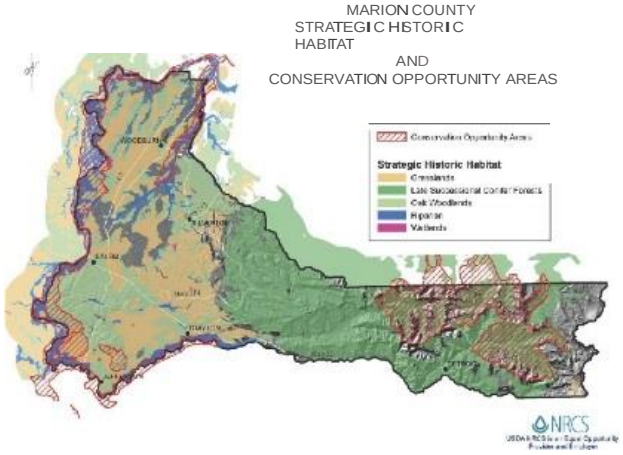
Maintaining the forestland base: any incentive practice that reduces the cost of carrying and managing forest land for individual landowners. For example, a landowner may be willing to (voluntarily) reduce erosion from a road (water bars, culverts, ditching, and grass seeding) or improve forest health (invasive weed control), etc. However, many woodland owners do not have the cash flow to fund improvements; this is especially true for landowners that will not have merchantable timber for decades, if ever during their life time.

Climate change: to the degree that forest cover "buffers" climate change, practices that incentivize conservation of existing forest cover, will address climate change. See practices mentioned above for fire safety, healthy forests, diversity / upland habitats, invasive species, and aquatic habitats.

Habitat Conservation

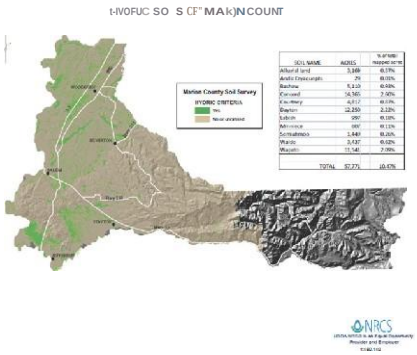
Historically this area was home to dense forest with large meandering rivers that help shape this into what we see today. But through the interactions of man with the land, this region like most has been greatly altered. The NRCS has made a commitment to working closely with United States Department of Fish and Wildlife Services, Oregon's Department of Fish and Wildlife and the Marion Soil and Water Conservation District on projects that increase the quality and amount of critical animal and plant habitats, in addition to other benefits like water quality and quantity.

The Oregon Conservation Strategy outlines wildlife conservation opportunity areas that have been identified throughout the county where improvement to habitat can be addressed to help fish, wildlife and habitat. Approximately 1800 acres of historic habitat has been restored in Marion County using the Wetland Reserve Program and Wildlife Habitat Incentives Program. The NRCS working on historic habitat and conservation opportunity areas has provided diverse habitat and healthy native plant communities in Marion County. Wetlands provide quality habitat for migratory birds and other wildlife and aquatic species while protecting water quality and reducing flood damages. Noxious weeds and invasive species have been a major concern in the Willamette Valley but with proper management we can improve historic habitat. Healthy plant and animal communities provide economic and aesthetic benefits and are essential to people's quality of life.



Hydric

Hydric soils and the Wetlands Reserve Program (WRP) create optimum habitats for waterfowl, shorebirds and other wetland dependent species within Marion County. The hydric soil mapping and inventory can be used to help identify conservation opportunities and direct technical and financial resources to the appropriate source. Restoring wetlands and wildlife habitat on private lands from the floodplains to the foothills to pro- vide critical wetland habitat and provides temporal floodwater retention while reducing flood risk. The goal of programs like the WRP/WRE is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, also provide recovery opportunities for several endangered and threatened species. Marion County in the last ten years has restored1000 acres of wetlands and riparian that benefit wildlife habitat.



A vast improvement of migratory and wintering waterfowl with a diverse wetland ecosystem has been seen on these sites. Great partnerships have been fanned with the WRP/WRE to protect and restore wetland and riparian areas.

Wetland Resource Concerns:

1) Historically, wetlands were regarded as "wastelands," with water too shallow to swim in, the ground too wet to farm or inhabit, and they were considered breeding grounds for mosquitoes, insects and disease. Their true value wasn't known.

   Wetlands are giant filters, purifying water, preventing and minimizing flooding, and replenishing groundwater. In addition to the human benefit, shorebirds, waterfowl, fish and other wildlife need wetlands for survival. Nationally, 35% of all rare and endangered species depend on wetlands.

Principal threats to wetland ecosystems include conversation to other uses and impacts from human activities, such as pollution, sedimentation and invasion of non-native species that threaten wetland condition and function. Many of the most critical wetland concerns are in lowlands of the major river basins, which were once vast wetlands, riparian forests and prairies that are now home to the majority of the state's population. As Marion County population continues to grow, wetland loss due to urbanization and resource development will continue to grow. Protecting and restoring the ecosystem benefits that wetlands provide is important to maintaining or increasing the valuable services they provide.

2) Some of the wetland ecosystem benefits include:

- Flood water storage that reduces peak flows;
- Habitat for a diversity of plants, wildlife and fish;
- Improvement of water quality through filtering of sediment and pollutants;
- Recharge of groundwater;
- Protection of shorelines;
- Benefits from open space and aesthetic qualities.

3) Statewide 29% of the native wetland plant communities are identified as "imperiled" and about 1.4 million acres of wetlands remain; about 2 percent of Oregon's total land surface. In the Willamette Valley only 1% of its wet prairie habitat remains.

References:

Oregon State of the Environment Report, 2000

The Wetlands Conservancy, http://oregonwetlands.net

State of Oregon Wetlands Program

Federally Listed, Proposed, Candidate and Species of Concern

Oregon Fish and Wildlife Services

Through the NRCS's habitat conservation efforts it has taken increased interest in the animals, reptiles and plants that are listed on the Oregon's Fish and Wildlife Services list of endangered species. When working with local landowners the NRCS and its partners have worked diligently in Marion County to alleviate species from the list.

LISTED SPECIES

Birds

Northern Spotted Owl
strix occidentalis caurina (CH,T)

Streaked Horned Lark

Eremophila alpestris strigata (T)

Fish

Oregon Chub
oregonichthys crameri (CH,T)

Plants

Golden Paintbrush
castilleja levisecta (T)

Willamette Daisy
erigeron decumbens var. decumbens (CH, E)

Water Howellia
howellia aquatillis (T)

Bradshaw's Desert Parsley
lomatium bradshawlii (E)

Kincaids Lupine
lupinus sulphureus ssp. kincaidii (CH,T)

Nelson's Checker-Mallow
sidalcea nelsoniana (T)

PROPOSED SPECIES

WESTERN POND TURTLE
Actinemys marmorata

CANDIDATE SPECIES

Birds

Streaked Horned Lark (Listed 2013)
eremophila alpestris strigata

SPECIES oF CoNCERN

Mammals

Red Tree Vole
arborimus longicaudus

Townsend's Western Big-Eared Bat
corynorhinus townsendii townsendii

California Wolverine
gulo gulo lutesu

Silver-Haired Bat
lasionycteris noctivagans

Long-Eared Myotis Bat
myotis evotis

Long-Legged Myotis Bat
myotis volans

Yuma Myotis Bat
myotis yumanensis

Camas Pocket Gopher
thomomys bulbivorus

Birds

Northern Goshawk
accipiter gentilis

Olive-Sided Flycatcher
contopus cooperi

Harlequin Duck
histrionicus histrionicus

Yellow-Breasted Chat
icteria virens

Acorn Woodpecker
melanerpes formicivorus

Mountain Quail
oreortyx pictus

SPECIES OF CONCERN

Birds

Band-Tailed Pigeon
patagioenas fasciata

Oregon Vesper Sparrow
pooecetes gramineus affinis

Purple Martin
progne subis

Reptiles & Amphibians

Northern Pacific Pond Turtle
actinemys marmorata marmorata

Coastal Tailed Frog
ascaphus truei

Oregon Slender Salamander
batrachoseps wrighti

Northern Red-Legged Frog
rana aurora aurora

Foothill Yellow-Legged Frog
rana boylii

Cascade Frog
rana cascadae

Fish

Pacific Lamprey
lampetra tridentata

Coastal Cutthroat Troat
oncorhynchus clarki ssp

Plants

Mountain Grape Fern
botrychium montanum

Cold Water Corydalis
corydalis aquae-gelidae

Pale Larkspur
delphinium pavonaceum

Willamette Valley Larkspur
delphinium pavonaceum

Peacock Larkspur
delphinium pavonaceum

Shaggy Horkelia
horkelia congesta ssp. congesta

Thin Leaved Peavine
lathyrus holochlorus

Whitetop Aster
sericocarpus rigidus

Pear Blue-Eyed Grass
sisyrinchium sarmentosum

DE-LISTED SPECIES

Birds

Aleutian Canada Goose
branta canadensis leucopareia

American Peregrine Falcon
falco peregrinus anatum

Bald Eagle
haliaeetus leucocephalus

Definitions

Listed Species: An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future.

Proposed Species: Taxa for which the Fish and Wildlife Service or National Marine Fisheries Service has published a proposal to list as endangered or threatened in the Federal Register.

Candidate Species: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

Species of Concern: Taxa whose conservation status is of concern to the U.S. Fish and Wildlife Service

KEY: E - Endangered
T - Threatened
CH & PCH- Critical Habitat designation
PE - Proposed Endangered
PT - Proposed Threatened

Strategic Plan

PRIORITY

Water Quantity

1

FOCUS AREA: Conservation Implementation Strategy (CIS) (Successfully Outcome 2015)

Stayton-Sublimity GWLA

Outcome Complete

Oregon Water Resource Department identified four Restricted Ground Water Areas (RGWA) also called Ground Water Management Areas (GWMA) in Marion County. Stayton-Sublimity was one of the four GWMA. Water quantity has become a problem for both ground and surface water because of extensive surface water use and declining aquifers. Ground water recharge is not keeping up with the draw down on 27,000 irrigated acres in the GWMA because of urban growth and inefficient irrigation systems on high value crops.

Municipal and Rural wells were having a tough time keeping up so restricted ground water use was placed in this areas. NRCS has successfully completed the Station-Sublimity CIS - GWMA area in 2015 helping to prevent the area from going from "Restricted to "Critical GWA's" causing irrigation water to have a potential of being cut off supply or put more regulation placed on the designated area. Over 10 000 acres have been treated, helping to keep the GWMA from going to Critical Water Management Area.

We receive ~50" of rainfall per year but the Willamette Valley has a Mediterranean Climate and rainfall is lacking during peak crop growing months needed to grow high value crops. Helping to address the water quantity concerns have helped Marion County pull though the 2015 drought and saved farmers from losing crops by converting inefficient irrigation system to highly efficient irrigation system. This was a successful outcome with great client participation in implementing water savings conservation practices.

Water Quantity NEW: 2015-2019

Conservation Implementation Strategy (CIS)

Champoeg Watershed

Problem

Champoeg Watershed's most pressing natural resource concerns are water quantity and not being able to sufficiently supply irrigation water and to improve water quality. Inefficient use of irrigation water have exasperated these key problems.

The main stem of Champoeg Creek is 303d listed by the Oregon Department of Environmental Quality for Dieldrin. Dieldrin is an "insecticide and a by-product of the pesticide Aldrin." The pesticide Aldrin has been outlawed but is still found in this environment from uses prior to the ban. All of these issues within the Champoeg watershed are due to a compounded set of circumstances which include: inefficient use of irrigation water, poor nutrient and pest management, poor drainage management, decreased soil organic matter, and in-stream dams for water storage.

Improved water management practices along with other management practices such as pest and nutrient management, cover cropping, and filter strips can help solve these concerns. Improving irrigation efficiency, reducing energy consumption, improving soil organic matter levels, and eliminating irrigation induced erosion will address water quality and improve stream flows for threatened and endangered fish species playing an important role in Salmon recovery efforts in the Willamette Valley.

NRCS has successfully completed the Station-Sublimity CIS - GWMA area in 2015 and the Local Working Group has helped identify our next strategic move to the Champoeg Watershed to address water quantity concerns while helping address water quality.

Water Quantity NEW: 2017-2021

Conservation Implementation Strategy (CIS)

Howell Prairie Creek – Pudding River Watershed

Problem

The Natural Resources Conservation Service (NRCS) and the Marion County local working group members identified water quantity as a major resource concern for the county. Based the water quantity resource concern, the Howell Prairie Creek watershed was recognized as the next strategic area to improve inefficient irrigation. This CIS fits well into the Marion County NRCS Strategic Plan, which has addressed the same natural resource concerns on other watersheds within the Pudding River drainage.

Howell Prairie Creek and the Pudding River have been plagued historically with low summer stream flows due to inefficient irrigation. Part of the Mt. Angel ground water limited area (GWLA) is within the Howell Prairie Creek watershed. Streams in the Pudding River drainage also experience excessively high levels of sediment, bacteria, nutrients and toxics, including dieldrin, nitrate, chlorpyrifos, DDT, guthion, and malathion. Both Howell Prairie Creek and the Pudding River are 303(d) listed and a TMDL was developed in 2008 by ODEQ to address these pollutants. The Pudding River has exceeded aquatic life criteria in USGS monitoring in at least one sample for atrazine, azinphos-methyl, carbofuran, chlorpyrifos, diazinon, lindane, malathion.

The Howell Prairie Creek watershed is nearly all agriculture, but does include some urban component by being located adjacent to the cities of Silverton and Mt Angel. Land use identified in the 2008 TMDL by DEQ in the Brandy Creek watershed breaks down as developed 2.7%, grass/wheat 35%, nursery 1.8%, pasture 5.1%, row crop 41%, orchards 0.6%, hops 7.7%, livestock 0.8%.

Strategy

NRCS strategy for addressing water quantity concerns in Marion County is to strategically address Conservation Implementation Strategies (CIS) over a specified time frame. Once the identified resource concern has been adequately addressed in a CIS and with the direction from Marion County Local Working Group, NRCS will move to the next priority watershed. The Stayton-Sublimity GWMA was Marion County's First successful CIS to be completed in 2015. As the Local Working Group continues to help identify priority resource concerns and future CIS's, we will continue the conservation efforts. NRCS will continue addressing efficient irrigation system and management of irrigation water.

NRCS will strive for 30 -50% reduction in water usage. Installation of low pressure irrigation systems will show immediate impacts on rural water availability and will also show an immediate impact on rural power usage.

We will make considerable efforts to make contact with each landowner/operator in the all CIS focus areas. With limited funding, working with our partners is crucial in order to continue our water savings work.

Based on the amount of work that has already been completed within the CIS's and the improvement we have seen thus far, our goals in all CIS should be achievable.

NRCS and our partners will continue outreach efforts to help utilize the Environmental Quality Incentive Program (EQIP) funding along with our clients commitment and partner contribution we should have a satisfactory resolution in Marion County's identified Conservation Implementation Strategy's.

Outcome

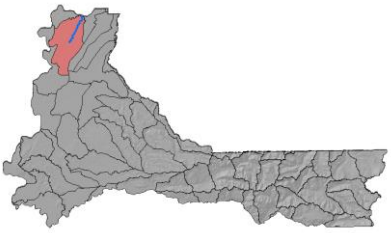
Working with our partners within the CIS's - Conservation Implementation Strategies will result in drawdowns not exceeding groundwater recharge. Giving priority to CIS's will keep municipal and rural well from going dry and help relieve restrictions on the farming community. Our outreach efforts and funding for conserving water, protecting water quality and saving energy will continue to support high value crops and the local economy. Our secondary goal is to have a measurable re-charge in groundwater aquifers, and conserve energy by converting inefficient irrigation systems to highly efficient irrigation systems over a specified time frame.

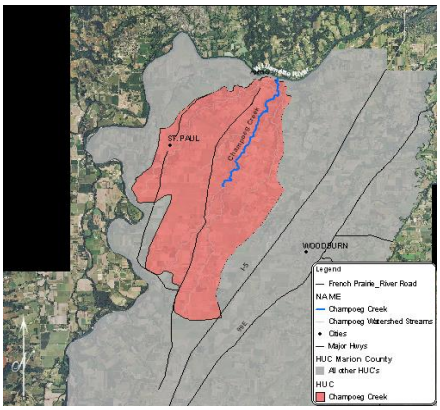
We will continue to build strong partnerships with the Irrigation Districts, Oregon Water Resource Department, Marion Soil and Water Conservation District and Energy Trust to leverage funding, We will also be working with our partners to track improvement in the aquifer and improving water quality by implementing practices that will address water quantity concerns. Address in efficient irrigation use over a specified time frame to improve water quantity issues to improve irrigation status. Participation in Marion Counties funding Pool has always been very high and competitive.

With the help of our clients, partners, vendors, and Technical Service Providers, Marion has been able to utilize funding and get good conservation practice on the ground to address priority resource concerns. The goals and objectives we have are reasonable to reach and the desired outcome will not be by the funding of projects alone, but by educating and outreach to these communities to try and conserve and protect the resources we have.

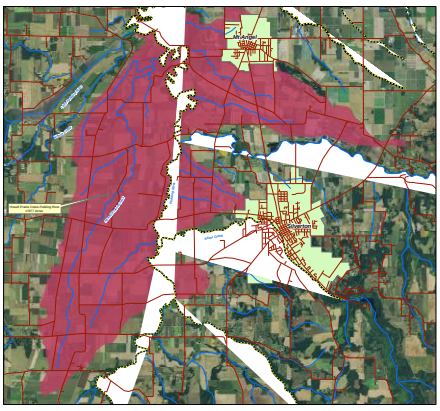
Champoeg Watershed

CIS-2015-2019





Howell Prairie CIS -2017-2021



Strategic Plan

Soil Erosion

FOCUS AREA:

PRIORITY 2

Problem

Willamette Valley receives 40-50'' of rainfall per year and many crops are planted during the critical rain period (October 15th- March 15th). During this critical rain period it is essential to control erosion through conservation tillage practices, especially on HEL ground that is near 303(d) listed streams. Soil erosion and water quality are the resource concerns which are associated with the disturbance caused by conventional tillage systems. This erosion is a severe resource concern in Marion County, especially in specified area in Figure 1 and 2. If this resource concern is not addressed, millions of tons of soil could be lost due to erosion and river and stream temperatures will rise due to the increased sediment load.

Strategy

The main conservation practice that will address these resource concerns is Residue Management. This practice comes in the form of strip till, mulch till, direct seed/ no-till. Other practices that would address these issues are conservation cover, cover crop and buffers.

Based on the size of the project area and the extent of the current condition of farmed soils in Marion County it is estimated that all the farmed ground within the Soil Quality Target Area that is eligible will be enrolled within five years and that a satisfactory resolution could be achieved within eight to ten years.

The primary objective is to enroll land in the focus area into a Residue Management / Cover Crop Conservation Management System. The focus area will include
303(d) listed streams: Pudding River, Drift Creek and Silver Creek. The boundary of the Soil Quality Target Area is defined by Highway 214 in the West and South, Howell Prairie Road in the East and Silverton Road in the North.

The Soil Quality Target Area totals 56,234 acres, with some acres being urban, which will not be eligible. We estimate a savings of 4T/ac/year.

Outcome

The success of these practices will be measured using Stream Visual Assessment Protocol and the Revised Universal Soil Loss Equation (RUSLE2). Interviews will also be conducted with the landowners to determine the project success and how it can be improved.

Strategic Plan

Water Quality

Focus AREA: CAPO's & AFO's

PRIORITY 3

Problem

Marion County has ~54 Confined Animal Feeding Operations (CAFO) / Animal Feeding Operations (AFO). They all have the potential to affect water quality because of the high nutrient content created by animal waste.

In 2001, the Oregon Legislature passed House Bill 2156, directing the Oregon Department of Agriculture (ODA) to regulate all livestock operations to satisfy both state water quality laws and the federal Clean Water Act. (From http://oregon.gov /ODA/NRD/cafoprogdocs)

A priority for the Marion County NRCS and Local Working Group is to help producers address the Clean Water Act and ODA water quality regulations for Animal Feeding Operations (AFO) and Confined Feeding Operations (CAFO).

Nutrients created by the AFO/CAFO's are usually concentrated on the farm. Over the wet months, the producer typically stores the manure and then during the dry months, applies the manure to their fields. The applied waste has a high nutrient concentration that can, if over applied, flow over land into streams and/ or into ground water causing water quality concerns. Producers may have issues with manure storage which encourages them to apply waste to fields during times where rain water transports the nutrients into surface or ground water instead of crop uptake.

When manure (solid/liquid) is over applied to fields it can cause eutrophication in the water system. This in-stream nutrient excess promotes vegetative growth that eventually decays and causes oxygen depletion. With oxygen depletion, excess algae growth can occur (some forms are toxic to humans and livestock), the resulting pH increase can cause raise ammonia concentrations. Therefore, if the nutrient management problem is not addressed nutrients could be mobile in the soil/water system, causing impaired water quality for fisheries, recreation, industry, and drinking.

Strategy

Marion County will assist 3-5 CAFO/ AFO per year, for the next 5 years, with qualified conservation practices to prevent excess nutrient from entering ground and surface water to improve water quality in selected watersheds.

Our focus will be on 3- 303dlisted streams/ Watersheds: Middle Willamette (HUC 17090007), Pudding (HUC 17090009) and North Santiam (HUC 17090005)

All streams have exceeded DEQ standards and been listed for: Fecal Coliform, E Coli, & Nitrates.

Outcome

Landowners and managers will be able to better manage nutrients within their *CAFOIAFO* systems to help improve water quality.

Conservation practices will improve 303d waterways in the Middle Willamette, Pudding, and North Santiam.

A satisfactory resolution will be achieved within 5-8 years.

Producers would be in compliance with the water quality of ODA's regulatory requirements.

Strategic Plan

TIMELINE

BUDGET

Water Quantity

Conservation Implementation Strategy (CIS):

	2017	2018	2019	2020	2021
EQIP FA$	600,000	600,000	600,000	500,000	400,000
Partner FA$	50,000	50,000	50,000	50,000	50,000
PartnerTA$	20,000	20,000	20,000	20,000	20,000
Equipment	2,500	2,500	2,500	2,500	2,500

Soil Erosion

	2017	2018	2019	2020	2021
EQIP FA$	75,000	75,000	75,000	75,000	75,000
Partner FA$	10,000	10,000	10,000	10,000	10,000
Partner TA$	5,000	5,000	5,000	5,000	5,000
Equipment	5,000	5,000	5,000	5,000	5,000

Water Quality

FOCUS AREA:

	2017	2018	2019	2020	2021
EQIP FA	120,000	120,000	120,000	120,000	120,000
Partner FA	20,000	20,000	20,000	20,000	20,000