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CHAPTER 2. NATURAL SETTINGS

2.1 INTRODUCTION/PURPOSE

Yakima County recognizes the integral link between the health of the natural setting and the health of its inhabitants. Therefore, it has chosen to include a natural setting element within ***Horizon 2040***. To maintain our present quality of life "as defined through our natural surroundings" while accommodating population growth, certain measures must be taken. If we are able to accommodate our natural setting by anticipating and preventing environmental problems, we can avoid the long-term costs associated with correcting them. The prevailing objective is to work with the natural environment rather than against it. By doing so, we can all live better, healthier lives.

The Natural Setting Element emphasizes the conservation and protection of our natural environment while preserving people's lifestyles and property. Yakima County and the communities within it can and will continue to grow, but this growth must occur in a way which balances nature's needs with our own. By embracing a philosophy of sustainable land use management, the County can help prevent many environmental problems and avoid the unforeseen costs associated with correcting them.

Our natural setting involves and affects all other plan elements. While the County is protecting those natural features most sensitive to growth and development (wetlands, flood plains, shorelines, and shrub-steppe habitat) through the Critical Areas Ordinance and Shoreline Master Program, other aspects of our physical and cultural landscape deserve consideration as well.

The Natural Setting Element serves two purposes. The first is to clarify the relationship between the natural environment and our built-out environment. The second is to secure a balanced or sustainable approach to future development.

Environmental degradation or depletion of our natural resources negates some of the many reasons people wish to live here. Sensitive areas such as wetlands, open spaces, and fish and wildlife priority species and priority habitat contain much of the natural wealth valued by County residents. Other sensitive areas, such as land located outside fire districts or those prone to flooding are important because of the risk to lives and property posed by developing in them.

Continued population growth is expected to occur in Yakima County. Over the twenty-year time frame of ***Horizon 2040***, another estimated 60,000 people are expected to live here. This projected growth will have significant adverse impacts on our fiscal and natural resources unless measures are taken to address them in an environmentally sound manner. By anticipating and preventing environmental problems we can avoid the unforeseen costs associated with correcting them. By doing so, we can all live better, healthier lives.

To help complete these purposes, the following guiding principles and assumptions were used:

- Our cultural landscape "where we work, live and play" is shaped by our natural surroundings.
- Our economic base of agriculture and forest products is dependent upon the County's natural setting and its resources.
- In order to protect the long-term capacity of the environment to support growth, we need to understand the limits of natural systems.
- Responsible growth requires us to work with and within our natural setting. We must work with nature rather than against it.
- We must recognize our limits. Humankind's problems, especially in regards to the natural setting, cannot always be solved with better science or a technological fix.

2.2 ORGANIZATION OF ELEMENT

The Natural Settings Element consists of six major sections: Introduction/Purpose, Growth Management Act Requirements, Major Opportunities, Existing Conditions; Analysis of Assets, Needs and Opportunities; and Goals, Objectives and Policies.

2.3 GROWTH MANAGEMENT ACT REQUIREMENTS

The Washington State Growth Management Act (GMA) does not require a Natural Settings Element in ***Horizon 2040***, but RCW 36.70A.020 – Planning Goals require that the following related items are addressed:

(6) Property rights. Private property shall not be taken for public use without just compensation having been made. The property rights of landowners shall not be protected from arbitrary and discriminatory actions.

(8) Natural resource industries. Maintain and enhance natural resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses.

(9) Open space and recreation. Retain open space, enhance recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.

(10) Environment. Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

(13) Historic preservation. Identify and encourage the preservation of lands, sites, and structures that have historical or archaeological significance. To view the list of sites within Yakima County that are currently listed on the state or Federal historic register contact the Washington State Department of Archaeology & Historic Preservation.

2.3.1 Critical Areas

The GMA also requires local jurisdictions to designate five critical areas and adopt development regulations which protect these them (RCW 36.70A.170(1)(d)). The Washington Administrative Code (WAC) Chapter 365-190 identifies "Minimum Guidelines to Classify Agriculture, Forest, Mineral Lands and Critical Areas" (hereafter referred to as *Minimum Guidelines).* Yakima County is required to consider the definitions found in the *Minimum Guidelines* when designating environmentally sensitive areas. The general extent and scope of certain critical areas, such as the 100-year floodplain, over steepened slopes and wildlife habitat areas are depicted on the Yakima County Geographic Information System (GIS). Yakima County also maintains a more detailed series of maps specifically for administering its Critical Areas Ordinance, these too are located in GIS. The following description summarizes the definition of each critical area according to the *Minimum Guidelines,* with some discussion of their functions and importance:

2.3.2 Wetlands

Wetlands are areas which have saturated soils or standing water for at least part of the year, contain hydric soils, and which contain water-loving vegetation. Areas such as swamps, marshes, and bogs are generally considered wetlands. The Critical Areas Ordinance uses a four-tier rating system for wetlands, recognizing that some wetland systems are more valuable or irreplaceable than others. The rating system is based on the wetland's functions and values, degree of sensitivity to disturbance, rarity, and ability to compensate for destruction or degradation (WAC 365-190-090).

Wetlands are economically, biologically, and physically valuable resources to Yakima County. They are the most biologically productive ecosystems in nature, even though they constitute only a small percentage of the County’s total landscape. For many species, including waterfowl, birds, fish, reptiles, invertebrates, and mammals, wetlands are essential habitat for feeding, nesting, breeding, and cover. Illustrative of wetland importance is the fact that at least one-third of the state’s endangered and threatened species require wetlands for their survival. The state Department of Fish and Wildlife lists over 175 wildlife species that use wetlands for primary feeding habitat and 140 species that use them for primary breeding habitat. Since the turn of the century, the Department of Fish and Wildlife estimates that Washington State has lost half of its original wetlands. Consequently, the functions and values of the existing wetlands increase and require more protection.

Wetlands are important nursery and spawning areas and provide nutrient sources critical to the survival of fisheries. These fisheries in turn support a strong commercial and recreational industry. Wetlands are also potential sources for harvesting of marsh vegetation and aquaculture and under proper management, forested wetlands are an important source of timber. Wetlands play important functions in local and regional hydrologic cycles. These functions include:

1. Lessening flood damage by slowing and storing flood waters;
2. Reducing shoreline erosion by waves and currents;
3. Protecting water quality by filtering out sediment and other water pollutants;
4. Biological processes that recycle and restore nutrients; and
5. Storing and recharging water to both surface and ground water systems, thereby helping to maintain stream flows during periods of low flow and replenishing drinking water supplies.

Wetland areas within Yakima County have been identified through the National Wetland Inventory (NWI) mapping efforts, as well as a landscape assessment by County staff. "Potential Wetland" locations are available through Geographic Information System (GIS) mapping efforts both within Yakima County Public Services and available online at www.yakimap.com. This mapping system, along with aerial photography interpretation, is used to review projects that have the potential to disturb wetland areas. Both project level and non-project level actions are reviewed on a case-by-case basis to ensure there is no loss of wetland functions and values. Depending on the location, protection of the wetlands are accomplished through development standards in the Critical Areas Ordinance or Shoreline Master Program.

2.3.3 Critical Aquifer Recharge Areas

Critical Aquifer Recharge Areas (CARAs) within Yakima County have been identified and mapped using the Washington State Department of Ecology publication "Critical Aquifer Recharge Area Guidance Document" (Publication 05-10-028). Using the procedures set forth by the guidance document, Yakima County has identified and mapped wellhead protection areas, sole source aquifers, susceptible groundwater management areas, special protection areas, moderately or highly vulnerable aquifer recharge areas, and moderately or highly susceptible aquifer recharge areas.

Some areas in Yakima County are underlain by soils which are highly permeable and allow surface waters to infiltrate into the ground water. Below the surface, the percolating water enters the geologic layer saturating the aquifer and supplying water in sufficient quantities and quality to be used as a resource. These conditions create aquifer recharge areas. Some of these aquifer recharge areas are highly vulnerable to ground water contamination. Soils, depth to ground water and hydraulic conductivity must all be analyzed to determine their vulnerability.

Ground water is the primary source of drinking water for most rural County residents. The city of Yakima is the only city within the County that uses surface water as a primary source (Naches

River). All other jurisdictions currently depend upon the County's aquifers as their primary source of water. Once ground water is contaminated it is difficult, costly, and often impossible to clean up. Some contaminants like microbial organisms can cause sickness and discomfort while others like organic chemicals, inorganic metals, and radio nuclides can cause neurological disorders, cancer, mutations and even death.

The quality and quantity of ground water resources used for drinking water in Yakima County is generally good. The greatest potential for problems exist in the valley bottoms. In these areas most wells tap shallow aquifers (less than 100 feet) which are extremely susceptible to surface contamination. Groundwater sampling over the past decade throughout Yakima County indicates that in some areas nitrate concentration shave risen significantly over the natural concentrations, and in several cases are approaching the maximum contaminant levels allowed by the state for nitrates. In 2011, Yakima County created the Lower Yakima Valley Groundwater Management Area (GWMA) to find solutions to prevent contamination and protect residents who might be exposed to high levels of nitrate in their drinking water. The primary long-term goal of GWMA is to reduce nitrate levels in groundwater to below state drinking water standards. The objectives have been divided into six categories: data and monitoring, problem identification, measures to reduce groundwater contamination, education, drinking water systems, and other general objectives. The effort is ongoing It is anticipated that GWMA group will issue their recommendations in 2018.

2.3.4 Fish and Wildlife Habitat Conservation Areas

"Fish and wildlife habitat conservation" means land management for maintaining populations of species in suitable habitats within their natural geographic distribution so that the habitat available is sufficient to support viable populations over the long term and isolated subpopulations are not created. This does not mean maintaining all individuals of all species at all times, but it does mean not degrading or reducing populations or habitats so that they are no longer viable over the long term. Yakima County contains large areas of some of the most diverse and unique fish and wildlife habitat found anywhere in the country. Habitat types range from upland forest to high arid desert. Lakes, wetlands, pristine streams, forests, shrub-steppe and alpine meadows provide support for a variety of plants, fish and wildlife species. Protection of these environments provide places where animals can find food, water, shelter and security, and act as gene pools to assure continued genetic diversity. Large intact blocks of these habitat parcels also provide critical movement corridors that allow animals to disperse across the landscape, which is vital to their continued existence on the landscape.

In addition to supporting fish and wildlife populations, habitat diversity and types can provide biological indicators of the health of the environment. Habitat conservation provides for water quality protection, flood control and preservation of biological diversity.

Fish and wildlife need food, water and shelter. Locations such as riparian (streamside), upland areas meet these needs and are called habitat areas. The *Minimum Guidelines* (WAC 365-190-130(2)) identify critical fish and wildlife habitat as the following (a) areas with which endangered, threatened and sensitive species have a primary association; (b) habitats and species of local

importance; (e) naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat; (f) waters of the state; (g) lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity; and, (h) state natural area preserves, natural resource conservation areas, and state wildlife areas.

Fish and wildlife habitat conservation areas are protected through Yakima County's Critical Area Ordinance and Shoreline Master Program. Critical areas and shoreline jurisdiction mapping is available at www.yakimap.com. Projects that are proposed in fish and wildlife habitat conservation areas are evaluated on a case by case basis. When required, Yakima County provides notice of proposed projects to other agencies, such as the Washington Department of Fish and Wildlife, who can require their own permits and/or suggest project design revisions or mitigation to protect species or their habitat. In addition, projects that are not exempt from environmental review under the State Environmental Policy Act (SEPA) require the proponent to assess impacts to species of importance and their habitat. The County, along with the input of other agencies, can require project design revisions or mitigation to protect species of importance and their habitat.

Preserving a wide range of habitats provides numerous benefits to County residents, including: ensuring the protection of rare species and maintaining sensitive ecosystems; reaping significant economic benefits from commercial and recreational fishing and hunting; preserving of cultures, lifestyles, and livelihood which center on fish and wildlife resources; and providing aesthetic and open space values which contribute to the overall quality of life.

2.3.5 Frequently Flooded Areas

Flood plains and other areas subject to flooding (wetlands) perform important hydrologic functions including storing and slowly releasing floodwaters, reducing floodwater velocities, and settling and filtering sediment. Frequently flooded areas provide natural areas for wildlife and fisheries habitat, recreation areas and rich agricultural lands. Development in frequently flooded areas diminishes these values and can present a risk to persons and property on the development site and/or downstream from the development. Building in flood hazard areas also results in additional costs for installing flood protection measures to protect life and property. Additional costs are incurred when flooded property must be repaired.

Flooding is the most commonly occurring natural disaster in Yakima County, posing threats to lives, properties, and resources. Floods occur when a stream or river receives more water than its channel can accommodate. Floods can originate from natural causes such as heavy rainfall or snowmelt. However, human activities such as building can often increase the frequency, magnitude and displacement of the flood, hence causing flooding in other areas of the river. Frequently flooded areas are normally adjacent to rivers or other water bodies and include the entire 100-year floodplain, that area which has a one percent chance of flooding in a given year. The floodplain receives water which overflows from the main floodway of a stream or river.

Loss of vegetation and soil often occurs when areas are developed. This causes a loss in permeable surfaces, thereby increasing the volume of storm water which is released directly into

streams, rather than being absorbed by vegetation or soil. In a similar manner, extensive logging of forest lands can increase storm water runoff erosion, and sedimentation. The result of these actions is an increase in the area which can be expected to be covered by floodwaters. Structures built in flood prone areas are often damaged or destroyed by floods. At times, people's lives are jeopardized.

Frequently Flooded Areas (FFA), defined as floodways, 100-year floodplain as identified by the Federal Emergency Management Agency (FEMA), preliminary updated FIRM maps, floods of records and mapped channel migration zones. Projects that are proposed on parcels that have mapped special flood hazard areas are reviewed under the authority of Yakima County's Critical Area Ordinance and Shoreline Master Program and require a flood hazard determination or flood hazard permit. Projects within special flood hazards areas must comply with building standards that are designed to protect property and not cause a rise in the base flood elevation.

2.3.6 Geologically Hazardous Areas

Geologic Hazards pose a threat to the health and safety of County citizens when development and associated infrastructure is sited in areas of significant hazard. In some cases the risk to proposed activities, and/or the environment within or near geologic hazards can be reduced (or mitigated) to acceptable levels by engineering design, or modified construction practices. In areas where these measures are not sufficient to reduce the risk from geologic hazards, building or disturbance is best avoided. Land use controls should reflect the degree of hazard and risk.

Other reasons for controlling land-use activities proposed in areas of geological hazardous areas include:

1. Preventing damage or loss of property;
2. Protecting water quality and preventing increased flooding problems;
3. Minimizing public expenditures for repairing or preventing damage to public and private property;
4. Reducing the amount of additional tax dollars that must be spent for various public utilities and public services within geological hazardous areas because of specialized engineering or equipment requirements;
5. Protecting aesthetic resources (e.g. integrity of steep slopes) and natural character of the landscape.

For example, failing to control drainage on development sites up-gradient from a landslide hazard or steep slope area could result in slope failure. Slope failure can lead to loss of life, be very difficult and expensive to mitigate, scar the landscape, and can degrade water quality and cause flooding problems. Projects that are proposed in or near a mapped geological hazard are evaluated on a case by case basis under the authority of Yakima County's Critical Area Ordinance and Shoreline Master Program. The proponent may be required to prepare a geological hazard report (typically mandatory in identified landslide areas) and receive a development

authorization. Projects that may contribute to an increase in the hazard or in the risk to life and property on or off the site would be required to mitigate those risks to an acceptable level through design and construction methods.

2.3.7 Cultural Resources

The location of many areas of cultural significance are unknown to most property owners and typically will remain confidential to protect their integrity. However, Yakima County utilizes the Washington State Department of Archaeology and Historic Preservation's (DAHP) archaeological and historic database and the Yakama Nation's Cultural Resource Program to determine if prospective land use permits may impact archaeological or cultural resources. As part of permit review, if a proposal requires public notice Yakima County notifies the Yakama Nation Cultural Resources office soliciting comments regarding cultural resources. In addition, if the property is within 500' of an identified archaeological or cultural resource site, as determined by DAHP's database applicants will be required to consult with both the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation) and DAHP to determine if their project has any potential impacts to those resources. On project permits beyond 500' of an identified archaeological or cultural resource site, Yakima County will rely on the Yakama Nation comments on projects that require notification, as well as DAHP's comments through the SEPA register.

2.3.8 Critical Areas Ordinance

Following a number of hearings and considerable public testimony, Yakima County adopted a Critical Areas Ordinance (CAO) in July, 1994 that focused on the protection of twenty selected stream corridors. This original ordinance was challenged, and under orders from the Eastern Washington Growth Management Hearings Board, was amended by the Board of Yakima County Commissioners in July, 1995. In compliance with the requirements of the Growth Management Act, Yakima County updated the 1995 CAO in December 2007. The 2007 update of the CAO started in May of 2004 with three public workshops at three different geographic locations to introduce the CAO draft update strategy. At that time, the draft update strategy was dispersed throughout the county and was used to encourage discussion between the public and the project staff so that general strategies could be understood before writing the ordinance.

From May 2004 to August 2004, planning staff held twenty-five meetings with interest groups, local and State agency representatives, local government groups, The County-Wide Planning Policy Committee, and the Yakima County Planning Commission in order to solicit comments on the draft update strategy. From these meetings, project staff compiled a list of all comments received on the draft update strategy. Comments received were closely reviewed and compiled into a separate document for public review.

After reviewing all comments, staff applied edits to the update strategy. With the edited update strategy, staff ultimately received final consensus and input on the broad strategy concepts and began to draft the more technical draft ordinance language (the CAO). Input continued to be solicited from a broad section of interests and the public throughout the update process, including roundtable meetings with the Planning Commission, which played a large role in how Yakima County met State requirements for updating the CAO.

The 2017 update of the CAO took a more simplistic approach then the 2007 CAO update. Text edits to the CAO were limited to those required by state law, or those necessary to accommodate changes in Best Available Science (BAS).

Since a good deal of Yakima County's critical areas, like floodplains, wetlands and important habitat, lie along our numerous stream corridors, the focus of the CAO is to protect these "hydrologically related critical areas." The stream corridor and other hydrologically related critical areas are designated critical areas and include one or more of the following features:

(1) Any floodway and floodplain identified as a special flood hazard area. Special flood hazard areas are those identified by the Federal Insurance Administration in the Flood Insurance Study for Yakima County which, together with accompanying Flood Insurance Rate Maps and frequently flooded areas are hereby adopted by reference and declared to be a part of this title as set forth in Chapters 16C.05.20 through 16C.05.72;

(2) Perennial and intermittent streams, excluding ephemeral streams, including the stream main channel and all secondary channels within the Ordinary High Water Mark;

(3) Naturally occurring ponds under twenty acres and their submerged aquatic beds; and man-made lakes and ponds created within a stream channel designated under (2) above;

(4) All wetlands, that meet the definition found in Section 16C.02.425, as required by WAC 365-190-080(1), and as designated in Section 16C.07.02(1) of the wetland chapter;

(5) Where specifically cited, any flood-prone area not included in a designated floodway and floodplain, but indicated as flood-prone by U.S. Soil Conservation Service soil survey data or geologic evidence developed through professional geologists or engineers (i.e. specific flood frequency, stream channel migration), by information observable in the field such as soils or geological evidence, or by materials such as flood studies, topographic surveys, photographic evidence or other data;

(6) A buffer area extending on a horizontal plane from the ordinary high water mark of a stream channel, lake, or pond, designated in this section or from the edge of a wetland designated in this section according to the distances set forth in Section 16C.06.16 (Vegetative Buffers).

Each stream in the County is typed according to their relative function and value into a five tiered ranking system. Type 1 Streams and Shoreline lakes and ponds are protected by the County's Shoreline Master Program (SMP). Vegetative buffers along the other four stream types vary according to their size with Type 5 streams (intermittent drains) having no buffer requirements.

CAO-defined wetlands are classified by a system modeled after the Department of Ecology's four-tiered rating system. This allows the County to distinguish between the most environmentally significant wetlands (Type 1) and those minor wetlands having slight to moderate function and value (Type 4). Vegetative buffers have been established that relate to the wetland type and are used to protect them.

As it was merged into the CAO, the County's 1985 Flood Hazard Ordinance was updated to meet minimum federal and state requirements to maintain eligibility in the National Flood Insurance Program. Development meeting the vegetative buffering requirements from nearby streams and wetlands, but that will still remain in the 100-year floodplain, are processed through the flood hazard permit system administered directly by the Building Department.

2.4 MAJOR OPPORTUNITIES

While Yakima County is rich in both natural and cultural resources, many related issues presently confront us. Certain problems, such as air quality, will always be with us and will require our constant attention. Other matters involve conflicts between resource uses and users, like the effect of timber harvesting on late summer water supplies or irrigation water runoff degrading in-stream water quality. These dilemmas are often so interrelated it's nearly impossible to deal with them singularly. And still other concerns, as yet unknown, are likely to evolve over the twenty year time frame of ***Horizon 2040***. But if we develop and practice principles that sustain our resources rather than weaken and neglect them, we'll be better prepared to address the problems that face us.

2.4.1 Critical Areas

While many of the other major issues identified in this section are closely related to the protection of critical areas, the administration and enforcement of the Critical Areas Ordinance (CAO) and Shoreline Master Program (SMP) will be on-going in Yakima County. Yakima County staff reviews proposed development to ensure that development does not negatively impact critical areas. One major area of contention has been the intersection between agricultural activities and critical areas. To address the issue, Yakima County opted into the Voluntary Stewardship Program (VSP). The VSP removes regulatory requirements of agricultural activities when they are within or adjacent to critical areas, and emphasizes non-regulatory protection of critical areas. The VSP requires a workgroup comprised of various stakeholders to create a Work Plan that identifies benchmarks in the protection and enhancement of critical areas. The Work Plan is reviewed and approved or disapproved by the Washington State Conservation Commission (WSCC). The benchmarks identified in the Work Plan and approved by WSCC must be met, or agricultural activities will fall back under jurisdiction of the Critical Areas Ordinance.

2.4.2 Water Supply

As with much of the West, water in Yakima County serves competing, and often conflicting, uses. Securing certainty in our water supply will be a major issue over the next twenty years. Reliable access to water is necessary for direct human uses like household, agriculture, commercial and industrial operations, and for indirect human needs such as habitat and recreation.

Today, irrigated agriculture is the biggest user of water. Yakima County agriculture depends largely on irrigation surface water supplied U.S. Bureau of Reclamation's Yakima Project. But recently the needs of other surface water uses, particularly those dealing with the protection and restoration of anadromous fish runs, have been argued. Anadromous fish are those species, like

salmon and steelhead that are born in fresh water and eventually migrate out to sea where they spend a large part of their life, returning to the fresh water stream in which they were hatched in order to reproduce. Along with the water needs of habitat, the demand for water to serve the County's growing urban and rural areas will significantly increase.

The basin was characterized as over-appropriated in 1904 and Yakima Basin surface water rights were subsequently defined in concert with the U. S. Bureau of Reclamation authorization of the Yakima Project in May of 1905, which is also the priority date of Reclamation's water rights in the Basin. More recent court cases have established that the Yakama Nation has a water right to maintain fish life as a result of the 1855 treaty with the United States, the priority date of that water right is "time immemorial". Since surface waters within the Yakima River Basin are over appropriated, our dependence on ground water for our domestic uses is likely to continue. To sustain growth, every resident and jurisdiction within Yakima County must meet the ongoing challenge of protecting and managing our water resources.

It is now generally accepted that Yakima River basin surface water and ground water are hydrologically connected. Rural domestic water supply is generally provided from groundwater sources (i.e. private wells). The withdrawal of water from these groundwater sources may have an adverse impact on senior water rights established before and including 1905. RCW 90.44.050 provides for the supply of rural domestic water through the use of "exempt wells", which can pump up to 5,000 gallons per day for residential use. Permit exempt groundwater withdrawals don't require a water right permit. However, to the extent the groundwater is beneficially used, the water user withdrawing groundwater under the exemption establishes a water right that enjoys the same privileges as a water right permit or certificate obtained directly from Washington State Department of Ecology. Though such withdrawals are "permit exempt", they are still subject to Washington State law regarding the seniority of water withdrawals.

Water use of any sort is subject to the "first in time, first in right" clause, originally established in historical western water law and now part of Washington State law. This means that a senior right cannot be impaired by a junior right. Seniority is established by priority date - the date an application was filed for a permitted or certificated water right or the date that water was first put to beneficial use in the case of claims and exempt groundwater withdrawals. Although exempt groundwater withdrawals don't require a water right permit, they are always subject to state water law. In some instances, Ecology has had to regulate, stop or reduce groundwater withdrawals when they interfere with prior or "senior" water rights, including instream flow rules.

Recent State Court decisions on the requirements of the Washington State Growth Management Act and County Land Use plans result in a positive duty for Yakima County to ensure that water for development is legally and physically available. Closure of the portions of the Yakima Basin to exempt well construction has already occurred in Kittitas County, which in turn has had effects on the development patterns and a large effect on the value and marketability of legal lots which can no longer be developed with the use of exempt wells. Therefore, Yakima County must secure future domestic water supply for its projected rural population growth.

On December 10, 2013, in anticipation of the possibility that the Department of Ecology might, by rule, declare the unavailability of water for development in Yakima County, the Yakima County Board of Commissioners adopted Resolution 399-2013, "In the Matter of the Formation of the Yakima County Water Resource System." Yakima County's Water Resource System (YCWRS) expands its current water systems to address a County-wide rural-domestic water supply to be available to those who would otherwise rely on the "exempt" well strategy offered by RCW 90.44.050. Yakima County understands that groundwater withdrawal may have effects on senior water rights, including the Yakama Nation Water right for the protection of fish life. Thus, the potential effects of future groundwater withdrawals on senior water users and habitat conditions have been addressed by the County in the technical report title "Assessment of the Availability of Groundwater for Residential Development in the Rural Parts of Yakima County," which was completed on January 2016. The report identifies mitigation strategies for providing water for rural development, while avoiding impacts to flows in main stem reaches and tributaries. To implement the strategies identified in the report the County has developed the Yakima County's Water Resource System (YCWRS). A more detailed description of Yakima County Water Resource System is outlined in the Utilities Element of ***Horizon 2040***.

2.4.3 Water Quality

The water quality of our streams, lakes, and ground water influences the domestic, economic, recreational, and natural environments of Yakima County. We all need clean water for daily use in our homes. Residents and tourists alike use our lakes and streams extensively for recreational activities such as boating, fishing, and swimming. Many industries require clean water for manufacturing processes. Some uses, such as commercial fishing and fish hatcheries, are dependent on a constant source of high quality water. As growth and development have increased, so have the problems associated with maintaining water quality. A specific area of water quality concern is in the Lower Yakima Valley, where high levels of nitrates have contaminated drinking water supplies.

In 2011, the Lower Yakima Valley Groundwater Advisory Committee (GWAC) developed a Groundwater Management Area program which is a multi-agency, citizen-based, coordinated effort to reduce groundwater nitrate contamination in the lower Yakima Valley. Yakima County, as the GWMA lead agency under RCW 173-100-080, was responsible for development of the program that shows the responsibilities and roles of each of the advisory committee members as agreed upon by the committee. The GWAC was responsible for overseeing the development of the program. The primary goal of the GWMA is to reduce concentrations of nitrate in groundwater to below Washington State drinking water standards. The program objectives have been divided into six key categories: data and monitoring, problem identification, measures to reduce groundwater contamination, education, drinking water systems and other general objectives. The GWMA is currently working towards the development of best management practices (BMPs) and strategies for implementing those BMPs such as technical assistance, education, ordinances, support enforcement of new and existing laws and ordinances and the coordination with other regulatory and nonregulatory programs. The anticipated conclusion of the GWMA is 2018.

2.4.4 Air Quality

We all contribute to air quality problems. Our daily lives are filled with single person car trips, smoke from woodstoves and the burning of brush and yard wastes. More traffic on gravel roads increases dust for residents and agricultural operations. Commercial and industrial operations also contribute to air quality problems, but the primary source of air pollution in Yakima County is motor vehicles. Although state and federal laws regulate some emissions, however, air pollution will increase as the population grows. Our challenge is to maintain or improve air quality as growth continues, particularly within urban areas. To that end, Yakima County works closely with the Yakima Regional Clean Air Agency to improve the quality of our air and minimize potential impacts resulting from development.

2.4.5 The Loss of Fish and Wildlife Habitat

Statewide, much of the historical fish and wildlife habitat has been lost to habitat conversion. In the Columbia Basin, over half of the historical extent of shrub-steppe has been converted by development or crop production and in some eastern Washington counties as much as 75 percent of the historical extent of shrub-steppe has been lost. The shrub-steppe habitats that remain are often fragmented and degraded by frequent fires and invasive weeds such as cheatgrass. Due to its ability to support rich agricultural use, the deep soil shrub-steppe communities that many priority wildlife species depend on have been disproportionately converted at a higher rate than other shrub-steppe communities.

The riparian management zones that line the regional rivers and streams are critically important to our regional fish and wildlife species, comprising one of the most biodiverse ecosystems in Washington State. Historically an estimated 900,000 adult anadromous fish returned to the Yakima River Basin annually, ranking second only to Idaho's Snake River. But as more of our natural resources have been put to use, the number and types of anadromous fish have rapidly declined. By the 1920's, the once awe-inspiring fish runs had dwindled to less than one percent of their historical numbers. Coho salmon became extirpated in the Yakima Basin in the early 1980's, and sockeye were extirpated from the Yakima River in the early 1900's with the construction of irrigation dams on the Keechelus, Kachess, Cle Elum, and Bumping lakes. Sockeye require lakes to spawn to as part of their life history, and when the dams were constructed without access, the sockeye were extirpated in the Yakima River Basin.

In the Yakima Basin, these riparian management zones have been reduced to narrow corridors, reducing the functionality of the riparian areas for both the fish and wildlife species that depend on them. Reduction of these corridors have resulted in reduced aquatic habitat for our important fish species and reduced breeding, wintering and migration habitat for wildlife. Reduction of these management zones increases pressure on the border between the riparian zones and other land use activities in the adjacent uplands with many wildlife species becoming stressed or disappearing due to the decreased riparian management zones.

Meanwhile, as wildlife and the habitat they need declines, our culture's recreational and land use activities that impact riparian and upland habitats have greatly increased. As demands on fish and wildlife habitat grow in light of our growing communities, to maintain functional fish and

wildlife populations we need to maintain core areas of both upland and aquatic habitat while also ensuring that connectivity corridors exist through more heavily used areas to allow healthy populations of fish and wildlife species to maintain and thrive in Yakima County and the Yakima Basin.

2.4.5.1 Priority Habitats and Species List (PHS)

The PHS List is a catalog of habitats and species considered to be priorities for conservation and management. Priority species require protective measures for their survival due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; animal aggregations (e.g., heron colonies, bat colonies) considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable.

Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species. A priority habitat may consist of a unique vegetation type (e.g., shrub-steppe) or dominant plant species (e.g., juniper savannah), a described successional stage (e.g., old-growth forest), or a specific habitat feature (e.g., cliffs).

In general, areas of priority habitats of greater importance to fish or wildlife tend to have one or more of these characteristics:

- Habitat areas that are larger are generally better than areas that are smaller,
- Habitat areas that are more structurally complex (e.g., multiple canopy layers, snags, geologically diverse) are generally better than areas that are simple,
- Habitat areas that contain native habitat types adjacent to one another are better than isolated habitats (especially aquatic associated with terrestrial habitat),
- Habitat areas that are connected are generally better than areas that are isolated,
- Habitat areas that have maintained their historical processes (e.g., historical fire regimes) are generally better than areas lacking such processes.

Table 2.4.5.1-1 below represents the PHS list (updated 2016) for Yakima County.

Table 2.4.5.1-1 Priority Habitat and Species in Yakima County

Priority Habitats	
Habitat	**Priority Area**
Aspen Stands	Pure or mixed stands greater than 1 acre
Biodiversity Areas & Corridors	
Inland Dunes	
Old-Growth/Mature Forest	
Oregon White Oak Woodlands	Stands greater than 5 acres in size
Shrub-Steppe	
Riparian	
Freshwater Wetlands & Fresh Deepwater	
Instream	

Priority Habitat Features	
Caves	
Cliffs	Greater than 25 feet high and occurring below 5000 ft.
Snags and Logs	
Talus	

Fish			
Species	**Priority Area**	**State Status**	**Federal Status**
Pacific Lamprey	Any Occurrence		Species of Concern
River Lamprey	Any Occurrence	Candidate	Species of Concern
White Sturgeon	Any Occurrence		
Leopard Dace	Any Occurrence	Candidate	
Umatilla Dace	Any Occurrence	Candidate	
Mountain Sucker	Any Occurrence	Candidate	
Bull Trout	Any Occurrence	Candidate	Threatened
Chinook Salmon	Any Occurrence		
Coho	Any Occurrence		
Kokanee	Any Occurrence		
Rainbow Trout/ Steelhead	Any Occurrence	Candidate *	Threatened *
Sockeye Salmon	Any Occurrence		
Westslope Cutthroat	Any Occurrence		
Reptiles and Amphibians			
Species	**Priority Area**	**State Status**	**Federal Status**
Cascade Torrent Salamander	Any occurrence	Candidate	
Larch Mountain Salamander	Any occurrence	Sensitive	Species of Concern
Van Dyke's Salamander	Any occurrence	Candidate	Species of Concern
Columbia Spotted Frog	Any occurrence	Candidate	
Western Toad	Any occurrence	Candidate	Species of Concern
Common Sharp-tailed Snake	Any occurrence	Candidate	Species of Concern
Striped Whipsnake	Any occurrence	Candidate	
Sagebrush Lizard	Any occurrence	Candidate	Species of Concern
Birds			
Species	**Priority Area**	**State Status**	**Federal Status**
Western Grebe	Regular concentrations, Breeding areas, Migratory stopovers, Regular occurrences in winter	Candidate	
E WA Breeding Concentrations of: Grebes, Cormorants	Breeding areas		
E WA Breeding: Terns	Breeding areas		
Black-Crowned Night-Heron	Breeding areas		
Great Blue Heron	Breeding areas		
Cavity-Nesting Ducks: Wood Duck, Barrow's Goldeneye, Common Goldeneye, Bufflehead, Hooded Merganser	Breeding areas		
Harlequin Duck	Breeding areas		
Tundra Swan	Regular concentrations		
Waterfowl Concentrations	Significant breeding areas, Regular concentrations in winter		

Bald Eagle	Breeding areas, Communal roosts, Regular concentrations	Sensitive	Species of Concern
Ferruginous Hawk	Breeding areas, including alternate nest sites. If breeding area is not known, approximate with a 7.0 km2 (4.35 mi2) area around known nest sites, foraging areas	Threatened	Species of Concern
Golden Eagle	Breeding and foraging areas	Candidate	
Northern Goshawk	Breeding areas, including alternate nest sites, post-fledging foraging areas	Candidate	Species of Concern
Peregrine Falcon	Breeding areas, Regular occurrence	Sensitive	Species of Concern
Prairie Falcon	Breeding areas		
Chukar	Regular concentrations in WDFW primary management zones for chukar		
Ring-Necked Pheasant	Self-sustaining birds observed in regular concentrations in WDFW's eastern Washington Primary Management Zone for pheasant		
Sage Grouse	Breeding areas, leks, Regular concentrations	Threatened	Candidate
Sooty Grouse	Breeding areas, Regular concentrations		
Wild Turkey	Regular concentrations and roosts in WDFW's Primary Management Zones for wild turkeys		
Sandhill Crane	Breeding areas, Regular concentrations, migration staging areas	Endangered	
E WA Breeding Occurrences of: Phalaropes, Stilts and Avocets	Breeding areas		
Band-Tailed Pigeon	Regular concentrations, Occupied mineral sites		
Yellow-Billed Cuckoo	Any occurrence	Candidate	Candidate
Burrowing Owl	Breeding areas, foraging areas, Regular concentrations	Candidate	Species of Concern
Flammulated Owl	Breeding sites, Regular occurrences	Candidate	
Spotted Owl	Any occurrence	Endangered	Threatened

Vaux's Swift	Breeding areas, Communal roosts	Candidate	
Black-Backed Woodpecker	Breeding areas, Regular occurrences	Candidate	
Lewis' Woodpecker	Breeding areas	Candidate	
Pileated Woodpecker	Breeding areas	Candidate	
White-Headed Woodpecker	Breeding sites, Regular occurrences	Candidate	
Loggerhead Shrike	Regular occurrences in breeding areas, Regular concentrations	Candidate	
Sage Sparrow	Breeding areas. Regular occurrences in suitable habitat during the breeding season	Candidate	
Sage Thrasher	Breeding areas. Regular occurrences in suitable habitat during the breeding season	Candidate	
Mammals			
Species	**Priority Area**	**State Status**	**Federal Status**
Merriam's Shrew	Any occurrence	Candidate	
Preble's Shrew	Any occurrence	Candidate	Species of Concern
Roosting Concentrations of: Big-Brown Bat, Myotis Bats, Pallid Bat	Regular concentrations in naturally occurring breeding areas and other communal roosts		
Townsend's Big-Eared Bat	Any occurrence	Candidate	Species of Concern
Black-Tailed Jackrabbit	Regular concentrations	Candidate	
White-Tailed Jackrabbit	Regular concentrations	Candidate	
Western Gray Squirrel	Any occurrence	Threatened	Species of Concern
Townsend's Ground Squirrel	Breeding Area, Occurrence, Regular concentrations	Candidate	Species of Concern
Cascade Red Fox	Any occurrence	Candidate	
Fisher	Any occurrence	Endangered	Candidate
Marten	Regular occurrence		
Wolverine	Any occurrence	Candidate	
Bighorn Sheep	Breeding areas, Regular concentrations		
Columbian Black-tailed Deer	Regular concentrations, Migration corridors		
Mountain Goat	Breeding areas, Regular concentrations		
Northwest White-tailed Deer	Migration corridors, Regular concentrations in winter		
Elk	Calving Areas, Migration Corridors, Regular concentrations in Winter		

	and in foraging areas along coastal waters		
Rocky Mountain Mule Deer	Breeding areas, Migration corridors, Regular concentrations in winter		
Invertebrates			
Species	**Priority Area**	**State Status**	**Federal Status**
Mardon Skipper	Any occurrence	Endangered	Species of Concern
Silver-Bordered Fritillary	Any occurrence	Candidate	
*Steelhead only			

Important Note

These are the species and habitats identified for Yakima County. This list of species and habitats was developed using the distribution maps found in the Priority Habitat and Species (PHS) List (see http://wdfw.wa.gov/conservation/phs/). Species distribution maps depict counties where each priority species is known to occur as well as other counties where habitat primarily associated with the species exists. Two assumptions were made when developing distribution maps for each species:

1. There is a high likelihood a species is present in a county, even if it has not been directly observed, if the habitat with which it is primarily associated exists.

2. Over time, species can naturally change their distribution and move to new counties where usable habitat exists.

Distribution maps in the PHS List were developed using the best information available. As new information becomes available, known distribution for some species may expand or contract. WDFW will periodically review and update the distribution maps in PHS list.

2.4.6 Achieving Sustainability

Practicing sustainable land management means finding a balance between the environment and diversifying future economic growth. Among other things, the concept of sustainability recognizes that our health and prosperity are directly linked with our ability to use what we need without impacting the needs for the future. We must recognize that what we use has opportunity costs associated with it.

The timber industry and its harvesting practices provides an outstanding example of sustainability. We will always need wood products. They provide us with a wide range of beneficial uses ranging from building our homes to heating them. For many years, the most cost-effective way of providing this resource was to clear cut vast stretches of our forested lands, starting with the closest trees to town. But in recent years the long term effects of this practice have raised some interesting and difficult questions. Do we want wood products at any cost, even if the price is undermining our water supplies, water quality and habitat? Are there places and situations where our forested lands are worth more over the long run by being preserved for their recreational values? Often this analysis can be done in terms of outright dollars and cents. Yet our actions should also be evaluated for their effects on the quality of life we enjoy today and want to see for our children. Sustainability means leaving something for the next time, the next generation. This practice applies equally to the trees we harvest and the streams we divert water from. We need to look closer at the long term costs and benefits of our activities. This includes the operation of large scale extractive industries and our individual daily actions.

2.5 EXISTING CONDITIONS

2.5.1 The Physical and Cultural Landscape

Yakima County contains an impressive array of landscapes. Ranging from the western snow fields of the Cascade Mountains to the arid basalt ridges of the east, the collective histories of these landscapes is what makes Yakima County such a vibrant place to live. The dynamic forces which shape our natural setting must be considered when planning for continued and sustained growth.

As we examine our natural setting, we must also explore its relationship to our manmade or cultural landscape. We often observe our assembled surroundings but we seldom think about them in terms of their ties to the natural environment. Our built-out environment is directly influenced by the ways in which we utilize our natural surroundings. Understanding the linkages between our natural and cultural landscapes is an important dimension of sound growth management.

2.5.2 Hydrology

Water is Yakima County's most precious resource. Water is available from various rivers, springs, lakes and underground sources. The majority of Yakima County is drained by the Yakima River and its tributaries, the far northeastern and southwestern sections of the County drain into the Columbia River. When viewed as a watershed, the Yakima River Basin is the largest drainage contained wholly within Washington State, about half of which lies within Yakima County. Mean annual precipitation ranges from over 100 inches in parts of the Cascades to less than 8 inches in the eastern lowlands.

2.5.2.1 Surface Water

The headwaters of the Yakima River begin in the Cascade Mountains above Keechelus Lake in northern Kittitas County. After flowing through the Cle Elum and Kittitas Valleys, the river enters Yakima County along the high basalt columns of Yakima Canyon and emerges onto a broad alluvial plain just north of the city of Selah. Through the upper Yakima Valley, the Yakima River flows in a north-south direction past the cities of Selah, Yakima and Union Gap. As the river cuts its way through Umptanum, Yakima and Ahtanum Ridges, its flow is augmented by numerous streams in (downstream order) the Wenas Valley and Selah area, the Naches Valley, the Moxee area, and the Ahtanum Valley. Below Union Gap, the Yakima River flows onto a broad riparian plain sometimes several miles wide.

In the lower Yakima Valley, the Yakima River collects water from even more streams and drains, the most notable being Satus, Toppenish and Simcoe Creeks. Scattered across the floodplain is evidence of a highly active Yakima River, one that wandered frequently and sometimes far from its present course. Dozens of old channel scars and partially filled oxbows remind us that the Yakima River is perhaps our most dynamic natural feature. As it leaves the County south of Grandview, the Yakima River continues running in a southeasterly direction through Benton County before emptying into the Columbia River near Richland. Throughout its 200-mile course, the Yakima is supplemented with irrigation and storm water runoff which is of a far lesser quality than when it was withdrawn. The combined actions of over withdrawal, pollution and vegetation

removal produce a waterway that leaves Yakima County completely altered from the one that begins near Snoqualmie Pass.

Yakima County and the larger Yakima River Basin is the site of the federally developed Yakima Project. The purpose of the Yakima Project is to store and deliver irrigation water, with hydroelectric power generation as an associated function. The six project reservoirs (see Table 2.5.2.1-1) also provide incidental flood control, recreation benefits, and some flows for fish. Three of the project's six reservoirs, Rimrock Lake, Clear Lake and Bumping Lakes, lie within Yakima County in the upper Naches River basin. The other three reservoirs (Cle Elum, Kachess & Keechelus) are located in the upper Yakima basin near its headwaters in Kittitas County. The three upper reservoirs supply water to lands in the basin above the Yakima-Naches River confluence. They are also the main water suppliers of the large irrigation districts in the lower Yakima Valley. The upper Naches reservoirs provide irrigation water to lands in the lower Naches Valley. They also make a small irrigation contribution to lands in the lower Yakima Valley. Total storage capacity of all reservoirs is approximately 1.07 million acre feet, total diversions average over 2.5 million acre feet.

Table 2.5.2.1-1 Major Reservoirs in the Yakima Subbasin

Reservoir	River system	Storage Capacity (acre-feet)
Keechelus Lake	Upper Yakima	157,800
Kachess Lake	Upper Yakima	239,000
Cle Elum Lake	Upper Yakima	436,900
Rimrock Lake	Naches	198,000
Bumping Lake	Naches	33,700
Clear Lake	Naches	5,300

Yakima County and the larger Yakima River Basin are also the site of the Yakima River Basin Water Enhancement Project (YRBWEP). The Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan) is a component of YRBWEP. The purpose of the Integrated Plan is to address a variety of water resource and ecosystem problems affecting fish passage, fish habitat, and water supplies for agriculture, municipalities, and domestic uses. The plan includes the elements of: reservoir fish passage, structural and operational changes to existing facilities, surface water storage, groundwater storage, habitat/watershed protection and enhancement, enhanced water conservation, and market reallocation.

The Integrated Water Resource Management Plan Alternative (Integrated Plan) was selected as the preferred alternative and represents a comprehensive approach to water management in the Yakima River basin. It is intended to meet the need to restore ecological functions in the Yakima River system and to provide more reliable and sustainable water resources for the health of the riverine environment and for agriculture and municipal and domestic needs.

The Integrated Plan is also intended to provide the flexibility and adaptability to address potential climate changes and other factors that may affect the basin's water resources in the future. The Integrated Plan includes three components of water management in the Yakima basin - Habitat, Systems Modification, and Water Supply. The intent of the Integrated Plan is to implement a

comprehensive program that will incorporate all three components using seven elements to improve water resources in the basin:

- Reservoir Fish Passage Element (Habitat Component);
  - Provide fish passage at the five major Yakima River basin dams – Cle Elum, Bumping Lake, Tieton, Keechelus, and Kachess – as well as Clear Lake Dam.
- Structural and Operational Changes Element (Systems Modification Component);
  - Cle Elum Pool Raise,
  - Kittitas Reclamation District Canal Modifications,
  - Keechelus-to-Kachess Pipeline,
  - Subordinate Power at Roza Dam and Chandler Powerplants, and
  - Wapatox Canal Improvements.
- Surface Water Storage Element (Water Supply Component);
  - Wymer Dam and Pump Station,
  - Kachess Reservoir Inactive Storage,
  - Bumping Lake Reservoir Enlargement, and
  - Study of Columbia River Pump Exchange with Yakima Storage.
- Groundwater Storage Element (Water Supply Component);
  - Shallow Aquifer Recharge, and
  - Aquifer Storage and Recovery.
- Habitat/Watershed Protection and Enhancement Element (Habitat Component);
  - Targeted Watershed Protections and Enhancements, and
  - Mainstem Floodplain and Tributary Enhancement Program.
- Enhanced Water Conservation Element (Water Supply Component);
  - Agricultural Conservation, and
  - Municipal and Domestic Conservation Program.
- Market Reallocation Element (Water Supply Component).

Reclamation and Ecology worked with the YRBWEP Workgroup to develop a package of projects to meet the goals of the Integrated Plan. These projects are described individually; however, Reclamation, Ecology and the YRBWEP Workgroup intend that the Integrated Plan would be implemented in a comprehensive manner, incorporating all elements of the proposed plan. Implementing the different elements of the Integrated Plan as a total package is intended to result in greater benefits than implementing any of the seven elements independently.

2.5.2.2 Groundwater

Groundwater in Yakima County is found in the basalt that underlies most of the area, in the alluvium deposits located along the various watercourses, and in the Ellensburg formation which both overlies and interbeds within the basalt flows. The following sections describe the three principal aquifers of Yakima County in more detail.

2.5.2.3 Yakima Basalt

Yakima Basalt, a subgroup of the Columbia Basalt, include confined aquifers in interbeds sandwiched between layers of basalt. Within the region, the basalt aquifers vary in their water-yielding character from 100 gal./min. to 2,000 gal./min. Although some deep municipal and irrigation wells penetrate the Yakima Basalt, the source appears relatively untapped and is potentially the most productive and least impacted of Yakima County's three principal aquifers.

Some portions of the interbed aquifers may involve fossil waters which have no source of recharge. Potential recharge areas include contacts between the Columbia basalt flows and the units within the Cascade Range, surface and subsurface drainage along exposed interbeds associated with anticlinal ridges, at gaps where streams have cut through uplifted basalt exposing interbeds, and along fault zones which bisect basalt layers. The Yakima Basalt may also be re-charged in upper valley reaches by overlaying gravels and unconsolidated alluviums.

2.5.2.4 Ellensburg Formation

The Ellensburg Formation consists largely of layers of gravels, sand, silt, and clay sediments transported from the westerly portion of Yakima County on to, and in some areas inter-bedded with, the upper basalt flows. The capacity of the formation as an aquifer ranges from poor to good, depending on its depth and composition. Underlying basalt layers generally dip toward the center of valleys and easterly such that more productive Ellensburg aquifers are located in the center of lower valley reaches having deeper profiles of the formation. Principal aquifers in the formation are generally confined, weakly cemented, permeable layers of gravel and well-sorted sands interbedded with less permeable layers of clay and shale. A basal layer of this formation which lies directly above the uppermost basalt flow may be one of its more productive water-bearing zones.

Recharge is by infiltration from precipitation and irrigation, by effluent seepage from surface waters, and by upward leakage from the Yakima Basalt. The most important current source of recharge is considered to be upward leakage from the underlying basalt. Susceptible recharge areas are those where the formation is exposed at the surface or where saturated alluvial gravels directly overlie the formation. Where the formation contains significant aquifers, the largest natural discharge is potentially the upward seepage to overlying gravel units and alluviums.

2.5.2.5 Upper Aquifer

The Upper Aquifer generally consists of gravel units and principally stream-deposited, unconsolidated alluviums distributed in variable thicknesses along the valley floors. The largely cemented gravel units are considered a viable aquifer only where they contain deeper profiles of weakly cemented sand and gravel. The most productive aquifer (second only to the Yakima Basalt) is the unconsolidated alluvium. The alluvium aquifer is generally unconfined, with its thickest, most productive units occurring in syncline centers. The Upper Aquifer is generally associated with a shallow ground water table which supports the bulk of Yakima County's domestic water supplies.

2.5.3 Climate

Yakima County's climate is an important yet often overlooked aspect of our natural setting. The long sunny days and cool nights have helped Yakima County become one of the top agricultural producing counties in the United States. Our attractive climate has also boosted the County's tourism industry. With over 300 days of sunshine per year and a central location within the state, Yakima County is an increasingly popular site for conventions, softball and tourism.

Climatic variation within Yakima County is extreme. The Rocky Mountains partly shield the region from strong arctic winds, so winters, while cold, are generally not too severe. In summer, Pacific Ocean winds are partially blocked by the Cascade Range. Thus the days are hot, but the nights are fairly cool. In winter the average temperatures at Yakima, Rimrock and Sunnyside are 32, 29, and 35 degrees Fahrenheit, respectively. In summer the average temperature is 68 degrees at Yakima, 61 degrees at Rimrock, and 70 degrees at Sunnyside. [USDA Soil Survey For Yakima County 1985, pg. 3] Temperatures elsewhere within the County can vary greatly from those measurements given. Scientific research supports the presence of the current climatic pattern over the last 2,500 years (Ubelacker 1986; Calder; 1974; Chatters 1981).

Yakima County's climate is an important yet often overlooked aspect of our natural setting. The long sunny days and cool nights have helped Yakima County become one of the top producing agricultural counties in the United States. The average length of our growing season is 195 days. Annual precipitation ranges from over 100 inches in parts of the Cascades to less than 8 inches in the eastern lower elevations. We depend upon significant snowpack accumulations at the higher elevations to supply irrigation water for much of the agricultural uses found in the lowland areas.

Our attractive climate has also boosted Yakima County's tourism industry. Tourism is a big business in Yakima County and it's growing. One reason people visit Yakima County is for our four full seasons of outdoor recreational opportunities. Our climate and central location within the state makes Yakima County an increasingly popular site for large conventions. And every summer hundreds of sports teams travel with their families to play in our parks and stay in our motels. It's clear that Yakima County's climate is a major contributor to the health of our local economy.

2.5.3.1 Climate Change

Climate change, as the name suggests, refers to the changes in the global climate which result from the increasing average global temperature. For example, changes in precipitation patterns, increased prevalence of droughts, heat waves, and other extreme weather, etc. "Global warming" refers to the increase in Earth's average surface temperature due to rising levels of greenhouse gases. ***Horizon 2040*** doesn't debate the cause of climate change only discusses the effects it has on our environment.

Climate models predict that Washington State will become warmer and wetter in the Cascades in the coming years. Warmer, wetter Cascades means while there may be more precipitation falling on the mountains, it may be in the form of rain instead of snow. Yakima Valley depends

on snowpack in the Cascades to act as a reservoir for irrigation; over half of the irrigation water Yakima Valley farmers depend is stored as snow in the mountains. A lower snowpack in the Cascades leads to less water available for irrigation in Yakima Valley. Meanwhile, drought in the Yakima Valley is expected to become more common in these climate models. In Washington State, likely climate change impacts and indicators that may need to be addressed include:

- Likely increase in frequency and intensity of heat waves.
- Retreating glaciers and reduced snowpack in the mountains.
- Likely rise in sea level accompanied by coastal erosion.
- Change in volume and timing of precipitation with possible landslides and flooding.
- Greenhouse gas emissions increase.
- Degraded air quality.
- Fish and wildlife habitat destruction; highly altered critical areas and ecosystems.

Local governments are concerned with climate change, but most do not yet have the level of local awareness, financial resources, information or state guidance to address this challenge. However, recent legislation and broader climate change efforts are beginning to help local governments address climate change. For example, in 2008 the Washington State Legislature established limits on the state's greenhouse gas emissions. Washington State Department of Ecology (DOE) is required to review these limits and make recommendations regarding revisions using science from the University of Washington's Climate Impacts Group (CIG). Ecology's latest recommendations are in the Washington Greenhouse Gas Emission Reduction Limits report that was provided to the state Legislature in December 2016, which includes:.

Existing state greenhouse gas limits:

- By 2020, reduce overall emissions of greenhouse gases in the State to 1990 levels.
- By 2035, reduce overall emissions of greenhouse gases in the State to 25 percent below 1990 levels.
- By 2050, the state will do its part to reach global climate stabilization levels by reducing overall emissions to 50 percent below 1990 levels, or 70 percent below the State's expected emissions that year.

Recommended limits:

- By 2020, reduce overall emissions of greenhouse gases in the State to 1990 levels.
- By 2035, reduce overall greenhouse gas emissions in the state to 40 percent below 1990 levels.

- By 2050, reduce overall greenhouse gas emissions in the state to 80 percent below 1990 levels.

Additionally the state has adopted a statewide goal to reduce annual per capita vehicle miles traveled for light-duty vehicles. Comprehensive planning is an excellent venue to address both the reduction of greenhouse gases and vehicle miles traveled. Almost half of all greenhouse gas emissions in our state result from the transportation sector. Land use and transportation strategies that promote compact and mixed-use development and infill reduce the need to drive, reducing the amount of greenhouse gas emissions.

The Yakama Nation's Climate Adaptation Plan for the Territories of the Yakama Nation was published in April, 2016 . The Climate Adaptation Plan represents the first collective effort by the Yakama Nation to identify (1) important resources and cultural components most likely to be impacted by climate change, (2) work the Tribe is currently undertaking that recognizes and will help to reduce climate change impacts, and (3) specific recommendations for deeper analyses of vulnerabilities and risks to their most important interests and adaptation actions that should be implemented. The Climate Adaptation Plan's goal is to be a starting point for the conversation about climate change and planning for adaptation throughout all of the territories of the Yakama Nation. It is derived from the experience of the Yakama Nation people, its tribal programs, and findings from regional experts on these important topics. This document is one way to educate ourselves about current vulnerabilities and future risks and share ideas about actions that may need to be taken to build climate resilience. It is a living document that will be revisited and adjusted over time to reflect new information, new understandings, and new priorities.

Some local governments in the state are taking action to address climate change through a combination of mitigation and adaption techniques in their operational and comprehensive plans. While addressing climate change or energy are not specific requirements under the Growth Management Act (GMA), many counties and cities are addressing climate change through land use and transportation planning or by adding climate change policies or even optional elements to their comprehensive plans. The expected return on investment of addressing climate change issues through planning at the local level is that development will occur where urban services exist or are planned for, where transportation choices can be more efficiently provided, and where the majority of jobs and housing are located.

This also conserves resource lands (designated agricultural, forest, and mineral lands of long-term commercial significance) and rural areas (lands outside of designated urban growth areas that are not formally designated resource lands). It may also result in a greater likelihood of transportation alternatives to the single-occupancy vehicle, fewer vehicle miles traveled, a greater mix of land uses and densities in urban areas, and a better jobs/housing balance. In fact, it is believed that the desired outcomes of addressing climate change are also the desired outcomes of the Growth Management Act.

In addition to the GMA, Yakima County may address potential impacts of climate change through the administration of State Environmental Policy Act (SEPA). Under SEPA, actions by a

governmental entity, such as granting a development permit, must be assessed for potential impacts to the natural and built environment. To perform this assessment, Yakima County relies on the use a SEPA checklist.

The SEPA checklist consists of a series of questions that ask for information about a proposal, such as a subdivision, a commercial building or a public building. Part of the checklist requests information describing the proposed actions impact on climate, but there is no guidance on whether or how to quantify, analyze and mitigate for greenhouse gas emissions at this time. To begin to provide such guidance, DOE is engaged with a SEPA working group to help clarify the SEPA rules and prepare important guidance information to:

- Clarify how, where and when to incorporate climate change considerations into the environmental review of a proposal.
- Recommend changes to the SEPA rules and/or environmental checklists, threshold determination, and/or Environmental Impact Statements (EIS).
- Provide instruction or guidance to local and state governments on how to determine possible mitigation strategies, and whether the impacts of climate change may affect the project over its lifetime.
- Encourage greater use of SEPA in a programmatic, upfront manner that results in streamlining permitting for compact development in urban growth areas or urban centers.

2.5.3 Air Quality

The primary source of air pollution in Yakima County is motor vehicles. Air quality is lowest during the winter, when the valley's shape and weather patterns combine to create an inversion layer of trapped air. Wood smoke, car exhaust, road dust (track out), and other emissions collect in this trapped layer and remain until weather conditions permit their dilution. With increased population, we will face an increasing challenge to maintain and improve air quality, particularly in urban areas.

Under state law, growth must be focused in urban areas. Yet more people locating into Yakima's Urban Growth Areas (UGA) will concentrate growth in a setting that traps air pollution. Gravel road dust is tracked out of rural areas into urban areas and is re-suspended. In order to maintain air quality, pollution from cars, wood smoke and industry must be addressed. The County's focus should be 1) to reduce single occupancy vehicle (SOV) trips, 2) reduce dependence on wood stoves as sole source of heat, and 3) work with local industries to help them comply with air quality standards.

One of mankind's most basic needs is the air we breathe. Polluted air contributes to a variety of health problems and consumes millions of dollars in medical costs each year. Polluted air also obscures visibility, creates unpleasant odors, and adversely affects animal and plant life. The attractiveness and livability of Yakima County is directly related to the quality of our air.

Air quality concerns in Yakima County are the greatest during the winter months. The weather patterns combine with our valley's topography shapes to create an inversion layer of trapped air. Wood smoke, car exhaust, suspended road dust, and other emissions collect in this trapped layer where they stay until the weather dilutes them. Polluted air contributes to a variety of health problems. Polluted air also obscures visibility, creates unpleasant odors, and adversely affects animal and plant life. Heavily traveled gravel roads also contribute to our air quality concerns in dry seasons. Yet the cost of solving the problem increases proportionately with the increased traffic resulting from Yakima's growth.

2.5.4 Geology

Between 16 and 10 million years ago, the central and eastern portions of Yakima County were overrun repeatedly by massive flows of molten lava. These flows originated from large fissures or rifts in what is now southeastern Washington and northeastern Oregon. Over and over again, each flow incident spread westward and eventually cooled to form basalt. The layers of basalt thin to the west and are generally absent at the crest of the Cascade Range. However, basalt exposures exist near the crest at Jumpoff Peak, Meeks Table and the Little Naches-American Fork River junction (Campbell, 1984). The local accumulation of these flows are known as the Yakima Basalt Group and are the youngest members of the greater Columbia River Basalts.

Near the end of the last great basalt flows, the Cascade Mountain Range was in the early stages of formation. Between basalt flood episodes came the deposition of volcanic materials, mostly large mud flows (lahars), from the newly-forming Cascades. These deposits, known as the Ellensburg Formation, are found both overlying and between Yakima basalt flows and ended about 4 million years ago. Because the basalts become thinner and pinch out to the west, the interbedded deposits are difficult to distinguish from the overlying deposits.

Subsequent folding of the basalts and volcanic deposits has formed a series of five east-to-west trending anticlinal (upfolds of rock) ridges with broad synclinal valleys lying in between. Collectively named the Yakima Fold Belt, the ridges are individually named Umtanum, Yakima, and Ahtanum/Rattlesnake Ridges; Cleman Mountain and the Horse Heaven Hills. Their folding occurred at different rates, at times fairly rapid and others very slowly. As uplift of the ridges occurred, the Yakima River was able to down-cut rapidly enough to generally maintain its present course. Most are used primarily as rangeland. Between the ridges are basin valleys that are tributary to the Yakima Valley. These include the Wenas, Naches, Moxee, and Ahtanum valleys. These valleys are quite extensive and are the main areas used for irrigated crops.

The ridges and basins form the visual perspective of Yakima County and provide community definition. The quality of our human environment is dependent, in part, on the quality of these ridges and basins. For example, the quality of surface water may be seriously degraded if the ridge drainages are disturbed by development or erosion due to overgrazing. Wildlife habitat for upland game birds and big game may also be destroyed.

Water quality can also be degraded by development in the valley bottoms. As additional areas are paved, run-off collects urban-area pollutants which are transferred back to the surface and

ground water environment. The ridges are also vulnerable to degradation as a visual resource from the construction of transmission lines, towers, houses, and roads.

The cost of developing along the ridges is high. Infrastructure costs more because water must be piped farther and upwards against gravity. Poor road networks make it difficult to reach developments. Slopes create difficulty in siting septic systems. An excessively drained septic system, for example, may contaminate wells located down slope. These conditions will not be solved in the near future by technology or a "quick fix" instead, they support the ***Visioning*** statement that "we must recognize that we can't live everywhere."

About one million years ago, lava began flowing from a volcano lying near the Goat Rocks region of western Yakima County. One eruption of this andesite lava flowed down the Tieton River toward the City of Yakima forming what is now Naches Heights. Another flow of this Tieton Andesite forced the Naches River northward from its original course along what it now Cowiche Creek. Today, the most striking exposures of the Tieton Andesite are found across from the Oak Creek Wildlife Recreation Area near the confluence of the Tieton and Naches Rivers.

During the last ice age, a glacial dam formed to block the Clark Fork of the Columbia River in Idaho. This blockage backed up a tremendous amount of water known as Glacial Lake Missoula. When this ice dam broke, the lake rushed westward to scour the top of the basalt flows and create the channeled scab lands of the Columbia Basin. Glacial flood events of this type were repeated as many as forty times during the last 30,000 years. The flood waters flowed out to the mouth of the Columbia River and up the Yakima Valley depositing gravel and slack water sediments as far north as Union Gap. These flood deposits can be seen in several places in the Lower Valley including the gravel pits south of Grandview, along old Highway 12 near Buena, and along the north side of Snipes Mountain.

With the notable exception of the eruption of Mount St. Helens in 1980, recent geologic history has been a time of little change. While several minor landslides and tremors have occurred, uplift of the ridges has almost stopped. The large scale erosive events of the past have diminished, but the Yakima River and its side streams continue to down cut, transport and deposit sediments.

The geologic history of Yakima County has provided us with rich volcanic and river deposited soils that have proven outstanding for agriculture. This aspect of our landscape, along with abundant cattle grazing opportunities, is what originally spurred people to move here. Although our economy has become more diversified, agriculture and its related industries are still Yakima County's biggest business. In this regard, our success is tied directly to our geologic past. But while large areas remain productive for agriculture, growth within Yakima County continues to remove substantial tracts of the best agricultural land for urban and suburban development. We will continue to face some difficult challenges in preserving our best agricultural ground as we continue to develop home sites and diversify our economy.

Another important local enterprise tied to our geologic past is the sand and gravel mining industry. While not a major local employer, these operations provide us with important

construction materials. The primary source for these aggregates is the Yakima River flood plain although several sites have been developed along the ridges.

2.5.5 Soils

The geologic history of Yakima County has provided us with rich volcanic and river deposited soils that have proven outstanding for agriculture. Although our economy has diversified over time, agriculture and its related industries are the County's leading industry. In this regard, our success is tied directly to our geologic past. But while large areas remain productive for agriculture, growth within Yakima County continues to remove substantial tracts of the best agricultural land for urban and suburban development. Yakima County encourages agricultural producers to coordinate their activities with local, state, and federal agencies to limit loss of soil due to erosion. Our challenge is to preserve our best agricultural ground as we continue to develop home sites and diversify our economy.

Another important local enterprise tied to our geologic past is the sand and gravel mining industry. While not a major local employer, these operations provide us with important construction materials. The primary source for these aggregates is the Yakima River flood plain although several sites have been developed along the ridges.

2.5.6 Vegetation

Natural vegetation in Yakima County reflects the wide range of climatic conditions found here. The eastern portions of the County are dominated by steppe and shrub-steppe plants common to the greater Columbia Basin. Eastern slopes and ridges are generally treeless and in their native condition are covered with sagebrush and desert grasses. Typical community dominants include shrubs such as big sagebrush, bitterbrush and stiff sagebrush. Stiff perennial grasses such as blue bunch wheat grass, Idaho fescue and giant wild rye were once commonplace. Traveling west and upward in elevation, the vegetation changes with climate and hydrology to allow an abundance of plant life, and includes extensive tracts of ponderosa pine, mountain hemlock, Douglas fir and various other conifer species. Ultimately, the harsh conditions of the highest points in the Cascades allow for little vegetative growth. What does survive has adapted to the extreme conditions found there.

Along stream corridors are vegetative belts that contain various kinds of shrubs, trees and grasses such as; black cottonwood, aspen and alder. These well vegetated stream-side riparian zones provide substantial food and shelter for wildlife. Many aquatic organisms feed on leaf litter and woody debris that collect in these streams. Insects and other invertebrates falling from these plants provide an important source of food for many fish species. Birds and land animals depend on stream-side vegetated areas for food, thermal protection, visual cover and as a migratory corridor to other parts of their habitat. It is the sum of these parts, from microorganism to migrating fish, that make habitat vibrant and healthy.

As development takes place, native vegetation is often indiscriminately removed and as a result, wildlife habitat is lost. Birds as diverse as osprey, heron and wood ducks all need large trees adjacent to streams for nesting. Early logging practices in the headwaters of the Yakima River

removed many of the larger trees from these reaches and thus ended the gathering of large organic debris along the river's banks. The commonly accepted actions we take in developing our resources disrupt the natural cycle that is essential to the continued health of riparian areas. Livestock, logging and irrigated agriculture have irrevocably altered the native vegetation of Yakima County. While our success at modifying our surroundings has driven our local economy, another perspective sees the missed opportunities. Stream corridors stripped of their vegetation no longer support the fish they once did. The "stair step" appearance along many of the ridges are long-term signs of overgrazing. With the difficulty these lands have in recovering, pressure mounts to convert them to other uses, most often housing**.**

The County's dominant native vegetative pattern is steppe and shrub-steppe. In the higher western elevations, trees become more abundant. The majority of Yakima County's commercial timber lies above 3,000 feet and much of this is outside of local land use jurisdiction. The health of the timbered areas contributes to the prosperity of the County's agriculture. With fewer trees in the mountains, water runs off faster and isn't retained for later seasonal use. Although standard forest practices encourage replanting, re-vegetation is more difficult on the eastern slopes of the Cascades. The practice of mono-cropping also makes the ecosystem more vulnerable to disease and other problems.

The introduction of livestock and agricultural production in the mid- to late 1800's has also drastically changed the County's vegetation patterns. This in turn has reduced wildlife habitat since the native vegetation they depend upon is reduced. Native plants have been edged out by invaders and all this increases wind and water erosion.

2.5.7 Visual

Perhaps the most popular "postcard" image of Yakima County is a bountiful orchard stretching westward with Mount Adams visible in the background. A somewhat lesser known image is the nearby ridge lines and valley bottoms. And intermixed with the ridges and valleys are other places that hold people, roads, buildings and lights. For most of us, these urban images dominate our daily visual perspective. They seem more dynamic and fluid than ridges, orchards and valleys. We see the changes in our urban setting more readily than anywhere else because that is where most of us live. But in Yakima County, many feel that what once looked rural and open has become increasingly filled up and more urban in appearance. We won't see our rural lands disappearing until it's already happened.

The ridge lines of Yakima County have become more than striking natural visual features. As Yakima County has grown, many of these high points have become highly coveted places in which to live and build homes. Areas like the Naches Heights west of Yakima, Lookout Point south of Selah and Yakima Ranches above Terrace Heights all offer outstanding views of the valley bottoms and seclusion from crowded city streets. Other ridge lines, such as Ahtanum and Rattlesnake Ridges, are serving the needs of a growing communication industry for the placement of transmitter towers. Yet we forget that these high points present problems for development due to the costs of providing services like roads, water and sewer. Past land use and subdivision practices have diminished the function of many ridge lines as important wildlife

habitat. These same practices have also reduced the ridges' ability to serve the more traditional uses applied to them as range or agricultural land.

The open spaces in Yakima County come in many forms, some of it dedicated and protected while others are informal and not publicly accessible. The majority of Yakima County is owned and/or managed by federal, state or Tribal interests. While these lands lie largely outside of County jurisdiction, they provide the bulk of our open spaces. Most of Yakima County's recreational opportunities lie within them and they contribute significantly to other open space values such as wildlife habitat. To protect the informal, privately held open spaces, Yakima County has an Open Space Tax Program which reduces the tax assessment on agricultural and timber lands in open space. Other open space lands can also qualify for reduced assessments if their preservation provides some public benefit.

The provisions of Yakima County's adopted Critical Area Ordinance (CAO) also encourages open spaces by establishing vegetative buffers along our streams and wetlands. The vegetative buffering provisions of the CAO were established to support the functional properties of wetlands and stream corridors. These include flood water storage, streambank and shoreline stabilization, erosion prevention, and migratory corridors for wildlife.

The Land Use Element advocates a large lot rural zoning pattern to preserve the remaining openness of these areas. Past zoning and subdivision regulations have allowed lots down to one-half acre in size anywhere in the County. This permissiveness has resulted in a sprawling rural land use pattern that has consumed large areas of our informal open spaces.

2.6 ANALYSIS OF ASSETS, NEEDS AND OPPORTUNITIES

2.6.1 Natural Resource Protection

As discussed in the preceding section, Yakima County is rich in both natural and cultural resources. This inheritance puts us in an enviable position for future growth. However, the prosperity of our near- and long-term future is in our hands and in many ways we are at a crossroads. Will we continue to meet our short-term needs at the expense of our long-term resources? Or will we meet the challenge of sustaining growth while preserving options and resources for both ourselves and upcoming generations?

For individuals, sustaining resources can be simple actions: turning off the bathroom tap while brushing your teeth. Recycling and properly disposing of hazardous materials like motor oil and antifreeze. Or finding alternative ways to get to work. Likewise, businesses can help build a sustainable community by "adding value" to locally produced renewable resources, providing internships and job training. These types of actions, if practiced by enough of us, foster a commitment to place and bring stability to both the economy and the environment.

To better meet this challenge, five components of sustainable land use management have been identified. These components are referred to throughout the Natural Setting goals and policies of ***Horizon 2040*** and include:

- *Strategies to foster improvement of the natural resources common to us all, particularly air and water quality;*
- *Protection of designated critical areas, including wetlands, stream corridors, and frequently flooded areas;*
- *Education efforts that will further awareness of environmental issues;*
- *Incentives that encourage the use of long-term, least-cost alternatives; and*
- *Performance measures that assess the state of certain key natural amenities today so they can be compared to their condition in the future.*

2.7 GOALS, OBJECTIVES AND POLICIES

To help guide development of the Goals and Policies for the Natural Setting Element, several principles have been identified:

- *Landscapes, both cultural and natural, provide clues to a region's human personality. The way we live our lives and create our cultural landscape is a function of the natural setting, of our environment. In turn, the long-term capacity of the environment to support significant population growth is directly related to our understanding the limits of natural systems.*
- *The natural setting and its resources drive our economic base and define our cultural landscape. It shapes our quality of life.*

2.7.1 Visioning "Check In"

Yakima County took part in a "Visioning check in" process in 2014 and 2015. This effort used online surveys to gain feedback from Yakima County residents on whether they feel the original Visioning Goals that influenced Yakima County's Comprehensive Plan - ***Plan 2015*** are still relevant today or should be updated or discarded. A total of 254 people took the survey related to the natural environment, resulting in the list of revised Visioning Goals below.

Visioning Goals - Environment

1. Water:

A. Improve and maintain water quality and quantity.
B. Promote increased levels of water management for the purposes of conservation, storage, delivery, and flood control.
C. Provide effective management for diverse and conflicting water uses: agricultural, municipal, and industrial; recreational and fishery base flows; wildlife habitat; wetlands; and rural residential.
D. Manage the Yakima River Basin as a unique resource.
E. Restore the water quality of the Yakima River.
F. Identify future needs and promote increased water supplies through coordinated management and conservation efforts.
G. Improve and maintain ground and surface water quality.

2. Land:

A. Coordinate land uses to reduce uncertainty and unpredictable development which sacrifices conservation and sound land management.
B. Preserve and protect critical areas.
C. Inventory public open space lands and define those to preserve for future generations.

3. Air:

A. Address air quality challenges while recognizing the different existing and future growth patterns and regulations for urbanizing and rural areas.
B. Identify the impact on air quality caused by industrial and community growth patterns, such as the quantity, size, location, and nature of the growth.
C. Determine what threshold of air quality we wish to achieve and maintain for health and aesthetics.
D. Establish county-wide quality standards based on best management practices.

4. Education and Awareness:

A. Promote environmental education opportunities.
B. Foster awareness necessary to address environmental challenges.
C. Develop an educational awareness program which informs people of the value of their resources and the steps for their protection.

5. Other Programs:

A. Create resources or incentives that will promote actions which enhance the natural environment.
B. Increase the community's participation in recycling and other innovative solid waste disposal programs.
C. Create a comprehensive image that links together environmental, resources and quality of life elements.
D. Preserve wetlands, open lands, and other habitat areas.
E. Establish and enforce standards for light, glare, and noise to minimize incompatibilities within and between land use areas and to enhance quality of life.
F. Consider energy supply alternatives and energy conservation opportunities.

EDUCATION:

PURPOSE STATEMENT NS 2

The failure to recognize environmental limits results in depleted resources, and as a result, diminishes our present quality of life. If the County is to achieve sustainable development, residents need to look beyond the short-term benefits of their actions. This goal and related policies encourage education as a means to inform County residents and visitors that preserving environmental quality will help maintain the County's quality of life for the long term.

GOAL NS 2:	**Inform residents and visitors on how living and doing business in Yakima County can be satisfying and profitable without degrading environmental values.**
POLICIES:	
NS 2.1	Make information available for the general public which outlines the various land use permitting processes. This should focus on reasons for the regulation and the basic permitting steps.
NS 2.2	Provide information and education on planning issues to schools and the community at large.
NS 2.3	Develop an educational brochure that illustrates the functions and values of Yakima County's wetlands and the natural history of the Yakima County stream corridors.
NS 2.4	Work with school districts to increase understanding of planning issues; make locally oriented planning curriculum available.

AIR QUALITY:

PURPOSE STATEMENT NS 3

Federal and state standards have been set for inhalable particulate matter (PM10) and carbon monoxide, both of which are of some concern, particularly in the Yakima urbanized area. Reductions in pollution must be realized from existing as well as future sources in order to accommodate growth without causing violation of any of the standards.

GOAL NS 3:	**Make steady improvement in the air quality of the Yakima Valley by reducing dust, odor, auto emissions, smoke, and other contaminants.**
POLICIES:	
NS 3.1	Support the Yakima Regional Clean Air Agency in researching the nature, magnitude, and potential solutions to problems caused by airborne particulates, taking appropriate actions, and monitoring results.
NS 3.2	Require control of emissions to the air during land development and construction projects.
NS 3.3	Participate in the review and planning efforts of the Yakima Regional Clean Air Agency to reduce smoke, odor, dust, and other air contaminants.
NS 3.4	To the extent physically and financially possible, control dust on County roads.

CULTURAL RESOURCES:

PURPOSE STATEMENT NS 4

Cultural resources are those items, both tangible and intangible, that provide us with ties to the past, a better understanding of the present, and a means to evaluate what the future might hold. The following goal and policies stress the importance of cultural resources to Yakima County's health and prosperity.

GOAL NS 4:	**Promote the identification and protection of archaeological and significant historical sites and structures.**
POLICIES:	
NS 4.1	Develop a local process, in conjunction with state agencies and the Yakama Nation for evaluating the significance of historic, cultural, and archeological resources to help ensure that archeological and significant historic sites and structures are identified within the County.
NS 4.2	Maintain a process to evaluate impacts of proposed land use actions on County-designated historic, cultural and archeological sites to help ensure that archeological and significant historic sites are not disturbed or destroyed through any action of the county, or through any action permitted by the county.
NS 4.3	When the original or present use of a designated historic structure ceases to be feasible, provide for adaptive reuse of the structure when it is determined that a more intensive use would encourage and facilitate rehabilitation and preservation of the landmark.
NS 4.4	Prior to demolition, moving or alteration of any designated historic, cultural, or archeological landmark, ensure that due consideration is given to its preservation or, at a minimum, documentation of its historic value.
NS 4.5	When available, utilize existing archaeological and cultural resource information from the Washington State Department of Archaeology and Historic Preservation and the Yakama Nation.

NOISE:

PURPOSE STATEMENT NS 5

The following goal and policies attempt to address the adverse effects that can result from noise.

GOAL NS 5:	**Promote an environment free from excessive noise that jeopardizes the public health, safety and welfare.**
POLICIES:	
NS 5.1	Review the adequacy of local noise control/abatement measures and mitigation standards.
NS 5.2	Enforce noise standards.
NS 5.3	Enforce the use of standard construction industry practices to control noise, including the use of noise-muffling equipment and observance of normal hours of operation.

NS 5.4	Evaluate specific projects for their effects on noise-sensitive uses, such as residences, schools, churches, libraries, and health care facilities, sensitive wildlife species, and establish mitigating conditions.

VISUAL:

PURPOSE STATEMENT NS 6

The following goal and policies address the importance of our urban and rural visual surroundings.

GOAL NS 6:	**Protect property values by improving the appearance of the Yakima Valley.**
POLICIES:	
NS 6.1	Protect the natural, historic, and visual quality of remote areas.
NS 6.2	Utilize programs that would enable open lands to remain in a natural state to maintain scenic beauty and aesthetic qualities.
NS 6.3	Develop standards for light and glare appropriate to each land use designation to minimize incompatibilities.
NS 6.4	Continue to enforce nuisance laws requiring clean-up of yards (garbage, clutter, junk cars, etc.).
NS 6.5	Encourage new telecommunications towers to be located and designed to minimize visual and land use impacts.
NS 6.6	Assure that lot coverage, height and setback regulations are appropriate to the purpose and intent of the zoning district.
NS 6.7	Include landscaping, signage and other aesthetic standards in the commercial and industrial site plan review process.
NS 6.8	Encourage private efforts to improve the appearance of the Yakima Valley.
NS 6.9	Provide incentives for the reconfiguration of parcels to enhance open space character.

SHORELINES:

PURPOSE STATEMENT NS 7

The goals and policies of the Shoreline Master Program are directed towards land and water uses and their impact on the environment. As the population continues to increase, the pressures upon our shorelines will also increase. The goal of the Shoreline Master Program is to protect the shorelines of the state.

GOAL NS 7.1:	**Implement the general policy goals of the Shoreline Management Act as listed below (WAC 173-26-176(3)):**
a.	Utilize Shorelines for economically productive uses that are particularly dependent on Shoreline location or use.
b.	Utilize Shorelines and the waters they encompass for public access and recreation.
c.	Protect and restore the ecological functions of shoreline natural resources.

d.	Protect the public right of navigation and corollary uses of waters of the state.
e.	Protect and restore buildings and sites having historic, cultural, and educational value.
f.	Plan for public facilities and uses correlated with other shoreline uses.
g.	Prevent and minimize flood damages.
h.	Recognize and protect private property rights.
i.	Preferentially accommodate single-family uses.
j.	Coordinate shoreline management with other relevant local, state, and federal programs.

GOAL NS 7.2:	**Protection measures for local Shorelines should use the following Shoreline Management Act principles in order of preference as listed below (RCW 90.58.020):**
1.	Recognize and protect the state-wide interest over local interest;
2.	Preserve the natural character of the shoreline;
3.	Result in long term over short term benefit;
4.	Protect the resource and ecology of the shoreline;
5.	Increase public access to publicly owned areas of the shorelines;
6.	Increase recreational opportunities for the public in the shoreline;
7.	Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

GOAL NS 7.3:	**Maintain, restore and where necessary improve the shoreline terrestrial and aquatic ecosystems so that they maintain viable, reproducing populations of plants and animals while providing the maximum public benefit of limited amounts of shoreline areas. Accomplish this through the policies in the required shoreline elements listed below.**

SHORELINE ENVIRONMENTS:

GOAL NS 7.4:	**Shorelines areas should be classified into specific environmental designations. The designation system should be based on the existing and future land use pattern as well as the biological and physical character of the shoreline. These environments should include the Urban, Rural, Conservancy, Natural Floodway / Channel Migration Zone (CMZ), and Urban Conservancy environments. Land uses and activities should be limited to those that are consistent with the character of the environment designation.**

Shorelines: Urban Environment

POLICIES:	
NS 7.5	The Urban Environment is to be used for the most intensely developed areas or areas where intensive development is desirable or tolerable. The basic principle in

	an Urban Environment is oriented toward quality of development in harmony with the shoreline. The Urban Environment should insure optimum utilization of shorelines occurring within urbanized areas by providing for public access and by managing development so that it enhances and maintains the shorelines for a multiplicity of uses.
NS 7.6	The following criteria should be used for the designation of Urban Environments:
1.	Areas presently supporting high intensity land use including residential, commercial, industrial and recreational uses.
2.	Areas which are planned to accommodate urban expansion of residential, commercial, industrial and recreational uses.
3.	High land values.
4.	Major public or private capital investments.
5.	Close proximity to services and utilities.
6.	Few biophysical limitations to development.
7.	Potentially low flood hazard.
NS 7.7	Water-oriented commercial, industrial, and recreation uses should be given high priority in the Urban Environment, and may be accompanied by non-water oriented uses in mixed-use developments. Residential uses should be discouraged. Recreational uses are preferred uses within the urban environments.

Shorelines: Rural Environment

POLICIES:	
NS 7.8	The Rural Environment should restrict intensive development along undeveloped shoreline areas that might interfere with the normal operations or economic viability of an agricultural activity located on adjacent associated shoreline areas. The Rural Environment maintains open spaces and provides opportunities for recreational uses compatible with agricultural activities.
NS 7.9	The following criteria should be used for the designation of Rural Environments:
1.	Intensive agricultural or recreational uses.
2.	Those areas with potential for agricultural use.
3.	Those undeveloped natural areas that lie between agricultural areas.
4.	Low-density residential development.
5.	Moderate land values.
6.	Potential low demand for services.
NS 7.10	Generally, allowed uses in the Rural Environment should focus on resource and recreation uses. Commercial and industrial uses should be carefully limited. Residential uses should sustain shoreline functions.

Shorelines: Conservancy Environment

POLICIES:	
NS 7.11	The Conservancy Environment classification is should be used for areas where maintenance of the existing character of the area is desirable. This does not necessarily mean preservation, but rather a use of natural resources on a sustained

	yield basis. Thus, the harvesting of timber as well as recreational activities are to be the primary uses permitted. Areas that are isolated from services, have poor drainage, high flood danger, poor ground for septic tanks, unstable earth, or steep slopes should also be designated Conservancy.
NS 7.12	The following criteria should be used for the designation of Conservancy Environments:
1.	Very low intensity land uses; primarily sustained-yield activities or pasture-range land.
2.	Larger acreages.
3.	Relatively low land values.
4.	Relatively minor public or private capital investment.
5.	Considerable biophysical limitations, making commercial, industrial, or medium to high-density residential development unsuitable.
NS 7.13	Generally, commercial and industrial uses should not be allowed in the Conservancy Environment, except when they are water oriented. Resource uses should be of low enough intensity to sustain shoreline functions with preference for non-permanent structures. Low-density residential development should sustain the character of the shoreline. Diffuse recreational uses are preferred use. Uses should avoid hazardous areas.

Shorelines: Natural Environment

POLICIES:	
NS 7.14	The Natural Environment should protect those shoreline areas which are considered unique by virtue of their existence and valuable only to the extent that the natural integrity is preserved for the benefit of future, as well as, present generations. Prime targets for classification into the Natural Environment will be certain shorelands owned or controlled by the various Federal and Tribal wildlife management agencies with limited access and certain private lands which are seen to be proper for Natural classification.
NS 7.15	The following criteria should be used for the designation of Natural Environments:
1.	The presence of a natural, historical, cultural, scientific, or educational feature considered valuable by virtue of its existence in a natural or original state and thereby warranting preservation for the benefit of present and future generations.
2.	Those areas generally intolerant of intensive human use.
3.	Areas with severe biophysical limitations.
4.	Natural areas with strong limits on access.
NS 7.16	Generally, commercial, industrial, mining, non-water oriented recreation, roads, utilities, and parking areas should not be located in Natural Environment. Other uses, including residential, should be carefully limited in the Natural environment. Restrict activities that may degrade the actual or potential value of this environment, and severely restrict development in hazardous areas.

Shorelines: Floodway / Channel Migration Zone (CMZ) Environment

POLICIES:	
NS 7.17	The Floodway/Channel Migration Zone environment should protect the water areas, associated vegetation; islands, associated overflow channels, and channel migration areas. This environment acknowledges the river's need to move within parts of its floodplain, and emphasizes the preservation of the natural hydraulic, geologic and biological functions of the county's shorelines that are constrained by severe biophysical limitations.
NS 7.18	A Floodway/Channel Migration Zone designation should be assigned to shoreline areas that are within mapped Channel Migration Zones and/or within a designated FEMA Floodway. The extent of the Floodway/Channel Migration Zone should never extend beyond the 100-year flood plain.
NS 7.19	Generally, commercial, industrial, mining, non-water oriented recreation, roads, utilities, parking areas, and residences should not be located in the Floodway/Channel Migration Zone Environment. Other uses (recreation, resource uses, etc.) should be carefully limited to protect shoreline functions. Restrict activities that may degrade the actual or potential value of this environment, and severely restrict development in hazardous areas. Modifications that harden or fix stream banks and channels should be discouraged.

Shorelines: Urban Conservancy Environment

POLICIES:	
NS 7.20	The Urban Conservancy environment should protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses.
NS 7.21	The following criteria should be used for the designation of Urban Conservancy Environments;
1.	areas that lie in incorporated municipalities and urban growth areas;
2.	areas appropriate and planned for development that is compatible with maintaining or restoring of the ecological functions of the area;
3.	areas that are suitable for water-enjoyment uses;
4.	areas that are open space or floodplain, or that retain important ecological functions that should not be more intensively developed;
NS 7.22	Generally, allowed uses should focus on recreational uses. Commercial, industrial and residential uses should be carefully limited, and when allowed should result in restoration of ecological functions. Uses that preserve the natural character of the area or promote the preservation of open space, floodplain or sensitive lands (either directly or over the long term) should be the primary allowed uses. Public access and public recreation objectives should be implemented whenever feasible and significant ecological impacts can be mitigated.

***GENERAL SHORELINE POLICIES*:**

Shorelines: Critical Areas, Restoration, and Vegetation Conservation

POLICIES:	
NS 7.23	New development or new uses, including the subdivision of land, should not be established when it would be reasonably foreseeable that the development or use would require structural flood hazard reduction measures within the channel migration zone or floodway.
NS 7.24	Only allow new structural flood hazard reduction measures in shoreline jurisdiction when it can be demonstrated that they are necessary to protect existing development, that nonstructural measures are not feasible, that impacts on ecological functions and priority species and habitats can be successfully mitigated so as to assure no net loss, and that appropriate vegetation conservation actions are undertaken.
NS 7.25	Protect all shorelines of the state so that there is no net loss of ecological functions from both individual permitted development and individual exempt development. Encourage protections that incorporate substantive fish habitat elements or follow Stream Bank Protection Guidelines.
NS 7.26	In development of the Shoreline Master Program, evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions to ensure no net loss of ecological function. Develop a means to allocate the burden of addressing cumulative effects.
NS 7.27	Provide, where feasible and desirable, restoration of degraded areas along the shorelines of Yakima County.
NS 7.28	Critical areas within shoreline jurisdiction should be protected with the critical area policies and standards protecting all of the County's critical areas, including those for CMZ's and Flood Control.
NS 7.29	Protect shoreline streams, lakes, ponds, and wetlands with a vegetative buffer as described in the Shoreline Master Program.
NS 7.30	For existing agriculture encourage through a variety of voluntary means the maintenance of a permanent vegetative buffer between tilled areas and associated water bodies to reduce bank erosion, retard surface runoff, reduce siltation, improve water quality and provide habitat for fish and wildlife. For new agriculture, buffer requirements should be applied.
NS 7.31	Natural vegetation within shoreline jurisdiction should be retained to the greatest extent feasible. This should be accomplished by applying the stream corridor and wetland buffer requirements. Activities covered by the State Forest Practices Act should not be subject to vegetation conservation standards, but should be subject to buffer requirements when under County jurisdiction. Require developers to indicate how they plan to preserve shore vegetation and control erosion in a long term management plan.
NS 7.32	Selective pruning of trees for safety and view protection, and the removal of noxious weeds should be allowed.

NS 7.33	Upon completion of construction/maintenance projects on shorelines, disturbed areas should at a minimum be restored to pre-project configuration wherever possible, replanted with native species and provided maintenance care until the newly planted vegetation is established.

Shorelines: Public Access – Physical and Visual

POLICIES:	
NS 7.34	Protect navigation of waters of the state, the space needed for water-dependent uses, and views of the water through development standards.
NS 7.35	Transportation and parking plans within Shoreline jurisdiction shall include systems for public access, including pedestrian, bicycle, and public transportation where appropriate.
NS 7.36	To provide public access planning in conformance with WAC 173-26-221(4), Yakima County uses the following approach to provide public access to Shoreline areas:
1.	Yakima County has a very high proportion of federal, state and other publicly owned or conservancy owned lands in Shoreline areas. These publicly owned Shoreline areas constitute a large portion of the county's total shoreline area. Yakima County emphasizes the use of those public lands to provide public access.
2.	Many of the above lands have improved sites and locations to promote physical access to shorelines. Yakima County relies on these agencies to develop new public access facilities as they deem appropriate.
3.	Many of the above lands are open to unimproved public access, as well.
4.	Many Shoreline areas are also along transportation corridors which provide visual access to much of the County's shoreline areas.
5.	Due to the nature of Yakima County's shorelines, commercial water oriented uses, existing and new, tend to be highly related to water enjoyment uses and recreation.
6.	Due to the nature of Yakima County's shorelines, recreational uses, existing and new, tend to be highly oriented toward the water, thereby providing access to shoreline areas.
7.	Yakima County relies on the development of commercial water oriented uses and recreational uses to provide additional public access opportunities.
8.	Development standards for dedicated and improved public access to the shoreline and visual quality should be required for public developments, with few exceptions. All projects should provide public access, except where it is demonstrated to be infeasible due to reasons of safety, security, impact to the shoreline environment, or constitutional or legal limitations.
NS 7.37	Promote and enhance diversified types of public access to shorelines in Yakima County which may accommodate intensified use without significantly impacting fragile natural areas intolerant of human use and without infringing on rights of private ownership.
NS 7.38	Access to recreational areas should emphasize both areal and linear access

	(parking areas and trails or bicycle paths, for example) to prevent concentrations of use at a few points. Linkage of shoreline parks and public access points by means of linear access should be encouraged.
NS 7.39	Development standards should be established to assure preservation of unique, fragile, and scenic elements and to protect existing views from public property or large numbers of residences. Where aesthetic impacts are not avoidable, provide mitigation.
NS 7.40	Where there exists a conflict between public access or a water-dependent use, and the maintenance of an existing view from adjacent properties, the physical public access or water dependent use should have priority unless there is a compelling reason to the contrary.
NS 7.41	Proper design, location, and construction of road and railroad facilities should be exercised to provide to the degree practical, scenic corridors, rest areas, view points, and other public oriented facilities in public shoreline areas.
NS 7.42	Wherever feasible, utility facilities should be placed underground.
NS 7.43	Outdoor sign size, spacing and lighting should conform to the Scenic Vistas Act (RCW 47.42) and standards in the Zoning Ordinance.

Shorelines: Archaeological and Historic Resources

POLICIES:	
NS 7.44	Encourage the protection and restoration of areas and sites in Yakima County having historic, archaeological, cultural, educational or scientific value. Wherever possible, sites should be permanently preserved for scientific study and public observation.
NS 7.45	Development along shorelines should include consultation with professional archaeologists, historians, and biologists to identify areas containing potentially valuable data, and to establish procedures for salvaging the data or maintaining the area in an undisturbed condition.
NS 7.46	Shoreline permits should contain special provisions which require developers to immediately stop work and notify local governments, the Office of Archeological and Historic Preservation, and affected tribes, if any possible archaeological or historic resources are uncovered during excavations.
NS 7.47	Development which could destroy archaeological or historical sites or data may be delayed to allow the appropriate agency or organization to purchase the site or to recover the data.

Shorelines: Water Quality, Stormwater, and Pollution

POLICIES:	
NS 7.48	Shoreline water quality should be protected as follows:
1.	Rely on a County stormwater program meeting state and federal stormwater control requirements where possible;
2.	Use Critical Aquifer Recharge Area protection measures in the Critical Areas Ordinance;

3.	Control drainage and surface runoff from all non-agricultural facilities requiring large quantities of fertilizers and pesticides (such as golf courses and play fields) to prevent contamination of water areas;
4.	All developments shall comply with County Health regulations, when applicable;
5.	Handle and dispose of pesticides in accordance with provisions of the Washington Pesticide Application Act (RCW 17.21);
6.	Proper design, location, and construction of all facilities should be exercised to prevent the entry of pollutants or waste materials into the water body.
7.	When earthen materials are moved within shoreline areas, measures to adequately protect water quality should be provided.
8.	Water quality protection measures should be balanced with recreation opportunities
NS 7.49	Agricultural erosion control measures should conform to rules and standards established by the Conservation Districts of Yakima County.
NS 7.50	In planning for marina location and design, special water quality considerations should be given to:
1.	Fuel handling and storage facilities to minimize accidental spillage;
2.	Proper water depth and flushing action for any area considered for overnight or long-term moorage facilities;
3.	Adequate facilities to properly handle wastes from holding tanks.
NS 7.51	Prohibit sanitary landfills along shoreline areas. Otherwise the disposal of all solid wastes should proceed in accordance with the Yakima County Solid Waste Management Plan.

SHORELINE USE POLICIES:

Shorelines: General Use

POLICIES:	
NS 7.52	Establish a system of shoreline uses that:
1.	Gives preference to uses with minimal impacts and that are dependent on the proximity to the water;
2.	Protects the public's health, safety, and welfare; ecological functions; and property rights;
3.	Establishes conditional uses to provide extra protection for the shoreline.
NS 7.53	Assure that new shoreline development in Yakima County is consistent with a viable pattern of use suitable to the character and physical limitations of the land and water.
NS 7.54	Encourage sound management of renewable and nonrenewable natural resources.

Shorelines: Recreation

POLICIES:	
NS7.55	Assure the preservation and expansion of diverse, convenient recreational opportunities along the public shorelines of Yakima County for public use, consistent with the capacity of the land to accommodate such activity. Accomplish this by ensuring that shoreline recreational development is given priority and is primarily related to access, enjoyment and use of the water and Shorelines of the State
NS 7.56	Where the uses designated for a specific recreational area are planned to satisfy a diversity of demands, these uses must be compatible with each other and the environment of the area.
NS 7.57	Where feasible and desirable, encourage the use of public lands for recreational facilities as a more economical alternative to new acquisitions by local agencies.
NS 7.58	Locate, design, construct and operate recreational facilities to prevent undue adverse impacts on natural resources of an area and on adjacent or nearby private properties.

Shorelines: Transportation and Parking

POLICIES:	
NS 7.59	Encourage a transportation network in Yakima County capable of delivering people, goods, and services, and resulting in minimal disruption of the shorelines' natural system.
NS 7.60	When it is necessary to locate major highways, freeways and railways along stream drainages or lake shores, such facilities should be sufficiently set back so that a useable shoreline area remains. Care should also be taken to insure that a minimum land area is consumed.
NS 7.61	To avoid wasteful use of the limited supply of shore land, locate access roads and parking areas upland, away from the shoreline whenever such options are available. Access to the water should be provided by pathways or other methods. Parking facilities in shorelines are not a preferred use and should be allowed only as necessary to support an authorized use.
NS 7.62	Proper design, location, and construction of road and railroad facilities should be exercised to:
1.	Minimize erosion and permit the natural movement of water;
2.	Use existing topography to maximum advantage and preserve natural conditions to the greatest practical extent.
NS 7.63	Extensive loops or spurs of old highways with high aesthetic quality or bicycle route potential should be kept in service.

Shorelines: Agriculture

POLICIES:	
NS 7.64	Allow lawfully established agricultural activities occurring on agricultural lands to continue as they historically have. New agricultural activities on land not currently

	used for agriculture, conversion of agricultural lands to other uses, and other development on agricultural land that does not meet the definition of agricultural activities (including any agricultural development not specifically exempted by the provisions of RCW 90.58.030(3)(e)(iv)) should meet shoreline requirements.
NS 7.65	Encourage animal feedlot operations to locate away from shorelines.

Shorelines: Aquaculture

POLICIES:	
NS 7.66	Consider aquaculture a preferred shoreline use when consistent with the control of pollution and prevention of damage to the environment.
NS 7.67	Ensure that aquacultural uses do not conflict with other water-dependent uses or navigation, spread disease, establish non-native species that cause significant ecological impact, or significantly impact the aesthetic qualities of the shoreline. Protect spawning areas designated by the Department of Fish and Wildlife from conflicting uses.

Shorelines: Boating Facilities and Marinas

POLICIES:	
NS 7.68	Ensure that boating facilities are located only at sites with suitable environmental conditions, shoreline configuration, access, and neighboring uses. All marinas should be developed and operated in accordance with all state and local requirements.
NS 7.69	In planning for marina location and design, special consideration should be given to necessary facilities such as adequate access, parking, and restroom facilities for the public. Such facilities should be located away from the immediate water's edge.

Shorelines: Forest Practices

POLICIES:	
NS 7.70	Shoreline areas having well-known scenic qualities (such as those providing a diversity of views, unique landscape contrasts, or landscape panoramas) should be maintained as scenic views in timber harvesting areas. Timber harvesting practices, including road construction and debris removal, should be closely regulated so that the quality of the view and viewpoints along shorelines of statewide significance in the region are not degraded.
NS 7.71	Forest management shall proceed in accordance with regulations established by the Washington State Forest Practices Act, including coordination with Yakima County on forest practice conversions and other Class IV-forest practices where there is a likelihood of conversion to non-forest uses.
NS 7.72	Ensure that timber harvesting on shorelines of statewide significance does not exceed the limitations established in RCW 90.058.150 (regarding selective harvest requirements), except as provided in cases where selective logging is rendered ecologically detrimental or is inadequate for preparation of land for other uses.

Shorelines: Mining

POLICIES:	
NS 7.73	Remove sand, gravel, and minerals from only the least sensitive shoreline areas. Due to the risk of avulsion and mine pit capture by the river, mining within the stream channel and channel migration zone should not be allowed. In special cases where it is allowed, it should be a conditional use. Restoration or enhancement of ecological function is encouraged.
NS 7.74	Require land reclamation plans of any mining venture proposed within a shoreline. Mining reclamation shall be done in conformance with the Washington State Surface Mining Act (RCW 78.44).
NS 7.75	Ensure that mining and associated activities are designed and conducted consistent with the applicable environment designation and the applicable critical areas ordinance.
NS 7.76	Ensure that proposed subsequent use of mined property and the reclamation of disturbed shoreline areas is consistent with the applicable environment designation and that appropriate ecological functions are provided consistent with the setting.

Shorelines: Residential Development

POLICIES:	
NS 7.77	Design subdivisions at a density, level of site coverage, and occupancy compatible with the physical capabilities of the shoreline and water, and locate them to prevent the need for new shore stabilization or flood hazard reduction measures.
NS 7.78	Restrict subdivisions in areas subject to flooding.
NS 7.79	Encourage cluster development wherever feasible to maximize use of the shorelines by residents, maximize both on-site and off-site aesthetic appeal, and minimize disruption of the natural shorelines.

Shorelines: Commercial Development

POLICY:	
NS 7.80	Limit commercial development to those activities that are particularly dependent upon a shoreline location. Other commercial uses should be encouraged to locate upland. Give first preference to water-dependent commercial uses over non-water-dependent commercial uses; and give second preference to water-related and water-enjoyment commercial uses over non-water-oriented commercial uses. Allow non-water-oriented commercial uses in limited situations.

Shorelines: Utilities

POLICIES:	
NS 7.81	New utility production and processing facilities, such as power plants and sewage treatment plants, or parts of those facilities that are non-water-oriented should not be allowed in shoreline areas unless it can be demonstrated that no other feasible option is available. Expansion, updating, and maintenance of existing

	facilities is allowed but should be designed to minimize the impacts as much as possible.
NS 7.82	Wherever possible, transmission facilities for the conveyance of services, such as power lines, cables, and pipelines, should be located outside of the shoreline area. If location within the shoreline cannot be prevented, confine utilities in a single corridor or within an existing right-of-way.
NS 7.83	Locate new sewage treatment, water reclamation, and power plants where they do not interfere with and are compatible with recreational, residential or other public uses of water and shore lands. New waste treatment ponds for industrial waste should be located upland when feasible.

Shorelines: Industry

POLICIES:	
NS 7.84	Allocate sufficient quantities of suitable land for water related industry. Give preference to water-dependent industrial uses over non-water-dependent industrial uses; and second, give preference to water-related industrial uses over non-water-oriented industrial uses. Allow non-water-oriented industrial development in limited situations.
NS 7.85	Discourage industries which have proven to be environmentally hazardous from locating along the shorelines.

Shorelines: In-stream Structural Uses

POLICIES:	
NS 7.86	The location and planning of in-stream structures should give due consideration to the full range of public interests, watershed functions and processes, and environmental concerns, with special emphasis on protecting and restoring priority habitats and species.
NS 7.87	All in-stream structures should provide for the protection and preservation of ecosystem-wide processes, ecological functions, and cultural resources, including, but not limited to, fish and fish passage, wildlife and water resources, shoreline critical areas, hydro-geological processes, and natural scenic vistas.

SHORELINE MODIFICATION POLICIES:

Shorelines: General Shoreline Modification

POLICIES:	
NS 7.88	Allow shoreline modifications only where they are shown to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage, or they are necessary for mitigation or enhancement work.
NS 7.89	Limit shoreline modifications to the minimum necessary to accomplish the objective, while still protecting ecological functions. Give preference to shoreline modifications that have a lesser impact on ecological functions.

Shorelines: Shore Stabilization

POLICIES:	
NS 7.90	New structural stabilization measures should only be allowed for the following instances, and then only when meeting specific criteria:
1.	When necessary to protect an existing primary structures;
2.	In support of existing development;
3.	To protect projects for the restoration of ecological functions or hazardous substance remediation projects.
NS 7.91	Avoid flood protection and stabilization measures which result in or tend toward channelization of streams such as, hardening of stream banks, or fixing channel locations.
NS 7.92	All shore stabilization activities must be designed and constructed to accepted engineering standards.

Shorelines: Fill

POLICIES:	
NS 7.93	Allow normal and reasonable land grading and filling where necessary to develop a land area for a permitted use. There should be no substantial changes made in the natural drainage patterns and no reduction of flood water storage capacity that might endanger other areas. Allow fill within the ordinary high water mark only when necessary to support water dependent uses, public access, transportation facilities, mitigation, restoration, enhancement, and certain special situations listed in WAC 173-26-231(3)(c).
NS 7.94	In evaluating fill projects, such factors as total water surface reduction, navigation restriction, impediment to water flow and circulation, impediment to irrigation systems, reduction of water quality, and destruction of fish and wildlife habitat should be examined.
NS 7.95	Locate and design shoreline fills or cuts to avoid creating a hazard to adjacent life, property, and natural resources systems, and to provide all perimeters of fills with vegetation, retaining walls, or other mechanisms for erosion prevention.

Shorelines: Dredging

POLICIES:	
NS 7.96	Dredging should only be permitted for maintaining existing navigation uses, not for obtaining fill material or mining.
NS 7.97	Permit deposit of spoils in water areas only to improve habitat or when the alternative is more detrimental than depositing in water areas.

Shorelines: Piers and Docks

POLICY:	
NS 7.98	Piers and docks should only be allowed for water dependent uses and public access, except that water enjoyment and water related uses may sometimes be included as part of a mixed use development. New piers and docks must have a specific need

	and must be the minimum size necessary. Such structures in stream are not reasonable to site at all locations and the effects of winter ice on a structure must be considered in design and deployment. Encourage the cooperative use of shared docks.

CRITICAL AREAS GENERAL:

PURPOSE STATEMENT 8

Critical Areas are an important part of the natural setting in Yakima County. Their protection is required by the Growth Management Act and important to the quality of life of the residents of this county. Critical Areas include groundwater, fish and wildlife priority species and habitat (which includes surface waters), wetlands, frequently flooded areas, and geologic hazards. The protection of critical areas must include certain general approaches, which are provided for in the goals and policies below.

GOAL NS 8:	**Establish critical areas protection measures to protect environmentally sensitive areas, and protect people and property from hazards.**
POLICIES:	
NS 8.1	Use the best available science to develop regulations to protect the functions and values of critical areas.
NS 8.2	Ensure proposed subdivisions, other development, and associated infrastructure are designed at a density, level of site coverage, and occupancy to preserve the structure, values and functions of the natural environment or to safeguard the public from hazards to health and safety.
NS 8.3	Use a preference-based system of mitigation sequencing for the County's stream, lake, pond, wetland, floodplain and fish and wildlife priority species and habitat critical areas that reduces impacts using approaches ranging from avoidance to replacement.
NS 8.4	In order to encourage Critical Area protection and restoration, the density and lot size limits stipulated in other policies may be adjusted or exceeded to accomplish clustering and bonus provisions adopted under the (Critical Areas Ordinance) CAO. The use of incentive based programs is encouraged.

WATER QUALITY AND QUANTITY:

Critical Areas: Groundwater And Critical Aquifer Recharge Areas (CARAS)

PURPOSE STATEMENT NS 9

Groundwater is the primary source of drinking water for many people. Once groundwater is contaminated it is difficult, costly, and may be impossible to clean up. The following goal and policies address these concerns by encouraging the identification of aquifers and taking steps to reduce potential contamination.

GOAL NS 9:	Maintain and manage the quality of the groundwater resources in Yakima County as near as possible to their natural conditions and in compliance with state water quality standards.
POLICIES:	
NS 9.1	Identify and map important aquifers, critical aquifer recharge areas, and surface waters.
NS 9.2	Develop performance standards and regulate uses for activities which adversely impact water quantity and quality in aquifers, wetlands, watersheds and surface waters.
NS 9.3	Evaluate the potential impact of development proposals on groundwater quality, and require alternative site designs to reduce contaminant loading where site conditions indicate that the proposed action will measurably degrade groundwater quality.
NS 9.4	Continue data collection and evaluation efforts to better understand the County's groundwater system and its vulnerability to contamination.
NS 9.5	Encourage the retention of natural open spaces in development proposals overlying areas highly susceptible for contaminating groundwater resources.
NS 9.6	Conduct and support educational efforts which inform County citizens of measures they can take to reduce contaminant loading of groundwater systems.
NS 9.7	Encourage development and expansion of community public water systems to lessen the reliance on individual wells.
NS 9.8	Ensure that abandoned wells are closed properly.
NS 9.9	Ensure sufficient water quantity exists to support residential development and land use activities.
NS 9.10	Support efforts to develop long-term solutions to prevent contamination of domestic wells.

Critical Areas: Surface Water

PURPOSE STATEMENT NS 10, 11 & 12

Efforts have been made to improve stream corridors within the County, especially in the areas of water quality and habitat. The following goals and policies should guide decisions related to surface water.

GOAL NS 10a:	Enhance the quantity and quality of surface water.
POLICIES:	
NS 10.1	Improve water conservation through education and incentives.
NS 10.2	Encourage groundwater detention and storage where the practice benefits stream base flow characteristics and flood-risk reduction.
NS 10.3	Protect water quality from the adverse impacts associated with erosion and sedimentation

GOAL NS 11:	Identify future needs and promote increased water supplies through coordinated development and conservation efforts.
POLICY:	
NS 11.1	Support local and regional cooperative efforts which help to accomplish this goal, such as the Yakima Basin Integrated Plan.

GOAL NS 12:	Restore, maintain or enhance the quality of the Yakima River Basin's surface water.
POLICIES:	
NS 12.1	Maintain local control over water quality planning by: 1) providing guidance to state and federal agencies regarding water quality issues, priorities and needs; and 2) demonstrating progress in accomplishing the goals and objectives of locally developed water quality plans, thereby pre-empting externally-imposed solutions to water quality problems as much as possible.
NS 12.2	Make use of local and regional data sources to assess water quality progress.
NS 12.3	Participate in water quality improvement planning and implementation efforts by local, regional, state, federal, and tribal agencies, as well as coalitions such as local watershed planning efforts.

Critical Areas: Stormwater

PURPOSE STATEMENT NS 13 & 14

When the amount of impervious area in a watershed increases, and provisions are not made for retaining stormwater on-site, development can contribute to the flooding hazards of their down-stream neighbors, and flooding becomes more frequent and more severe. If the natural drainage courses are obstructed with fill material, buildings, or roads that lack adequately-sized culverts, storm water can cause localized flooding, with property damage and disruption of services. The following goals and policies should guide decisions related to stormwater.

GOAL NS 13:	Prevent increased flooding from stormwater runoff.
POLICIES:	
NS 13.1	Require on-site retention of stormwater.
NS 13.2	Preserve natural drainage courses.
NS 13.3	Minimize adverse storm water impacts generated by the removal of vegetation and alteration of land forms.

GOAL NS 14:	Improve water quality through improved stormwater management.
POLICIES:	
NS 14.1	Review the recommendations of locally adopted stormwater management plans, and develop an implementation schedule.
NS 14.2	Control stormwater in a manner that has positive or neutral impacts on the quality of both surface and groundwater.

Critical Areas: Fish And Wildlife Habitat, Wetlands, And Frequently Flooded Areas

PURPOSE STATEMENT NS 15, 16, 17 & 18

Stream corridors, lakes, ponds, wetlands, flood plains and other areas subject to flooding perform important hydrologic functions including storing and slowly releasing flood waters, reducing floodwater velocities, settling and filtering of sediment and nutrients, shading surface waters, and other functions. These areas also provide natural areas for wildlife and fisheries habitat, upland wildlife habitat, recreation areas, and rich agricultural lands. Development in these areas diminishes their functions and values and can present a risk to persons and property on the development site and/or downstream from the development. Building in frequently flooded areas also results in high costs for installing flood protection measures to protect life and property and to repair flood damages.

The following goals and policies work toward preserving, protecting and managing fish and wildlife habitat and wetlands by adopting, boundaries, and a data system to track them, and establishing development regulations for their protection. These goals and policies also seek to reduce the hazards and impacts of development through comprehensive flood control planning, directing facility development away from these areas, and developing site development standards.

Critical Areas: Fish and Wildlife Habitat

GOAL NS 15:	**Provide for the maintenance and protection of habitat areas for fish and wildlife.**
POLICIES:	
NS 15.1	Encourage the protection of aquatic, riparian, upland and wetland fish and wildlife habitat. This can be approached from both a region-wide and site specific perspective to ensure that the best representation and distribution of habitats remains to protect the natural values and functions of those habitats. Fish and wildlife habitat protection considerations should include:
1.	The physical and hydrological connections between different habitat types to prevent isolation of those habitats;
2.	Diversity of habitat types both on a local and regional scale;
3.	Large tracts of fish and wildlife habitat
4.	Connectivity between tracts of habitat;
5.	Areas of high species diversity;
6.	Locally or regionally unique and rare habitats; and
NS 15.2	Direct development away from areas containing significant fish and wildlife habitat areas, especially areas which are currently undeveloped or are primarily dominated by low intensity types of land uses such as forestry.
NS 15.3	Encourage the retention of sustainable natural resource based industries such as forestry and agriculture in order to protect important fish and wildlife habitat.
NS 15.4	Coordinate fish and wildlife protection efforts with state and federal agencies and the Yakama Nation to:
1.	Avoid duplication of effort;

2.	Ensure consistency in protecting fish and wildlife habitat which crosses political boundaries;
3.	Facilitate information exchanges concerning development proposals which may impact fish and wildlife habitat; and
4.	Take advantage of any available financial, technical, and project review assistance.
NS 15.5	Protect fish and wildlife habitat for all native species in Yakima County, so as to maintain current population over time. Protect the habitat of Washington State Listed Species of Concern and Priority Habitats and Species in order to maintain their populations within Yakima County.
NS 15.6	Work with the resource agencies to prioritize habitats and provide appropriate measures to protect them according to their relative values.
NS 15.7	Support efforts to enhance fish and wildlife habitat made by local organizations, local agencies, state agencies, federal agencies, and the Yakama Nation.

GOAL NS 16:	**Conserve, protect and enhance the functions and values of stream corridors to provide for natural functions and protect hydrologic connections between features.**
POLICIES:	
NS 16.1	Flood Development projects should not be authorized if they obstruct fish passage or result in the unmitigated loss or damage of fish and wildlife resources.
NS 16.2	Encourage and support the retention of natural open spaces or land uses which maintain hydrologic functions and are at low risk to property damage from floodwaters within frequently flooded areas.
NS 16.3	Protect public and private properties by limiting development within hazardous areas of the stream corridor.
NS 16.4	Support restoration of floodplain topography and historic drainage features to regain normative stream functioning.
NS 16.5	Give special consideration to conservation and protection measures necessary to preserve or enhance anadromous fisheries.
NS 16.6	Establish a system of vegetative buffers landward from the ordinary high water mark of streams, lakes and ponds and the edge of wetlands.

Critical Areas: Frequently Flooded Areas

GOAL NS 17:	**Prevent the loss of life or property and minimize public and private costs associated with repairing or preventing flood damages from development in frequently flooded areas.**
POLICIES:	
NS 17.1	Support comprehensive flood control planning (i.e. Comprehensive Flood Hazard Management Plans).

NS 17.2	Conduct additional analysis and mapping of frequently flooded areas in cases where the 100-year floodplain maps prepared by the Federal Emergency Management Agency do not adequately reflect the levels of risk or the geographic extent of flooding.
NS 17.3	Direct new critical facility development away from areas subject to catastrophic, life-threatening flood hazards where the hazards cannot be mitigated.
NS 17.4	Where the effects of flood hazards can be mitigated, require appropriate standards for subdivisions, parcel reconfigurations, site developments and for the design of structures.
NS 17.5	Plan for and facilitate returning Shoreline rivers to more natural hydrological conditions, and recognize that seasonal flooding is an essential natural process.
NS 17.6	When evaluating alternate flood control measures on Shoreline rivers:
1.	Consider the removal or relocation of structures in the FEMA 100-year floodplain;
2.	Where feasible, give preference to nonstructural flood hazard reduction measures over structural measures;
3.	Structural flood hazard reductions measures should be consistent with the County's comprehensive flood hazard management plan.

Critical Areas: Wetlands

GOAL NS 18:	**Provide for long term protection and no net loss of wetland functions and values.**
POLICIES:	
NS 18.1	Preserve, protect, manage, and regulate wetlands for purposes of promoting public health, safety and general welfare by:
1.	Conserving fish, wildlife, and other natural resources of Yakima County;
2.	Regulating property use and development to maintain the natural and economic benefits provided by wetlands, consistent with the general welfare of the County;
3.	Protecting private property rights consistent with the public interest; and
4.	Require wetland buffers and building setbacks around regulated wetlands to preserve vital wetland functions and values.
NS 18.2	Adopt a clear definition of a regulated wetland and a method for delineating regulatory wetland boundaries.
NS 18.3	Classify regulated wetland areas to reflect their relative function, value and uniqueness.
NS 18.4	Develop a wetlands data base.
NS 18.5	Manage and mitigate human activities or actions which would have probable adverse impacts on the existing conditions of regulated wetlands or their buffers.

NS 18.6	Require mitigation for any regulated activity which alters regulated wetlands and their buffers. Develop ratios, performance standards, monitoring, and long-term protection.

Critical Areas: Geologic Hazards

PURPOSE STATEMENT NS 19

Geologic hazards pose a threat to the health and safety of County citizens when incompatible commercial, residential, or industrial development and associated infrastructure is sited in areas of significant hazard. The following goal and policies address the risk associated with these areas by encouraging engineering designs or modified construction practices that will mitigate problems, and prohibiting building where problems cannot be mitigated.

GOAL NS 19:	**Protect the public from personal injury, loss of life or property damage from geologic hazards.**
POLICIES:	
NS 19.1	Ensure that land use practices in geologically hazardous areas do not cause or exacerbate natural processes which endanger lives, property, or resources.
NS 19.2	Locate development within the most environmentally suitable and naturally stable portions of the site.
NS 19.3	Classify and designate areas on which development should be prohibited, conditioned, or otherwise controlled because of danger from geological hazards.
NS 19.4	Prevent the subdividing and development of known or suspected landslide hazard areas, side slopes of stream ravines, or slopes 40 percent or greater for development purposes.

Critical Areas: Fire Hazards

PURPOSE STATEMENT NS 20

Areas of Yakima County are highly susceptible to fire hazard during much of the year. The following goal and policies address this need by establishing road, bridge and building standards which will ensure better fire protection in forest and rural areas.

GOAL NS 20:	**Protect life and property in rural Yakima County from fire hazards.**
POLICIES:	
NS 20.1	Encourage the development of adequate water supply/storage for new development which is not connected to a community water/hydrant system. A storage facility/fire well should be accessible by standard firefighting equipment and adequate for the needs of the structure(s) and people being protected.
NS 20.2	Roofing used in the construction of residential development shall be of a Class "A" fire retardant material when located outside of 5 road miles of a full service fire station.
NS 20.3	Encourage, where feasible, the undergrounding of electrical utilities to reduce their exposure to fire.

NS 20.4	Require new residential construction to provide for a fuel break around structures.
NS 20.5	Require proposed developments to provide sufficient access for heavy-duty firefighting equipment.
NS 20.6	Bridges, culverts, road drains and other structures shall be constructed and maintained in a manner to accommodate firefighting apparatus on a year around basis.
NS 20.7	Residences and driveways shall be clearly marked and visible with the appropriate address assigned by Yakima County.