Wahkiakum County Comprehensive Plan

Draft #3 – August 2008

Comprehensive Plan

for

Wahkiakum County, Washington

Draft #3

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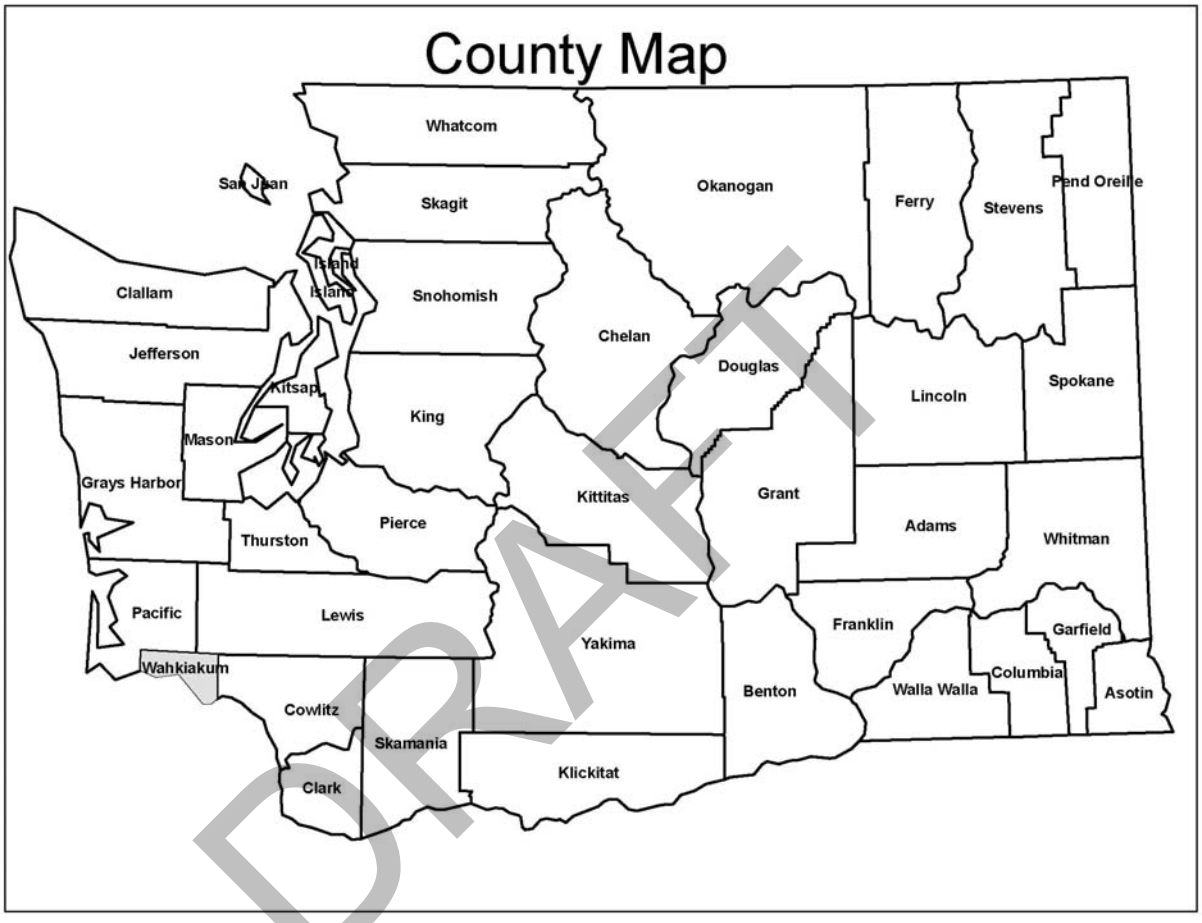
Prepared by

Cowlitz-Wahkiakum Council of Governments
June 2006

Edited by

Board of Wahkiakum County Commissioners
August 2008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Wahkiakum County Comprehensive Plan

Citizen Steering Committee
Commission

MEMBERS
LeRoy Burns
Bill Coop
Tom Doumit
Ruth Edmondson
Richard Erickson
Delvin Fredrickson
Joe Florek, Jr.
David Goodroe
Kyle Gribskov
Bob Jungers
David Vik
Frank Webb

FORMER MEMBERS
Linda Barth
Karen Bertroch
Arvid Blix
Andrew Lea
Curt Nielson
Harry Paul
Larry Reese
Ken Scholes

COMPREHENSIVE PLAN STAFF
Melissa Taylor
Senior Planner

Erin Dahlquist
GIS Technician

Cowlitz-Wahkiakum Council of Governments
Administrative Annex
207 North Fourth Avenue
Kelso, WA 98626
http://www.cwcog.org

Phone: 360-577-3041
Fax: 360-425-7760

Planning

MEMBERS
Terry Irving, Chairman
LeRoy Burns
Erle Cooper
Delvin Fredrickson
Bob Jungers
Charles Parker
Lawrence Rose
David Vik

STAFF
Chuck Beyer
Marsha LaFarge

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For further information call (360) 795-8048
Wahkiakum County Commissioners' Office

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Wahkiakum County Comprehensive Plan

Introduction

Comprehensive plans examine issues, trends, and needs that are likely to surface over a 20 year time period. The 1984 Wahkiakum County Comprehensive Plan has reached the end of its useful lifespan. County commissioners saw that the plan was nearing the end of its shelf-life, and began an update process in late 2002, using the Council of Governments to staff the effort. There is no state requirement to update the 1984 plan. Wahkiakum County is not subject to most of the requirements of the Growth Management Act, and therefore plans under the Planning Enabling Act of 1959.

It is considered good business practice for local governments to regularly update their long-range plans because they are used to make a variety of decisions affecting county residents—including investments in capital facilities, such as roads, utilities, parks and fire stations—as well as public service expenditures, such as youth and senior services, health programs, fire and police protection. A comprehensive plan can help make the most efficient use of taxpayer dollars by pairing land use planning with capital improvement budgeting.

From time to time people have asked “What's wrong with the 1984 plan?" There is nothing “wrong” with the original plan. But because the land use recommendations in that plan haven’t been followed, the plan clearly isn’t meeting the county’s current needs. For instance, the 1984 plan calls for the conservation of agricultural land. Many agricultural areas designated for “no development” on the 1985 map have since been converted to other uses, primarily residential lots. Many comprehensive plans are updated in five or ten year intervals. Because there were no periodic updates to the original 1984 plan, the current effort has involved more extensive work, and basically represents a new plan.

So much has changed in the world and within Wahkiakum County over the past 20 years that the 1984 plan is no longer useful in guiding county decisions. Water and sewer systems have been built to address environmental and health issues, bringing significant potential for growth. Lifestyles and work patterns have radically changed, due in large part to technological advances, a global economy, and major demographic shifts as baby boomers have aged. People are not as tied to a specific geography for their employment or residence. People are retiring earlier. Family size is shrinking. There have been significant shifts in the makeup of the county population, with 100% of the growth due to in-migration, as there has been no net natural increase.

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Those who move to Wahkiakum County bring different perspectives and expectations for county services. Facilities and services must be planned for these recent “settlers” as well as those who have lived in Wahkiakum for generations. Demographic shifts make it harder to provide cost-effective volunteer services such as fire protection, and the loss of young adults and children drains school systems of students and mentors. The plan examines ways to attract or retain the younger population, in addition to planning for those who are “staying put”, as well as the county’s more recent arrivals. Getting to the point where a comprehensive plan can be considered for adoption by a local government means that everyone has made some trade-offs in order to reach agreement. That is the essence of democracy.

Adopting a plan is not the conclusion of the process—it is actually a beginning. Once a plan is adopted, actions to achieve the vision can begin in earnest. Citizens can be assured that adopting the plan—and any implementation tools that follow—are based on a public process that remains in the public eye. Subsequent amendments to allow the plan to adapt to changing conditions are likewise conducted in a public forum.

Typically, a county or a city develops and adopts a comprehensive plan (through an extensive public process and after many modifications) that represents a common view of what they hope to be, and what they hope to achieve over the next twenty years. Following adoption of the plan, a local government typically reviews its existing ordinances, budgets, and programs to ensure that existing tools are helping to support and implement the plan, rather than working at cross-purposes by using approaches that are now considered out-of-date. The next stage of implementation typically involves development of new programs—such as historic preservation, parks and recreation, or a capital improvement program—as well as regulatory standards to address specific issues. In Wahkiakum County, that phase could include consideration of local land use tools that could be enacted countywide, or on a smaller, more localized scale to meet each community’s needs and preferences.

Over time, personal circumstances change, social values shift, technology advances, and other changes occur that make it appropriate to reconsider the comprehensive plan or some of the land use designations. Local governments should revisit their comprehensive plan—usually a brief, “big picture” review—every five to ten years, to identify any trends that would alter the path outlined in the plan, to ensure that the plan still reflects the community vision, and that plan policies are still appropriate. A comprehensive plan provides a process for negotiated community change that requires public review—and hopefully inspires citizen involvement at all stages.

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Citizen Participation Element

Introduction

Public input is an essential component of any comprehensive plan. It helps begin the process of defining the community's vision of itself over the 20-year plan horizon. A ***community vision*** is translated into ***goals*** that describe *what* the community hopes to achieve over the life of the plan. ***Policy statements*** specify *how* the goals will be reached. ***Objectives*** are stated to identify *who* will carry out any needed action, as well as *when* it should occur. This results in an ***implementation strategy***. Citizen involvement is needed throughout the process to ensure that the plan actually reflects community desires. Attaining public involvement and support throughout the process will help ensure that the plan is actually implemented, as there are stakeholders in the outcome.

Initial Citizen Participation Strategy

Prior to undertaking the comprehensive planning effort, the Cowlitz-Wahkiakum Council of Governments, which staffed the effort, developed a suggested Citizen Participation Strategy. It was used as the basis for the comprehensive planning process and involved:

An appointed group of approximately 15 persons was suggested to guide the plan through its development. The Citizen Steering Committee conducts public input meetings, reviews plan drafts, and makes recommendation to the Planning Commission. Suggested makeup of this group included: (some categories overlap)

- Planning Commissioners (2-3 members)
- School District Representative (1)
- Port District Representatives (2)
- EDC Representative (1)
- Chamber of Commerce Representative (1)
- PUD Representative (1)
- Social Service Agency Representative (1)
- Employer Representative (1)
- Watershed Planning Group/Diking District Representative (1)
- Forestry Representative (1)
- Fisheries Representative (1)
- Farming Representative (1)
- Grange/General Public Representatives (2-3)
- Town Representative (1)

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Community Meetings

Hold two series of meetings: 1) a preliminary "town meeting" format in 3 to 4 locations to define the key issues and values; and 2) presentation of plan drafts for feedback at 3 to 4 locations.

Newspaper

Issue press releases at timely intervals to provide updates to the planning process. Publish public meeting notices.

Web Page

Introduce a Comprehensive Plan icon on the county web page, and include meeting notices and meeting summaries, draft elements, community "vision" and "rural character" work, etc. available at www.cwcog.org/compplan.html.

Public Involvement Process

The ***Wahkiakum County Planning Commission*** met in early 2002 during ***four (4) regular, public work sessions*** to review the 1984 Comprehensive Plan to determine areas that needed particular attention during the plan update.

A ***Comprehensive Plan Steering Committee*** was appointed by the county commission in September of 2002 to develop goals, policies, objectives and a future land use map. They have welcomed many visitors to ***forty-four (44) twice-monthly work sessions*** from January 2003 to August of 2005. They sponsored ***five "town hall" meetings*** in late 2002 to gather ideas for developing the community's vision of its future. In addition, the committee requested interested citizens to complete a survey of their key values and issues. There were 256 surveys returned and tallied that verified the results of the town hall meetings.

Beginning in December 2004 and running through August 2005, ***twelve (12) "feedback forums***" were held around the county to obtain information on needed adjustments to the proposed plan. This included an extensive survey of the plan concepts as well s implementation tools. The final round of forums in August of 2005 and the review of these results marked the conclusion of the Steering Committee's work. Their recommendation will be sent to the county planning commission for review and public input.

The ***Wahkiakum County Planning Commission***, the public body appointed to oversee all planning efforts throughout Wahkiakum County, is charged with reviewing the draft plan. The Planning Commission will hold at least one public hearing to gather input on the plan. This body will modify or adopt the proposed plan before sending it on to the ***Wahkiakum County Board of Commissioners*** for consideration. After a thorough review, including additional opportunities for comment through a formal public hearing(s), the commission may decide to adopt the plan as presented or they may amend it prior to adoption based in additional input.

Citizens of Wahkiakum County have multiple opportunities to participate in the comprehensive planning process:

- ***Community Forums*** – Initial "town hall" meetings provided an opportunity for citizens to envision the future they hope to see. Multiple follow-up forums were held to receive suggestions and comments on the proposed plan.

- ***Citizen Steering Committee Meetings*** – There were five (5) "town hall" meetings held in the early "visioning" stage. Forty-four (44) public meetings have been held over the past two and one-half years, with many visitors attending. Twelve (12) citizen forums have been held throughout the county to gather public response to the Citizen Steering Committee proposal. ***There have been sixty-one (61) public meetings sponsored by the Citizen Steering Committee since the comprehensive planning process began.***

- ***Planning Commission Public Meetings & Hearings*** - The Planning Commission will review and consider modifications to the proposed plan during regular public meetings or in specially scheduled public work sessions. The Planning Commission is required to hold at least one public hearing before a draft plan is recommended to the County Commission.

- ***County Commission Formal Public Hearings*** – One or more public hearings will be held by the County Commission to gather public comments regarding the proposed plan. These meetings are specifically designed to give elected representatives feedback on any final modifications that are needed for the plan before adoption.

Wahkiakum Comprehensive Plan "Visioning" Results

A series of five (5) community forums were held in the fall of 2002 to gather public input for developing the vision and goals to guide development of the plan. The result of these "visioning" meetings was as follows:

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Town Meeting Results

⇒ **Maintaining the rural character of the county (rural qualities and rural lifestyles)**

⇒ **Stimulating economic growth (diversification and value-added resource industries)**

⇒ **Securing family wage jobs, retaining our young people and attracting young families**

⇒ **Keeping taxes reasonable by developing a sound tax base**

⇒ **Maintaining a strong volunteer base (firefighters, emergency medical, granges, etc)**

⇒ **Provision of adequate public services and infrastructure**

⇒ **Addressing environmental issues (flooding, erosion, siltation, landslides, etc.)**

In addition to town hall meetings, hundreds of surveys were sent to county residents to gather additional ideas for the plan. There were 256 surveys returned. When tallied, the surveys verified that town meeting results reflected broad community concerns:

Community Visioning Survey Results

Issue/Value	Percent Selected as 1 of Top 3 Issues
Maintaining quality school buildings & teachers	13%
Jobs to attract/keep young people	12%
Diversify economic base with family-wage jobs	10%
Activities for youth; substance abuse among youth	9%
Adequate public services	8%
Keep property taxes affordable	8%
Maintain rural community appearance & lifestyles	7%
Maintain / strengthen our resource-based economy	6%
Encouraging growth; increasing the tax base to support schools & services	5%
Balancing private property rights & land use issues	4%
How to guide growth for land use compatibility	4%
Improvements to infrastructure	4%
Environmental issues (flooding, siltation, dredging)	3%
Improvements to the transportation network	3%
More senior housing & services	2%
Federal/state environmental regulation	2%
Increase in tax-exempt properties	1%
Other	1%

CITIZEN FORUMS/FEEDBACK SESSIONS -- Citizen Preferences* by Planning Area

Once a draft plan was developed, twelve forums were held to gather citizen feedback on the planning concepts as well as tools to implement the plan. Questionnaires were distributed and tallied; preferences listed below are those items that collectively ranked higher than a "neutral" score. These planning concepts are presented in detail in **Appendix B** in the back of this plan.

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HOW THE PLAN WAS DEVELOPED

Early Citizen Involvement

⇒ Met with the County Planning Commission in work sessions to identify needed changes to the 1984 plan, and what needed to be carried through to the new plan

⇒ The Board of Commissioners appointed a 15- member Citizen Steering Committee to develop proposals for a new comprehensive plan

⇒ Five (5) "town hall" meetings were held and surveys distributed throughout the county to determine the key values of county residents (What do you want to protect?) and to identify key issues (What needs to be changed or addressed?). In addition, all grades at the high school were surveyed, and presentations made to the senior class. The overwhelming consensus was that the new comprehensive plan should focus on:

- **Protecting Rural Character & Rural Quality of Life**
- **Promoting Economic Opportunity for Family Wage Jobs** (Build on traditional industry & diversify the economy)

Development of the Economic Strategy

⇒ Due to the results from the community visioning sessions, economic issues were used as organizing principles for the new plan

⇒ Conducted a SWOT (Strength, Weaknesses, Opportunities, & Threats) Analysis

⇒ Identified Competitive Advantages & Key Economic Sectors for further exploration

⇒ Invited speakers to discuss Wahkiakum County's advantages/disadvantages for Value-Added Agriculture, Value-Added Forestry, Community Forestry, Tourism, Arts & Entertainment, Technology & Telecommunications, Business Recruitment, Retention & Expansion, and Entrepreneurial Development. ("Riverine" sector added later.)

⇒ Ranked ideas from speakers and used that process to identify key components of an economic strategy which identified the Sector, the Action, and the Partners needed for implementation.

Development of Plan Policy

⇒ Identified ***"Issues & Trends"*** affecting Wahkiakum County (see next section)

⇒ Conducted workshops to discuss proposed policies for Economic Development, Housing, Land Use, Resource Lands & Critical Areas, Transportation, and Capital Facilities

⇒ Used a Visual Preference Survey to identify rural qualities of different landscapes and define "rural" for Wahkiakum County

⇒ Used the "Community Viz" software to visualize how different types of housing development would look along East Sunny Sands Road, to evaluate different approaches

Development of the Future Land Use Map

⇒ Inventoried existing land uses throughout the county

⇒ Used national, state and local data bases to inventory physical features, environmental constraints and property ownership patterns throughout the county.

⇒ Identified "developable areas" that presented few constraints to growth

⇒ Reviewed existing plans for infrastructure (water, sewer, roads) capacity for "developable areas"

⇒ Reviewed Watershed Plan, Comprehensive Flood Plan, Water Resource Problems on Lower Columbia River Study, Shorelines Industrial and Tourist/Commercial Site Inventory, Port 1 Comprehensive Plan, Port 2 Parks Plan, Cathlamet Comprehensive Plan, and other related documents to determine relationship of these plans to proposed growth areas.

⇒ Evaluated "Carrying Capacity" (environmental constraints, water resources, infrastructure capacity) against "Developable Areas", using population forecasts, different growth scenarios and using proposed policies for economic development, housing, transportation, capital facilities, and land use.

⇒ Cross-checked the map against the policies and to incorporate public feedback

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Issues & Trends affecting Wahkiakum County

- **In-Migration will be the driving force for growth for the foreseeable future**
  - Deaths are projected to outnumber births through the year 2025
  - Increasing numbers of seasonal residents with impacts to public services
  - 2000: 1 in every 6 persons is from somewhere else
  - 2025: 1 in 4 persons (25%) will be from somewhere else, due to in-migration
  - Cultural shifts, community values, different expectations for services and government?
  - A target growth rate of 1.5% per year will bring the county population from 3,900 to 5,509 by the year 2025

- **Wahkiakum has one of the highest proportions of population over age 65** of all of Washington State's 39 counties.
  - Lower numbers of volunteers available and able for fire suppression, emergency medical services, etc.
  - Higher level of senior exemptions from property tax levies – Wahkiakum has the highest rate of senior exemptions in the state, at 19.4%. The next-highest county is Klickitat, at 13.3%

- **The ability to maintain efficient volunteer services is declining**
  - Increased out-commuting to work means younger people are not available
  - Increased proportions of persons over age 65 decreases size of volunteer pool

- **Housing costs rising faster than income, especially for first time homebuyers**
  - First time homebuyers earning the median income cannot afford to buy the average home in Wahkiakum County
  - Waterfront and amenity property sales are driving up assessed values and housing costs
  - The wage needed for affordable rent is $11.33 per hour

- **Student populations are declining and will continue to do so for the next decade or more.**
  - State funding formulas are based on full-time student enrollments which are declining
  - Wahkiakum County has the highest rate of senior exemptions in the state. The exemption also applies to special levies.

- **Family wage jobs needed to attract and retain young people and families**
  - The manufacturing industry has been declining locally, statewide, and nationally since the early 1980's. This sector has traditionally offered high wages, job stability, and job "spin-offs" of 1.5 to 3 jobs for every manufacturing job.
  - Lower paying jobs in the service sector have replaced many manufacturing jobs, which has the effect of reducing personal income
  - The county experiences a high degree of "retail leakage" by spending consumer dollars in adjoining counties

- **Infrastructure and development costs are borne primarily by existing residents and the existing tax base**
  - Growth is subsidized by the current residents of the county; growth brings advantages as well as disadvantages
  - Managed growth can increase efficiency of taxpayer dollars

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- **Resource base shifting is occurring as people convert resource lands to other uses**
  - The number of farms is declining but acreage is increasing
  - Commodity farming is going the way of the dinosaur. Dairying has been particularly hard-hit by consolidation within the industry, escalating land prices and environmental regulation
  - Alternative agricultural production is viable on small acreages, and are increasing in number
  - Timberlands are periodically re-sold, with some conversion to residential uses expected.

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Policy Summary

Wahkiakum County
Comprehensive Plan Goals

1. Direct growth in a manner that will preserve the rural character of the county and protect the public health, safety and general welfare, without unduly jeopardizing the rights of the individual.

2. Promote economic diversification that supports the creation of family-wage jobs in order to:
   - allow young people the opportunity to live, work and raise families within Wahkiakum County;
   - develop the tax base necessary for maintaining quality schools and other public services;
   - provide a ready local market for retail goods and services; and,
   - offer local employment opportunities that contribute to community involvement.

3. Encourage growth and employment opportunities that are compatible with the rural character of the county by:
   - encouraging small- to moderate-sized employment opportunities rather than large growth centers;
   - targeting investments in site-specific infrastructure in order to avoid sprawling development patterns; and,
   - addressing the impacts of growth on surrounding land owners.

4. Support economic development efforts that seek to:
   - increase access to the tools and resources needed for economic growth;
   - encourage the retention and expansion of existing businesses;
   - support value-added enterprise that generates additional local income from the local natural resource base; and,
   - offer a range of economic diversity to reduce the impact of cyclical swings in natural resource-based industries; and,
   - minimize the tax-supported costs of new development.

5. Maintain an affordable tax structure through preserving and expanding the tax base of the county and by making strategic investments in infrastructure.

6. Encourage the development of programs and/or facilities that address the unique needs of youth and seniors throughout the county.

7. Develop a transportation network that provides safe and efficient movement of people, goods and services and offers compatibility with the rural character of the county.

8. Encourage the provision of housing stock needed to meet the needs of current and future residents.

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9. Provide public facilities and services in a fiscally responsible manner and at levels adequate to ensure the health and safety of citizens.

10. Protect the land and water environments essential to natural resource-based economic activities, fish and wildlife habitats, rural lifestyles, outdoor recreation and other open space.

11. Encourage preservation of the county's heritage as exemplified thorough sites and buildings of archaeological, historical and cultural significance.

12. Foster coordinated planning and decision-making between federal, state, and local governments with respect to public services and facilities, economic diversification, environmental protection and other appropriate programs.

13. Promote public involvement by individuals and groups in the planning and decision-making processes of local government.

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Economic Development

GOALS

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   - offer a range of economic diversity to reduce the impact of cyclical swings in natural resource-based industries; and,
   - minimize the tax-supported costs of new development.

POLICIES

1. Broaden the range of products and services available for purchase to markets located both within and outside of the community, and minimize spending ("sales leakage") that occurs outside of the county. Such efforts would decrease non-local tax payments, encourage local investment opportunities, and promote "Buy Local" or "Buy Wahkiakum" campaigns for goods and services. Sectors most appropriate for such targeted technical assistance include:
   - ✓ Value-added industry (forest/fish/farm products)
   - ✓ Small business development
   - ✓ Tourism development, including arts and entertainment venues
   - ✓ Business retention and expansion/improved efficiency of existing firms
   - ✓ Expansion of local trade and service sectors
   - ✓ Recruitment of business and industry

2. Identify and promote alternative forms of forest ownership and/or management that will provide opportunities for stable employment while enhancing public values, including:
   a) Long-term commercial viability of resource lands
   b) Protection of the watershed and environmentally sensitive areas

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c) Public access for recreational uses such as camping, hiking, hunting and wildlife viewing.

3. Increase the county's competitiveness to attract new business investment through:
   - ✓ Local involvement in workforce development programs
   - ✓ Strategic infrastructure investments
   - ✓ Availability of "shovel-ready" sites suitable for manufacturing or industrial use, whether integrated into a planned business/industrial park environment, or resulting from redevelopment of abandoned sites
   - ✓ An incubator facility geared towards:
     - value-added industries (farm/forest/fish)
     - technology-based businesses
     - entrepreneurs
   - ✓ Appropriate financial and/or other incentives and technical assistance

4. Develop land use policies that establish guidelines for rural character at the landscape scale, with special emphasis given to the visual quality of "community gateways". This effort should include:
   - ✓ Supporting conservation of structures and sites that reflect the county's heritage, define Wahkiakum County's unique sense of place, and identify a distinctive market niche.
   - ✓ Encouraging adoption of the "Main Street" approach for achieving and maintaining vital commercial centers in towns and villages.
   - ✓ Developing a "Wahkiakum" brand concept to market locally produced goods and services and for community marketing efforts that is based upon cultural, historical, natural or other local features and resources.

5. Develop a multi-modal transportation system to serve the economic, recreational, and utilitarian needs of the community and its visitors. In particular, examine:
   - ✓ Scenic byway designation or development of corridor management plans for all state highways within the county (S.R. 4 and S.R. 409) to accommodate recreational use and achieve economic development goals related to tourism and community marketing.
   - ✓ Accommodations for bicycling in the design and improvement of major roadways
   - ✓ Establishing an off-road trails network throughout the county in key areas, such as Grays River, Pillar Rock, Skamokawa, Cathlamet)
   - ✓ Intra-county transportation to assist visitors traveling by other modes of transportation (e.g., boaters)
   - ✓ Identifying needed support services (bike rentals, food concessions, laundromat, etc.) at transportation nodes (marina, ferry landing, city dock, etc.)
   - ✓ Public transit needs, particularly for a growing population of older citizens
   - ✓ Alternative modes of transportation, hauling and distribution that may assist in economic development efforts, such as barge, tour boats, and water/air taxi

6. Explore methods for efficient and effective delivery of critical utilities and infrastructure, including:
   - ✓ Targeting of existing deficiencies and appropriate growth areas
   - ✓ Consolidated service areas
   - ✓ Technological innovations and alternative approaches
   - ✓ Non-traditional financing sources
   - ✓ Technical assistance for operational improvements

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7. Develop a Strategic Technology Plan that assesses needs (including potential use/demand), identifies goals for addressing critical issues, and specifies an action plan for implementation. This plan should:
   - ✓ Identify gaps in existing telecommunications infrastructure by pinpointing problems that limit economic development, service delivery, or quality of life
   - ✓ Determine which problems are most pressing and their relative priority
   - ✓ Expand financial resources and create opportunities for partnerships by identifying common interests
   - ✓ Build more broad-based support for new telecommunications applications
   - ✓ Provide a mechanism to coordinate multiple strategies (e.g., attracting outside investment through aggregated demand, recruiting a major telecom user, cultivating increased local demand; or, collaborating with local providers to meet a particular need, such as telemedicine or distance learning)

8. Increase the availability of science and technology resources to benefit local economic development efforts through:
   - ✓ Employment and training programs
   - ✓ Educational programs coordinated with K-12, colleges, technical schools and businesses that increase awareness of advances in science and technology
   - ✓ Investment in "innovation infrastructure" (local infrastructure to access consumer-driven technology as well as industrial technology/knowledge transfer)
   - ✓ Building upon existing resources, community institutions and the needs of local industry
   - ✓ Assistance to existing firms to expand access and use of technology
   - ✓ Supporting entrepreneurial development
   - ✓ Providing access to investment capital
   - ✓ Building capacity for technology development at the local level

9. Develop a mechanism to facilitate on-going intergovernmental coordination among general purpose (county and town) and special purpose (PUD, Ports, etc.) districts for the purposes of:
   - ✓ Identifying appropriate roles and partnerships to implement economic development programs and activities.
   - ✓ Coordination of economic development programs with community institutional partners (education, medicine, business, finance, etc.)
   - ✓ Preparing a locally coordinated program of action at the regional, state or national levels to assist in local community development efforts

10. Expand the available financial infrastructure by:
    - ✓ Exploring partnership potential with traditional lenders in the community/region
    - ✓ Developing relationships with '"double-bottom line" and alternative lenders
    - ✓ Creating opportunities for local investment networks
    - ✓ Facilitating formation of cooperatives or other types of business organizations that can access other sources of capital and technical assistance (particularly for value-added industries)
    - ✓ Exploring the value of a local community development corporation (CDC) for quick response to business needs
    - ✓ Assessing the need for a revolving loan fund to assist with business investment

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11. Build social capital and social infrastructure needed to support rural entrepreneurship, small business success and long-term community vitality through:
    - ✓ Leadership development programs for youth and adults
    - ✓ A Capacity Inventory to identify existing skills, resources, and assets that can be used to increase overall economic prosperity; the inventory can assist in developing new enterprises, linking skills to employers, discovering market opportunities, creating a local skills bank, instituting a learning exchange, or identifying cultural or artistic resources
    - ✓ Cultivating a community environment supportive of entrepreneurship, or creation of an entrepreneurial support organization, such as a "league" system
    - ✓ Development of a local Business Assistance Team
    - ✓ Co-operatives, flexible business networks, or other organizations to assist in supply, production, processing, distribution, marketing, or other functions

12. Protect resource lands (such as prime farmland, commercial forestland and mineral deposits) and environmentally sensitive areas (such as floodplains, wetlands, geologic hazards, and aquifer recharge areas)from inappropriate development through:
    - ✓ Identifying and designation of natural resource areas essential for economic development to allow extraction and harvesting of these resources
    - ✓ Consideration of Right-to-Farm/Right-to-Forestry provisions
    - ✓ Reserving waterfront areas for water-dependent uses
    - ✓ Review of local Critical Area and Shoreline Master Program ordinances for overall consistency with the comprehensive plan

13. Promote land use policies aimed at increasing the range and type of housing available within the county.
    - ✓ Housing for the workforce should address a variety of types and price ranges, conveniently located to employment opportunities, and located in appropriate growth areas where infrastructure is planned or available
    - ✓ Child care facilities should be encouraged within convenient proximity to employment and educational centers
    - ✓ Assisted living facilities should be developed with proximity to essential services
    - ✓ Establish a plan to develop community facilities—such as parks and community centers—that create amenities attractive to families and retirees.

14. Promote workforce development through coordination of local K-12 educational programs with higher education, advanced training, and the needs of local/regional industry clusters.

15. Involve local business and industry clusters in identifying interests and opportunities for partnerships to implement Wahkiakum County's economic development program.
    - ✓ A cluster convening on value-added forestry opportunities might include small forest landowners, industrial forest landowners, wood product manufacturers and crafters. The tourism cluster discussions would involve all facets of the hospitality industry, including accommodations, restaurateurs, artists, retail merchants, transportation and related services.

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Housing

GOALS

1. Promote a range of housing types and densities to provide an adequate supply of housing that offers choices in style and cost.

2. Promote residential development that respects and blends with the county's rural character and scenic views.

3. Ensure access to housing that meets acceptable standards of safety and sanitation for every citizen of the county.

4. Promote the restoration of historic properties and older housing stock.

5. Ensure fair and equal access to housing for all people throughout the county, regardless of race, color, national or ethnic origin, religion, creed, age, sex, marital status, or disability.

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POLICIES

General

1. Encourage development of housing stock adequate to meet projected needs and demands due to:
   - ✓ Population growth
   - ✓ Desire to attract families and retirees
   - ✓ Employer needs

2. Promote the livability of neighborhoods and communities through investment in adequate improvements, facilities and services (such as drainage, streets, schools and recreational opportunities).

3. Encourage larger residential developments to incorporate a range of housing types and choices into overall project design. Discourage enclaves of higher density housing development.

4. Large subdivisions or extensive developments should incorporate a mix of uses to help meet the day-to-day needs of the community, such as neighborhood-oriented retail and services.

5. Encourage a variety of housing types, densities and price by encouraging creative site planning and providing adequate public services and facilities.

6. Identify incentives and other tools that can be used to meet community priorities, such as public recreational access, conservation of sensitive lands, development of affordable housing, and rehabilitation of the existing housing stock.

7. Encourage intensive residential developments to locate close to existing towns and villages with employment, infrastructure and services. Encourage large-lot developments to locate in outlying, rural areas.

8. New residential uses located near resource lands (farming, forestry, mining) should incorporate very low densities to minimize conflicts with standard resource management practices.

9. Develop a mechanism to tie individual building permits and real estate transactions with notification of nearby established resource uses.

10. Allow opportunities for home-based businesses and cottage industries that do not generate nuisances detrimental to the health, welfare, and rural lifestyle of neighboring properties.

11. Provide residential areas with adequate protection from noise, odors, visual and other off-site impacts generated by higher density residential developments or other types of intensive land uses.

12. Support efforts to maintain and improve the physical condition of existing housing stock and the livability of neighborhoods.

13. Provide practical development patterns with pedestrian facilities in order to promote a sense of community and safety.

14. Allow residential development on smaller lot sizes along the county's waterfront and waterfront view areas, when such development can be accomplished in a manner that addresses the protection of environmentally sensitive areas. Development of this type should incorporate utility services when located within reasonable proximity of the site.

Environmental Services & Infrastructure

15. Review subdivision proposals for their impact on water quality and quantity. Encourage connection to existing utility systems and/or planned extensions within the area.

16. Site buildings in the areas that most suitable for development. Avoid placement of buildings in environmentally sensitive areas, such as steep slopes, frequently flooded areas or within geologically hazardous areas.

17. Establish tools and methods (e.g., guidelines, codes, and technical assistance) to encourage low-impact development techniques to reduce environmental impacts and lower development and housing costs.

18. Reduce the amount of constructed or "hard" infrastructure to the greatest extent feasible. Retain existing natural drainage ways. Use curbing only where necessary. Provide trails, in lieu of sidewalks, that can be used by pedestrians, equestrians, and others to provide alternative travel routes.

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19. Discourage direct access from individual lots to arterial highways and major collectors in a proposed residential subdivision.

20. Limit the number of residences served by cul-de-sacs or dead-end streets, or encourage multiple access points within rural subdivisions that use cul-de-sac street design by promoting “eyebrow” street connections.

21. Encourage a “grid” street pattern or a modified grid where development is of a high intensity.

22. Encourage development of local streets so that they:
    - ✓ avoid long, straight segments
    - ✓ include reverse curves
    - ✓ enhance the “line-of-sight” views of key features such as village greens, water bodies, meadows or playing fields
    - ✓ include “single-loaded” streets at appropriate locations, so that there are houses on only one side of a street that follows along natural areas or around a central feature, such as a village green
    - ✓ create perpendicular, or “T” intersections that reduce traffic speed
    - ✓ provide street and trail connections with other parts of the neighborhood and with adjoining properties that may be developed in the future, by utilizing “stub-street” extensions.

23. Promote pedestrian ways and with convenient access points that allow links with other developments, future expansions, and open space.

Protecting Rural Character

24. Encourage new developments of residential areas to:
    - ✓ respect the natural features of the land;
    - ✓ provide access to an interconnected network of “green infrastructure” or permanent open spaces along stream corridors, woodlands and other similar areas for multiple uses, such as trails, wildlife habitat, stormwater management, and other desirable functions;
    - ✓ incorporate historic, cultural, or natural resources into site planning; and,
    - ✓ use local building and architectural styles.

25. Support clustered development that will result in usable open space for residents’ enjoyment or for resource-based activities, such as a community garden or small farms growing specialty niche agricultural products.

26. Promote the location of buildings and facilities in areas with the least visible impact; e.g., along tree lines, wooded field edges, access roads or natural borders. Avoid placing buildings, structures and roadways on ridgelines and in open fields. Encourage structure heights that are below the crown line of mature, on-site trees in new developments.

27. Consider the impact each development will have on views from surrounding properties when reviewing residential plats.

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28. Encourage large or extensive developments to establish a community focal point, such as a “village green”, park, community center, or other unifying feature.

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Natural Environment

Resource Lands & Critical Areas

RESOURCE LANDS

AGRICULTURE

Goal

1. Conserve prime farmlands as a local natural resource that is essential to the agrarian tradition of living off the land, fosters growth in value-added agriculture, and maintains the scenic qualities and working landscapes that are fundamental to the rural character of Wahkiakum County.

Policies

1. Designate areas as "Agriculture" on the plan map for a broad range of agricultural uses and protection from encroachment by incompatible uses.

2. Review resource lands designations on a periodic established schedule to consider whether economic, social or other trends indicate the need to enlarge or reduce the amount of lands designated as resource lands.

3. Encourage land uses that support agricultural activities in areas designated for agriculture.

4. Protect existing agriculture from having to constrain normal operations in favor of incompatible adjacent land uses. (Designate locations and density of new, non-farm developments.)

5. Extend preferential treatment for agricultural uses in cases of land use conflicts arising between incompatible uses on lands designated as “Agriculture” where it is evident that the agricultural use employs practices consistent with, or equivalent to, recognized Best Management Practices.

6. Promote development designs within or adjacent to designated resource lands (and lands being actively farmed) that use techniques to avoid or reduce impacts from land use incompatibility. Examples of methods that help minimize land use conflicts include conservation subdivision design, clustered development, performance standards, and the use of berms and/or screening.

7. Encourage compatible land uses adjacent to designated resource lands in order to minimize conflicts associated with activities generating dust, noise, odors, liability, vandalism etc.

8. Promote tourism uses related to the county’s natural resource base of agricultural, forestry and riverine activities.

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FOREST LANDS

Goal

Identify forest resource lands of long-term significance and protect them as a natural resource essential to maintaining the traditional resource-based economy, developing value-added forest industries, and maintaining the working landscapes fundamental to the rural character of Wahkiakum County.

Policies

1. Conserve areas designated as "Forestland" on the plan map for timber management to the maximum extent possible.

2. Encourage land uses related to, supportive of, or complimentary with forest management and timber harvesting activities in areas designated for forestry.

3. Discourage incompatible land uses from encroaching upon designated forestlands.

4. Extend preferential treatment for forest uses in cases of land use conflicts arising between incompatible uses on lands designated as “Forestlands,” where it is evident that the forest use employs practices consistent with, or equivalent to, recognized Best Management Practices.

5. Promote development designs within or adjacent to designated resource lands that use techniques to avoid or reduce impacts from land use incompatibility. Examples of these methods include conservation subdivision design, clustered development, performance standards, and the use of berms and/or screening.

6. Encourage compatible land uses adjacent to designated resource lands in order to minimize conflicts associated with activities generating dust, noise, odors, liability, vandalism etc.

7. Identify and promote alternative forms of forest ownership and/or management that will provide opportunities for stable employment while enhancing public values, including:
    a. Long-term commercial viability of resource lands
    b. Protection of the watershed and environmentally sensitive areas
    c. Public access for recreational uses such as camping, hiking, hunting and wildlife viewing

8. Promote tourism uses related to the county’s natural resource base of agricultural, forestry and riverine activities.

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MINERAL RESOURCE LANDS

Goal

1. Identify mineral resource lands of commercial significance in order to provide essential materials for local and regional use.

Policies

1. Protect mineral and aggregate resources of commercial significance where utilization of the site has not already been compromised by incompatible adjacent land uses or development.

2. Discourage incompatible uses from encroaching upon and compromising the productive use of mineral and aggregate resources.

3. Promote development designs within or adjacent to designated resource lands that use methods to avoid or reduce impacts from land use incompatibility. Examples of these methods include conservation subdivision design, clustered development, performance standards, and the use of berms and/or screening.

4. Encourage compatible land uses adjacent to designated resource lands in order to minimize conflicts associated with activities generating dust, noise, odors, liability, vandalism etc.

5. Reclaim sites used for the extraction of mineral and aggregate resources in a manner consistent with applicable state and local laws.

6. Promote tourism uses related to the county's natural resource base of agricultural, forestry and riverine activities.

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RIVERINE AREAS

Goal

Protect, preserve and restore aquatic resources, shorelines, and related upland areas as local natural resources essential to maintaining the traditional resource-based economy, developing value-added industry, maintaining working landscapes and scenic qualities fundamental to the rural character of Wahkiakum County.

Policies

1. Protect the integrity and encourage restoration of the natural functions and values of river systems and watersheds throughout the county.

2. Review proposed projects and activities for impacts at the watershed or landscape scale and recommend development tools and techniques to address impacts caused by specific uses, as well as cumulative impacts.

3. Promote development designs that use techniques to minimize impacts to the watershed. Examples of such techniques include low impact development methods, green building techniques, conservation subdivision design, and utility extension policies.
4. Identify causes or sources of environmental degradation and work with property owners to identify feasible solutions to redress or eliminate these impacts.

5. Encourage natural fixes and bioengineering techniques, where possible, to address environmental impacts of development on the watershed. Examples of such techniques include using live/dead plants and inorganic materials to prevent erosion, control sediment and other pollutants, providing habitat restoration of native vegetation on river banks to enhance natural decontamination of runoff before it enters the river, and creation of wetland systems for the treatment of storm water.

6. Work with federal, state and local agencies to monitor watershed health and adapt local approaches where the need for such changes are indicated.

7. Promote tourism uses related to the county's natural resource base of agricultural, forestry and riverine activities.

CRITICAL AREAS (Environmentally Sensitive Areas)

Goals

1. Protect the public health, safety and welfare and expand opportunities for economic growth and prosperity by protecting air and water quality and avoiding the unnecessary expenditure of public revenues generated by inappropriate development in areas susceptible to natural disasters and hazards.

2. Strive for balance among potential conflicts between economic development and environmental protection objectives when dealing with state, federal and local agencies and other county stakeholders.

Policies

1. Land use decision-making and development review should be implemented in a manner that protects the functions and values of identified Critical Areas within the County.

2. Floodways and inherently unstable slopes are not suitable for development and should be avoided wherever feasible. Developments subject to damage or that could result in loss of life should not be located in areas of known natural disasters and hazards (e.g. areas potentially subject to flooding, flash flooding, saturated soils or high groundwater, sloughing, landslides, creeping, eroding, rock fall, etc.) unless it can be demonstrated that the development is sited, designed and engineered for long term structural integrity, and that life and property on and off-site are not subject to increased hazards as a result of the development.

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3. Lands subject to natural hazards should be used in ways that avoid or minimize exposure of life and property to those hazards. Suitable uses include agriculture, recreation, very low density residential, water dependent uses or other uses that will not be significantly impacted by potentially hazardous conditions.

4. Encourage preservation of natural areas that have scientific, research, or educational significance.

5. Reserve unbuildable areas, publicly owned lands, and biologically sensitive natural areas such as rivers, creeks, ridges and slopes to create an integrated, contiguous pattern of open lands that serve multiple functions, such as wildlife habitat/migration corridors, hiking trails, recreational uses, stormwater retention, and/or buffers between incompatible uses.

6. Encourage private development that incorporates design approaches that minimize environmental degradation and maximize functional open space networks. Examples of such approaches include low impact development techniques and conservation subdivision design.

7. Apply land use designations and review development proposals to avoid fragmentation of corridors or areas identified through best available science as important for protecting regional bio-diversity. Such actions should not interfere with continued use of lands historically used for the production of food, agricultural products, commercial timber production, grazing of livestock, or for the extraction of minerals in the accustomed manner and in accordance with best management practices.

8. Identify and protect natural drainage areas and watersheds. Developments which have the potential for significant individual or cumulative impacts on ground and surface water quality should be avoided or sited and designed so as to avoid or mitigate those impacts.

9. Identify and protect critical fish and wildlife habitat from destruction or encroachment by incompatible uses.

10. Identify and designate for protection those natural wetlands (marshes, sloughs, shorelines, etc.) that are important for wildlife and game habitat and for recreational uses.

11. Protect the functions and values of Critical Areas from adverse impacts of new agriculture in previously unfarmed riparian corridors and regulated wetlands. Technical, financial and program resources of federal and state agencies should be utilized to identify practices and incentives to protect critical resources.

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Capital Facilities

GOALS

1. Promote and participate in coordinated planning and decision-making among general and special purpose governments.

2. Provide essential public facilities in a manner that protects investment in and maximizes the use of existing facilities and which promotes orderly, compact growth.

3. Ensure that new or extended public facilities and services are made available in a logical, timely and equitable manner.

4. Maintain a safe community with adequate levels of police protection, fire prevention and suppression, and emergency medical services.

5. Support the provision of safe, efficient and effective educational facilities.

6. Maintain existing recreational facilities and encourage additional recreational and cultural activities, such as the development of walking and bicycling trails, for the enjoyment of residents and visitors.

7. Use local resources whenever possible to encourage civic involvement, provide opportunities for contributions through volunteerism, and ensure that citizens have full opportunity to be heard and participate in governmental affairs.

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GENERAL POLICIES

1. Coordinate land use decisions and financial resources with a schedule of capital improvements to correct existing deficiencies, replace worn out or obsolete facilities and accommodate desired future growth.

2. Evaluate and prioritize proposed capital improvement projects using the following criteria:
    a. the need to correct existing deficiencies, replace needed facilities, or to provide facilities for future growth;
    b. elimination of public hazards;
    c. elimination of capacity deficits;
    d. financial feasibility;
    e. consistency with projected growth patterns;
    f. support for new development and redevelopment;
    g. plans of state agencies;
    h. impact to the local budget; and
    i. location and effect upon natural and cultural resources.

3. Evaluate proposed comprehensive plan amendments and requests for new development or redevelopment as to whether they:
    a. contribute to a condition of public hazards;
    b. exacerbate any existing condition of public facility capacity deficits;
    c. increase needs in the Six-Year Schedule of Improvements;
    d. conform with future land uses as shown on the future land use map;
    e. demonstrate financial feasibility when public facilities are provided, in part or whole, by the County;
    f. affect plans and siting of state essential public facilities; and
    g. affect significant cultural and scenic resources or critical natural areas.

4. Direct development to those areas where public services and infrastructure and land characteristics are suited to urban uses and densities.

5. Minimize effects of growth upon agricultural lands, forest resources, and fish and wildlife habitat.

6. Avoid placement of facilities and structures in environmentally sensitive areas, such as steep slopes, frequently flooded areas or within geologically hazardous areas.

7. Promote a natural appearance to facilities such as stormwater ponds and detention/retention areas. Encourage use of materials and finishes that enhance the visual impact of public facilities.

8. Reduce the amount of constructed “hard” infrastructure to the greatest extent feasible. Retain existing natural drainage ways. Use curbing only where necessary.

9. Designate and develop cycling routes and trails for public use.

10. Provide public facilities and services needed to support development in a timely manner to address the impacts created by development.

11. Require all sewer, water, access, streets, drainage and related facility improvements installed in new developments to meet or exceed development standards established by Wahkiakum County

12. Require future development to bear its fair share of facility improvement costs in order to achieve and maintain acceptable levels of service and to limit costs borne by existing taxpayers.

13. Examine and consider funding mechanisms for developer contributions towards fair-share costs of public facility improvements such as drainage, streets, and recreation.

14. Place utilities underground, where feasible, in new developments.

15. Attempt to secure grants or private funds whenever available to finance the provision of capital improvements.

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16. Support and encourage the joint development and use of cultural and community facilities with other governmental or community organizations where there is mutual concern and benefit.

17. Support maintenance dredging at the confluence of tributaries with the Columbia River, particularly where port districts and port and marine facilities are located. Endorse efforts to maintain a system of buoys, lights and channel markers. Encourage placement of dredging materials for beach nourishment and erosion control of affected areas.

Water & Sewer Utilities

18. Promote development that considers alternative water supply sources and does not lead to a proliferation of small community water/sewer systems.

19. Discourage developments that rely on small water systems. Encourage development that utilizes municipal water sources, domestic wells that do not have hydraulic continuity with surface water bodies, or other alternative water supply management approaches outlined in the WRIA 25/26 watershed management plan.

20. Establish minimum county development standards for small water systems to ensure compatibility for eventual hookup to conventional utility systems.

21. Develop a coordinated approach among utility purveyors to determine “fair share” contributions for utility system expansions/extensions. This should include standards for hooking up to systems located within a specified distance.

22. Revenues from sewer and water connection fees should be allocated to system capacity improvements and expansion. Apply this standard to storm water management, should such systems be required or developed.

23. Encourage all water and sewer purveyors to consult with each other for purposes of facility planning, financing, and efficient provision of services throughout the county. Encourage synchronization of utility planning by these entities, and review the comprehensive plan prior to and following development of new or updated utility plans

24. Subdivision developments should ensure that water supplies and flow pressures are provided and maintained throughout the site. Utilities should be sized to accommodate water supply and fire flow for later phases or future expansions.

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Transportation

GOALS

1. Ensure development of a safe, convenient and efficient transportation network to serve current and future residential areas, commercial and industrial developments, as well as visitors to Wahkiakum County.

2. Plan and develop a transportation system that contributes to the county's rural character—one that recognizes and respects the features of the natural environment and minimizes undesirable effects on adjoining land uses.

3. Maintain good circulation and safe roads in order to protect rural character and avoid the need for urban style traffic management techniques.

4. Provide a well-maintained multi-modal transportation system that accommodates automobiles and truck traffic, public transportation, ferry/water transport, future aviation and safe walking and cycling.

5. Develop a trails system that improves and expands public access to waterfront areas throughout the county.

GENERAL POLICIES

1. Ensure that roads are designed to serve their current and anticipated uses as determined by the Comprehensive Plan.

2. Provide for improvements to existing facilities and extensions to the transportation network that will serve new development by updating the county Transportation Improvement Plan (TIP) on an annual basis, and by making application for funding for prioritized projects.

3. Submit identified improvements along State Route 4 and State Route 409 for consideration in the next SWRTPO Regional Transportation Plan update. These should include, at a minimum:

- ✓ Future access policies to address growth and preserve highway capacity;
- ✓ Accommodation of pedestrian/bicycling activities by widening during regularly scheduled state pavement maintenance;
- ✓ Traffic calming improvements to enhance pedestrian and cyclist safety;
- ✓ Information kiosks for visitor information and interpretive signage for historic and cultural sites;
- ✓ Scenic byway grant requests to encourage improvements that would enhance the heritage, scenic, and cultural features of the corridor and to enhance marketing and tourism efforts;
- ✓ Amenities and improvements near the Wahkiakum Ferry landing area to accommodate visitors and commuters, and develop a plan for marketing/service delivery (e.g., bike rentals, food, signage);
- ✓ Sufficient vehicular access to recreational sites and facilities located along state routes.

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- ✓ Examination of the need for improvements/replacement of deficient and structurally obsolete bridges along S.R. 4.

4. Designate a Level of Service (LOS) standard of "C" or better for state highways, major arterials and minor arterials. Acceptable levels of traffic on collector roads and local streets should be established through street design standards. The Level of Service shall be calculated according to the most recent *Highway Capacity Manual* or approved alternative method and evaluated using the appropriate road design standards for the type and character of the intended transportation uses. (LOS "C" represents a "stable" flow of traffic, with individuals significantly affected by the presence of others in the traffic stream; level of comfort declines noticeably; speed is affected by other users, and freedom to maneuver requires substantial vigilance. LOS "C" is the standard recommended for rural areas in the Southwest Washington Regional Transportation Plan and LOS "D" is the standard recommended for urban areas.)

5. Control direct access to primary arterial highways and encourage multiple or shared access points for non-residential uses. Consolidate access to properties along state highways and major/minor arterials whenever possible to preserve the capacity of the facilities and to reduce potential safety conflicts. Maintain WSDOT access standards on state highways.

6. Protect the functional efficiency and safety of the county's existing and proposed arterials, collectors, and local streets through road design and access controls, with particular attention to:
   - ✓ Roadway widths, pavement materials, curb and sidewalk standards, and street lighting;
   - ✓ Utilizing "low impact" development techniques in rural areas—such as trails instead of sidewalks, and on-site detention/retention of storm water instead of curbs—to protect rural character, reduce stormwater runoff, and promote aquifer recharge while reducing long-term maintenance costs;
   - ✓ Restricting location and number of access points to improve safe movement between vehicles, pedestrians and bicyclists;
   - ✓ Properly integrating new streets with the existing and proposed circulation system; and,
   - ✓ Promoting a system of collectors and local streets that serve residential and commercial areas, while minimizing the traffic and visual impact on adjacent arterial highways.

7. Encourage development of local roadways that:
   - enhance the "line-of-sight" views of scenic features;
   - create perpendicular, or "T" intersections that reduce traffic speed and provide better sight distance characteristics; and,
   - provide street and trail connections with adjoining properties that may be developed in the future, by utilizing "stub-street" extensions.

8. Limit the number of residences served by cul-de-sacs or dead-end streets, or encourage multiple access points within rural subdivisions that use cul-de-sac street design through tools such as "eyebrow" street connections.

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9. Encourage a “grid” street pattern or a modified grid where development is of a higher intensity, to reduce traffic congestion and improve safety.

10. Construct roadways so that they follow existing contours as much as possible to minimize cut and fill and to protect the rural character of the area.

11. Coordinate street and utility improvements with other utility providers whenever possible to minimize pavement damage and maximize convenience to the traveling public.

12. Promote positive working relationships between the county, the Town of Cathlamet, and the Washington State Department of Transportation to assist in:

    - ✓ Developing partnerships between the County and the Town to determine alternative uses for the town dock and costs of associated improvements;
    - ✓ Scenic byway funds for activities related to tourism and marketing;
    - ✓ Completing a Route Development Plan for S.R. 4 to prioritize needed improvements;
    - ✓ Determining improvements along S.R. 409 to accommodate increased use of the roadway by bicyclists;
    - ✓ Continued operation of the Wahkiakum Ferry and improvements to the ferry area;
    - ✓ Acquisition of a new ferry to support long-term needs;
    - ✓ Public transit system operation, maintenance, expansion and governance;
    - ✓ Siting criteria and financing assistance to explore feasibility of local airport

13. Support maintenance dredging at the confluence of tributaries with the Columbia River, particularly where port districts and port and marine facilities are located. Endorse efforts to maintain a system of buoys, lights and channel markers. Encourage placement of dredging materials for beach nourishment and erosion control of affected areas.

Alternative Travel Modes & Rural Character

14. Support efforts to improve and expand public transportation between communities, services and destinations within the region, including service at the West End to Pacific County and to Longview at the east end.

15. Provide off-road trails that can be used by pedestrians, equestrians, and others to provide alternative travel routes.

16. Encourage development of cost effective roadway facilities for pedestrians and bicyclists that are connected with important regional and local destinations.

17. Promote establishment of a multi-purpose, interconnected trails network featuring convenient access points that link with nearby communities and recreational, open space or waterfront areas.

18. Encourage designation of walking, cycling, or driving loops that cater to various markets (e.g. bird watching areas, geology formations, local artist workshops, farms/ranches, historic buildings, etc.)

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19. Support suitable traffic calming techniques along the county's major roadways to slow traffic and enhance safety, in consultation with the Washington State Department of Transportation and the Town of Cathlamet.

20. Develop well-designed "gateways" (entrances and exits) to each community within the county located along a state highway, to promote tourism as well as public safety.

21. Develop and/or improve signage to direct travelers to significant landmarks, heritage sites, recreational opportunities, and scenic areas.

22. Encourage compatibility of roads with the character of residential neighborhoods and commercial districts in which they are located.

23. Explore the feasibility of developing a small airport to serve the county, giving attention to appropriate siting criteria, possible sites, funding sources, and maintenance authority.

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Land Use

GOALS

1. Direct growth in a manner to protect the rural character of the county, enhance social and economic stability, and protect the public health, safety and general welfare through established standards of land subdivision and land development.

2. Protect the quality of the county's natural environment.

3. Ensure that public facilities and services are provided in a fiscally responsible manner and at levels adequate to ensure the health and safety of citizens.

4. Promote distinctive, attractive communities with a strong sense of place, using natural, historical and other community assets to their best advantage.

GENERAL POLICIES

1. Evaluate and identify appropriate locations to encourage growth, giving consideration to:
   - ✓ Maintaining the rural qualities and landscape;
   - ✓ Infrastructure capacity, as well as the costs of expansion and maintenance (water, sewer, transportation);
   - ✓ Capacity and costs to provide public services, including schools, public safety, recreation, and health;
   - ✓ Environmental constraints, such as flooding and geologic hazards
   - ✓ Environmental quality, public health, and carrying capacity of the land;
   - ✓ Natural amenities such as views and waterfront access
   - ✓ Economic development objectives

2. Maintain active, working landscapes by designating resource lands for those uses, and by reviewing development proposals for their short- and long-term impacts on resource uses. Develop a mechanism to tie building permits and real estate transactions with notification of nearby established resource uses.

3. Allow opportunities for home-based businesses and cottage industries that do not generate nuisances detrimental to the health, welfare, and rural lifestyle of neighboring properties.

4. Protect residents from off-site impacts due to noise, odor, smoke, vibration and other undesirable effects of proposed commercial or industrial land uses. Encourage visual screening and noise buffers for incompatible uses that create off-site impacts.

5. Review proposals for commercial and industrial uses for consistency with the rural character of the community and for their needs for water service and waste disposal.

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6. Designate suitable areas for beneficial commercial and industrial uses in order to protect them from less suitable or incompatible developments.

7. Promote shared public parking areas and access points to reduce paved surfaces, improve safety, and protect highway capacity along major roadways.

8. Regulate commercial signage to encourage aesthetic design, limit visual clutter and ensure adequate spacing for public safety.

9. Encourage land use development practices that respect the physical lay of the land and blend well with the rural character of the community, and does not generate a nuisance detrimental to the health, welfare and rural lifestyle of neighboring properties.

10. Promote construction practices that minimize the impact of site disturbances caused by heavy construction of roads and other improvements.

11. Require hillside developments to use or install measures that will control or eliminate stormwater runoff and erosion.

12. Encourage development that uses “low impact” design and construction techniques that reduce paved surfaces and allow water infiltration.

13. Promote dedication of cycling and walking trails through the subdivision process, dedications of land, and other means.

14. Encourage development that incorporates or provides public access to shorelines and forests.

15. Provide public parks along shorelines and other significant features to ensure adequate public access to the county’s environmental and scenic amenities.

16. Retain native vegetation to the greatest extent practicable and avoid large expanses of high-maintenance, non-native cultivated areas.

17. Discourage extensive or complete removal of trees along ridgelines when property is developed.

18. Limit development in areas where there are physical constraints such as slopes, wetlands, floodplains, aquifer recharge areas, and priority wildlife habitat, and in areas of active resource use, such as prime agricultural soils and industrial forestland.

19. Correlate the intensity of development with environmental constraints, watershed capacity, septic suitability, historic character, existing land use patterns, the capacity of the road network, and the availability of infrastructure and community facilities.

20. Discourage developments that rely on small water systems. Encourage development that utilizes municipal water sources, domestic wells that do not have hydraulic continuity with surface water bodies, or other alternative water

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supply management approaches outlined in the WRIA 25/26 watershed management plan.

21. Direct intensive or high density developments to locate close to existing towns and villages with appropriate infrastructure and services.

22. Support re-development efforts within existing communities.

23. Large subdivisions or extensive developments should be encouraged to incorporate a mix of uses to help meet the day-to-day needs of the community, such as neighborhood-oriented retail and services.

24. Require a master plan for entire parcels when any portion of a site is proposed for phased land subdivision or development.

25. Identify appropriate development incentives to help meet community priorities, such as public recreational access, conservation of sensitive lands, and/or development of affordable housing.

26. Develop an urban growth boundary jointly with the Town of Cathlamet that will ensure that public facilities and services are available and provided in a logical, cost-effective manner. Promote urban densities and intensive developments to locations within the urban growth boundary.

27. Create an implementation framework that provides predictability for real estate investments and encourages the type of development desired by the community, with features that:
    - ✓ Offer alternative approaches to implement the community vision;
    - ✓ Identify land use tools that are simple to administer;
    - ✓ Encourage quality development rather than restricting growth;
    - ✓ Address off-site impacts of development on neighboring properties;
    - ✓ Minimize on-site restrictions.

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Rural Character

28. Define communities by creating or maintaining a clear distinction between town, village and countryside.

29. Designate community entrances or gateways and identify methods to reinforce those qualities that yield a strong “sense of place.”

30. Encourage the development of sites and subdivisions in a manner that:
    - ✓ respects the natural features of the land;
    - ✓ incorporates historic, cultural, or natural features into the site design;
    - ✓ identifies natural areas to provide stormwater runoff, wildlife habitat, and recreational areas;
    - ✓ uses low-impact development techniques to reduce stormwater runoff and reduces the amount of “gray infrastructure. “

31. Support clustering of development that will result in open space for residents' enjoyment or for resource-based activities, such as a community garden or small farms growing specialty agricultural products.

32. Identify waterways, wetlands, woodlands, and other natural features that can form interconnected networks of functional open space to provide stormwater retention, wildlife migration corridors, and recreational trails. Encourage landowners to develop property around these networks and to avoid fragmenting open space into small, isolated pieces.

33. Promote the location of buildings and facilities in areas with the least visible impact; e.g., along tree lines, wooded field edges, access roads or natural borders. Avoid placement of buildings, structures and roadways on ridgelines and in open fields. Encourage structure heights that are below the crown line of mature, on-site trees along ridgelines.

34. Encourage development that is sited, designed and constructed to preserve and enhance scenic views, natural features and working landscapes visible from major roadways.

Historical & Cultural Resources

35. Preserve and promote conservation of historic features and cultural landmarks for the education and enjoyment of residents and for the promotion of tourism and other economic benefits.

36. Encourage development patterns that incorporate historic, archeological, cultural, and scenic features into the site design.

37. Encourage adaptive reuse of existing structures (barns, farmhouses, etc.) for recreation, community facilities, commercial uses, or as "camouflage" to house infrastructure.

38. Promote national, state, or local register designations to access financial incentives for restoration.

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Implementation Strategy

The following programs, projects and activities were developed from the Comprehensive Plan policies. These activities hold the keys to implementation of the Comprehensive Plan. It specifies what actions are needed in order to achieve the community's vision of how it wants to develop over the next twenty years.

Key Regional/State/Federal Coordination Issues

Establish and/or continue efforts by local elected officials and local agencies to facilitate action to achieve the desired outcomes for the following issues:

1. Erosion control along the Lower Columbia River
2. Dredge spoil disposal (from Columbia River deepening and other projects)
3. Maintenance dredging of tributaries to the Columbia River (particularly Grays River, Deep River, Skamokawa Harbor, Elochoman Marina, Cathlamet Channel, Birnie Slough, Welcome Slough)
4. Local/state property tax reform to encourage continuation of resource uses and to address inflationary property reassessments that displace long term/older residents from their homes.
5. Agencies which develop administrative rules and procedures that supersedes original intent/statutory authority.
6. Proliferation of Group B water systems that do not meet development standards for Group A connections and equivalent requirements for water quality.
7. Management of state trust forest lands and impact of reduced timber harvest on county general fund and school districts.
8. Alternative emergency routes for use during natural disasters and accompanying road closures

Land Use Objectives

1. Review existing ordinances to ensure they are compatible with and assist in implementing the adopted Comprehensive Plan. These include current Subdivision, Flood Control, Shoreline, and Resource Lands & Critical Areas ordinances.

2. Review county development standards for consistency with the Comprehensive Plan and identify areas where additional standards or guidelines are needed, such as hillside development standards, or low impact development guidelines.

3. Develop performance standards to address off-site impacts for intensive land uses, including noise, glare, smoke, particulates, vibration and aesthetics.

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4. Develop proposals to address land use issues, including performance standards, nuisance ordinances, zoning codes, programs for the transfer of development rights, design standards for community gateways, and other approaches suitable to the community.

5. Establish a county sign ordinance.

6. Identify a set of incentives, requirements, programs and other tools that will help achieve community goals, such as affordable housing, public access to shorelines and forests, protection of scenic views, and conservation of environmentally sensitive areas. Evaluate and adopt appropriate measures.

7. Work with the Town of Cathlamet to establish an Urban Growth Area, with standards that will:
   - ✓ Ensure the logical extension of public facilities to serve urban development;
   - ✓ Direct intensive land uses to areas that can provide needed services; and,
   - ✓ Address the compatibility of adjoining land uses.

8. Disseminate information regarding the benefits of designating historic properties and districts.

Resource Lands and Critical Areas Objectives

9. Review existing ordinances for compatibility with the adopted Comprehensive Plan, including Shoreline, Resource Lands & Critical Areas, & Flood Control.

10. Establish “Right-to-Farm” and “Right-to-Forestry” ordinances

11. Examine and identify appropriate land use controls and/or programs—such as transfer of development rights, agricultural zoning, and other tools—for their suitability in protecting resource uses.

12. Explore the suitability and feasibility of a Community Forestry program for the county.

Economic Development Objectives

13. Develop an intergovernmental coordinating body among local and special purpose governments to address issues of mutual concern.

14. Identify tools and resources, and develop networks to expand the financial infrastructure available for business development and expansion. Expand access to capital, angel investors, seed capital, grants, etc. through technical assistance and referrals.

15. Establish links for technology transfer and innovative approaches (e.g., flexible manufacturing networks), through Washington Technology Center, WA-FAST, WSU-Wood Materials Engineering Lab, and Manufacturing Extension Partnership (MEP). Provide technical assistance regarding product, markets, production techniques, and financing resources (e.g., certified wood, green marketing, engineered wood products).

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16. Identify industry or business “clusters” that can leverage investment to increase involvement in economic development activities (such as forums for hospitality and tourism to develop marketing strategies, etc.).

17. Create leadership programs and mentor networks to cultivate youth and young adults to fill key civic roles.

18. Develop a capacity or “asset inventory” to identify existing skills, resources, and assets within the county that can be used to further economic development. Conduct an inventory of space and facilities available within the county (e.g., commercial kitchens that can be used for value-added agriculture).

19. Create a local Business Assistance Team (BAT) using the SCORE model, business retirees, and members of the financial and educational community.

20. Develop a Business Retention/Expansion (BRE) strategy to provide assistance to existing businesses and entrepreneurs.

21. Explore feasibility of establishing an “ombudsman” role to function as a liaison between businesses and regulatory agencies.

22. Identify an appropriate site and available financing tools for development of a business or industrial park. Examine the feasibility of a business incubator and develop such a facility, if warranted.

23. Evaluate former industrial sites (sort yards, etc.) for potential redevelopment through brownfields and other programs. Reuse existing/abandoned sites with technology retrofit at appropriate locations. Explore potential of acquisition, and clean-up as incentives to redevelopment.

24. Develop a “Wahkiakum” brand identity to market local products regionally and beyond. Create a “Buy Local” campaign.

25. Assist as requested with development of cooperative processing, storage and distribution of locally produced, value-added goods and services as well as legal, accounting, procurement, marketing, and other business support services.

26. Provide organizational, marketing, and other assistance to local businesses/crafters interested in participating in a “Farm/Forest/Fish Market” or other retail sales outlets.

27. Conduct studies and analyze:
    - ✓ Feasibility of a central venue for visual arts and folk art.
    - ✓ Identify potential locations for a performing arts center or amphitheater.
    - ✓ Waterfront Revitalization Plan for the urban area. Analyze potential uses for the city dock and costs of associated improvements.
    - ✓ Countywide Tourism Plan to define community identity, SWOT analysis, asset inventory, product development and to determine a coordinated approach to marketing the county in concert with state and regional

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resources. Identify ways to integrate the arts within schools, local business and the community.

- ✓ Secure on-going support for a local Development Marketing Organization (DMO) to assist with product development (tourism activities), and marketing efforts such as familiarization tours and hospitality training.
- ✓ Develop a set of consistent community guidelines to assist the film and entertainment industries with local procedures that accurately reflect current community expectations. Designate a single point of contact for entertainment industry.
- ✓ Analyze the range of accommodations needed to serve various tourism markets, e.g. campgrounds, lodges, retreats, farm/ranch visits, hotel/motels, conference facilities, etc.
- ✓ Evaluate activities suitable for year-round use of existing facilities (wildlife refuge, fairgrounds, paddle center, etc.) and develop a service delivery and marketing plan to support it.
- ✓ Explore feasibility for a "Skamokawa Harbor" development to serve fisheries, create value-added products, and enhance tourism.
- ✓ Long-range master plan for the county fairgrounds, looking at current and potential uses, development, and maintenance costs. (hostel/equestrian facility/etc.). Study potential uses for the county-owned parcel at the fairgrounds, including development and maintenance costs. (e.g., RV Park/Camp)
- ✓ Strategic Technology Plan to expand high speed Internet access, community technology centers, and/or state-of-the-art technology center for remote learning, business assistance and job training. Recruit back office & small firms seeking rural quality of life.
- ✓ Market study for goods and services suitable for the Elochoman Marina and develop a plan for marketing and delivery of targeted activities. (e.g. laundry/RVs/bait/ food)
- ✓ Analyze suitable amenities and needed improvements for the Wahkiakum Ferry landing area, and develop a plan for marketing and service delivery. (e.g. bike rentals/food/signage)
- ✓ Conduct a market feasibility study for an up-scale retreat that examines demand, marketing, location and development costs.

28. Establish a Scenic Byways Group to identify what types of cultural/historical/other features should be promoted along S.R. 4 (e.g. Pacific flyway, JBH Refuge, other scenic/nature-based/adventure/heritage tourism), what types of improvements are needed to support those activities, and development of marketing materials.

29. Develop a series of self-guided walking/cycling/driving loops that cater to various markets (e.g. bird watching, geology, artists, farms/ranches, historic buildings, etc.). Develop marketing strategies and promotional materials.

30. Recruit support businesses needed to support nature tourism markets, such as outfitters, repair shops, etc.

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Capital Facilities Objectives

31. Establish a rotating six-year Capital Facilities Program and update annually.

32. Develop a Parks Plan and a countywide Trails Plan. Examine options for expanding public access to waterfront areas and recreational activities.

33. Establish a countywide Utility Coordination Advisory Group to address issues such as: small system development standards, fair-share contributions to system improvements & expansions, coordinated utility planning, and system financing.

34. Examine and develop financial mechanisms for funding facility and utility expansions.

35. Provide information, coordination, and other support activities necessary to establish a program of regular maintenance dredging at the confluence of tributaries with the Columbia River, particularly where port districts and port and marine facilities are located. Facilitate the placement of dredging materials for beach nourishment and erosion control of affected areas. Support efforts to maintain a system of buoys, lights and channel markers.

Housing Objectives

36. Revise subdivision ordinances to include additional options that will help stimulate the production of adequate housing stock, especially affordable housing.

37. Examine land use controls and programs that will assist with implementing the comprehensive plan, including performance standards, use and intensity regulations, and home business standards.

38. Develop a notification system for real estate transactions and/or building permits to make buyers aware of nearby resource uses (farming, forestry, etc.).

39. Identify incentives to encourage affordable housing, housing rehabilitation, and pedestrian/cycling trails and amenities.

40. Offer technical assistance regarding financial assistance programs that are available for housing repair.

Transportation Objectives

41. Review the county Transportation Improvement Plan and the SWRTPO Regional Transportation Plan to determine if they are consistent with future growth patterns and plan policy. Use those processes to help fund activities such as scenic byways, trails and cycling routes, bridge replacements, and other needed improvements.

42. Review and update street design standards, subdivision code, and other development requirements relating to existing and proposed arterials, collectors, and local streets, with particular consideration given to:
    - ✓ Road widths, pavement materials, curb and sidewalk standards, and street lighting;

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- ✓ Utilizing “low impact” development techniques in rural areas—such as trails instead of sidewalks, and on-site detention/retention of storm water instead of curbs—to protect rural character, reduce stormwater runoff, and promote aquifer recharge while lowering maintenance costs;
- ✓ Alternative development techniques, such as rural clusters, to protect scenic and rural qualities;
- ✓ Restricting the location and number of access points to improve movement between vehicles, pedestrians and cyclists; and,
- ✓ Properly integrating new roads with the existing and proposed circulation system.
- ✓ Promoting a system of collectors and local roads that serve residential and commercial areas while minimizing impacts on adjacent arterials; and,
- ✓ Encouraging development of local streets so that they:
  - enhance the “line-of-sight” views of scenic features
  - create perpendicular, or “T” intersections that reduce traffic speed and provide better sight distance characteristics
  - provide street and trail connections with adjoining properties that may be developed in the future, by utilizing “stub-street” extensions
  - provide multiple access points for developments along cul-de-sacs, such as “eyebrow” connections that link two cul-de-sacs.

43. Develop a series of self-guided walking/cycling/driving loops that cater to various markets (e.g. bird watching, geology, artists, farms/ranches, historic buildings, etc.) Develop marketing strategies and materials through scenic byway funds.

44. Develop a countywide trails plan. Identify existing and potential trails and networks throughout the county that will link nearby communities, recreational areas, open space and waterfront areas, examining potential acquisition and development costs.

45. Work with Washington State Department of Transportation to design and install improved signage along major routes to indicate areas or sites of interest.

46. Work with Washington State Department of Transportation to use scenic byway funds to develop tourism and marketing materials for S.R. 4, as well as a Route Development Plan to identify needed improvements to support economic development activities, protect scenic views, and preserve the rural character of the county.

47. Work with Washington State Department of Transportation to develop guidelines for traffic calming and community gateway design features along state routes that will improve safety and enhance community appearance (“context-sensitive design”).

48. Work with the Washington State Department of Transportation to investigate potential sites suitable for an airport and the feasibility of constructing such a facility. Identify safe moorage sites and services for float plane operators. Identify a local lead agency to work with WSDOT under an Aviation Planning Grant to explore airport feasibility.

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49. Work with the Washington State Department of Transportation and other transportation agencies to develop a strategic plan for the transit system

50. Develop a market analysis/feasibility study for the development of amenities, services and improvements to serve traffic using the Wahkiakum Ferry, in consultation with the Washington State Department of Transportation.

51. Work with the WSDOT towards acquisition of a new ferry to support long term needs.

52. Work with the Washington State Department of Transportation to create a Route Development Plan for S.R. 4 that will identify needed improvements.

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Economic Development

Wahkiakum County's new comprehensive plan has an economic development element summary. The Wahkiakum Comprehensive Plan Steering Committee developed a Comprehensive Economic Development Plan as part of the comprehensive plan update. This plan is a stand alone plan, but the highlights of the plan are summarized in the next 18 pages. As part of the planning process, the steering committee sponsored a series of community meetings to establish a community vision as a first step. Next, they identified economic sectors where the county has a natural competitive advantage. Following a series of workshops with panelists speaking about the county's strengths, weaknesses, and potential for growth in each identified sector, the group developed strategies to encourage specific types of growth. The economic strategy has been analyzed against other elements of the plan (housing, transportation, community facilities) to determine effects and to evaluate how well the plan supports the community's vision.

Plan Goals

1. Promote economic diversification that supports the creation of family-wage jobs in order to:

allow young people the opportunity to live, work and raise families within Wahkiakum County

develop the tax base necessary for maintaining quality schools and other public services

provide a ready local market for retail goods and services

offer local employment opportunities that contribute to community involvement

2. Encourage growth and employment opportunities that are compatible with the rural character of the county by:

- *encouraging small- to moderate-sized employment opportunities rather than large growth centers*
- *targeting investments in site-specific infrastructure in order to avoid sprawling development patterns*
- *addressing the impacts of growth on surrounding land owners*

3. Support economic development efforts that seek to:

- *increase access to the tools and resources needed for economic growth*
- *encourage the retention and expansion of existing businesses*
- *support value-added enterprise that generates additional local income from the local natural resource base*
- *offer a range of economic diversity to reduce the impact of cyclical swings in natural resource-based industries*
- *minimize the tax-supported costs of new development*

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See link on Wahkiakum County Websidte for the Economic Development Summary: Go to www.co.wahkiakum.wa.us homepage and look for Economic Development Summary Link.

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Housing Element

Purpose of the Housing Element

The Housing Element outlines current conditions and projects future needs for housing. It establishes the community's policies to address the housing needs of the county over the next twenty years. The Housing Element has been integrated with all other plan elements to ensure consistency throughout the Comprehensive Plan. Specifically, it considers the condition of the existing housing stock; the cause, scope and nature of housing problems; and the provision of a variety of housing types to match the lifestyle and economic needs of the community. The Housing Element includes the following major sections:

- Demographic Profile
- Projected Population Growth
- Housing Profile & Projected Needs
- Economic Profile & Housing Affordability
- Housing Assistance Programs

DEMOGRAPHIC PROFILE

The population of southwest Washington grew much faster than the population of the state during the
1990s. As shown below, the region grew by more than 36 percent, 15 percentage points greater than the state as a whole. Clark County was the engine driving this trend. The region's high rate of growth is expected to continue and out-pace that of the state through the year 2025.

Table 1
Regional Population Growth

County	1990 Population	2000 Population	% Change from 2000	2025 Population (Projected)	% Change 2025 (Projected)
Clark	238,053	345,238	45.0%	544,809	57.8%
Cowlitz	82,119	92,948	13.2%	136,114	46.4%
Skamania	8,289	9,872	19.1%	12,927	30.9%
Wahkiakum	3,327	3,824	14.9%	5,072	32.6%
Total	**331,788**	**451,882**	**36.2%**	**698,922**	**54.7%**
Washington State	*4,866,663*	*5,894,121*	*21.1%*	*7,975,471*	*35.3%*

Source: U.S. Census Bureau, Census 2000; 2002 Population Trends, State of Washington Office of Financial
Management, Forecasting Division; Washington State County Population Projections For Growth Management,
Intermediate Projection, State of Washington Office of Financial Management, Forecasting Division, January 2002.

Table 2, below, shows that about one in six residents of Southwest Washington who are of working age have some type of disability that does not require them to be institutionalized, but just over half are employed. More than 40 percent of retirement-aged people have a disability.

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Table 2
Non-Institutionalized Disabled Populations

County	Age 21-64 Percent of Population	Age 21 to 64 Percent Employed	Age 65 + Percent of Population
Clark	**17.8%**	**60.3%**	**44.2%**
Cowlitz	**22.0%**	**52.1%**	**46.4%**
Skamania	**17.3%**	**49.7%**	**40.5%**
Wahkiakum	**23.0%**	**47.8%**	**40.8%**
Washington State	*17.7%*	*57.6%*	*42.3%*

Source: U.S. Census Bureau, Profile of Selected Social Characteristics: 2000.

Table 3 shows that about one of every five people living in Wahkiakum County is over 65. The other counties in the region have retiree-age populations at about the same percentage as the state as a whole, although this population has been growing in recent years in Skamania County. Wahkiakum is in the "Top 8" of 39 counties for the proportion of residents over age 65.

Table 3
Population Over Age 65

County	Percent of Total Population
Clark	**9.5%**
Cowlitz	**13.3%**
Skamania	**11.0%**
Wahkiakum	**18.5%**
Washington State	*11.2%*

Source: U.S. Census Bureau, Census 2000.

Table 4 highlights the mobility of residents. Almost 4 out of 10 people living in the county moved between 1995 and 2000. Of these, one-quarter were from a different county, and almost 10% of these were from a different state. This is another indicator of the extent that in-migration as a growth factor. While the percentage of county residents who moved is somewhat lower than the state average, a significantly higher percentage of Wahkiakum County residents moved in from another county.

Table 4
Residence in 1995
Wahkiakum County & Washington State

Indicator	Wahkiakum Number	Wahkiakum Percent	Washington State Percent
Population 5 years and over	3,615	100.0	--
Same house in 1995	2,248	62.2	48.6
Different house in the U.S. in 1995	**1,366**	**37.8**	**48.2**
Same county	445	12.3	27.5
Different county	**921**	**25.5**	**20.7**
Same state	589	16.3	9.5
Different state	332	9.2	11.2
Elsewhere in 1995	1	--	3.2

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PROJECTED POPULATION GROWTH

Historical Growth Patterns

Wahkiakum County has experienced cyclical changes in population over the past century, with gains during some decades and losses in others. The first wave of significant in-migration in Washington State was in the decade leading up to 1940 (as was also the case in Wahkiakum County), followed by another decade of high in-migration through 1950 (but not reflected in Wahkiakum County growth figures). At the same time, the state rate of in-migration was almost doubled that of natural increase (births minus deaths). The 1950's and 1960's saw large gains statewide, mostly due to natural increase--those who had moved into the state in the 30's and 40's were having their own children. Between 1970 and 1980, another wave of in-migration outpaced natural increase, again almost 2-to-1. The 1980's were years when births and migration were about equal factors in growth. The more prosperous decade of 1990 saw another "boom" in people moving into the state, although there were healthy natural increases in the population that accompanied growth.

Population in Wahkiakum County reached its highest point in the 1940 census, when 4,286 persons were counted. The growth trend of the preceding decades reversed itself during the twenty-year period of the 1940's and 1950's, a time of significant and prolonged population loss for the county. Population growth showed a slow but steady increase through the 1960's and 1970's, followed by another substantial decline during the 1980's. This dynamic reflects a period of immense economic restructuring in the Pacific Northwest, primarily due to declines and displacement in the timber industry. However, it should be noted that some of the decline may be attributed to an undercount of housing units within Cathlamet during the 1990 census. The decade between 1990 and 2000 saw a healthy rebound in population. A declining birth rate was outpaced by the death rate, resulting in an overall natural population decrease that was far outweighed by in-migration to the county.

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Table 5
Historical Population Growth Comparison
1900 - 2000

Year	Population	% Growth over Decade	Annualized Growth Rate
1900	2,819	---	---
1910	3,285	6.5	1.7
1920	3,472	5.7	0.6
1930	3,862	11.2	1.1
1940	**4,286**	**11.0**	**1.1**
1950	3,835	-10.5	-1.1
1960	3,426	-10.7	-1.1
1970	3,592	4.8	0.5
1980	3,832	6.7	0.7
1990	3,327	-13.2	-1.3
2000	3,824	14.9	1.4

Source: WA OFM & CWCOG

Population Growth Forecasts

Washington Office of Financial Management has issued population growth projections beginning with Census 2000 population counts and extending through 2025. These projections appear in three series or growth scenarios: Low, Intermediate, and High. Under each series, the primary driver of population gain is due to in-migration. This mirrors the components of growth for Washington State as a whole. The highest population growth in Wahkiakum County occurred during the 1930's, as evidenced in the 1940 census count of 4,286 persons. Under a low growth scenario, the county would again reach this figure sometime between 2020 and 2025. Under an intermediate growth scenario, the county would reach or exceed this population between 2010 and 2015. Annual historical growth rates for Wahkiakum County have averaged around 0.4%, very close to the "low" growth series outlined in Table 6.

Table 6
Wahkiakum County
Projection of the Total Resident Population

	2000 Actual	2005	2010	2015	2020	2025	Total Growth Rate	Average Annual Growth Rate
Low	3,824	3,656	3,810	3,930	4,128	4,301	12.5%	0.5%
Intermediate[1]	3,824	3,906	4,169	4,406	4,745	5,072	32.6%	1.3%
High	3,824	4,156	4,528	4,882	5,362	5,843	52.8%	2.1%
CWCOG Forecast[2]	4,267	4,773	5,262	5,736	---	---	34.4%	2.3%

Source: WA OFM, 2002; CWCOG Population Forecasts: 1990-2015
[1]The Intermediate projection was selected to forecast growth for the comprehensive plan.
[2]Note: CWCOG forecast was based upon 1990 census count of 3,327 and projected forward. The 2000 figure is not actual count; it is a projected estimate based upon 2.9% growth rate each year, from 1990 forward.

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In 1993 the Cowlitz-Wahkiakum Council of Governments hired a consulting demographer to project population growth by jurisdiction and by census tracts. The CWCOG projections are substantially higher than the OFM projections, reflecting a different methodology. The relatively small population of Wahkiakum County makes development of dependable forecasts more difficult. Cohort survival statistics were balanced against concerns and issues were raised in an economic summit. Participants from Wahkiakum County envisioned growth coming from three sources:

(1) An increase in the number of new commuters to Cowlitz County and Oregon
(2) Immigration of retirees
***(3) Future in-migration of telecommuters for lifestyle choice purposes. ***

Employment growth was predicted to be largely in service jobs to support the growing population. Housing growth and escalating land values were held as indicators of these trends. Projected growth rates assumed a declining rate over time. However, it was pointed out that even modest spillover of growth from Cowlitz County could easily double Wahkiakum County's population over the next 25 years. Each of these trends appears to describe what has happened over the past decade, although not to the extent projected in the CWCOG forecast.

The Cathlamet Comprehensive Plan adopted a population growth rate that, in essence, "split the difference" between the CWCOG estimate and OFM's "intermediate" series. The Cathlamet population was applied to the intermediate series as a percentage of county population. The

town's share of county population ranged from a low of 13% to a high of 18% over the decades since 1940. The lower proportion (13%) was selected as the multiplier. It should be noted that this method incorporated the "intermediate" growth scenario that was published by OFM in 1995, but which are regularly updated to maintain a "rolling" 20-year projection period. The current state projections now cover the years 2005-2025. In addition to adding on a new five-year increment, the latest population projections were modified to reflect slowing economic growth statewide in the early years of the 21st century. The new population projections reflect a "dampening" trend in growth, based on current economic conditions and a slower recovery period than originally estimated. These revisions resulted in projections that are no longer comparable to those used in the Cathlamet plan. For instance, growth for Wahkiakum County in the "intermediate" series once ranged from 4,285 persons in 2005 to 5,490 persons by the year 2020. The current projections estimate an intermediate population of 3,906 by 2005 and 4,745 persons by 2020, when comparing the same timeframes. This results in a discrepancy of 745 persons by the year 2020, using the old and new forecast for intermediate growth. For this reason, more consideration and adjustment would be recommended, in using the Cathlamet approach.

The table below illustrates the source of projected growth. A declining birthrate is not sufficient to result in natural population increases over the projected 20-year period. ***In-migration to the county has been and will continue to be the dominant factor driving growth in Wahkiakum County over the next twenty years***, reflecting a similar statewide dynamic.

Table 7

Historical & Projected Population Growth and Components of Growth
Intermediate Series: History 1970 to 2000 & Projections from 2005-2025

	1970	1980	1990	2000	2005	2010	2015	2020	2025
Historical & Projected Population	3,592	3,832	3,327	3,824	3,906	4,169	4,406	4,745	5,072
Historical & Projected Population Change	166	240	-505	497	82	263	237	339	327
Historical & Projected % Population Change	4.8	6.7	-13.2	14.9	2.14	6.73	5.68	7.69	6.89
Historical & Projected Births	577	532	370	367	184	199	218	221	225
Historical & Projected Deaths	428	347	355	434	226	246	270	295	322
Historical & Projected Net Migration	17	55	-520	564	124	310	289	413	424

Source: WA OFM

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The 2000 Census found that between 1995 and 2000, 924 persons moved into Wahkiakum County from other counties and states, and 674 moved away. This snapshot allows a look into how dynamic the population really is. Wahkiakum County has been viewed as a sleepy little rural area without much growth to speak of. ***But over a five-year period, hundreds of people moved into the county, while hundreds of others left***. This created a net gain of 247 persons during the five-year period. Over the decade of 1990–2000, in-migration was strong enough to out perform out-migration, increasing death rates, and declining birth rates. In-migration is most assuredly the current growth engine in Wahkiakum County.

The following table illustrates the changes in population groups as they are projected to grow over time. Children and youth are projected to decline as a share of the overall population, from 25.2% to 21.8%, while the 65 and older group increases its share from 18.5% in 2000 to 26% of the population by 2025. ***However, the number of adults in their child-bearing years begins to increase again after 2010, indicating a corresponding growth in children that begins to***

show in 2025. Wahkiakum County is among ***eight counties in the state experiencing a significantly higher concentration of people 65 years of age and older,*** although the numbers of persons in this age group is increasing nationally.

Table 8
Population Projection: 2000 to 2025

Intermediate Series: By Age Group

Age Group	Year 2000	Year 2005	Year 2010	Year 2015	Year 2020	Year 2025
0-19	965	892	912	958	1,025	1,104
Percent	25.2	22.8	21.9	21.7	21.6	21.8
20-44	981	990	1,037	1,115	1,274	1,381
Percent	25.7	25.4	24.9	25.3	26.9	27.2
45-64	1,172	1,219	1,291	1,239	1,220	1,267
Percent	30.7	31.2	31.0	28.1	25.7	25.0
65 & Over	706	805	929	1,094	1,226	1,320
Percent	18.5	20.6	22.3	24.8	25.8	26.0
Total Pop	**3,824**	**3,906**	**4,169**	**4,406**	**4,745**	**5,072**

Source: WA OFM

Comprehensive Plan Adopted Population Growth Projection

The Comprehensive Plan Steering Committee initially began their efforts for long-range planning by using the historical average growth rate of 0.5% per year. Mid-way through the process, the group came to believe that recent population trends have already begun to alter this historical growth rate. In addition, the group determined that public policy should be developed in order to encourage growth and vitality over the next 20 years. While growth and prosperity is a key desired outcome, preserving the rural character of the county was another key value that must be used to balance policy decisions.

Growth rates applied during the development of the Watershed Resource Inventory Area (WRIA) plans for Wahkiakum and Cowlitz counties adopted a growth rate of 1.86%, and concluded that water resource management could support this rate of population growth. The Steering Committee adopted a growth projection somewhat in between the “intermediate” series used by the state Office of Financial Management and that used in the watershed planning process. This growth rate average is 1.5% per year. The growth estimate is applied across the county uniformly, although growth has been very uneven over the past 15 years.

Recent population growth has concentrated in the eastern half of the county, particularly in the Elochoman Planning Area and Puget Island. Skamokawa’s population has been fairly stable while the West End of the county has seen population decline due to significant numbers of out-migration by families with children. Their “replacements” are typically older residents who have already raised a family, thus changing the demographics of the western end of the county quite markedly.

These demographic changes create drains on efficient provision of volunteer services such as fire protection and emergency medical services. For those who remain in the county, daily commuting to other counties for work renders them unavailable to assist in these community functions. The economic development strategy focuses on growing local jobs that pay a family wage in order to steer these demographic trends in a more productive direction, over the long term.

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Table 9
Comprehensive Plan Growth Projections by Planning Area

	Puget Island	Elochoman	Skamokawa	West End	Total
POPULATION					
2000 Population	798	1,200	425	836	3,259
+ Cathlamet		565			3,824
2025 Population Project @ 1.5%	1,158	1,741	617	1,213	4,729
+ Cathlamet @ 1.3%		780			5,509
Population Increase	360	541	192	377	1,470
+ Cathlamet		215			1,685
HOUSEHOLDS					
2000 Households	332	470	164	337	1,307
+ Cathlamet		246			1,553
2000 Average Household Size	2.4	2.53	2.59	2.48	2.42
Cathlamet		2.06			
2025 Households	482	684	238	489	1,893
+ Cathlamet		350			2,243
HOUSING UNITS					
Additional Units/ Households	150	214	74	152	590
+ Cathlamet		104			694
Number of New Units Needed, @ 5% Vacancy Rate	158	225	78	160	620
+ Cathlamet		109			729

Source: Cowlitz-Wahkiakum Council of Governments

Based on the anticipated growth rate, approximately 590 new housing units would be needed to serve the growing population. When growth in the Town of Cathlamet is factored in another 104 units would be added, for a total need of 694 housing units. A 5% vacancy rate was selected to allow for a healthy market variation. Higher rates indicate an excess of housing, while lower vacancy rates indicate a shortage of available housing. Although there are a significant number of vacant housing units on the West End, by and large these units have been vacant for extended periods, resulting in the potential for significant structural deterioration. For this reason, these units are not deducted from the number of new units needed to accommodate population growth.

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HOUSING PROFILE

Although relatively high rates of homeownership are common throughout Southwest Washington, it appears that more rural counties rely more heavily on mobile homes and other types of dwellings to meet housing needs than their more urban counterparts.

Table 10
Housing Types

COUNTY	SINGLE FAMILY	MULTI-FAMILY	MOBILE HOME	OTHER
CLARK	**70.6%**	**22.6%**	**6.6%**	**0.2%**
COWLITZ	**68.5%**	**18.8%**	**12.3%**	**0.4%**
SKAMANIA	**68.1%**	**5.9%**	**24.5%**	**1.5%**
WAHKIAKUM	**69.8%**	**4.7%**	**23.8%**	**1.7%**
WASHINGTON STATE	**65.4%**	**25.6%**	**8.5%**	**0.5%**

Source: U.S. Census Bureau, Profile of Selected Economic Characteristics: 2000.

A further breakdown of housing types within Wahkiakum County is provided below. It is clear that most of the mobile home housing is within the unincorporated area, while most of the multifamily housing is located in the county's sole incorporated area, the Town of Cathlamet.

Table 11

Housing Units & Type

	Number	Percent		Unincorporated Area	Percent		Cathlamet	Percent
Wahkiakum County	1,792	--		1,518	--		274	--
1 unit detached	1,240	69.2		1,062	70.0		178	65.0
1 unit, attached	10	0.6		7	0.5		3	1.1
2 units	22	1.2		4	0.3		18	6.6
3 or 4 units	18	1.0		--	--		18	6.6
5 to 9 units	21	1.2		--	--		21	7.7
10-19	23	1.3		--	--		23	8.4
20 or more units	--	--		--	--		--	--
Mobile home	427	23.8		419	27.6		8	2.9
Boat, RV, van, etc.	31	1.7		26	1.7		5	1.8

Source: Census 2000

It is clear from Table 12 that there are a significant number of seasonal homes in the county, representing almost 6% of the housing stock. Many of these are found on Puget Island, although increasing numbers are seen in the Altoona-Pillar Rock area.

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Table 12

Housing Tenure & Occupancy

	2000 Population	# Units	Occupied Units	Owner	Renter	Vacant	Seasonal (from vacant)
Wahkiakum County	3,824	1,792	1,553	1,237	316	239	100
Percent			86.7	79.7	20.3	13.3	5.6
Vacancy Rate (Percent)				3.5	5.1		
Avg. Household Size			2.42	2.45	2.33	--	--

	2000 Population	# Units	Occupied Units	Owner	Renter	Vacant	Seasonal (from vacant)
Cathlamet	565	278	246	140	106	32	11
Percent			88.5	56.9	43.1	11.5	4.0
Vacancy Rate (Percent)				3.4	8.6		
Average Household Size			2.06	2.25	1.81	--	--

Source: Census 2000

As might be expected, there are much lower rates of homeownership in the town of Cathlamet (56.9%) as compared to the county as a whole (79.7%).

Fast-growing Clark County has the newest housing stock in the southwest Washington region, with about half its housing built since 1980. Cowlitz and Wahkiakum Counties, which grew faster in earlier years, have a greater percentage of housing built before 1960. The prevalence of older housing stock may indicate greater extent of housing in need of repair. At the same time, it provides an inventory of structures that have high potential for helping maintain the rural character and heritage of the county.

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Table 13

Housing Stock – Year Built

COUNTY	PRE-1939 TO 1959	1960-1979	1980 – 2000
CLARK	17.1%	33.0%	49.9%
COWLITZ	38.5%	35.5%	26.0%
SKAMANIA	26.1%	36.5%	37.4%
WAHKIAKUM	42.2%	30.9%	26.8%
WASHINGTON STATE	29.4%	32.7%	37.9%

Source: U.S. Census Bureau, Profile of Housing Characteristics 2000

During the collection of land use inventory data, planning staff inventoried general housing conditions throughout the county. The chart below indicates that about 7% of the housing stock is in need of major repair. This represents a very general estimate based on observation of exterior conditions.

Table 14

Wahkiakum County Housing Conditions

	Number	**Percent**
Total Units (Unincorporated Area)	1,518	84.7
Total Units Surveyed	1,396	92.2
Units Not Surveyed	118	7.8
No Repairs Needed	1,255	89.9
Minor Repairs	41	2.9
Major Repair	99	7.1
Abandoned	1	0.1

Source: Cowlitz-Wahkiakum Council of Governments 2001 Windshield Survey

Additional measures of housing quality can be found in the census results for Wahkiakum County. This data indicate that about 3.3% of the county's housing stock may be considered substandard due to overcrowding, lack of plumbing/kitchen/heating facilities.

Table 15

Housing Conditions, Selected Characteristics

	Wahkiakum			**Cathlamet**	
	Number	**Percent**		**Number**	**Percent**
Number of Units	1,792			274	
Year Structure Built					
1939 or earlier	410	22.9		113	41.2
1940 or later	1,382	77.1		161	58.8
Occupied Units	1,553			244	
Occupants Per Room					
1.01 to 1.50 Persons	26	1.7		--	--
1.51 or more	15	1.0		--	--
Value					

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Less Than $50,000	24	3.2		5	4.2
Median Value	$145,500			$107,100	
Selected Characteristics					
Lacking complete plumbing facilities	22	1.4		5	2.0
Lacking complete kitchen facilities	10	0.6		5	2.0
No telephone service	24	1.5		11	4.5
House Heating Fuel					
Utility Gas	3	0.2		--	--
Bottled, tank or LP Gas	152	9.8		8	3.3
Electricity	855	55.1		159	65.2
Fuel oil, kerosene, etc.	129	8.3		50	20.5
Coal or coke	--	--		--	--
Wood	398	25.6		23	9.4
Solar energy	--	--		--	--
Other fuel	12	0.8		2	0.8
No fuel used	4	0.3		2	0.8

Source: Census 2000

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Table 16, below, shows the phenomenal growth in building permits in Wahkiakum County over the past five years. The rate of building permits has doubled from that experienced during the 1990s. The county's housing stock has grown 7.8% in just five years. Most of that growth has been on the eastern end of the county, although about one-third comes from the West End. This indicates that growth patterns are beginning to even out across the county.

Table 16
Single Family Building Permits, 2001 - 2005

Year	Housing Units	Increase
2000	1,792	--
2001	1,821	29
2002	1,838	17
2003	1,869	31
2004	1,901	32
2005	1,931	30
Total		**139**
Annual Average		28

Source: Washington State OFM

Economic Profile

Median household income is an indicator of economic stability. Median household income means that half of all households earn more, and half earn less than the figure listed. Table 14 shows that median household incomes in three out of four counties in Southwest Washington are below the state average. Only Clark County, with its high-paying high-tech industries, had a median household income higher than the state average. Cowlitz, Skamania, and Wahkiakum Counties all have lost a significant percentage of high paying jobs in the forest products industries. When manufacturing jobs are replaced primarily with lower paying jobs in the service and trade sectors, their earning power relative to the state is declining. Rural counties in Washington State have typically earned a declining share of state average wages over the past 25 years.

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Table 14
Median Household Income

County	Median Household Income, 1999
Clark	**$48,376**
Cowlitz	**$39,797**
Skamania	**$39,317**
Wahkiakum	**$39,444**
Washington State	*$44,776*

Source: U.S. Census Bureau, Profile of Selected Economic Characteristics: 2000

Table15 shows that Cowlitz and Skamania Counties have a larger percentage of people living in poverty than the state as a whole. These counties have been classified as distressed for the past several years because their rate of unemployment has been at least 20 percent higher than the state average for three consecutive years; this is common in resource-based economies. Both counties have lost a significant number of high-paying manufacturing jobs, particularly in forest products industries, in recent years. Wahkiakum County enjoys a relatively low poverty rate. A large percentage of personal income in the Wahkiakum County is comprised of transfer payments, such as pensions, investment income and property rentals, thus assisting in its relatively low poverty rate.

Table 15
Poverty Rates

County	Percent of Total Population	Children Under 18	Over Age 65
Clark	**9.1%**	**11.7%**	**6.8%**
Cowlitz	**14.0%**	**19.5%**	**6.6%**
Skamania	**13.1%**	**18.1%**	**7.9%**
Wahkiakum	**8.1%**	**11.0%**	**2.7%**
Washington State	**10.6%**	**13.2%**	**7/5%**

Source: U.S. Census Bureau, Profile of Selected Economic Characteristics: 2000

Housing Affordability

The general rule of thumb for housing affordability is that housing costs—including utilities—should not consume more than 30% of the gross household income. Given a median household income of $39,444 for Wahkiakum County, housing costs should not exceed 30% of this figure, or $11,833 per year. This represents a monthly housing budget of $986. Using the estimate provided by Washington State Office of Financial Management for 2004, the county median income is **$43,164**. An affordable housing payment at 30% of this figure is $12,949 per year or ***$1,079 per month***

Table 16
Residential Sales Comparison, 2004 & 2005

	2004	2005
Number of Total Sales	81	85
Total Amount	$12,649,962	$13,645,121
Average Sales Price	**$156,172**	**$160,531**
Residential on Acreage	49	66
Total Sales	$5,774,162	$9,479,856
Average Acreage	2.35 acres	1.63 acres
Average Residence Size	1,424 sq. ft.	1,460 sq. ft.
Average Sales Price	**$117,840**	**$143,634**
Residential on Lots	10	6
Total Sales	$1,437,700	$1,129,000
Average Sales Price	**$143,770**	**$188,167**
Frontage Properties	22	13
Total Sales	$5,438,100	$3,036,265
Average Frontage	179.5 front feet.	189.5 front feet
Average Residence Size	1,631sq.ft.	1,646 sq. ft.
Average Sales Price	**$247,186**	**$233,559**

Source: Wahkiakum County Assessors Office, 2006

The data above indicate that home sale prices in Wahkiakum County still remain relatively affordable. The sales data excludes land-only sales as well as sales among family members. It shows that homes on acreage are typically just under 1,500 square foot in size, on two acre tracts and selling for under $150,000. Homes on city lots generally have a higher average price due to the urban services that are provided, as well as the structure type. Sales prices for waterfront footage are still a relative bargain, with the typical home just over 1,600 square feet with just under 200 waterfront footage and selling for under $250,000.

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Using the ***average sales price for 2005*** and current interest rates (6.25% for a 30-year mortgage), the estimated payment for principal and interest (only) is ***$988.42***. The monthly payment that a person earning the Wahkiakum County median income could afford is $986 (using 2000 Census). Using the 2004 OFM income estimate, an affordable payment is ***$1,079 per month***. In this scenario, there is a small surplus of $90. Either example used reveals that the gap/surplus is small, but widens quickly—and considerably—when taxes, insurance, and utility costs are included.

Table 17 compares affordability of housing in Wahkiakum County with other counties selected for comparison. The Housing Affordability Index (HAI) for all purchases as well as first-time home buyers indicates problems with affordability in Wahkiakum County as compared to other counties. Only Jefferson County fared worse in this comparison. While purchasers generally have enough income to qualify for housing, the typical first time buyer household has only 77.1% of what is needed to purchase entry-level housing in Wahkiakum County.

Table 17
Housing Affordability Index, Third Quarter 2005

	Median Price	Mortgage Rate	Monthly Payment	Median Family Income	HAI	*Starter Monthly Payment*	*Median Household Income*	*First Time HAI*
Wahkiakum	$180,000	5.83%	$848	$50,017	122.9	$833	$43,996	77.1
Pacific	$135,000	5.83%	$636	$43,660	143.1	$625	$35,192	82.2
Cowlitz	$157,900	5.83%	$744	$52,128	146.0	$730	$43,594	87.0
Jefferson	$288,200	5.83%	$1,357	$52,422	80.5	$1,333	$42,476	46.5
Lewis	$145,000	5.83%	$683	$47,172	143.9	$671	$39,539	86.0
Statewide	$269,300	5.83%	$1,268	$61,853	101.6	$1,246	$50,431	59.0

Source: WSU Center for Real Estate Research

Notes:
Housing Affordability Index measures the ability of a middle income family to carry the mortgage payments on a median price home. When the index is 100 there is a balance between the family's ability to pay and the cost. Index numbers higher than 100 indicate housing is affordable.
First Time Buyer Index assumes the purchaser's income is 70% of the median household income. Home purchases by first-time buyers are 85% of the area median price.
All loans are assumed to be 30-year terms. All buyer indices assume 20% down payment. First-time buyer index assumes 10% down.
It is assumed 25% of income can be used for principal and interest payments.

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Table 18
Existing Home Sales & Median Home Prices
Time Trend: First Quarter 2004 – Third Quarter 2005

	2004 Q 1	2004 Q2	2004 Q3	2004 Q4	2004 Annual	2005 Q1	2005 Q2	2005 Q3	% Change Q3
Median Home Prices	$170,000	$165,000	$172,500	$165,500	$167,000	$185,000	$150,000	$180,000	4.3%
Existing Home Sales	10	30	10	40	90	20	40	10	40%

Source: WSU Center for Real Estate Research

It is clear from Table 19 that about one-third of renters pay more than 30% of their income for housing in Wahkiakum County. Homeowners pay more than 30% at about half that rate—only 17.5%. A range of land use densities and locations is designated on the comprehensive plan future land use map in order to provide opportunities for development of affordable housing.

Table 19
Wahkiakum County Housing Affordability
Selected Characteristics

	Wahkiakum		Cathlamet	
	Number	**Percent**	**Number**	**Percent**
Number of Units	1,792		274	
Monthly Costs as % of Income				
Owner – Over 30% of Income	133	17.5	15	12.7
Renter – Over 30% of Income	**90**	**29.4**	**33**	**30.3**
Not Computed	52	17.0	9	8.3

Source: Census 2000

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Rental Affordability
The Housing Wage is the amount a person working full-time has to earn to afford a two-bedroom rental unit at fair market rent while paying no more than 30% of income in rent. The *Out of Reach: 2005* report by the National Low Income Housing Coalition calculates the Housing Wage for every state, region and county in the U.S.

In Washington State, the Fair Market Rent (FMR) for a two-bedroom apartment is $757. In order to afford this level of rent and utilities, without paying more than 30% of income on housing, a household must earn $2,522 monthly or $30,268 annually. Assuming a 40-hour work week at 52 weeks per year, this level of income translates into a Housing Wage of $14.55.

In Washington, a minimum wage worker earned an hourly wage of $7.35 in 2005 (the figure was increased in 2006). In order to afford the fair market rent for a two-bedroom apartment, a minimum wage earner must work 79 hours per week, 52 weeks per year. Or, a household must include two minimum wage earner(s) working 40 hours per week year-round in order to make the two bedroom affordable.

Monthly Supplemental Security Income (SSI) payments for an individual are $579 in Washington. If SSI represents an individual's sole source of income, $174 in monthly rent is affordable, while the FMR for a one-bedroom is $617.

Table 20
Out of Reach 2005 – Selected Statistics

Location	Total Households	Percent Renter Households	Two-Bedroom Fair Market Rent – 2004	Hourly Wage Needed (40 hour week)	No. Hours Per Week Needed to Afford Unit @ Minimum Wage
Washington	2,271,398	35%	$757	$14.55	79
Cowlitz	35,850	32%	$588	$11,31	62
Wahkiakum	1,553	20%	$589	$11.33	62

Source: National Low Income Housing Coalition

Site Selection for Families

Wahkiakum County has had a declining natural growth rate, meaning that most of its growth is driven by in-migration to the county. This has occurred as young people of child-bearing years have left Wahkiakum County to further their education or to seek a living wage job in another area. A key foundation of the county's economic strategy is to increase employment with jobs that can sustain a family wage.

In 1998, Reader's Digest asked parents to rate 13 features of a good location to raise a family. These areas are important indicators of what is still valued when considering a new place to call home.

Table 21
Family Site Selection Factors

Factor	Importance (Maximum of 10 Points)
Low Crime Rate	**9.7**
Low Drug/Alcohol Problem	**9.6**
Good Public Schools	**9.5**
Quality Health Care	**9.3**
Clean Environment	**9.2**
Affordable Cost of Living	**8.9**
Strong Economic Growth	**8.8**
Extracurricular School Activities	**8.7**
Access to colleges	**8.3**
Many Activities for Youth	**7.8**
Less Than One Hour to Major city	**7.0**
Many Private Schools	**6.9**
Warm & Sunny Weather	**6.0**

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High homeownership rates point to a population that has a vested interest in maintaining the living standards of an area. The number of college-educated residents is indicative that the residents value the importance of higher education. This translates into educated parents who are inclined to be active participants in promoting good local schooling. Feeling safe and secure is a primary consideration when choosing where to live. Quick access to quality health care and corresponding coverage areas are top-of-mind concerns when deciding where to relocate. Distance or travel time to the nearest hospital or urgent care facility, especially if a member of the family has an existing chronic medical condition, is key. Lower costs of living are universally attractive, as long as the benefits do not outweigh the perceived remoteness.

Special Needs Populations

Housing availability and affordability are critical issues to special needs populations, including low income, elderly, and very small/large families. These needs often translate into a cost burden for housing that exceeds 30% of household income, which is the standard in the real estate industry. The State of Washington conducts a Comprehensive Housing Assistance Strategy (CHAS) that is updated on a biennial basis. Data from the original CHAS and the 2002 update and estimates identify housing needs of special needs populations, which are outlined on Table 22, below.

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Table 22
Estimate of Special Needs Housing Populations – 2002

	RENTERS					OWNERS			
Household by Type, Income & Housing Problem	**Elderly (1 & 2 P/H)**	**Small Related (2-3 P/H)**	**Large Related (5+ P/H)**	**All Other HH**	**Total Renters**	**Elderly**	**All Other Owners**	**Total Owners**	**Total HH**
Very Low Income (0%-50% MFI)	44	34	2	38	118	158	68	226	344
0%-30% MFI	16	24	0	34	74	100	47	147	221
31%-50% MFI	28	10	2	4	44	58	21	79	123
Other Low-Income (51%-80% MFI)	13	24	3	25	65	170	85	255	320
Moderate Income (81%-95% MFI)	3	12	35	7	57	36	21	57	114
Total Households*	63	189	50	107	409	544	711	1,255	1,664

Source: Washington Department of Community, Trade and Economic Development
Notes: MFI = Median Family Income
Assumes renter occupied households at 24.58% and owner occupied at 75.42% of all occupied units.
*Includes all income groups, including those above 95% MFI

Existing Resources for Special Populations

Group quarters exist in two locations within Cathlamet. Hotel Cathlamet offers 20 assisted living units with a maximum capacity of 22 persons. This facility is located within the downtown commercial district and offers nursing services to residents without age or income thresholds. Sun Bridge Care Center is located in a residential area near the downtown district. It can accommodate up to 53 persons who need long-term care and rehabilitative services. There are no age or income thresholds associated with this facility. Special needs populations may be served at either location. Both group quarters typically have vacancies at any given time. The 2000 Census found 58 persons living in group quarters in Wahkiakum County, all within Cathlamet.

Subsidized Housing

Eagle Pointe is a recent residential development offering 17 units of rental housing for persons aged 62 years and older. Twelve (12) units are subsidized by Section 8 for low-to-moderate income elderly persons and five are offered to seniors at market rates. This project was a joint venture between the Longview Housing Authority, U. S. Department of Housing and Urban Development, Wahkiakum County, Federal Home Loan Bank Board, Washington Department of Community, Trade and Economic Development, and Bank of the Pacific. The property is located between the high school and Erickson Park on 3rd Street. Four low-income rental units are offered at 25 River Street.

A similar project is envisioned on the West End of the county to assist seniors who are paying more than 30% of their incomes for housing. Site discussions have included an area near the Grays River Methodist Church and near the Rosburg School.

Twelve Housing Market Trends in Washington State

The Washington State Affordable Housing Advisory Board has identified several trends in Washington State's housing market, and has developed strategies (outlined below) to address them.

1. Thirty-nine percent of Washington households are "low income"
2. Home ownership in Washington trails the national average
3. Rental housing has become less affordable for households with the lowest incomes
4. Public resources are key to housing affordability
5. The Federal Housing Choice Voucher Program (Section 8) is a critical component of affordable housing in Washington
6. Insufficient public infrastructure funding and regulatory barriers disproportionately burden affordable housing development
7. Insurance costs for housing continue to increase
8. Homelessness remains pervasive and persistent issue
9. Low-income people with the greatest needs require affordable housing and services to remain in housing
10. Manufactured housing is an important source of affordable housing
11. Rising energy costs continue to impact the affordability of housing
12. Adequate farmworker housing is key to the state's agricultural economy

Source: "Affordable Housing Advisory Board Report, 2005 – 2010"

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Strategies to Meet Needs for Affordable Housing

Use Local Government Financial Support for Affordable Housing

⇒ Support use of document recording fee revenues for low income housing
⇒ Encourage local governments housing levies for affordable housing

Make More Public Investment In Infrastructure

⇒ Reexamine the balance of "who pays for growth" with respect to affordable housing. Support more public investment in infrastructure from general tax revenues, rather than depending on impact fees, hook-up fees and development requirements that can add to housing costs.
⇒ Support deferral of impact fee collection or waiver for low-income housing

Pursue Regulatory Strategies and Incentives that Support Affordable Housing

⇒ Promote inclusionary zoning requirements for affordable housing or voluntary programs with density bonuses and other incentives for developers.
⇒ Require minimum densities within urban growth areas (UGAs)
⇒ Support compliance with the statutory requirement to allow accessory dwelling units
⇒ Substantially simplify local building codes through the state building code
⇒ Encourage better environmental review of plans and regulations to streamline permitting.
⇒ Encourage priority permit processing for low-income housing developments.

⇒ Encourage small nodes of housing development surrounded by rural land.
⇒ Provide more public education and community involvement so that citizens see that housing density can be accomplished in a way that enhances rather than detracts from the quality of life.
⇒ Examine other ownership models such as "mutual housing" and cooperatives.

Help Developers Address Rising Insurance Costs

⇒ Ensure there is affordable and available insurance coverage for housing contractors, particularly condo builders, small homebuilders, and subcontractors.
⇒ Encourage risk-reduction and safety programs within the affordable housing industry.
⇒ Continue to work on liability reform for all housing development and operations while protecting consumer interests.

Significantly Reduce Homelessness for Individuals And Families

⇒ Adopt and implement a coordinated plan to end homelessness in ten years.
⇒ Utilize and replicate the Homeless Families Services Fund to meet the need for homeless families to address the "housing plus service" needs of other homeless populations and special needs populations.

Promote Supportive Housing

⇒ Increase the amount of permanent supportive housing.
⇒ Increase the supportive housing capacity of local housing and service providers through federal, state, and privately sponsored technical assistance.

Promote Quality Manufactured Housing And Equitable Regulation

⇒ Utilize CTED technical assistance to implement SB 6593 by revising local regulations that have the effect of discriminating against consumers' choices in the placement or use of a manufactured home.
⇒ Support permit fees for manufactured home installation.
⇒ Support changes to land use codes to allow for condominium conversion or other home ownership opportunities for land currently zoned for mobile and manufactured home parks.

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⇒ Develop a homeowner strategy that supports movement from mobile to manufactured homes.
⇒ Develop a homeowner strategy that supports the allowance and acceptance of manufactured homes for both new development and redevelopment/in-fill projects.
⇒ Support expansion of the Office of Manufactured Housing to include other services to provide homeowner opportunities for seniors and first time homebuyers.

Increase Investment In Farmworker Housing
⇒ Support the provision of more permanent housing for farmworkers.

Additional Concerns
Lead-based paint
According to Federal government data, 86% to 95% of all residential lead-based paint hazards are found on housing built before 1960. The issue of lead-based paint hazards in housing is not only a safety and health concern, but is inseparable from affordability. Measures taken to maintain and preserve established, older housing are generally more cost effective than replacing it. Housing units built before 1960 are 45 or more years old. Those that have not undergone significant renovation are now in need of attention.

Section 8 voucher program
The current federal administration has significantly reduced Section 8 program funding, with additional cuts scheduled until 2009. The needs cannot be met by other housing programs, since all other federal and state low-income housing subsidy programs combined total $160 million a year in Washington State.

Housing for the elderly – changing demographics
Washington's elderly population will grow rapidly after 2005. The population of age 75 and older shows the most rapid growth after 2015 when the Baby Boom generation has its impact. Affordable housing that is accessible to services will be essential for addressing this aging population.
Excerpted from: "Affordable Housing Advisory Board Report, 2005 – 2010"

Housing Assistance Programs
There are a number of state and federal housing programs available to assist with a variety of housing needs. A brief description of some of the programs that may be applicable to Cathlamet is provided below.

Washington State Department of Community, Trade and Economic Development -
Weatherization grants are available to non-profits and local governments for low-income persons, families with young children, and the elderly. Energy Matchmakers provides matching grants to local government for low-income persons. Mortgage/Rental Assistance is available for dislocated timber and fishing impact counties, including Wahkiakum County; Community Development Block Grants/Housing Enhancement funds can be used to carry out a locally designed housing program; HOME provides funds for housing construction, repair and rehabilitation, and first-time homebuyers and rental assistance in qualifying areas. The Housing Trust Fund provides up to 25 percent of development costs for housing.

Washington State Housing Finance Commission - The House Key program offers financing to new homeowners who meet income criteria. The Multifamily Tax-Exempt Bond Financing Program offers bonds to finance housing owned by for-profit and nonprofit entities. The Low-Income Housing Tax Credit Program allocates federal income tax credits to investors in qualified low-income rental housing. The sale of bonds is used to support the Affordable Housing Initiative and the Nonprofit Program. The former provides low-interest subordinate loans for housing developed by nonprofit organizations, while the latter provides financing for low-income rental

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housing. The Housing for the Elderly Program provides financing for rental housing, assisted living, retirement communities and nursing homes owned and operated by a for-profit or nonprofit organization.

USDA Rural Development - The Guaranteed Rural Housing Program provides mortgage guarantees for qualified home buyers. Mutual Self-Help Housing Loans are made to individual families who wish to work together to build their own homes. Availability of water, sewer, and affordable land are critical to the success of this program. Home Ownership Loans are offered to families and individuals without adequate housing who are unable to obtain private lender loans. Home Improvement Loans and Repair Loans and Grants are available to existing low-income homeowners. The Housing Preservation Grant provides funds to public and private non-profit groups to finance rehabilitation of owner-occupied, rental or cooperative housing for low and very low-income households. Rural Rental Housing Loans provide funds for living units for persons with low- and moderate-incomes who are age 62 and older.

U.S. Department of Housing and Urban Development (HUD) - The Section 8 Existing Housing Program provides rent subsidies to households with incomes below 50 percent of the area median for privately-owned rental housing. Supportive Housing for the Elderly provides interest-free capital advances and rental assistance to nonprofit sponsors and developers of housing for the elderly. Supportive Housing for Persons with Disabilities provides similar assistance to nonprofit sponsors and developers of housing for persons with disabilities. HUD/FHA Mortgage Insurance is available to private or nonprofit owners of new or existing market-rate, multifamily rental housing. A similar program provides mortgage insurance for home mortgages made by private lenders.

Private Lenders - The Federal Home Loan Bank sets aside a percentage of its net income for grants and rate write-downs to participating lenders. Their Affordable Housing Program provides below market-rate loans and grants for very low- to moderate-income ownership and rental housing. The Community Investment Fund provides loans for owner or rental housing for households at or below 115 percent of area median income and commercial development loans in low- and moderate-income households. The Challenge Fund provides recoverable grants to community-based organizations for predevelopment costs of affordable housing. The Washington Community Reinvestment Association (WCRA) is a statewide private lender providing long-term conventional financing for multi-family rental and special needs housing. The Washington Community Development Loan Fund provides predevelopment financing for nonprofit organizations for housing and community development projects benefiting low-income persons. The Low Income Housing Fund is a national nonprofit financial institution that offers financing for affordable housing and community development at favorable rates and terms.

Local Funding Strategies - General obligation bonds for housing can be issued for housing that meets the needs of households with incomes at or below 80 percent of the area median income. A Special Purpose Property Tax Levy is available to cities and counties to implement locally designed housing programs for low- to moderate-income households.

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Natural Environment

Introduction

The natural environment functions as a complex set of interrelated dynamics—such as climate, geology, soils, wildlife, vegetation, etc.—as well as interrelationships between the natural and the built environment—including residential development, farming and forestry, flood control structures and infrastructure. Due to these interrelationships, much of the discussion in this element will occur in the context of watersheds and at a county-wide scale.

The Growth Management Act (GMA) of 1990 requires all cities, towns and counties in the state to identify and protect the functions and values of environmentally sensitive areas, which are termed "critical areas." The GMA defines critical areas as frequently flooded areas (including areas prone to tsunamis), geologically hazardous areas (including areas prone to erosion, landslide, seismic activity, etc.), fish and wildlife habitat conservation areas, wetlands, and recharge areas for aquifers used for potable water. This approach has been signed into law not only to protect environmentally sensitive areas, but also to protect humans from natural hazards presented by the environment, such as flood and geologic hazards.

CLIMATE

Wahkiakum County has an area of 264.2 square miles, or 169,088 acres, and is one of the smallest counties in the State of Washington, ranking 37th among 39 counties. Wahkiakum County is located in southwest Washington State, and is bounded on the north and the west by Pacific County, Lewis County on the northeast corner, on the south by the Columbia River, and on the east by Cowlitz County.

Wahkiakum County enjoys a typical Pacific Northwest maritime climate. This moist marine air moderates temperatures so that summers are dry and cool, while winters are wet but mild. Precipitation is heaviest between October and March. While annual precipitation can range from 45 to 118 inches, the average is 70-85 inches per year. Lighter rainfall averages are found in the southeastern portion of the county, with the highest amount of rain falling in the rugged terrain that parallels the northern border of the county and descends from the Willapa Hills. Snowfall is generally light and of short duration, given that most of the county is at relatively low elevation and the moderate temperatures. Temperatures are generally mild, averaging from 31 to 46 degrees in winter and average between 50 to 76 degrees on an average summer day. Prevailing winds during summer are from the north, northwest and west, while winter winds shift to the east, southeast and south. Wind patterns depend upon weather systems over the Pacific Ocean to the west. Ambient air quality is good, as there are no major discharges from industry within the county. Industrial uses along the Oregon border of the Columbia River rarely effect air quality in Wahkiakum County.

Natural resource industry has formed the backbone of Wahkiakum County's economy since early settlement days. Much of the area's suitability for resource production is due to its climate. The soils, temperatures and rainfall are beneficial for growing timber and agricultural products, created mineral resources, and have produced fisheries that, until recently, seemed inexhaustible. Climate, soil, and geology also contribute to extensive occurrence of environmentally sensitive areas. These include wetlands, floodplains, aquifer recharge areas, fish and wildlife habitat, and geologically unstable areas. Floods, earthquakes, landslides, and other natural disasters are not rare or unusual occurrences in Wahkiakum County.

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Wahkiakum County Watersheds

In 1998, the Washington State Legislature enacted the Watershed Management Act authorizing local governments to develop a plan for watershed protection. From 1999 to 2004 planning studies were conducted and planning unit discussions were held for Watershed Resource Inventory Areas (WRIAs) 25 and 26 to evaluate appropriate policy and implementation actions to address the four areas of watershed concern:

- Water Quantity
- Water Quality
- Aquatic Habitat
- Instream Flow

Wahkiakum County contains two main drainage basins—Grays River (which includes Crooked Creek and Deep River) and the Elochoman River—as well as two smaller basins—Skamokawa Creek (including Jim Crow Creek) and Mill Creek (part of the Abernathy/Germany/Mill Creek basin in Cowlitz County). Local governments adopted plan objectives in 2000 which outlined agreed-upon principles for protecting and enhancing the watershed.

Water needs throughout the watershed are met by both surface and ground water supplies. Municipal, industrial, and residential water supplies are a mix of surface water diversion and ground water wells. The town of Cathlamet receives its water supply from the Elochoman River. Based on a water rights review, ground water sources supply over 90 percent of the water required of self-supplied commercial and industrial facilities. Water rights for irrigation and stock watering demands are more evenly distributed among surface (48%) and ground water (52%) sources.

Forested lands comprise 77% of the land cover throughout the county's watersheds. Non-forested and logged lands represent 11 percent of the land area in WRIA 25. Agricultural uses cover approximately 8% of the land in WRIA 25, while developed lands make up 2%of land coverage. Surface water bodies take up the remaining land area. Types of land coverage are summarized in the table below.

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WRIA 25 Land Cover in Acres

Basin	Agriculture	Conifer	Hardwood	Mixed	Riparian, Wide Rivers	Non-Forested, Logged
Grays River	6,280	66,517	17,341	6,937	1,899	5,230
Skamokawa	4,984	13,027	23,568	---	408	4,088
Elochoman	4,759	27,372	15,088	---	275	4,739

Source: WRIA 25 & 26 Management Plan

Change in the landscape is slowly taking hold. There are fewer large agricultural operations than in years past, while residential growth is occurring, especially in the Elochoman watershed area near Cathlamet, and on Puget Island. Forestry remains the predominant land use throughout the county.

Water Supply

Three principles guided the development of water supply strategies for WRIAs 25 and 26:

1. Existing water rights cannot be changed or impaired by the Watershed Management Plan.
2. As the region continues to grow and develop, new or expanded water supplies will be needed for communities, businesses, and citizens.
3. Diversion of water from streams or pumping from aquifers can deplete stream flows, with unintended consequences for aquatic habitat.

The watershed planning effort provided an opportunity to explore strategies for striking a balance between the latter two principles, without impairing existing water rights. A water right permit is not required for domestic uses that consume less than 5,000 gallons per day. (Domestic water is not an exempt use, but is exempted from the permitting requirements for a water right.) Two policies resulted from this discussion:

1. Public and private water users throughout WRIAs 25 and 26 should have access to water resources to meet new or expanded needs for water supply consistent with adopted land use plans.

2. Water resource development to meet new or expanded needs should avoid or minimize effects on stream flows or aquatic habitat in stream reaches where flow conditions are an important factor for sustaining aquatic life, including fish populations in their various life stages.

To put these policies into operation, the Planning Unit reviewed a range of water management strategies. These strategies included:

- Development of new surface or ground water supplies
- Water conservation
- Water reclamation and reuse
- Voluntary transfers of water rights
- Aquifer storage and recovery
- Surface water storage.

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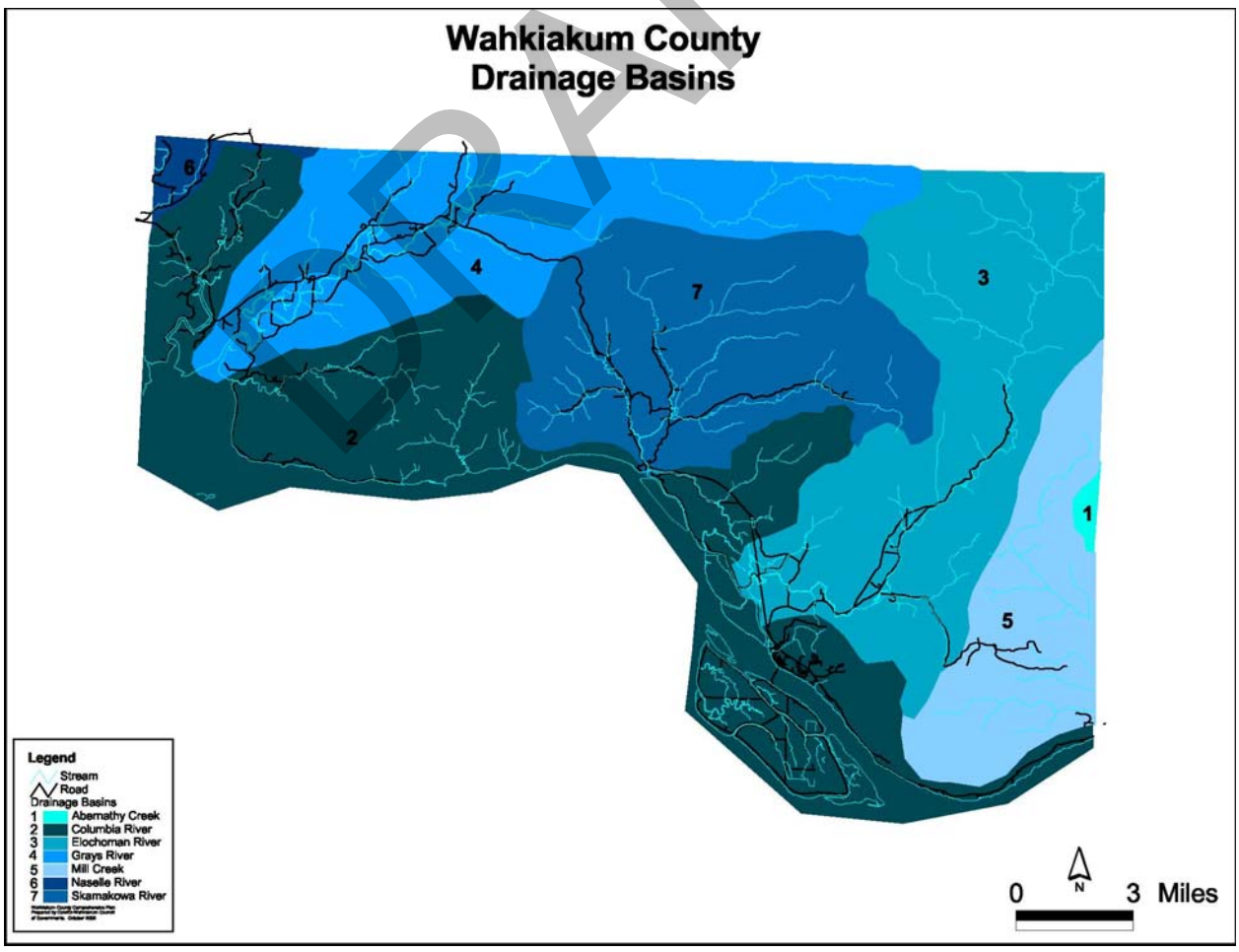

Projected Water Needs
Projections for water needs were developed for municipal water suppliers, smaller public water systems throughout the region, and for homeowners who rely on domestic wells. Collectively, the need for water from public water supply and domestic wells is projected to increase by 47 percent from year 2000 to year 2020, for WRIAs 25 and 26 combined. Smaller municipal water providers are expected to have a relatively large percentage increase in population growth; however, the absolute increase in demands as a result of the growth will be relatively small.

The population of the watershed is expected to increase by about 37% between 2000 and 2020, primarily in the unincorporated area. This represents an annual growth rate of about 1.8%. The population growth in numbers is actually relatively small, representing an increase from about 3,800 persons in 2000 to around 5,200 persons by the year 2020. The Grays River and Skamokawa Creek basins together will be home to about 2,100 persons, and the Elochoman sub-basin is projected to have about 3,100 persons by 2020.

Stream Flow
Stream flow in the lower reaches of tributaries to the Columbia River is influenced by tides from the Pacific Ocean as well as changes in water level on the Columbia River. Whenever water levels in the Columbia River are higher than natural flows of the tributary, the tributary waters back up. At certain times and places this can extend for miles upstream. These are instances when diversions for water supply do not influence flows or water levels to any measurable degree. Most communities in WRIAs 25 and 26 have water sources located upstream of tidally influenced reaches. In order to prevent unnecessary impacts on stream flow, issuance of new water rights to these communities should be carefully managed.

Communities should evaluate all reasonable alternatives prior to developing a new supply that will reduce late summer stream flows. For example, in some locations ground water from deeper confined aquifers may be more appropriate than shallow ground water sources. Where alternatives are either infeasible or prohibitively expensive, other approaches such as water conservation and development of reclaimed water supplies can help reduce needs for new supplies. The Planning Unit recommends that procedures be established to require exploration of alternative solutions in some detail before Ecology issues new water rights that would impact stream flows. Where such rights are issued, the plan recommends that mitigation be provided—at least in part—to offset the effect on stream flow.

Determinations of minimum instream flow requirements for fish habitat, as would be established by Ecology through a rule adoption or administrative process, have not been determined for any of the sub-basins. However, there have been two surface water source limitations in Wahkiakum County. Fossil Creek, in western Wahkiakum County, has been closed to new surface water rights since 1952. The Elochoman River and its tributaries have had restricted surface water source limitations in place since 1973. These restrictions limit the amount of surface water withdrawal from May 1 to November 1 in order to protect summer stream flow.
Source: WRIAs 25 & 26 Watershed Management Plan

Tidally Influenced Stream Reaches
Tidally influenced streams and rivers occur in all of the sub-basins that have tributaries to the Columbia River, and include the Grays River, Elochoman River, Skamakowa Creek, and Germany-Abernathy-Mill Creeks. The magnitude and timing of daily fluctuations in water levels in tidally-influenced reaches vary. Major factors include the distance from the mouth of the tributary to the mouth of the Columbia River, and the daily variation in tidal levels at the mouth of the Columbia River.

A brief review of tidal data shows that the water level on the Columbia River can vary nearly eight feet at Skamokawa Creek, which is near the mouths of both the Grays and Elochoman Rivers. The extent of tidal influence within tributaries to the Columbia River depends on the gradient of the tributary stream valley. A relatively flat tributary valley may have tidal influence for several

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miles upstream of its confluence with the Columbia River. A steeper tributary stream may have only a short reach with tidal influence. Information is available from different agencies that have estimated the extent of tidal influence in these tributaries.

Ground Water Resources
The principal hydrogeological units that yield the largest quantities of ground water to wells within WRIA 25 are the unconsolidated sediments that occur in the Grays River system valleys and along the Columbia River. Historically, these units have yielded between 5 and 500 gpm to wells in the upper parts of the Cowlitz and Grays River systems and from 500 to greater than 3,000 gpm near the Columbia River.

The other geologic units that have the potential to produce sustainable ground water yield include the Wilkes Formation of the Continental Sedimentary Rock Units and the Columbia River Basalt Group (CRBG). However, yields in these formations are variable. Typical yields are on the order of 50 gpm in the Continental Sedimentary Rock Units and as high as 1,200 gpm in local portions of the CRBG.

No comprehensive mapping of exempt(domestic) wells is available to evaluate whether areas of dense well clusters exist that may impact stream water levels. However, based on estimated total ground water use and projected population increase, the ground water withdrawal does not appear to be significant.

Surface Water Quality
Protection and improvement of surface water quality is an important objective of the Watershed Plan. However, programs already exist to protect and improve water quality. The primary vehicle for achieving compliance with State criteria for surface water quality is the Washington State Department of Ecology's (Ecology) Total Maximum Daily Load (TMDL) program, also known as Water Cleanup Plans.

As required by section 303(d) of the federal Clean Water Act (CWA), each state must identify polluted water body segments and submit a list of these water quality limited estuaries, lakes, and streams to the U.S. Environmental Protection Agency (USEPA). To qualify for the list, it must be determined through water quality monitoring that the water body segment does not meet state surface water quality standards and that water quality is not expected to improve within the next four years. The standards are the criteria to ensure that water may be beneficially used for multiple purposes such as fishing, swimming, drinking, and fish habitat.

At the time the Watershed Management Plan was developed, Ecology's 1998 303(d) list served as the State's official list of impaired water bodies. Eighteen water body segments in the WRIAs 25 and 26 planning area are on the 1998 303(d) list. The west fork of the Grays River and the Elochoman River are listed due to higher water temperatures than are suitable for habitat. Skamokawa Creek does not contain any water body segments that are officially listed as impaired.

Ground Water Quality
A variety of factors have the potential to contribute to the degradation in quality of ground water supplies, which is the primary source of drinking water in Wahkiakum County. These factors include point pollution sources (from specific, identified land uses) as well as "non-point" pollution sources (the cumulative impacts of many land uses taken together), shallow depth to the aquifer, and unprotected ground water supplies. Information on ground water quality is fairly limited. However, the information available suggests that, in general, water quality is currently in good condition in shallow alluvial deposits. Potential hazards to water system quality within the Western Wahkiakum Water System and the Regional Water System have been identified in the capital facilities element. Monitored water sources have generally met federal requirements for quality, although there are elevated levels of inorganic constituents such as iron and manganese

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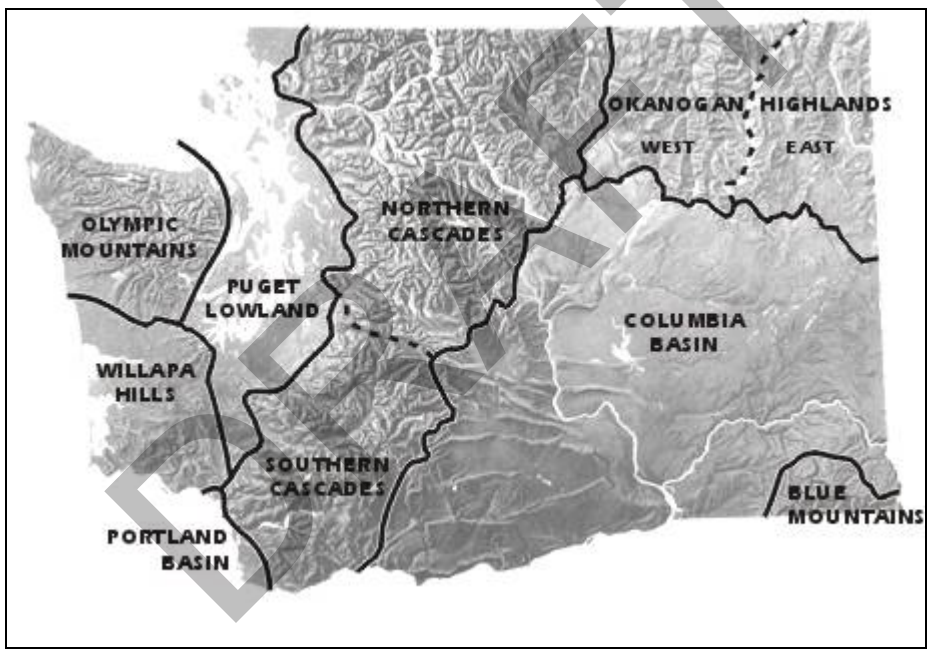
that require treatment in some of the deeper wells. This is generally true of deeper soils of the alluvium as well as glacial and terrace units, the Continental Sedimentary Rock Units and the Columbia River Basalt Group.

Wellhead/Source Quality Protection
Wellhead or source protection measures are recommended in comprehensive water plans for the Western Wahkiakum Water System as well as the Cathlamet Regional Water System. These recommendations are based on land use restrictions within specified distances of well fields or surface water diversions. These are described in more detail in the Capital Facilities & Utilities Element.

Geology

Geology greatly influences the development of soils, slope stability, and dictates the typical substrate for streams within a watershed. Wahkiakum County is located within the Willapa Hills Province.

Geologic Regions of Washington



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The Willapa Hills are part of the Coast Range and include the adjacent broad valleys that open up to the Pacific Ocean. Barrier beaches characterize the low-lying coastline, behind which are major estuaries at Grays Harbor and Willapa Bay. The geology is a mix of basalt, sedimentary and volcanic rock. The bedrock comprises a series of moderately folded Tertiary formations of volcanic and sedimentary rock, with a north-south deformation. The Columbia River Basalt Group contains columnar jointing and pillow lava, some flows over 100 meters in thickness. Flows of Columbia River basalt followed ancestral courses of the Columbia River until they reached the Pacific Ocean at Willapa Bay and Grays Harbor.

As it flowed to the sea, meltwater from continental glaciers carved a wide valley along the present-day Black and Chehalis Rivers. However, most of the province was never glaciated, so ridges and hills have a rounded topography and a deep weathering profile. The descent to the Columbia River on the south is generally precipitous, but elsewhere the hills merge gradually into the surrounding lowlands. Evidence for large earthquakes (magnitude 8 or greater) on the

interface of the Juan de Fuca and North America plates is preserved in the coastal marshes of this province.

Wahkiakum County consists of rugged mountainous uplands, a surrounding belt of low hills, and areas of relatively broad, flat floodplains located along the southern fringe of the province. Though the Willapa Hills contain rugged, mountainous country, most of the region is less than 2,000 feet in altitude. The steep canyons and tributary streams brought sand and gravel to the lowlands, where much of the settlement has occurred on alluvial soils. These river valleys are connected to adjacent floodplains that border the Columbia River. Runoff from the steeply-rising foothills frequently leads to flooding of valley floors.
Sources: Washington DNR Division of Geology & Earth Resources; WRIA 2526 Watershed Management Plan

Soils

The Soils Survey conducted by the U.S. Soil Conservation Service (now the Natural Resources Conservation Service) includes a series of soil maps which can be used for regional planning. The survey provides information regarding suitability for agriculture, residential development, recreational uses, woodland and wildlife habitat, and other uses.

Soils consist of several properties that combine to create unique soil associations that affect the suitability of the soil for various uses. Load-bearing capacity, hydric soils, erosion potential, and shrink-swell action all play a significant role in development of land. Hydric properties are particularly relevant to determining potential for on-site waste treatment, the presence of wetlands, or other environmental concerns. Soils can also be designated as “prime agricultural” or “unique agricultural” soils. Prime agricultural soils are optimum for growing crops and livestock. Unique agricultural soils are suited for specialty crops. Cranberry cultivation in neighboring Pacific County is the closest example of unique agricultural soils.

Descriptions of soil classifications relevant to Wahkiakum County are provided below, as presented in the WRIA sub-basin plans.

- **Ocasta**
- **Grehalem-Rennie**
- **Lytell-Astoria**
- **Zenker-Elochoman**
- **Raught-Germany**
- **Bunker-Knappton**
- **Lates-Murnen**

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The soil types described above include references to limited suitability for development. The Soil Conservation Service provides the following general guidelines for development suitability:

Soil Suitability for Development

Slope Category	Development Suitability	Description
0% - 8%	Good suitability for development	Nearly flat to moderately gentle slope. Slopes general present few problems to development.
9% - 15%	Good to moderate suitability for development	Gentle to moderate slope. Slopes should be given careful consideration in the design.
16% - 30%	Moderate to poor suitability	Moderate to steep slopes. Very careful consideration in design is essential. If misused, definitely susceptible to serious erosion and slope failure.
+30%	Unsuitable for development	Steep to precipitous. If disturbed by construction and forest removal, widespread failure is highly probable.

Source: Soil Conservation Service

Wetland areas are characterized by hydric soils that are susceptible to flooding, ponding or saturation. Of the seven soil associations described previously, only the Ocasta association and the Rennie soils are designated in the Soil Survey as hydric soils, although low-lying soils or depressions involving other soil groups can experience saturation and ponding. These are typically located within the low lying floodplain areas, and experience saturation and ponding at the soil surface. The deep but poorly drained Ocasta soils are found along coastal bays, and have a high water table. Rennie soils are silty clays typically located along drainage ways and depressions. Each of these soil associations is suitable for silage, pasture, field crops, wildlife and wetland habitat. Development limitations include flooding hazards and a seasonally high water table.

NATURAL HAZARDS – EROSION & EARTHQUAKE

EROSION

Wind and water action can pose serious threats to life and property by moving soil and destabilizing hillsides, shorelines, and other sensitive areas. Pile dikes placed in the Columbia River on the south side of Puget Island were designed to direct the current into the channel and keep it clear of sand. The pile dikes have created an unintended effect with the creation of powerful eddies further downstream. These eddies are causing erosion to riverfront properties on Puget Island, including the Puget Island dike at Pancake Point and further northwest, along North Welcome Slough Road. Sandbags have been placed on multiple occasions to assist in maintaining the dike as well as protect private property.

The County has worked to design a bank stabilization plan and to obtain permits and secure funding for implementation of the plan. The U.S. Army Corps of Engineers, which maintains the pile dike as part of their duty in maintaining the Columbia River as a navigable waterway, has agreed to some temporary emergency work. A small amount of dredge spoils have been placed in scour holes in 2005 to reduce or slow the erosion. Completion of permitting to implement the stabilization plan is essential in reducing future emergency actions.

Erosion is also a problem in the county's watersheds. Upland forest practices and a dense forest road network have increased sedimentation in the lower reaches of the Grays, Skamokawa, and

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Elochoman river basins. Agricultural uses and rural development have impacted middle and lower watershed sections through loss of forested riparian cover, agricultural practices, diking and riverbank hardening, and land development. These activities have exacerbated erosion along the banks of the lower stream reaches. The Comprehensive Flood Hazard Management Plan as well as the WRIA Watershed Management Plan address these specific activities and include recommendations to reduce impacts to the watershed.

Landslide Hazard Areas

Landslides include a wide array of earth movements, including rock falls, slope failures, and shallow debris flows. These potentially deadly events often destroy private property, roads, utilities, and other infrastructure, disrupting service and interrupting transportation routes.

Washington State has six landslide zones. Steep terrain typical of the Southwest Province has been exposed to weathering over the ages. Within this province, landslides typically take one of two forms:

- Earth Flow (Slumps) – The most common type of landslide occurring within the province. Ancient and active earth flows are common in high, steep terrain as well as areas of low rolling hills. Large excavations or stream erosion at the base of a flow can reactivate these slides or start new ones.

- Debris Flows – These occur in various locations throughout the province, typically in mountainous areas or steep slopes where soils are thin and rock is strong and relatively un-weathered. Heavy rains or rain following a wet snow commonly trigger these landslides.

The most common sources of landslides are bluffs along shorelines of river valleys. A landslide triggered a tsunami that engulfed Puget Island in the 1960's, killing one person. During the winter of 1995-1996 there were numerous landslide events and resulted in the closure of S.R. 4 just past the eastern border of Wahkiakum County. Even though landslides often tend to reoccur in certain areas, determining the probability of any landslide is difficult due to the number of contributing factors, including:

- Local topography –Shape, size, degree of slope, and drainage conditions affect landslide danger.
- Erosion - The erosion power of water bodies can create steep, unstable slopes.
- Saturation of slopes - Periods of heavy rainfall and/or rapid snow melts can weaken rock or soils on slopes.
- Geology - Accumulation of groundwater can lead to weak slopes, especially where sand and gravel lie above less permeable soils.
- Earthquakes – Stress from earthquakes greater than magnitude 4.0 commonly cause slope failure.
- Volcanic eruptions – Loose ash deposits and debris flows typically follow an eruption.
- Excess weight on weak slopes - Accumulations of rain or snow, stockpiling of rock, or manmade structures may create stress on weak slopes and make them prone to failure.
- Human actions – Soil and slope disturbances due to construction, logging, road building, and other activities can lead to slope failures.

Certain soils types are subject to mass movement, such as occurs in a landslide. The soil survey identifies soil characteristics and factors that increase vulnerability to landslide. These include the depth of soil before reaching bedrock, permeability of the soil, presence and availability of water, effective rooting depth of vegetation, rates of water runoff, and the degree to which water erosion hazards are present. Human activities tend to exacerbate the potential for slope failure. Areas of potential landslide hazard, based on soil type, are illustrated below.

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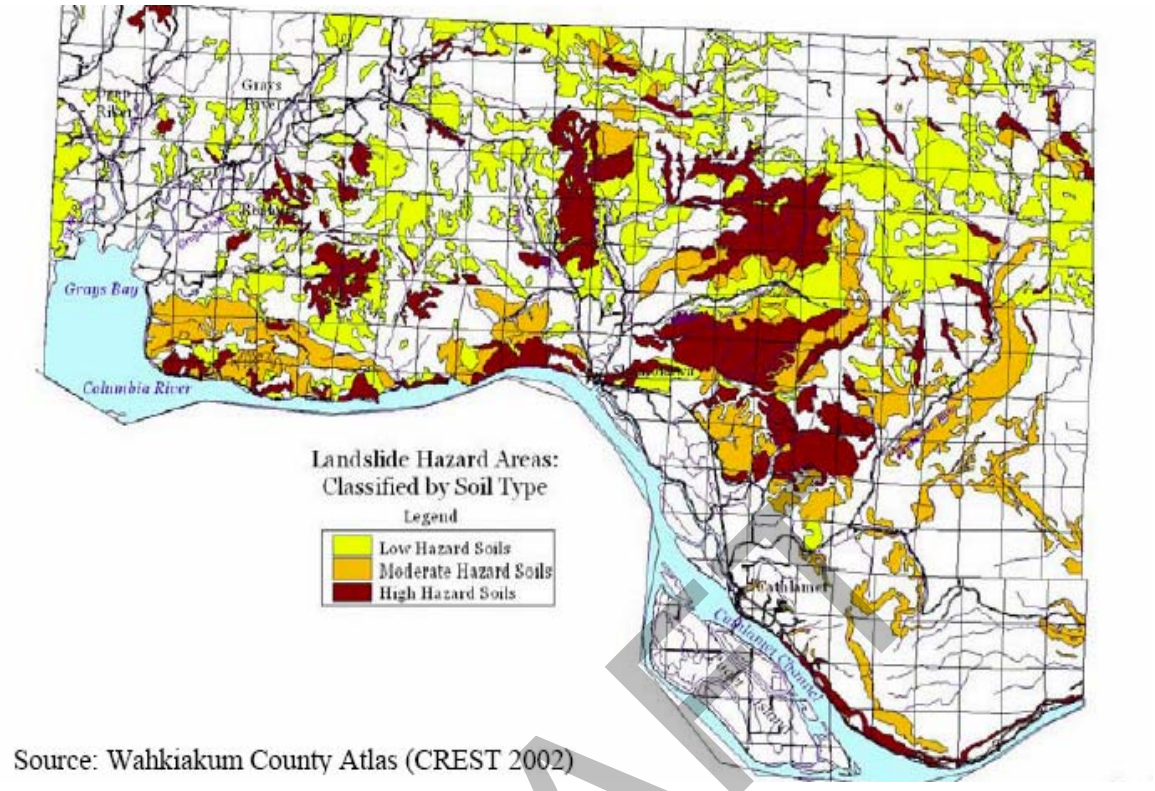
Landslide Hazard Areas



Source: Wahkiakum County Atlas (CREST 2002)

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EARTHQUAKE

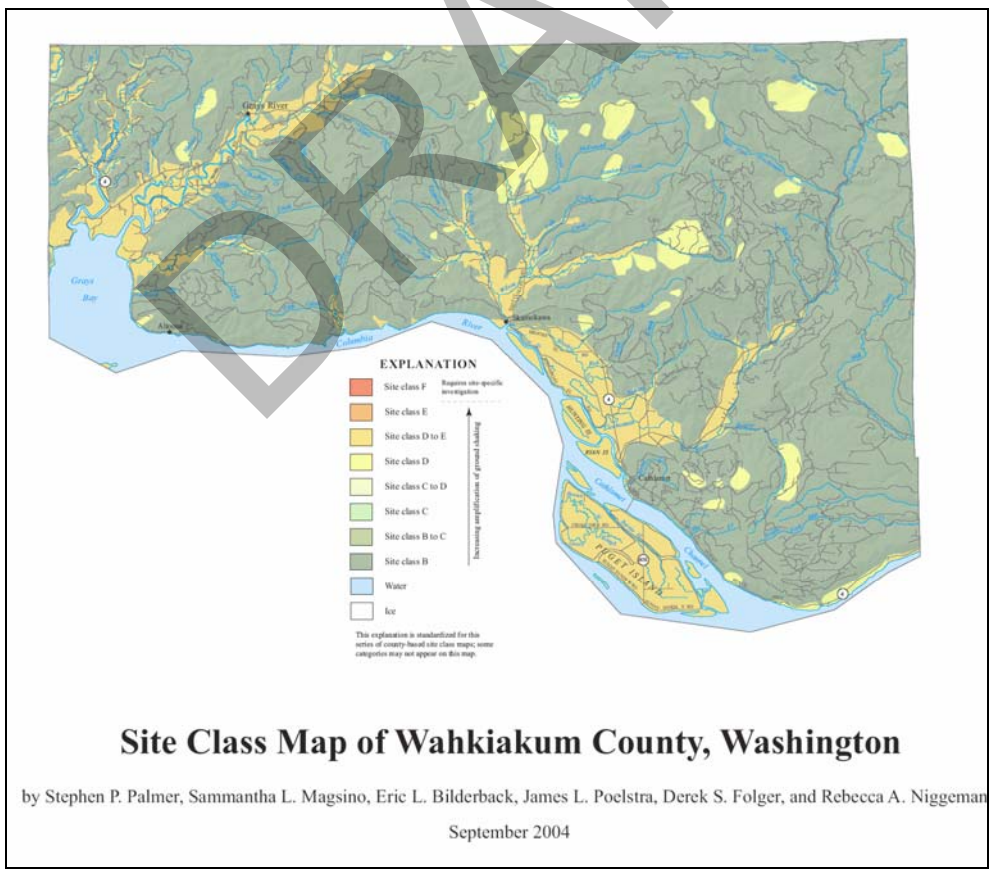
An earthquake occurs as a sudden release of stored seismic energy that typically occurs along a fracture or fault within the earth. Ground shaking during these events may be minimal or disastrous. The consequences of strong shaking are many—loss of life, injury, damage to buildings and structures, which have the potential to create long term economic disruption.

The Pacific Northwest sits squarely at the convergence of a “collision zone” between two continental plates. The Cascadia Subduction Zone is a fault or fracture occurring between the North American plate and the Juan de Fuca plate. It runs under the Pacific Ocean from northern California and extends north to British Columbia. These continental plates are converging at a rate of about 2 inches per year. To further complicate matters, the Pacific plate is pushing the Juan de Fuca plate in a northward direction, resulting in an accumulation of seismic strain. Earthquakes result from the abrupt release of these seismic forces.

Table 1. Site class designations defined in Building Seismic Safety Council (1997).

Site class	Average shear wave velocity in the upper 100 feet (30m)	Rock or soil category
A	greater than 5000 ft/sec (greater than 1520 m/sec)	hard rock
B	2500 to 5000 ft/sec (760 to 1520 m/sec)	rock
C	1200 to 2500 ft/sec (360 to 760 m/sec)	very stiff soil or soft rock
D	600 to 1200 ft/sec (180 to 360 m/sec)	stiff soil
E	less than 600 ft/sec (less than 180 m/sec)	soft soil
F	soils susceptible to potential failure under seismic loading, such as liquefiable soils or sensitive clays, peats, or organic clays thicker than 10 ft (3 m); thick sections of clays	special category indicating a geotechnical evaluation should be performed to assess amplification potential

The following map gives a general indication of areas where soils will amplify ground shaking during an earthquake. Most of the susceptible areas in Wahkiakum County are "Class D to E", and are found along floodplain river valleys, coastal lowlands, and islands (areas in gold). Isolated areas of slightly less risk are scattered along steep upland areas (yellow shaded areas).



Source: Washington State DNR, Division of Geology & Earth Resource, " Liquefaction Susceptibility and Site Class Maps for Washington State"

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NATURAL HAZARDS – LIQUEFACTION & TSUNAMI

LIQUEFACTION

Liquefaction is a phenomenon in which strong earthquake shaking causes a soil to rapidly lose its strength and behave like quicksand. Liquefaction typically occurs in artificial fills and in areas of loose sandy soils that are saturated with water, such as low-lying coastal areas, lakeshores, and river valleys. When soil strength is lost during liquefaction, the consequences can be catastrophic. Movement of liquefied soils can rupture pipelines, move bridge abutments and road and railway alignments, and pull apart the foundations and walls of buildings. Ground movement resulting from liquefaction caused massive damage to highways and railways throughout southern Alaska during the 1964 Good Friday earthquake. During the 1989 Loma Prieta earthquake, liquefaction was a contributing factor to severe building damage in the Marina District of San Francisco. Liquefaction-induced ground movements also broke water lines, severely hampering control of the ensuing fires. Damage caused by liquefaction to the port area of Kobe, Japan, during the 1995 earthquake resulted in billions of dollars in reconstruction costs and lost business.

A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. The susceptibility is a measure of the physical characteristics of a soil deposit, such as grain texture, compaction, and depth of groundwater, that determine the propensity of the soil to liquefy during earthquake shaking. A liquefaction susceptibility map depicts the relative hazard in terms of high, moderate, low, or very low liquefaction susceptibility, and cannot be used to directly predict the severity of permanent ground deformation resulting from liquefaction. Assessment of ground failure effects depends on local site conditions, such as the configuration of the ground slope. A geotechnical evaluation is necessary for a detailed localized assessment of ground failure effects.

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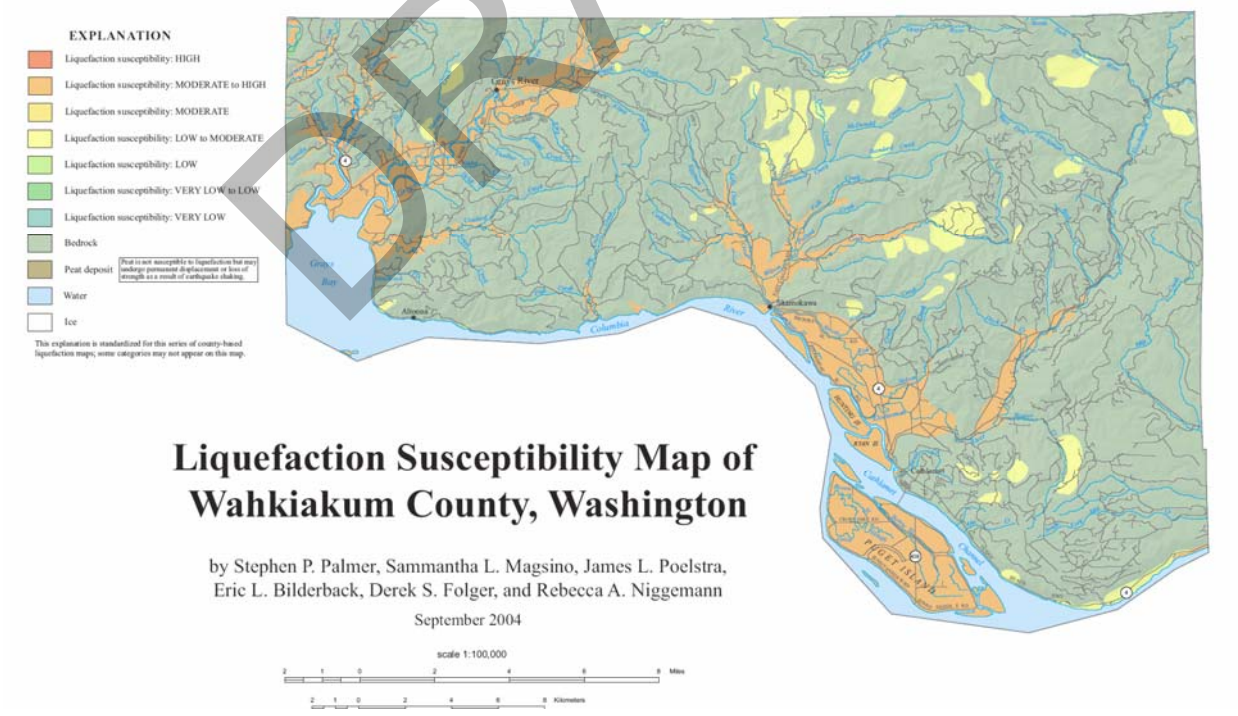

Source: Washington State DNR, Division of Geology & Earth Resources, "Liquefaction Susceptibility and Site Class Maps for Washington State"

TSUNAMI

Tsunamis are typically caused during an earthquake, although landslides and underwater volcanic eruptions may also generate a tsunami. The mechanics of a tsunami are similar to the movement of ripples in a pond. The movement of the ocean floor or a lakebed during an earthquake, or a substantial rock fall into an enclosed body of water displaces that water, which sets off a series of waves. These waves come ashore and resemble a rapidly rising tide, with powerful outward currents. In Southwest Washington, areas of the Pacific Coast are at risk from tsunamis, which can threaten life and property along the shoreline. This often leaves little time for reaction, and populations that are less mobile—including children and elderly—experience elevated risk during a tsunami.

Tsunamis typically travel at great speeds—approaching 600 miles per hour—with the event continuing for an extended period. The 1946 tsunami from Alaska's Aleutian Islands took less than five hours to reach Hawaii, where it killed 159 people. The 1700 tsunami along the Pacific Coast of Washington took about 10 hours to reach Japan. The largest tsunami wave recorded in Washington entered Willapa Bay about 12 hours after the 1964 Alaska earthquake.

Washington's outer coast is subject to tsunamis that are generated by distant sources, such as earthquakes in Alaska and South America, as well as earthquakes occurring within the Cascadia subduction zone. This is a very large and active fault zone under the Pacific Ocean that extends east to the coastline, and generating powerful earthquakes about every 500 years. The most recent occurrence was recorded on January 26, 1700. It is estimated that tsunami waves from another similar event could reach up to 30 feet in height and affect the entire Washington Coast, and would reach coastal communities within minutes.

A tsunami occurred on Puget Island in the 1960s. Although the event is not well documented, it appears that a landslide triggered a wave that covered Puget Island, killing one person.

NATURAL HAZARDS – FLOOD HAZARD AREAS

FLOOD HAZARD AREAS

Flooding generally occurs because of two factors—general flooding of the river system and flooding that results from development, particularly in small basins. In Wahkiakum County, the principal sources of flooding, as identified in the Washington State Hazard Mitigation Plan, include the Grays River, the Elochoman River, and the Columbia River. Since 1956, there have been ten occasions where a Presidential Disaster Declaration has been made due to flooding within Homeland Security Region IV (Clark, Skamania, Cowlitz and Wahkiakum Counties). On average, this represents a federal disaster declaration every five years. A major flood event does occur, on average, every 2 to 5 years within the region. Wahkiakum and Clark Counties have the greatest percentage of areas lying within the 100 year floodplain, with Wahkiakum at 9.1% of all properties, and Clark with 7.5% of land area within the flood plain.

In 2002 Wahkiakum County began a comprehensive assessment of current flood hazards with the goal of creating a management plan that would identify alternatives and action items consistent with state law that could address these problems. The Comprehensive Flood Hazard Management Plan (CFHMP), developed by the Columbia River Estuary Study Taskforce (CREST), takes a watershed approach to addressing flood hazard concerns, and includes three major watersheds in Watershed Resource Inventory Area (WRIA) 25. These include Grays River (which includes Crooked River and Deep River), Skamokawa (including Jim Crow Creek) ad the Elochoman River. Although the Mill Creek portion of the Abernathy/Germany/Mill Creek watershed lies primarily within Wahkiakum County, there are no known flooding issues associated with this drainage basin.

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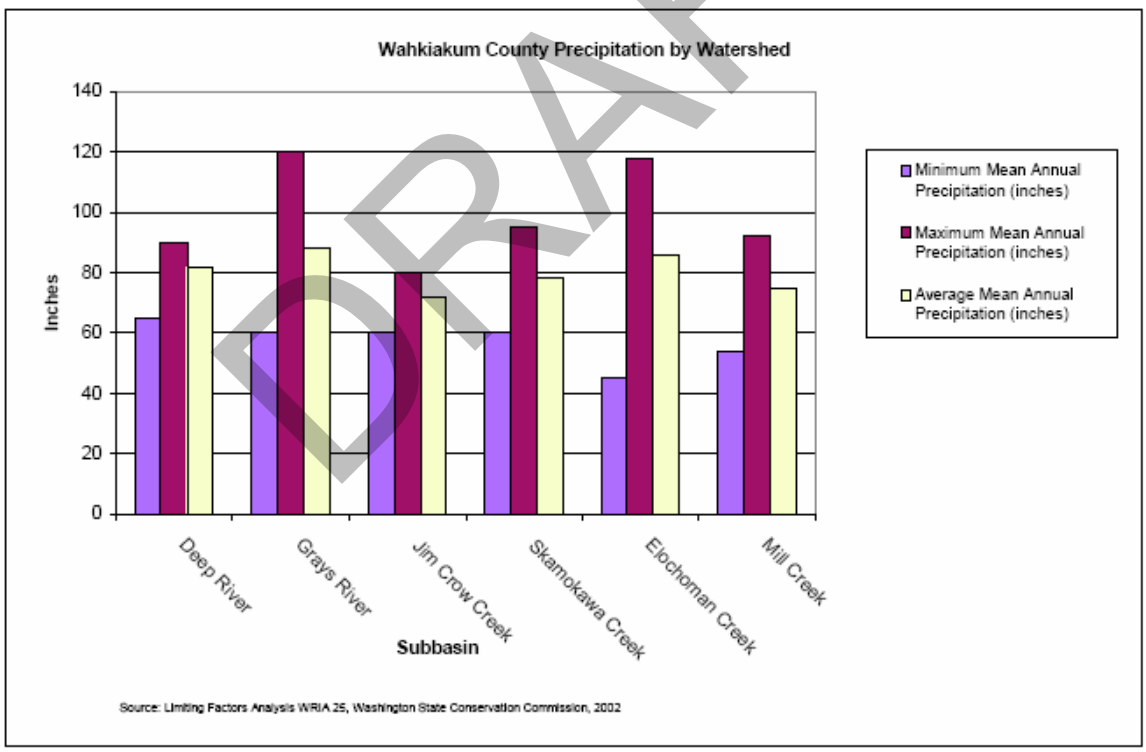
Recognized Flood Control Districts in the County include:

DIKING DISTRICT	WATERSHED AREA
Diking District #1	Puget Island
Grays River Habitat Enhancement District	Grays River
Diking District #4	Elochoman
Diking District #5	Skamokawa

Because flooding is such a frequent event in Wahkiakum County, it is important to understand the dynamics of how floods occur and the approaches used by local, state and federal agencies to deal with these events. Flooding is a natural process resulting from a combination of factors at the watershed scale. In Wahkiakum County this involves major drainage basins as well as the Columbia River Estuary, since flooding can result from a combination of freshwater and ocean conditions. Generally speaking, the likelihood and extent of a flood event depends on the intensity, duration, and timing of water moving through a watershed. These factors can come together in a variety of ways, depending upon climate, soils, land cover, and topography.

The chart below, taken from the WRIA 25/26 watershed plan, illustrates the extent of variance in precipitation patterns in each of the county's watersheds. It is clear that the Elochoman and Grays River watersheds experience the greatest variation between maximum and average precipitation rates.

Precipitation by Watershed



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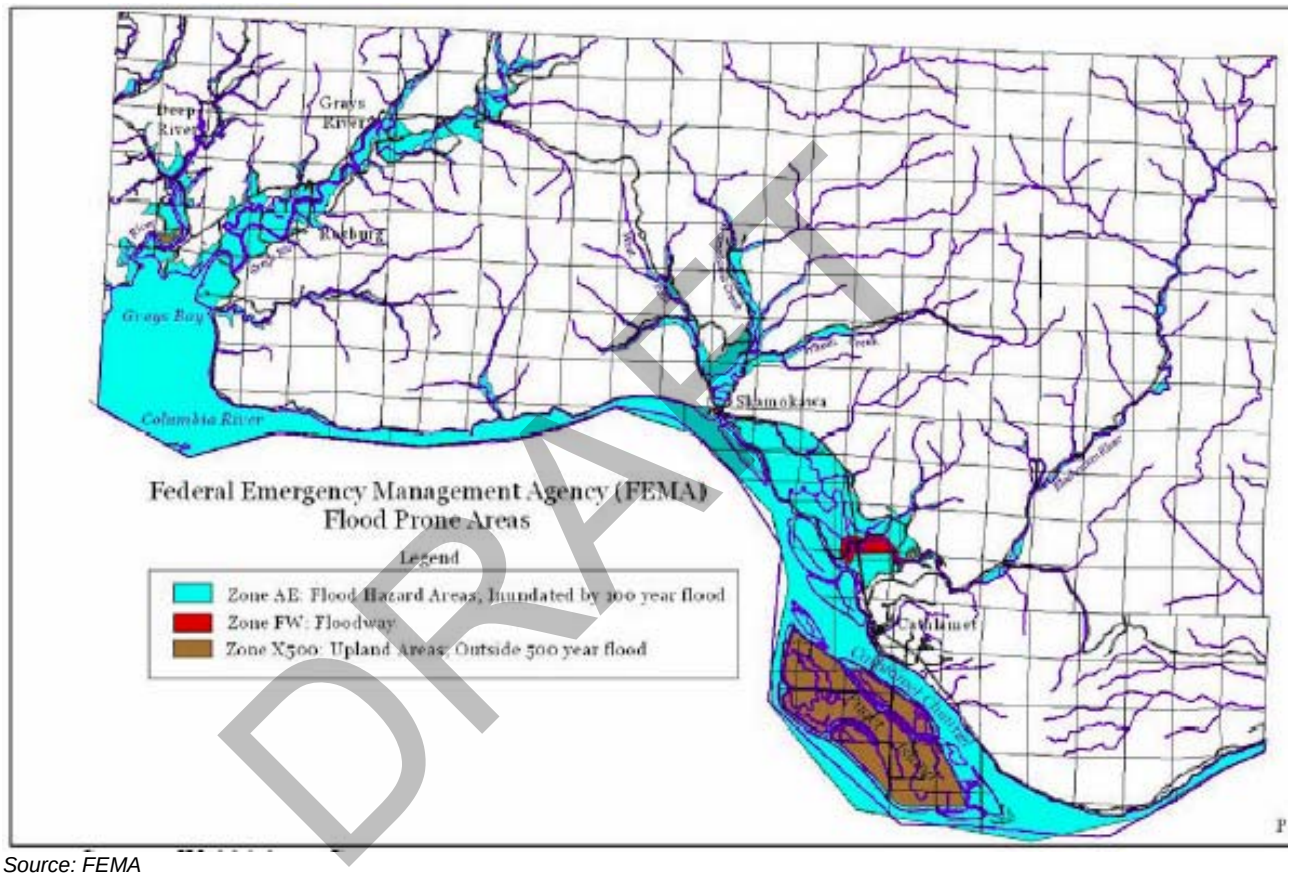
Floodplain is generally defined as the land area on both sides of a river that become inundated with water during a flood. The exact extent of the actual floodplain is always a matter of some debate, due to the nature of flood events and the limits of available data. The Federal Emergency Management Agency (FEMA) defines floodplains according to the probability of flooding of a given magnitude within a time period, such as the "100 year floodplain." Because there is little actual flow data available for the watersheds of Wahkiakum County, existing floodplain mapping

is somewhat rudimentary. The map below shows existing floodplain areas within a 100-year flood event. Zone AE is considered an area of special flood hazard, as it is usually inundated during a 100-Year flood event. Areas of the 100-Year floodplain are shown in blue; floodways are shown in red. Areas outside the 500-Year flood event are shown in brown. This latter category applies to Puget Island, which has an extensive system of ditches and dikes that were constructed to protect farmers and settlers on the island.

Flood Prone Areas
Federal Emergency Management Agency (FEMA)



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Source: FEMA

Floodplain is divided into two categories: the floodway and the flood fringe. Under the National Flood Insurance Program (NFIP), floodways are defined as the channel of a river or other watercourse—including adjacent land areas—that must be reserved in order to discharge the flood without increasing the overall water surface elevation more than one foot in height. The floodway is where most of the water is moving during a flood event, and therefore where water has the greatest force and speed. Development and structures of any type are prohibited within a floodway because they obstruct flood flows and can divert flood waters onto neighboring properties. The flood fringe begins at the outer edge of the floodway and encompasses the area that would normally be completely covered with water, if the elevation of the 100-year flood has not been increased by obstructions or development. But the flood fringe is also where development is most likely to occur, since the land is fairly flat, easy to build on and often has nearby waterfront scenic qualities. This makes it an area where human activities should be carefully approached.

The frequency of flood events is based on river discharge data. Designation of the "100-year flood" area does not mean that a flood can be expected to occur once every 100 years; it means that a flood of a particular magnitude has a 1% chance of occurring each year. Likewise, a 25-year flood event has a 4% chance of occurring in a given a year, and a 10-year event has a 10% chance of occurring in any given year. Discharge information looks at past events to predict discharge levels for a specified time period. Manmade influences—such as paved areas or other extensive, impervious surfaces—have huge impacts upon the rate that water is transferred. Instream structures such as dams, weirs, and rip-rap have similar effects and increase the erosion power of flood waters.

Grays River Basin Conditions

The Grays River headwaters originate in ridges and mountain peaks of the Willapa Hills. The entire watershed covers 124 square miles and is distributed over a three-county area. A land cover analysis found 87% of the land in forest cover, 5% logged, 6% in agriculture, and 2% in aquatic habitat. The river flows in a southwesterly direction as it reaches the lowland floodplains, where it meanders slowly towards the Columbia River. Stream flows in the Grays River are tied directly to rainfall, since there are no lakes, reservoirs, or impoundments for storage. Immediate impacts can—and frequently do—occur during heavy rainfall events. According to the sub-basin plan, the Grays River is "very unstable, prone to mass wasting, and very turbid during even modest rainfall events." Most of the upper watershed flows through steep narrow canyons in the rugged Willapa Hills. When muddy soils are combined with logging activity and road construction, fine sediments are released throughout the watershed, increasing flooding risk.

The channel has been altered significantly due to past splash-damming, channel straightening, streambank hardening, and more recent flood control activities. The mainstem headwaters—East Fork, South Fork, and West Fork—of the Grays River primarily support winter steelhead spawning and rearing. These upper reaches have been impacted mostly by forest practices, which have disrupted riparian function, hydrology, and sediment distribution. The lower six miles of the river consists of tidally-influenced sloughs and diked lowlands. Siltation and runoff from farms and residential development have created water quality issues. The absence of riparian vegetation has exposed stream banks to erosion and created areas sharp stream banks that are increasingly subject to erosion and flooding.

The mainstem of the lower Grays River—as well as most of its lower tributaries—have been diked, armored, drained, and/or relocated, primarily for agricultural purposes. Portions of the middle Grays have been diked for agricultural purposes and armored to protect stream banks from erosion. The flood of 1996 deposited soils that may actually have improved floodplain connectivity in Klints Creek. Similar activity occurred in lower Fossil Creek during the same flood, reducing sediment losses. Subsequent efforts to reconnect Fossil Creek with the Grays River have led to erosion of the deposited sediment, and flooding problems still exist (Wade 2002). The lower reaches of Deep Creek (up to RM 3.9) are diked. Crooked Creek is channelized and entrenched for two miles along its lower reach. The effect of tide gates on floodplain connectivity on Grays Bay tributaries has not been assessed (Wade 2002).

The Wahkiakum Conservation District (WCD) inventoried areas of bank instability throughout the Grays River basin during 1994. Most of the areas identified on the lower reach of the Grays were farms with unrestricted cattle access to the stream and streambank. Areas of concern were identified on the lower Grays (along some of the dikes), upper Impie Creek, lower Thadbar Creek, lower Hull Creek, lower Silver Creek, and Honey Creek. Bank stability is also a concern along the middle mainstem of the Grays in the Gorley Springs area, due to a 1999 breach in the dike that left an unstable channel in its wake. The lower reaches of King and Fossil Creeks also have bank stability issues. Debris flows are common in the South and West Forks, typically a result of shallow landslides on steep, unstable slopes. Bank instability may contribute to elevated turbidity in the South Fork basin, which also decreases dissolved oxygen available for fish. The upper Grays is in fairly good condition for bank stability. The original railroad bed paralleling the East Fork has led to slope failures and debris flows (Wade 2002).

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Tributaries to Grays Bay were also identified for bank stability issues during the WCD survey. Reaches of Rangila, Anderson, and Peterson Creeks were found to have extensive areas of streambank erosion. Lower Hendrickson Creek, lower Crooked Creek, and the North Fork Deep River each had isolated stretches of banks that were unstable. Mass bank failures were found at a frequency of 4.67 per square mile along the Deep River, and at a rate of 6.25 per square mile along Crooked Creek (Wade 2002).

Skamokawa Creek Basin Conditions

The Skamokawa Creek sub-basin drains approximately 14,100 acres or 22 square miles, with 79% of the area in forest cover, 9% is logged, 11% in agriculture, and 1% in aquatic habitat. Major flood prone tributaries include West Valley Creek, the West and Left Fork of Skamokawa Creek, Wilson Creek, Falk Creek and Pollard Creek. This watershed, like others in Wahkiakum County, has elevations that range from sea level to over 2,000 feet. Brooks Slough, a tidal channel through the Julia Butler Hansen Wildlife Refuge, is fed by Alger Creek and Risk Creek. Jim Crow Creek is a separate drainage sub-basin isolated by steep hills and partially influenced by tidal forces from the Columbia and represents a moderate flood hazard risk.

The Skamokawa has been diverted from its natural, meandering form into a straightened channel from the mouth up to River Mile (RM) 1.7. It flows through agricultural lands in a confined trench from this point up to RM 6.6. The lower reaches of tributaries to the Skamokawa have been diked and entrenched for agricultural uses. In addition to diking, a canal was constructed to divert flow from the stream, and tide gates were installed, effectively cutting off an artificially created stream meander. Pump stations control channel elevation on Nelson Creek and on Brooks Slough in the wildlife refuge. Alger Creek is diked along the first 1,700 feet of its length, although the Columbia Land Trust has proposed a project to improve floodplain connectivity in this section.

Jim Crow and Skamokawa Creek watersheds were found to have generally good bank stability during WCD surveys. Over 90% of the reaches on the mainstem Skamokawa had less than 10% of actively eroding streambank. Surveys of the middle reaches of the Skamokawa in 1991 found that 28% of banks surveyed were eroding—up to 34%, in areas of agricultural use (Ludwig 1992). Bank erosion is significant where land is cultivated or used for agricultural uses, due to stream incision, alluvial soils, and a lack of streambank (riparian) vegetation.

Elochoman River Basin Conditions

The Elochoman watershed drains 42,000 acres, or 66 square miles, and at the last inventory, 81% of the land was in forest cover, 9% logged, 9% in agriculture, and 1% was aquatic habitat. The headwaters of the Elochoman River flow through narrow canyons originating in the northeast corner of the county, flowing south-southwest towards the Columbia River. The middle reaches consist of wide valley floodplains draining Duck Creek to the west, and Beaver Creek to the east. The lower reaches consist of tidally influenced slough channels. Nelson Creek is included due to its proximity and the risk it presents to life and property. Birnie Creek is a similar situation, technically distinct from the Elochoman and having separate issues related to its proximity to the Town of Cathlamet. Areas of Special Flood Hazard include the lower portions of Nelson, Beaver, and Alger Creek, as well as a significant portion of the mainstem Elochoman.

The Elochoman River is diked for the first 1.4 miles of its lower reach. The lower portion of Nelson Creek, a tributary to the Elochoman, is also diked, with the banks showing signs of advanced incision. The lower reaches of the Elochoman and its tributaries have many areas of disconnected floodplains, due to the presence of roads and an old logging railroad bed constructed during the settlement of the valley. Agricultural uses and former logging practices in the middle reaches of the Elochoman Valley have resulted in a high degree of stream entrenchment. Connectivity of the floodplain is somewhat better in the upper reaches of the watershed.

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Puget Island Drainage Conditions

Puget Island lies within the Elochoman drainage basin, but due to its mid-channel location in the Columbia River, it experiences different set of drainage patterns and flooding issues. The island at one time was crisscrossed by a network of slough channels created from flow patterns of the Columbia River and tide cycles of the Lower Columbia Estuary. Human activities such as diking, filling, construction of flood structures, and development activities have partially disconnected the island from its original floodplain. Flood control structures have been installed to control tidal elevations. The level of sediment accretion in Grove Slough affects tide gate functioning increasing burden on the pump station.

Surface water patterns have been manipulated by dredging and the construction of pile dikes. Cathlamet Channel, located between Little Island and Cathlamet, is experiencing siltation from the Elochoman as well as the Columbia River. The Columbia River Navigation Channel, which lies on the south side of Puget Island, is maintained by the Portland District Army Corps of Engineers. Pile dikes and jetties along the channel were installed to direct flow velocities into the navigation channel to minimize maintenance of the existing channel configuration for transportation needs. The position and angle of these structures has created eddies which scour deep holes resulting in erosion. Shorelines adjacent to East Sunny Sands Road at Pancake Point and along North Welcome Slough Road downstream form the Aegerter Dairy have experienced increased risk to life and property.

Bank stability in the Elochoman watershed was generally found to be adequate. Road-related erosion problems exist on the mainstem, West Fork and the Nelson Creek systems. Mass wasting events are viewed as a much more significant issue in the Elochoman watershed, and is associated with road construction in the West Fork system. A DNR survey of the North Elochoman basin found that 205 of 383 the landslides surveyed originated in forest practices (WDNR 1996).

Sources: WRIA 25/26 Watershed Management Plan; Wahkiakum County Comprehensive Flood Hazard Management Plan, 2005 Final Draft

Inventory of Flooding Issues

An examination of flooding issues at the landscape scale during the development of the Comprehensive Flood Hazard Management Plan found several four key areas of concern:

1. **Channel Aggradation** – Two primary forces affect the equilibrium of floodplain areas within a drainage basin. One force builds up sediment and soils (aggradation) and the other carries sediment to other locations (erosion). Aggradation occurs when the forces building up the sediment level are more powerful than flows that discharge sediment further downstream. Two types are occurring within Wahkiakum County—fluvial or river-dominated forces—wash sediment from steep headwaters and canyons under high energy forces, and deposit coarse sediments in lower elevations. This often overwhelms channel carrying capacity, which leads to flooding and/or creation of a new stream channel, as occurred in the Gorley Springs area. The second form of aggradation—tidal-fluvial—represents a combination of river and much larger, ocean-derived estuary forces operating at slower energy levels, allowing deposits of the remaining fine material. While the popular perception is that accretion of sediment in bays along the Columbia River contributes to flooding within the watershed because of reduced stream capacity for discharge into the river, there are larger-scale forces at work. A complex combination of natural forces, including flow patterns, sediment sources, distribution of sediment sizes, and river-bay transition zone dynamics are part of the equation. Human activity such as pile diking, disposal of dredge spoils, and changes in the Columbia River dynamics due to hydropower modifications are the other side of the equation. All of these factors have a bearing on the buildup of sediments in channels and bays throughout the watershed.

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2. **Overbank Flooding** – This type of flooding occurs when there is more water than the stream channel can carry. Water spilling into the floodplain affects most human activities that take place in the lower elevations, affecting homes, farming activities, and travel along the county road system. Overbank flooding commonly results from periods of heavy precipitation combined with demands placed upon deteriorating flood control structures and overdue maintenance on the county road system, particularly in regards to adequately sized culverts. While diking can be beneficial within a particular stretch of river, it tends to displace flooding to other areas further downstream, which are then impacted.

3. **Streambank & Shoreline Erosion** – The energy of water action against the stream banks causes erosion, which leads to increased flooding impacts. This is particularly common in the middle reaches of the county's watersheds, once water has left the steep hillsides to travel down to the tidal areas. Areas in the Grays River basin have experienced significant threats from stream bank erosion, including the well field that serves Western Wahkiakum Water System, as well as various locations along Loop Road. Alternative approaches to reduce impacts of stream bank erosion have taken place in the Skamokawa basin, with mixed results. More study is needed on effective alternatives.

   Erosion has presented significant threats to property along Puget Island shorelines, especially at Pancake Point, the southwest corner near Welcome Slough, and at Brown Slough. Shoreline erosion is related to pile dikes and jetties to improve and maintain the navigation channel within the Columbia River. These issues have been studied by Pacific International Engineering as well as Coast & Harbor Engineering. The county is currently working through project planning and permitting issues with the Corps of Engineers and other permitting authorities. The Corps maintains the pile dike and jetties to ensure navigational passage in the Columbia River. They have placed dredge spoils in limited locations as an interim measure.

4. **Localized Flooding** –Localized water ponding occurs frequently in the valley lowlands, particularly in areas that have been diked for agricultural activity. Many of these diked areas are characterized by slow draining or hydric soils related to wetland habitat.

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HABITATS, SPECIES, SHORELINES & WATER RESOURCES

PRIORITY HABITATS & SPECIES

The Priority Habitats and Species (PHS) Program was begun in 1989 by the Washington Department of Fish and Wildlife (WDFW) to provide important fish, wildlife, and habitat information to local governments, state and federal agencies, private landowners and consultants, and tribal biologists for land use planning purposes. PHS information is used for:

- Screening of Forest Practice, Hydraulic Project and State Environmental Protection Act (SEPA) applications
- Critical Area protection requirements for all cities and counties required by the Growth Management Act
- Development of Habitat Conservation Plans on state, federal, and private lands
- Landscape-level planning and ecosystem management by state, federal, and tribal governments;
- Statewide oil spill prevention planning and response.

PHS provides the information necessary to incorporate the needs of fish and wildlife in land use planning. The PHS program focuses on three central issues:

1. Which species and habitat types are priorities for management and conservation?
2. Where are these habitats and species located?

3. What should be done to protect these resources when land use decisions are made?

In responding to these questions, the PHS program conducts ongoing studies and surveys in order to:

- Identify habitats and species determined to be priorities based on defensible, scientific criteria
- Map known locations of priority habitats and species
- Provide information on conditions required to maintain healthy populations of priority species as well as viable, functioning priority habitats, using best available science
- Provide consultation and guidance on land use issues affecting priority habitats and species
- Distribute information in easily accessible formats

The Washington Department of Fish and Wildlife publishes updated lists of Priority Habitats and Species (PHS) and Species of Concern (SOC) on an ongoing basis. The PHS List is a catalog of habitats and species considered to be priorities for conservation and management. The statute requires ***delineation***, ***listing, and protection*** of priority species in order to ensure continued viability. Factors affecting the viability of a species include:

- Population status
- Sensitivity to habitat alteration
- Recreational, commercial, or tribal importance

The state listing of priority species is continuously reviewed and updated according to a process established by state law. A listed species may or may not be located on a particular land parcel even though it is listed as present within the region. The list is intended as a point of reference for land owners, local governments, and planners. The Department also develops management recommendations for priority species.

Priority habitats have unique or significant values for species diversity. A priority habitat may be described by a unique vegetation type or by a dominant plant species that is of primary importance to fish and wildlife (e.g., oak woodlands, eelgrass meadows). A priority habitat may also be described by a successional stage (e.g., old growth and mature forests). Alternatively, a priority habitat may consist of a specific habitat element (e.g., consolidated marine/estuarine shorelines, talus slopes, caves, snags) of key value to fish and wildlife. WDFW has identified 18 habitat types, 140 vertebrate species, 28 invertebrate species, and 14 species groups throughout Washington State. Taken together, these constitute about 16% of the 1,000 or so of the known vertebrate species and a fraction of the state's invertebrate species.

WDFW has very limited authority over the habitats upon which listed species depend. Most protective actions are conducted by landowners and through applications of the State Environmental Policy Act (SEPA), the Growth Management Act (GMA), the Forest Practices Act (FPA), the Shoreline Management Act (SMA), and similar local government processes. A priority species is a fish or wildlife species requiring protective measures and/or management guidelines to ensure their continued existence. Criteria for listing priority species fall into three categories:

Criterion 1 - State Listed and Candidate Species
State listed species are those native fish and wildlife species legally designated as Endangered, Threatened, or Sensitive. State Candidate species are those fish and wildlife species that will be reviewed by WDFW for possible listing as Endangered, Threatened, or Sensitive according to the process and criteria defined in state administrative code.

Criterion 2 - Vulnerable Aggregations
Vulnerable aggregations include those species or groups of animals susceptible to significant population declines, within a specific area or statewide, by virtue of their inclination to aggregate. Examples include heron rookeries, seabird concentrations, marine mammal haul outs, shellfish beds, and fish spawning and rearing areas.

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Criterion 3 - Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable

Native and non-native fish and wildlife species of recreational or commercial importance, and recognized species used for tribal ceremonial and subsistence purposes that are vulnerable to habitat loss or degradation.

The **Species of Concern (SOC) List,** published by the Wildlife Management Program, includes only native Washington Fish and Wildlife species that are listed as Endangered, Threatened, or Sensitive, or those that are Candidates for these designations. Endangered, Threatened, and Sensitive species are legally established by the Washington Administrative Code. Candidate species are established by WDFW policy. There are currently 24 Endangered, 11 Threatened, 4 Sensitive, and 103 Candidate species on the SOC List. Every species included in the Species of Concern list is included in the Priority Habitat & Species listing.

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Priority Species of Southwest Washington

Common Name	*Species Criteria*
Mollusks	
California floater	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
Arthropods	
Columbia River tiger beetle	▪ ***State Listed and Candidate Species***
Butterflies	
Chinquapin hairstreak	▪ ***State Listed and Candidate Species***
Golden hairstreak	▪ ***State Listed and Candidate Species***
Johnson's hairstreak	▪ ***State Listed and Candidate Species***
Juniper hairstreak	▪ ***State Listed and Candidate Species***
Mardon skipper	▪ ***State Listed and Candidate Species***
Valley silverspot	▪ ***State Listed and Candidate Species***
Whulge checkerspot	▪ ***State Listed and Candidate Species***
Fish	
River lamprey	▪ ***State Listed and Candidate Species***
Green sturgeon	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
White sturgeon	▪ ***2 Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Olympic mudminnow	▪ ***State Listed and Candidate Species***
Lake chub	▪ ***State Listed and Candidate Species***
Leopard dace	▪ ***State Listed and Candidate Species***
Mountain sucker	▪ ***State Listed and Candidate Species***
Channel catfish	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Eulachon	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Bull trout/Dolly Varden	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Chinook salmon	▪ ***State Listed and Candidate Species***

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	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Chum salmon	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Coastal resident/Sea run cutthroat	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Coho salmon	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Kokanee	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***

Common Name	*Species Criteria*
Pygmy whitefish	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
Rainbow trout/Steelhead	▪ ***State Listed and Candidate Species***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Sockeye salmon	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Westslope cutthroat	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Largemouth bass	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Smallmouth bass	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Walleye	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Amphibians	
Cascades torrent salamander	▪ ***State Listed and Candidate Species***
Columbia torrent salamander	▪ ***State Listed and Candidate Species***
Dunn's salamander	▪ ***State Listed and Candidate Species***
Larch Mountain salamander	▪ ***State Listed and Candidate Species***
Van Dyke's salamander	▪ ***State Listed and Candidate Species***

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Northern leopard frog	▪ ***State Listed and Candidate Species***
Oregon spotted frog	▪ ***State Listed and Candidate Species***
Western toad	▪ ***State Listed and Candidate Species***
Reptiles	
Western pond turtle	▪ ***State Listed and Candidate Species***
California mountain king snake	▪ ***State Listed and Candidate Species***
Sharptail snake	▪ ***State Listed and Candidate Species***
Birds	
American white pelican	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
Brandt's cormorant	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
Common loon	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
Common Name	***Species Criteria***
Marbled murrelet	▪ ***State Listed and Candidate Species***
	▪ ***Vulnerable Aggregations***
Terns (Laridae)	▪ ***Vulnerable Aggregations***
Black-crowned night heron	▪ ***Vulnerable Aggregations***
Great blue heron	▪ ***Vulnerable Aggregations***
Aleutian Canada goose	▪ ***State Listed and Candidate Species***
Cavity-nesting ducks ***Wood duck***	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Barrow's golden eye	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Common golden eye	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Bufflehead	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Hooded merganser	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Common Name	*Species Criteria*
Western Washington non-breeding arrow's golden eye	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Common golden eye	▪ ***Vulnerable Aggregations***

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	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Bufflehead	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Harlequin duck	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Trumpeter swan	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Tundra swan	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Anatidae excluding Canada geese	▪ ***Vulnerable Aggregations***
	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Bald eagle	▪ ***State Listed and Candidate Species***
Golden eagle	▪ ***State Listed and Candidate Species***
Merlin	▪ ***State Listed and Candidate Species***
Northern goshawk	▪ ***State Listed and Candidate Species***
Peregrine falcon	▪ ***State Listed and Candidate Species***
Prairie falcon	▪ ***State Listed and Candidate Species***
Blue grouse	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Chukar	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Mountain quail	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Wild turkey	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Sandhill crane	▪ ***State Listed and Candidate Species***
Western Washington non-breeding plovers, sandpipers and phalaropes	▪ ***Vulnerable Aggregations***
Band-tailed pigeon	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Burrowing owl	▪ ***State Listed and Candidate Species***
Spotted owl	▪ ***State Listed and Candidate Species***
Vaux's swift	▪ ***State Listed and Candidate Species***

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Black-backed woodpecker	▪ ***State Listed and Candidate Species***
Lewis' woodpecker	▪ ***State Listed and Candidate Species***
Pileated woodpecker	▪ ***State Listed and Candidate Species***
White-headed woodpecker	▪ ***State Listed and Candidate Species***
Loggerhead shrike	▪ ***State Listed and Candidate Species***
Oregon vesper sparrow	▪ ***State Listed and Candidate Species***
Purple martin	▪ ***State Listed and Candidate Species***
Sage thrasher	▪ ***State Listed and Candidate Species***
Slender-billed white-breasted nuthatch	▪ ***State Listed and Candidate Species***

Common Name	*Species Criteria*
Streaked, horned lark	▪ ***State Listed and Candidate Species***
Big brown bat, Myotis bats, Pallid bat	▪ ***Vulnerable Aggregations***
Townsend's big-eared bat	▪ ***State Listed and Candidate Species*** ▪ ***Vulnerable Aggregations***
Rodents	
Gray-tailed vole	▪ ***State Listed and Candidate Species*** ▪ ***Vulnerable Aggregations***
Brush Prairie pocket gopher	▪ ***State Listed and Candidate Species***
Western gray squirrel	▪ ***State Listed and Candidate Species***
Western pocket gopher	▪ ***State Listed and Candidate Species***
Carnivores	
Fisher	▪ ***State Listed and Candidate Species***
Gray wolf	▪ ***State Listed and Candidate Species***
Marten	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Mink	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Wolverine	▪ ***State Listed and Candidate Species***
Marine Mammals	
Harbor seal	▪ ***Vulnerable Aggregations***
Big Game	
Columbian black-tailed deer	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***

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Columbian white-tailed deer	▪ ***State Listed and Candidate Species***
Mountain goat	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Rocky Mountain elk	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Rocky Mountain mule deer	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***
Roosevelt elk	▪ ***Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable***

Source: Washington Department of Fish & Wildlife

FISH RECOVERY

The WRIA 25/26 Watershed Management Plan conducted under the state watershed planning act also examined habitat conditions, particularly those that relate to the recovery of anadromous fish populations. The Lower Columbia Fish Recovery Board (LCFRB), established in 1988 by state law, has been tasked with constructing a collaborative approach to restoring threatened anadromous fish species as well as other fish and wildlife species within the region. The Board's activities include recovery and watershed planning as well as habitat restoration and protection.

The fish recovery and sub-basin plans developed by LCFRB focus on six salmonid species. Four are listed as threatened under the Endangered Species Act (ESA): chum, chinook, steelhead, and bull trout. One other species—coho—is a proposed candidate for listing. Coastal cutthroat is identified as a species of regional interest that may be proposed for listing under ESA. These six species comprise 85 individual populations. Other fish and wildlife of interest include sturgeon, Pacific lamprey, smelt, northern pike minnow, shad, introduced game fish, dusky Canada goose, Caspian terns, Columbia white-tailed deer, sand hill crane, western pond turtle, and selected neotropical birds.

All watersheds of Wahkiakum County flow into the Columbia River, with the exception of the Naselle and Salmon Creek, which flow into Willapa Bay. Each of the river basins within Wahkiakum County has historically supported thousands of fall Chinook, winter steelhead, chum, and coho. The numbers of naturally spawning salmon and steelhead have plummeted far below historical numbers. Chinook and chum have been listed as Threatened under the Endangered Species Act, while coho is proposed for listing. The decline has occurred over several decades, and causes can be attributed to many factors, as identified in the Lower Columbia Fish Recovery and Fish & Wildlife Sub-basin Plan:

- The quality of freshwater and estuary habitat has declined due to agricultural and forestry practices.
- Actions such as channel modifications, diking, filling, draining of floodplains and wetlands have eliminated or isolated essential habitat areas.
- Losses caused by predators have increased, due to altered habitat conditions.
- Fish productivity has been reduced by competition and interbreeding with domesticated/non-local hatchery fish.
- Fish numbers have been reduced by harvests in fresh and saltwater fisheries.

Each of the drainage basins in Wahkiakum County—the Grays, Elochoman, and Skamokawa—are viewed as more critical to the regional recovery of salmon and steelhead because they comprise the coastal portion of the Evolutionary Significant Unit (ESU). Salmon and steelhead within these basins should be restored to a high level to meet regional recovery objectives. This means that the populations are abundant and productive, exhibit multiple life history strategies,

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and occupy a significant portion of the watershed. Although there have been many efforts by local, state and federal governments, citizens and landowners and conservation groups, much still remains to be accomplished. The recovery plan states that there is no single threat or action that will turn around the decline in fish populations. The recovery plan recommends a reduction in all threats and environmental limiting factors.

Conditions that have an influence on habitat and salmonid populations include passage barriers, stream flow, water quality, nutrient loads, habitat diversity, substrate and sediment, woody debris, channel stability, riparian function, and floodplain function. The recovery plan identifies limiting factors and management objectives to improve watershed health and habitat.

Fish Recovery Plan Recommendations

The fish recovery plan analysis has indicated that recovery cannot be achieved by addressing only one limiting factor. Recovery will require actions to reduce or eliminate all manageable factors or threats, both in-basin (such as stream flows, riparian habitat, floodplain connectivity, and hatchery management) and out-of basin activities (such as fish harvesting, impacts of hydropower, loss of estuary habitat, etc.). General recommendations for immediate action are found in the Fish Recovery & Watershed Plan for Water Resource Inventory Area 25/26, (July 2006).

NATURAL AREAS

Lands with a high priority for conservation include those with critical wildlife habitat, prime natural features, examples of native ecological communities, and environmentally significant sites. These sites provide opportunities for outdoor environmental education and appropriate low impact public uses. The Julia Butler Hanson National Wildlife Refuge is a federally designated area for the protection of the Columbian White-tailed Deer. Hendrickson Canyon is listed as a state Natural Area Preserve through the Department of Natural Resources. Other natural areas listed below have been identified by conservation groups as significant enough to warrant some form of restoration and/or protection.

The **Grays River watershed** has experienced a high level of interested in protecting natural areas through acquisition, primarily by the Columbia Land Trust (CLT). Using Salmon Recovery Funding Board (SRFB) funding, the CLT acquired 116 acres of delta estuarine habitat near the mouth of Grays River, 202 acres of wetlands and associated forested uplands near Grays Bay, 200 acres of floodplain near Devils Elbow, 125 acres of floodplain near Eden Valley and 183 acres of floodplain habitat adjacent to Grays River and Seal Slough, for a total of 826 acres. All of these properties are situated along the lower three miles of the watershed. Once additional proposed acquisitions are completed, the Grays River watershed may include over 1500 acres of permanently protected areas.

The Washington Department of Fish and Wildlife (WDFW) has management authority over 26 acres adjacent to **Miller Point**, near the mouth of Grays River. This parcel was acquired by WDFW to protect unique fish and wildlife habitat and a high quality emergent, scrub-shrub and forested wetland. Most of the property is dominated by a mature stand of Sitka spruce.

Natural Resources Conservation Areas (NRCA) and Natural Areas Preserves (NAP) are the two types of natural areas managed by the Department of Natural Resources. Conservation areas protect outstanding examples of native ecosystems, habitat for endangered, threatened and sensitive plants and animals, and scenic landscapes. Environmental education and low impact public use are appropriate on conservation areas where they do not impair the resource values of the area protected. The NRCA program was established by the Legislature in 1987, and represents an important protection alternative which complements the preserves and provides for a diverse natural areas program. State-designated conservation areas presently include

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approximately 88,560 acres in 28 sites distributed throughout the state, including a 272-acre Natural Resource Conservation Area (NRCA) in the Grays River watershed.

Hendrickson Canyon NCRA is situated along the upper reaches of the Grays River and protects old growth silver fir, western hemlock, and western red cedar, in three distinct forest ecosystem types. This property represents one of the last undisturbed examples of this forest community in southwest Washington. This NAP is known to support a variety of fish and wildlife species, including the Vandyke's salamander, cascade torrent salamander, pacific giant salamander, Cope's giant salamander, coastal cutthroat trout, and marbled murrelets.
Source: Washington Department of Natural Resources

The **Julia Butler Hansen Refuge for the Columbian White-tailed Deer** was established in 1972 specifically to protect and manage the endangered Columbian white-tailed deer.
The refuge contains over 6,000 acres of pastures, forested tidal swamps, brushy woodlots, marshes and sloughs along the Columbia River in both Washington and Oregon. The mainland refuge unit, the Hunting Islands and Price Island are in Washington. Tenasillahe Island, Crims Island, Wallace Island and several small parcels around Westport are in Oregon.

The refuge also provides habitat for a variety of other species, including birds, a small herd of Roosevelt elk, river otter, various reptiles and amphibians including painted turtles and red-legged frogs, and several pairs of nesting bald eagles and ospreys. The refuge is a wintering area for tundra swans, Canada geese, mallards, wigeon, and pintails. Water birds and raptors are common. Salmon, steelhead, sturgeon, and trout are found in surrounding waters.

Known Occurrences of Rare Plants in Wahkiakum County

Common Name	State Status	Federal Status
Dense Sedge	T	
Chaffweed	R1	
Gorge Daisy	T	SC
Pink Fawn-lily	S	
Floating Water Pennywort	S	
Ussurian Water-milfoil	R1	
Loose-flowered Bluegrass	S	
Soft-leaved Willow	S	
Water-pimpernel	S	
Hairy-stemmed Checker-mallow	E	
Columbia Water-meal	R1	

Source: Washington Department of Natural Resources, Washington Heritage Program, August 2005

The State Status of a plant species is determined by abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness. State Status categories as used in the above chart include:

E = Endangered - In danger of becoming extinct or extirpated from Washington.
T = Threatened - Likely to become Endangered in Washington.
S = Sensitive - Vulnerable or declining and could become Endangered or Threatened
X = Possibly extinct/extirpated in Washington
R1 = Review group 1- Of potential concern but needs more field work to assign another rank.
R2 = Review group 2 - Of potential concern but with unresolved taxonomic questions.

The designation of "SC" under Federal Status indicates a Species of Concern. This is an unofficial status, indicating that the species appears to be in jeopardy, but without sufficient information to support a formal listing.

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NATIVE PLANT SPECIES

The intentional or accidental introduction of non-native species to an area often brings unintended consequences. Non-native species are capable of overwhelming native species, under favorable conditions. Eradication efforts are rarely successful, and can involve expensive, time-consuming methods that create additional impacts. Non-native species can have detrimental effects upon fish and wildlife habitat, agricultural and silvicultural activities, as well as the landscape. Native plantings to restore riparian habitat is recommended in the Comprehensive Flood Hazard Management Plan. The Washington Native Plant Society has identified vascular plants that are native to Wahkiakum County, which are listed below:

Native Plant Species of Wahkiakum County, Washington

- Grand fir
- Vine maple
- Big-leaf maple
- Vanilla leaf
- Baneberry
- Maidenhair fern
- Wheatgrass
- Red alder
- Short-awned foxtail
- Serviceberry
- False indigo
- Kneeling angelica
- Red columbine
- Pacific madrone
- Sandwort
- Goatsbeard
- Western aster
- Weedy milk-vetch
- Lady fern
- Bitter wintercress
- Gray birch
- Deer fern
- Leathery grape-fern
- Autumnal water-starwort
- Spring water-starwort
- Yellow marshmarigold
- Common harebell
- Seaside bittercress
- Dense sedge
- Henderson's sedge
- Slough sedge
- Sawbeak sedge
- Harsh paintbrush
- Diffuse knapweed
- Spotted knapweed
- Chaffweed
- Western golden-carpet
- Enchanter's nightshade
- Virgin's bower
- Tufted hairgrass
- Bleeding heart
- Foxglove
- Hooker fairy-bell
- Smith fairy-bell
- Coastal wood-fern
- Spreading wood-fern
- Crowberry
- Common willow-herb
- Small-flowered willow-herb
- Watson's willow-herb
- Giant helleborine
- Giant horsetail
- Gorge daisy
- Rough wallflower
- Mole plant
- Red fescue
- Crinkle-awn fescue
- Quickweed
- Cleavers
- Small bedstraw
- Salal
- Large-leaved avens
- Globe gilia
- Reed mannagrss
- White bog-orchid
- Cow parsnip
- Small-flowered alumroot
- Ocean spray
- Pacific waterleaf
- Jewell-weed
- Spurless balsam
- Hall's isopyrum
- Toad rush
- Soft rush
- Western juniper
- Primrose-willow
- Angled pea
- Leafy peavine
- Small-flowered woodrush
- Fringed loosestrife
- False lily-of-the-valley
- Manroot
- Japanese mazus
- Pennyroyal
- Fool's huckleberry
- Toothed-leaf monkey-flower
- Common monkey-flower
- Musk-flower
- Allegheny monkey-flower
- Coastal mitrewort
- Streambank spring beauty
- Candyflower
- Common forget-me-not
- South American water-milfoil
- Pond lily
- Indian plum
- Water parsley
- Devil's club
- Mountain sweet-cicely
- Oregon wood-sorrel
- Great oxalis
- Broad-leaf penstemon
- Bolander's phacelia
- Woodland phacelia
- Reed canarygrass
- Mock-orange
- Pacific ninebark
- Gold-back fern
- Scouler's popcorn-flower
- Annual bluegrass
- Roughstalk bluegrass
- Licorice fern
- Sword fern
- Closed-leaved pondweed
- Self-heal
- Cherry plum
- Bitter cherry

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Native Plant Species of Wahkiakum County, Washington (continued)

- Queen's cup
- Varied-leaf collomia
- Red-osier dogwood
- Western corydalis
- Hazelnut
- English hawthorn
- Slender hawksbeard
- Columbia larkspur
- Himalayan blackberry
- Evergreen blackberry
- Blackcap
- Thimbleberry
- Salmonberry
- Wild blackberry
- Sheep sorrel
- Stickystem pearlwort
- Arctic pearlwort
- Coyote willow
- Pacific willow
- Purple-osier willow
- Soft-leaved willow
- Sitka willow
- Russian thistle
- Blue elderberry
- Water pimpernel
- Yerba buena
- Grassland saxifrage
- Merten's saxifrage
- Nuttall's saxifrage
- Northern starwort
- Cutgrass
- Butter and eggs
- Yellow-seed false-pimpernel
- Fern-leaf biscuit-root
- Black twinberry
- Big deervetch
- Miniature lotus
- Broad-leaf lupine
- Prairie lupine
- Streambank lupine
- Field woodrush
- Stinging nettle
- Oval-leafed huckleberry
- Red huckleberry
- Sitka valerian
- Inside-out-flower
- American brooklime
- Giant vetch
- Tiny vetch
- Evergreen violet
- Oregon stonecrop
- Oregon selaginella
- Wallace's selaginella
- Bolander's groundsel
- Rayless alpine butterweed
- Wood groundsel
- Hairy-stem checker-mallow
- Douglas' silene
- Hardhack
- Cooley’s hedge-nettle
- Meadow buttercup
- Gmelin's buttercup
- Little buttercup
- Cascara
- Poison oak
- Stink currant
- Coast black gooseberry
- Gummy gooseberry
- Yellowcress
- Sweetbrier
- Clustered wild rose
- Crisped starwort
- Bronze bells
- Clasping-leaved twisted-stalk
- Common snowberry
- Fringecup
- Western meadowrue
- Foamflower
- Youth-on-age
- Broadleaved starflower
- White trillium
- Purple sandgrass
- Western hemlock
- Narrow-leaved cattail
- Common cattail
- Small-flowered bulrush
- Triangular bulrush
- California figwort
- Mexican betony

Source: Washington Native Plant Society, 2004

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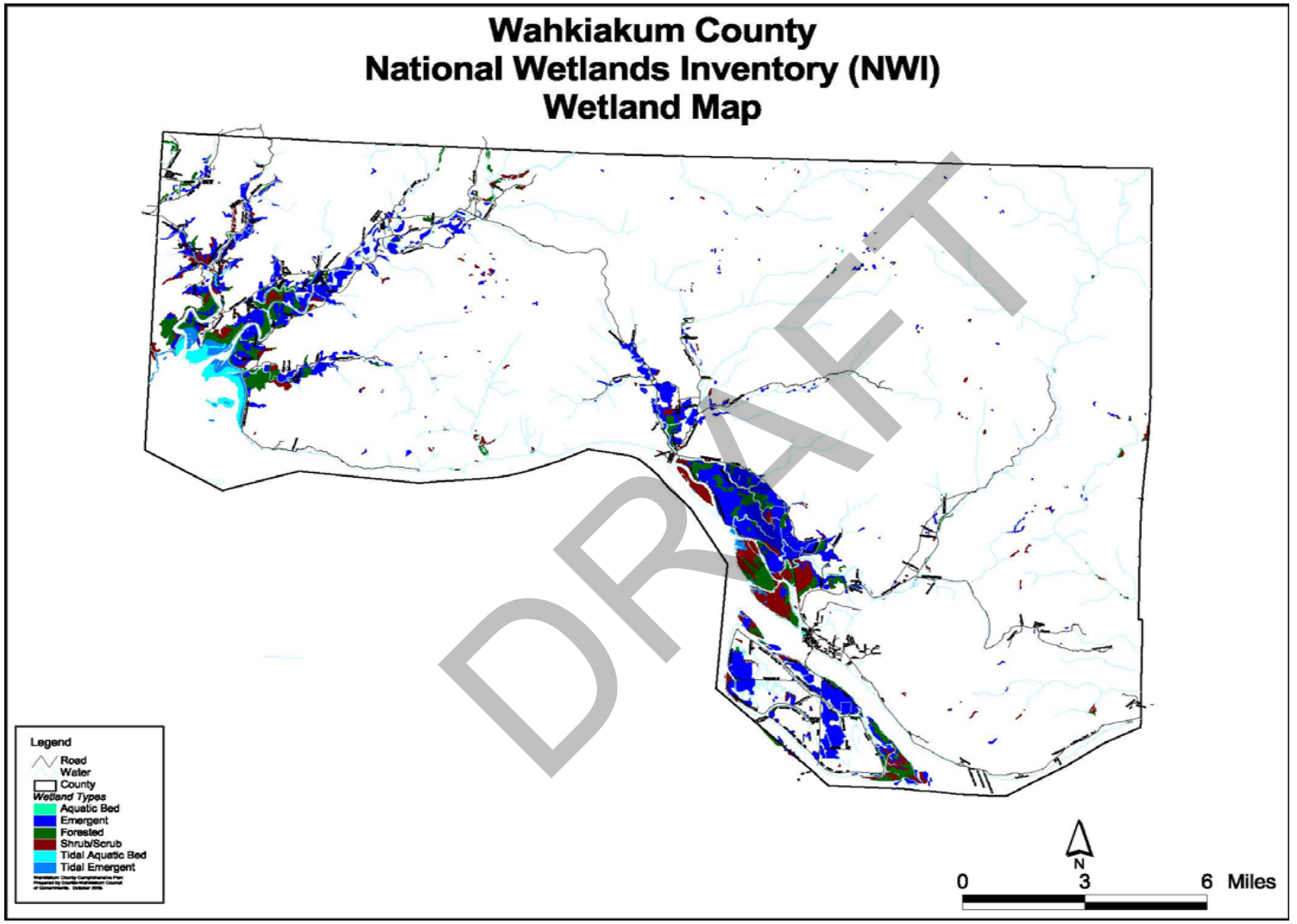
HABITATS OF INTEREST

Wetlands & Riparian Areas

Wetlands and riparian habitat serve a key function by providing a transition between aquatic and terrestrial species and habitats. The different types of wetland and riparian areas include deepwater tidal habitats, freshwater wetlands, fresh deepwater habitat, and riparian areas.


Wahkiakum County
National Wetlands Inventory (NWI)
Wetland Map
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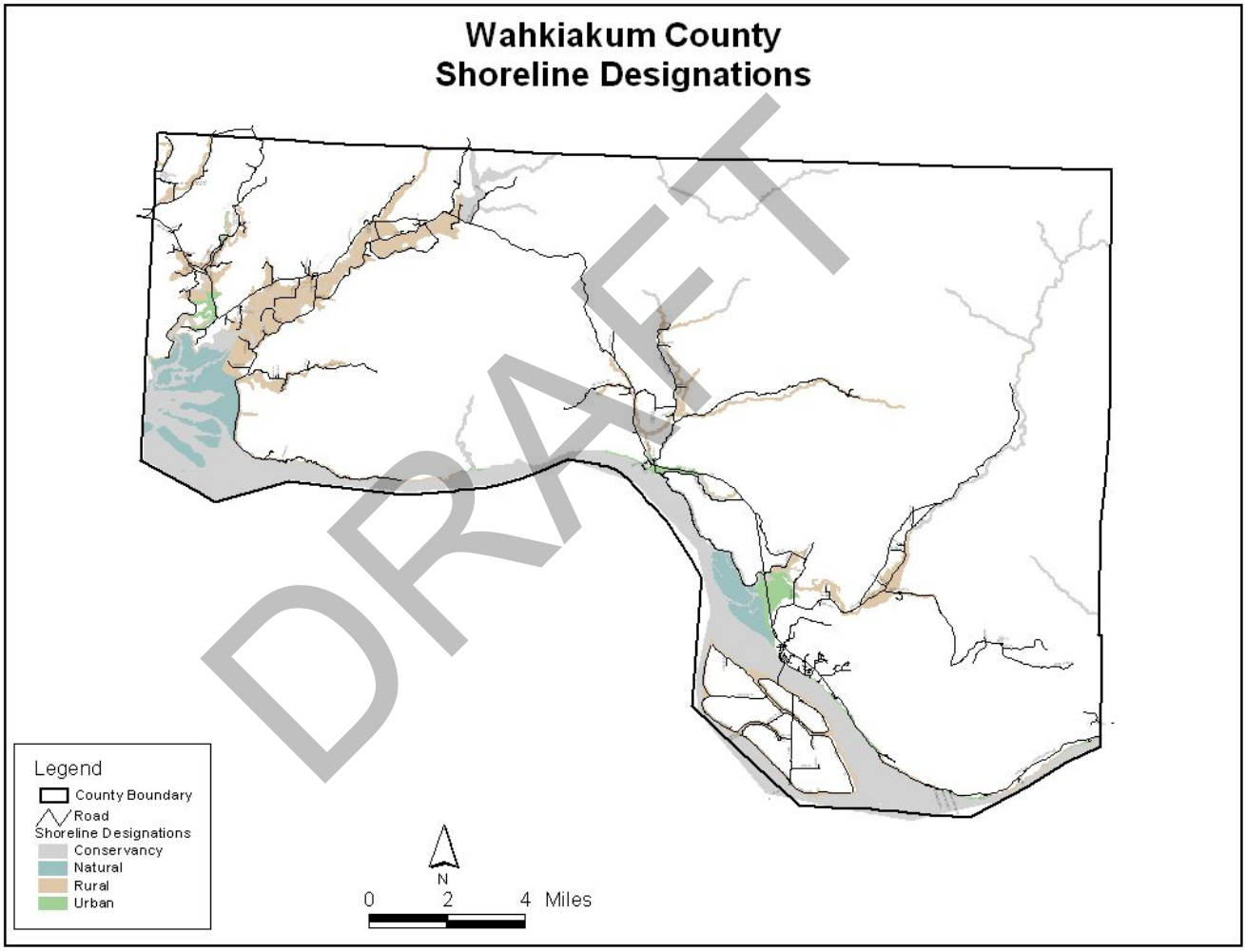
Legend
Road
Water
County
Wetland Types
Aquatic Bed
Emergent
Forested
Shrub/Scrub
Tidal Aquatic Bed
Tidal Emergent
N
0
3
6 Miles

Wahkiakum County has a Shoreline Management Plan in place. Washington State developed a new Coastal Zone Management Program in February 2001. Wahkiakum County must update its shoreline master program no later than **2014** in order to stay in compliance with state requirements. Legislation requires that local plans:

- Recognize and protect the statewide interest over local interest
- Preserve the natural character of the shoreline
- Result in long-term over short-term benefit
- Protect the resources and ecology of the shoreline;
- Increase public access to publicly owned areas of the shorelines
- Increase recreational opportunities for the public in the shoreline



Water Resource Problems

Pacific International Engineering (PIE) studied ***water resource problems*** along the Columbia River for the Lower Columbia River Port Communities in 2002. This report identified several projects in Wahkiakum County and presented some methods and cost estimates to address these issues. Some of these solutions may be combined with structural and nonstructural recommendations of the Comprehensive Flood Hazard Management Plan, while others might be modified, in light of the recommendations found in the CFHMP. The issues and solutions identified by PIE can be summarized as follows:

Location	Problem	Solution/Alternatives
County Sand Pit (Puget Island)	Deficit of dredge material	~Use hopper dredge to fill site ~Use cutterhead pipeline dredge
Brown Slough Pump Station (Puget Island)	Erosion	~Rock revetment rehabilitation ~Beach nourishment
Grove Slough Tidegate (Puget Island)	Sedimentation	~Regular maintenance dredging
North Welcome Slough Road (Puget Island)	Bank Erosion	~Rock revetment rehabilitation ~Steel sheetpile wall
Ferry Terminal (Puget Island)	Deposition/shoaling	~Coordinated dredging schedule ~Advanced maintenance dredging
Pancake Point (Puget Island)	Pancake Point erosion	~Beach nourishment ~Buried rock revetment
Cathlamet Channel	Sedimentation	~Coordinated dredging schedule
Cathlamet Marina	Sedimentation	~Flow improvement ~Dredging
Skamokawa Creek Channel	Sedimentation	~Federal dredging ~local dredging
Mouth of Grays River	Sedimentation	~Detailed Hydraulic evaluation ~Local dredging

Source: Pacific International Engineering, Inc., 2002

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Dredged Material Management Plan (DMMP) for the Columbia Estuary

The Columbia River Estuary Study Taskforce (CREST) developed a Dredged Material Management Plan for the Columbia River Estuary in 1979, which identified 98 sites for dredged material disposal along the Oregon and Washington shorelines of the Columbia River. These sites were then protected by comprehensive plans (in Oregon) and through Shoreline Management Master Programs (in Washington) The plan was updated in 1986 to reflect changes in availability and suitability of disposal sites. Another review was undertaken in 2000 to refine the dredging and disposal policies and to inventory an adequate number of disposal sites with sufficient capacity to accommodate projected disposal needs for at least a five-year period. This update is also intended to be incorporated into comprehensive plans and shoreline management master programs, and included the 1998 Dredged Material Management Plan conducted for channel maintenance by the U.S. Army Corps of Engineers. The plan also provides for disposal needs created by local dredging projects. For these projects, disposal sites in close proximity of the local dredging areas were identified, where permitting authority appeared feasible. ***Three circumstances can trigger local review of dredging or disposal issues***:

1. Dredging within the jurisdiction
2. Disposal within the jurisdiction
3. Review of a development proposal for a designated disposal site

These activities should be reviewed for consistency with the policies, standards, and other requirements of the comprehensive plan or shoreline master program. In addition to reviewing for consistency, local governments should encourage early timing of disposal projects when this might create beneficial impacts. The DDMP recommends that local jurisdictions ***designate and reserve*** the dredged material disposal sites listed in the DDMP; otherwise, the absence of a designation may allow development to occur prior to placement any dredged material, thereby reducing overall capacity for disposing of dredged materials. A "30-day freeze" on pre-emptive development proposals is provided so that local governments can negotiate for the use of the property as a disposal site. Approval of the project will result in removal of the site from the DDMP list. The plan recommends the ***use of zoning to designate sites*** and assist in limiting the potential of pre-emptive development at a disposal site. The list of disposal sites is to be updated every five years.

Site selection criteria for dredged material disposal are set out in the DDMP as follows (in no particular order:

- Sites that provide opportunity for beneficial use of dredged material
- Sites where the comprehensive plan/shoreline master program designate for development, provided that disposal does not preclude future development of the site
- The final use of the site will benefit from the placement of the material
- Sites where material may be stockpiled for future use
- Areas where dredged spoils containing organic, chemical or potentially toxic/polluted materials can be properly contained without environmental damage or health risks
- Placement will help restore degraded habitat
- Wetlands will not be impacted
- Lands owned by the state, owned or leased by a county, port, or other public entity
- Review/permitting processes for impacts to listed species has been followed and approved
- Important fish and wildlife habitat or scenic, recreation, archaeological or historical areas that would not benefit from placement of spoils should be avoided.
- Engineering factors, such as size and capacity of the site, dredging method, composition of dredged materials, distance, control of drainage, elevation, costs of acquisition, preparation and revegetation
- Flow lane disposal sites are allowed only where sediments can reasonably be expected to be transported without excessive shoaling, interference with recreation and commercial fishing is minimized, hydraulic effects will be minimal, disposal depth is between 20 and 65 feet below MLLW, and the disposal site does not create a hazard for safe navigation
- Estuarine in-water disposal sites only in areas of low benthic productivity, unless for an approved fill project; these sites will be used only when there is no feasible upland or ocean disposal site, and where biological and physical impacts are minimal, and only where sufficient data is available to meet this criteria
- Beach nourishment sites only on sandy beaches currently experiencing active erosion, and only to offset erosion—not to create new beach or upland areas, and not where adverse impact to tidal marshes or intertidal areas would occur

Many designated disposal sites in Wahkiakum County have environmental constraints, such as threatened or endangered species, juvenile salmon migration, or located within an organized gillnet drift. These sites would require lengthier time frames for negotiation of conditions and procedures that would minimize impacts on affected resources. Dredged material disposal sites recommended for Wahkiakum County are listed in the following table.

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Designated Locations & Characteristics of Dredged Material Disposal Sites

Water Mile	Common Name	Owner	Acres/Feet	Capacity (Cubic Yards)
21.2	Rice Island	State	215	6,900,000 20' above elevation
20.7	Mouth of Deep River	Private	15	240,000 10' above elevation
21.1	Deep River	Private	22	350,000 10' above elevation
22.4	Mouth of Grays River	Private	19	307,000 10' above elevation
22.9	Grays River	Private	25	400,000 10' above elevation
28.2	Jim Crow Point	--	--	--
33.4	Skamokawa Vista Park	Wahkiakum Port District 2	3,300'	250,000 (~200 X 10)
34.4	Skamokawa Bar	--	--	--
36.9	Elochoman	Private	7.5	120,000 10' above elevation
38.1	Hunting Island	Unknown	3.6	58,000 10' above elevation
38.4	County Sand Pit	Wahkiakum County	8	128,000 10' above elevation
38.7 (CF)	Orhberg's Beach	Unknown	2,900' (beach length)	216,000 (~200 X 10)
38.8 (CF)	Brown's Slough	Private	800'	62,000 (~200 X 10)
40.8 (CF)	Puget Island	Private	900'	33,0000 (~100 X 10)
40.9 (CF)	Puget Island	Unknown	2,500'	92.500 (~100 X10)
41.2	Welcome Slough (Puget Island)	Private	5.3	85,000 10' above elevation
41.3 (CF)	Coffee Pot Island	Private	4,000'	148,000 (~100 X 10)
41.8	Puget Island	Wahkiakum County	6.2	100,000 10' above elevation
42.4	Puget Island	Private	4,200'	310,000 (~200 X 10)
42.5	Coffee Pot Island (upstream)	Federal	35	560,000 10' above elevation
43.8 (CF)	Pancake Point	Private	3,250'	120,000 (~100 X 10)
44.0	Vik Property	Private	100	3,200,000
45.0 Beach (CF)	White Island	State	5,400'	300,000 (~150 X 10)
46.3 (CF)	Brown Island	State	6,000'	330,000 (~150 X 10)
51.3	Eagle Cliff	--	--	--
51.8 (CF)	County Line Park	Wahkiakum County	3,100'	230,000 (~200 X 10)

Note: (CF) indicates disposal site is within an organized gillnet drift.

Source: Columbia River Dredged Material Disposal Plan, 2000

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The Columbia River Channel Deepening Project will increase the shipping channel by an additional three feet. This project began in late 2004 and is a multi-year project requiring millions in federal assistance, much of which has not been officially approved. Once completed, ports along the Columbia River should be more competitive with ports further north (Tacoma, Seattle, Everett, Vancouver) and further south (Los Angeles). The project is not without controversy. Concerns over environmental damage and injury to fish stocks during the work have been expressed. Increased shipping traffic at higher speeds has raised issues over wake damage and shoreline erosion. Serious erosion problems already exist, particularly on Puget Island at Pancake Point and Welcome Slough. Wahkiakum County has been attempting to negotiate a stop-gap measure to place dredged soils in locations where pile dikes have generated erosive forces. Permanent solutions appear distant, though the Corps of Engineers is developing a Regional Sediment Management Initiative for the Lower Columbia that could suggest beneficial management practices.

Neglected maintenance dredging at the confluence of local rivers and the Columbia has created problems with sport and commercial traffic. The forces of sedimentation and erosion have different sources and dynamics. This has resulted in imbalances, such as more extensive flooding than in years past, and loss of private property. Six port districts in Wahkiakum and Pacific counties have joined forces to push for more frequent and beneficial maintenance dredging efforts. This costly activity must be assisted by other dredging and disposal activity taking place at the federal level.

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Capital Facilities & Utilities

PURPOSE OF THE CAPITAL FACILITIES AND UTILITIES ELEMENT

The Capital Facilities and Utilities Element is the mechanism for coordinating physical facilities and fiscal planning. Prioritization of capital improvements encourages efficient use of those facilities. By addressing long-range land use planning with facilities needed to serve future growth, projects can be scheduled to encourage development to follow in a logical pattern, which protects taxpayers by promoting public investments that appropriately reflect their urgency, economic desirability, and community benefit. Identification of potential funding sources allows projects to be evaluated in an explicit, objective manner. The capital facilities inventory identifies major repairs, renovation, expansion and/or replacement of existing facilities to serve the current as well as the future population.

This Capital Facilities, Utilities and Services Element has been developed to address the need for improving, expanding or developing facilities and services within Wahkiakum County. This element consists of an inventory of public facilities, identifies needs for improvement, expansion of new facilities, and sets public policy for using funds to meet needs in a manner consistent with the community's vision. It also includes a six-year improvement plan from FY 2006 to 2012. While the goals, objectives and policies in this plan will be used to guide public decisions, they also indirectly guide private development decisions by providing a strategy of planned public expenditures. The Capital Facilities and Utilities Element includes:

Utilities	Page	Capital Facilities	Page
Water	2	Public Safety	55
Wastewater	28	General Government	63
Stormwater	40	Public Education	65
Solid Waste	44	Parks & Recreation	67
Energy	47	Financing	72
Telecommunications	53	Capital Project Needs	81

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Much of the information and material for this element is taken from existing capital facility plans as well as interviews with key personnel. Steps in the planning process used to develop this section included:

- Development of goals and policy statements to guide facility development in a way that is consistent with the community vision
- Identification of suitable locations for growth
- Identification of locations where utilities are located or planned
- Development of growth scenarios
- Identification of watershed growth capacity
- Comparisons of growth scenarios to utility system and watershed capacity
- Adjustments to incorporate capacity of the watershed and water purveyors

Two key changes that occurred between this plan and the 1984 Comprehensive Plan are:

- The 1984 plan did not call for supporting rural service areas with utilities. Since that time, water and sewer utilities have developed or expanded in rural areas of the county to address health issues (water quality) and water quantity (growth).
- In 2004, the county health department increased the minimum lot size for a residential parcel with a domestic well and septic system from one-half acre to one acre, consistent with state law. The 1984 plan used the health codes to determine that "Low Density" development in designated growth areas would equate to two units per acre, or half-acre lots, which are no longer permitted unless the site is served by municipal water service. A

default to health codes for land development densities is no longer appropriate, given the extent of water utilities throughout the county, and given technological alternatives for waste treatment that have become commonplace for individual lots, as well as cluster and community systems serving larger developments.

WATER SUPPLY & WATER SYSTEMS

The development of land requires a source of potable water. Whether water is delivered via municipal water systems, community systems, or individual wells, there must be adequate water supply and satisfactory water quality. Refer to the Town of Cathlamet's 2008-2014 Water Plan for detailed information.

Watershed Plan

In 1998, the Washington State Legislature enacted the Watershed Management Act authorizing local governments to develop a plan for watershed protection. From 1999 to 2004 planning studies were conducted and planning unit discussions were held for Watershed Resource Inventory Areas (WRIAs) 25 and 26 to evaluate appropriate policy and implementation actions to address the four areas of watershed concern:

- Water Quantity
- Water Quality
- Aquatic Habitat
- Instream Flow

WRIA 25 comprises the Grays River Basin, Skamokawa Basin and Elochoman River Basin as well as Germany, Mill and Abernathy Creeks in neighboring Cowlitz County. Local governments adopted plan objectives in 2000 which outlined agreed-upon principles for protecting and enhancing the watershed, the process for developing the watershed plan, and improving information and data management.

Management of Water Supplies

Three principles guided the development of water supply strategies for WRIAs 25 and 26:

4. Existing water rights cannot be changed or impaired by the Watershed Management Plan.
5. As the region continues to grow and develop, new or expanded water supplies will be needed for communities, businesses, and citizens.
6. Diversion of water from streams or pumping from aquifers can deplete stream flows, with unintended consequences for aquatic habitat.

The watershed planning effort provided an opportunity to explore strategies for striking a balance between the latter two principles, without impairing existing water rights. A water right permit is not required for domestic uses that consume less than 5,000 gallons per day. (Domestic water is not an exempt use, but is exempted from the permitting requirements for a water right.) Two policies resulted from this discussion:

3. Public and private water users throughout WRIAs 25 and 26 should have access to water resources to meet new or expanded needs for water supply consistent with adopted land use plans.
4. Water resource development to meet new or expanded needs should avoid or minimize effects on stream flows or aquatic habitat in stream reaches where flow conditions are an important factor for sustaining aquatic life, including fish populations in their various life stages.

To put these policies into operation, the Planning Unit reviewed a range of water management strategies. These strategies included development of new surface or ground water supplies,

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water conservation, water reclamation and reuse, voluntary transfers of water rights, aquifer storage and recovery, and surface water storage.

Projected Water Needs
The Planning Unit also examined the needs of specific communities and general water users and providers within WRIAs 25 and 26. Projections for water needs were developed for municipal water suppliers, smaller public water systems throughout the region, and for homeowners who rely on domestic wells. Collectively, the need for water from public water supply and domestic wells is projected to increase by 47 percent from year 2000 to year 2020, for WRIAs 25 and 26 combined. ***The watershed plan is intended to provide enough growth potential to allow for new industry in areas outside major urban areas served by public water, where sufficient supplies are available. Such could be the case in Wahkiakum County, which includes growth in small manufacturing operations as part of its economic strategy***. A small plant located in or near Cathlamet could be served through the Regional Water System. Needs for additional water for agriculture are not well-defined in the plan and have raised serious levels of concern in other areas of Western Washington, particularly Clallam County, which has pursued expansion of the value-added agricultural sector through specialty crops, value-added processing, marketing and agritourism. ***Despite the prevalence of small acreage in this new agricultural movement, the Washington Department of Ecology maintains that, absent a legislative remedy, any commercial use larger than 0.5 acres must obtain a water right.*** Such processes are lengthy, are outcomes are by no means certain.

Two areas within the WRIA 25 are subject to surface water source limitations. Fossil Creek, in western Wahkiakum County, has been closed to new surface water rights since 1952. The Elochoman River and its tributaries have had restricted surface water source limitations in place since 1973. These restrictions limit the amount of surface water withdrawal from May 1 to November 1 in order to protect summer stream flow.

Stream flow in the lower reaches of tributaries to the Columbia River is influenced by tides from the Pacific Ocean as well as changes in water level on the Columbia River. Whenever water levels in the Columbia River are higher than natural flows of the tributary, the tributary waters back up. At certain times and places this can extend for miles upstream. These are instances when diversions for water supply do not influence flows or water levels to any measurable degree.

Because of this effect, the Planning Unit anticipates that water users needing new or expanded rights from tidally influenced reaches should be able to have access to water rights. ***Most communities in WRIAs 25 and 26 have water sources located upstream of tidally influenced reaches. In order to prevent unnecessary impacts on stream flow, issuance of new water rights to these communities should be carefully managed***.

Communities should evaluate all reasonable alternatives prior to developing a new supply that will reduce late summer stream flows. For example, in some locations ground water from deeper confined aquifers may be more appropriate than shallow ground water sources. Where alternatives are either infeasible or prohibitively expensive, other approaches such as water conservation and development of reclaimed water supplies can help reduce needs for new supplies. The Planning Unit recommends that procedures be established to require exploration of alternative solutions in some detail before Ecology issues new water rights that would impact stream flows. Where such rights are issued, the plan recommends that mitigation be provided—at least in part—to offset the effect on stream flow.
Source: WRIAs 25 & 26 Watershed Management Plan

Watershed Plan & Wahkiakum County Water Systems

The upstream limit of tidal influence for the Grays River is at River Mile (RM) 8, near the Rosburg Bridge. The Western Wahkiakum Public Utility District has water rights for their water source from two wells located just downstream of the S.R. 4 bridge crossing near RM 11.4. Since the Grays

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River at this location is definitely upstream of the tidally influenced area, any flow restrictions to be established on the Grays River would apply at this location. Any additional water rights from these existing sources or other sources in the vicinity would either be subject to flow restrictions or the granting of an additional water reservation as outlined in the watershed plan.

The only major public water supplier using ground or surface water in the Elochoman River watershed is the Town of Cathlamet, which has a service area including the Town, the surrounding area, and Puget Island. The Cathlamet regional system has a total permitted instantaneous withdrawal of 1.83 cfs or 821 gpm from the Elochoman River, and a Maximum Annual Withdrawal of 572.3 acre-feet, of which only 247.3 acre-feet can be used between May 1st and September 30th of any given year. Even with these surface water limitations, it is anticipated that water needs can be met through 2020 without any additional water rights.

The town has existing water rights for their water source from a pumping facility located just downstream of the Elochoman River Road bridge near RM 4.2. The upstream limit of tidal influence for the Elochoman is established at RM 2.2, near the Foster Road Bridge. Any flow restrictions to be established on the Elochoman River would apply at this location. Should the town determine that it needs to obtain additional water rights, any additional water rights would either be subject to flow restrictions or the town would need to have watershed planning unit members agree to re-allocation of a reserved block of water.

The zone of tidal influence for Skamokawa Creek is unknown, and the WRIA plan calls for an analysis to establish its location, although it is stated in the watershed plan that it will likely be located between the mouth of Skamokawa Creek and RM 0.5. Any future water needs in excess of existing water rights would need to consider relocation of wells or surface water intake so that it is within the zone of tidal influence, or prepare some sort of mitigation plan to offset the additional water right requested. It appears at present that this will not be necessary to meet projected population growth within the plan horizon of year 2025. The Western Wahkiakum Water System, the Cathlamet Regional Water System and the Puget Island Water System are projected to have enough existing water rights and water capacity to meet projected demand through their respective plan horizons.

The 2005 Draft Western Wahkiakum Water System Plan analysis determined that the Western Wahkiakum Water System has adequate water rights and source capacity to meet projected water demand and to deliver water to the service area through the year 2025, which the same plan horizon as the comprehensive plan. This means that no additional water rights will be needed for daily or peak demands, given that the service area population growth is projected to increase from 620 persons to 1,143 persons by 2025 (2.2% per year) and from 472 ERUs to 601 ERUs (a growth rate of 1.4% per year). The number of connections or households served is projected to increase from 248 to 457. However, the system is currently limited to 300 connections, which could ultimately be increased by the Washington State Department of Health (DoH). The number of connections will be reviewed with DoH as a follow-up to the water system plan.

The Puget Island 2003 water plan projects that water consumption will grow at the same rate as population growth, and adopts a 1.8% annual growth rate. The Puget Island Water System can meet projected water demand and deliver water to the service area throughout the plan horizon, which is 2023. This means that no additional water source (from the Cathlamet Regional System) will be needed for daily or peak demands, given that the service area population growth is projected to increase from 1,168 persons to 1,687 persons by 2023 and from 583 ERUs to 823 ERUs. The number of connections or households served is projected to increase from 467 to 675. The system currently has an “unspecified” number of connections for the 6-year, short term plan horizon, and an absolute limit of 520 total connections, though it has a stated capacity of 1,212 Equivalent Residential Units. The PUD will work with the DoH to determine an appropriate system capacity

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Overall, the population growth in the Cathlamet Regional Water System service area is expected to average 2.1% per year. Cathlamet has an older population than the surrounding area, and thus has smaller household sizes. While this demographic mix dampens growth rates over the long term, it also reduces water use somewhat.

Table 1
Year 2020 Projected Population & Growth Rates

Area	2000 Connections	2000 ERUs	Annual Growth Rate	2020 Projected Population	2020 ERUs
Regional Water System	**1,031**	**1,285**	**2.1%**	**3,150**	**1,968**
Cathlamet	275	478	1.3%	713	445
Out-of –Town	286	337	2.3%	922	576
Puget Island	470	470	2.3%	1,515	947

Source: Regional Water System Plan 2000

The WRIA 25/26 plan utilized a 1.86% annual rate of population growth in setting water allocations that would adequately protect minimum instream flows for wildlife habitat. This projection results in a total county population of 5,277 by the year 2020. In contrast, the Comprehensive Plan uses a 1.5% annual growth rate, and tops out at 5,202 persons by 2025. Larger "municipal" water systems that draw water from a tidally-influenced source will have an unlimited ability to add new connections. The watershed analysis does not estimate future growth of these municipal systems; instead, it looks closely at adequacy for domestic wells and small water systems. These factors suggest that there is sufficient watershed capacity to meet projected population growth over the next 20 years, while it can also accommodate growth supplied by larger water systems.

Land Development & Services

Where urban services such as water and sewer are available, development densities can have unanticipated consequences:

- Higher development densities can support economical growth of utility systems due to economies of scale. This also provides a higher level of environmental protection, such as maintaining stream flows by preventing groundwater withdrawal, or protecting water quality from the cumulative impact of septic systems, particularly in environmentally sensitive areas or near drinking water sources.
- Sparse development undermines the economical extension of centralized services because the cost per user is much higher when lines must travel greater distances to serve fewer customers. Users are reluctant to hook up to the system for a variety of reasons, and so invest in on-site systems (wells and septic systems) that have a long depreciation period. These on-site systems also create long-term maintenance issues that affect water quantity and quality.
- The provision of utilities to an area with sparse development will typically promote a denser pattern of development, once services are available. Centralized water service and wastewater treatment—as well as a regional decentralized waste treatment system—will most likely change the character of an area from a more rural community to a more suburban or urban environment.
- Land use controls—or more commonly, the lack of controls—can result in mandatory water and/or sewer services where groundwater has become contaminated or drinking water is not adequate. Failure to plan adequately can result in situations where service options are severely limited or very expensive, due to existing development patterns.

Joint land development standards between the Town, the County and all utility providers would assist in guiding development appropriately, when services are needed. Coordinated land planning and development would support water quality with wellhead and source protection. Four units per acre is generally cited as the break-even point for urban services. This can be

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accomplished through land use controls such as zoning, or by ordinances or development review processes that require connection to the system. This ensures that growth is focused in a manner that protects the original—and subsequent—investments in capital facilities.

TYPES OF WATER SYSTEMS

There are several public water systems in Wahkiakum County. In the eastern half of the county, the Town of Cathlamet operates the Regional Water System, which serves customers within and outside the town limits, and wholesales water to the Puget Island Water System, which is operated by Wahkiakum PUD No. 1. The source for this water is the Elochoman River. The central portion of the county is served by the West Side Water Works, a small system utilizing a well that draws upon groundwater. In the western end of the county, the PUD owns and operates Western Wahkiakum Water System. This system is served by a well field on the Grays River. A variety of smaller, private water systems serve special uses, as described below. Private systems, domestic wells, and larger municipal water systems all depend upon the good health of the watershed in order to provide adequate amounts of clean water.

A public water system is any system that provides water for drinking, cooking, and sanitation purposes except those serving only one single-family residence, or those with four or fewer connections, all of which serve residences on the same farm. The Washington State Department of Health (DoH) regulates public water systems under two main categories.

1. Group A systems are those regulated under the federal Safe Drinking Water Act (SDWA). Group A systems are further divided into two categories:
   - Group A, Community Water Systems – These provide water to 15 or more service connections used by year-round residents for at least 180 days per year. They also include systems providing water to less than 15 connections with at least 25 year-round residents. These systems serve cities, subdivisions, mobile home parks, and other types of communities.
   - Group A, Non-Community Water Systems – These systems provide water to the public, but not to residential communities. DoH defines and regulates two sub-categories of these systems: transient and non-transient. Examples include campgrounds, restaurants, motels, day-care centers, and some businesses.

2. Group B Systems – These meet the definition of a public water system, but do not include any of the above types. These systems serve smaller communities and subdivisions ranging from 2 to 14 residential service connections, and are regulated only by the state DoH.

In Wahkiakum County, Group A (or "municipal") public water systems include:

- Town of Cathlamet
- West Side Water Works (serving Skamokawa)
- Skamokawa Vista Park (transient, non-community system)
- Puget Island Water System
- Western Wahkiakum Water System
- County Line Park (transient, non-community system)

Group B water systems are smaller systems with only 2-14 connections per system, and are not subject to the federal Safe Drinking Water Act; however, they must meet state and local requirements for water quality and operations. Systems listed by the Washington State Department of Health include:

- Brooks Slough Water Association
- Nassa Point Water System
- Schneider Water System
- Gollersrud Water System
- Duck Inn Water System

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- West Cape Horn Water System
- Steamboat Slough Water Association
- Sleepy Hollow Water Company
- Elochoman Salmon Hatchery Water System (2)

State requirements for Group B systems include: sampling for water quality, record-keeping and reporting, system maintenance and operations. The State Department of Health does not regulate two-connection water systems. Expansions of Group B systems require health department approval. For systems that exceed 5,000 gallons per day, or irrigation of more than 0.5 acres, a water right must be obtained from the Washington Department of Ecology.

Issues identified with the use of Group B systems include:

- Long-term financial feasibility
- Compliance with water quality monitoring
- Development to standards that will permit connection with a Group A system or an Satellite Management Agency (SMA) in the future;
- Development of "six-pack" water systems that serve up to six dwellings and offering a cost-effective alternative to connecting with an existing Group A water system;
- Interconnected networks of "six-packs" created to avoid triggering the requirement for securing a water right but serving an extensive area or number of dwellings. These developments can lead to serious water quality problems within the watershed in the long run, and also undermine financial feasibility of municipal water systems that are established to protect the watershed and drinking water supplies.

Satellite Management Agencies (SMAs) were created by the legislature in 1994 to ensure:

⇒ Enhancement of public health;
⇒ Provision of high quality drinking water in a reliable manner and in a quantity suitable for intended use;
⇒ Capacity for meeting the requirements of the federal Safe Drinking Water Act; and
⇒ Uniformity in the designation of SMAs and their compliance processes.

Since July 1995, the state places Group B systems into one of two categories:

1. Systems owned or operated by a state-approved Satellite Management Agency
2. Systems approved under condition of future management or ownership by a state-approved Satellite Management Agency. The health department may require these systems to have satellite management if they are unable to meet financial viability or other operating requirements.

Group B systems created after 1995 must be owned or operated by a state-approved Satellite Management Agency (SMA), or approved under condition of future management or ownership by an SMA. Satellite management agency (SMA) means an individual, purveyor, or entity that is approved to own or operate more than one public water system on a regional or county-wide basis, without the necessity for a physical connection between such systems. Satellite management and operation services entail all day-to-day responsibilities of a water system. Management responsibilities include planning and policy development. Operational responsibilities include normal day-to-day operations, preventative maintenance, water quality monitoring, troubleshooting, emergency response, response to complaints, public and media contact, and recordkeeping.

Wahkiakum PUD adopted a Satellite System Management Resolution in May of 2001, which formally established the agency's intent to act as a Satellite Management Agency (SMA). An SMA can assist small water systems in accomplishing technical and administrative tasks, maximize water availability, and maintain satisfactory water quality. Through ownership or contracting for services, a SMA provides operation and maintenance of small and large water systems within a district. This can create an economies of scale that make it possible to provide

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adequate levels of professional staffing, provide good system management and operation, and meet stringent federal Safe Drinking Water Act (SDWA) standards and State of Washington requirements.

As of September 2005, there were two agencies certified by the Washington State Department of Health as Satellite Management Agencies for Wahkiakum County. These include:

1. GPM Water Systems – approved for ownership, management and operations (operating from Ariel, Washington)
2. Pacific Water Systems, Inc. – approved for management & operations only (operating out of Chehalis, Washington)

The other primary source of drinking water in the county—and in most rural areas—includes private sources such as domestic wells, which are not subject to state or federal drinking water regulations, but which are administered by county health departments, under the authority of the state Department of Health .

MUNICIPAL (GROUP A) WATER SUPPLIERS

Much of the information in this chapter is derived from comprehensive water system plans developed for the Town of Cathlamet in 2000, Puget Island in 2003, and the Western Wahkiakum Water System in 2005. These documents are prepared according to requirements of the Washington State Department of Health, and generally evaluate water source (supply and capacity to meet growth), water treatment, water storage, distribution and transmission systems, fire flow, and system reliability. A short-term plan horizon of 6 years is used to identify the most urgent improvements, with all needs evaluated in the overall, 20-year plan horizon.

Water system plans for large Group A systems are developed using state Department of Health guidelines, local comprehensive plans, local land use ordinances, and other applicable documents and planning standards. Other information has been provided by the Wahkiakum County Health Department and the Washington State Department of Health.

For detailed information about Group A Water Systems in Wahkiakum County, please refer to the plans below. These plans can be found at the Wahkiakum County Building & Planning Department, 64 Main Street, 3rd Floor, Cathlamet, WA 98612.

- Wahkiakum County PUD District No. 1 Water System Plan for Puget Island Water System, February 2008.
- Town of Cathlamet Water System Plan, February 2008.
- Western Wahkiakum Water System Comprehensive Water System Plan, August 2005.

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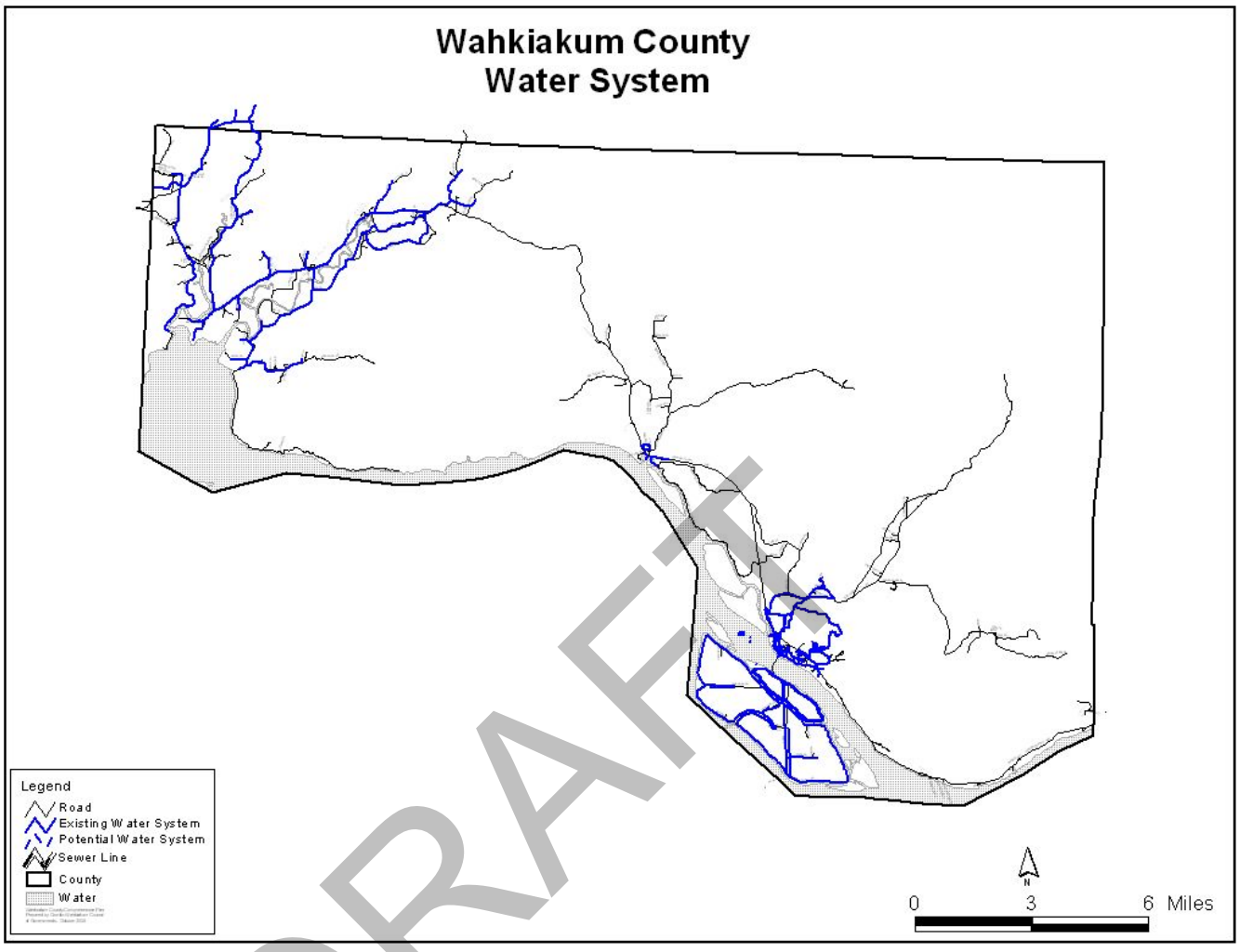

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Western Wahkiakum Water System

- Western Wahkiakum Water System (WWWS) is owned and operated by the Public Utility District No. 1 (PUD #1) of Wahkiakum County. It has a service area of approximately 80 square miles, currently providing water for residents from Grays River west to Deep River, along State Route 4. Other purveyors located in the vicinity include the West Side Water Works in Skamokawa, approximately 16 miles east of WWWS and on the opposite side of KM Mountain, and the Naselle system approximately three miles west of the WWWS service area. For detailed information, please refer to the Western Wahkiakum Water System Comprehensive Water System Plan, August 2005.

Other Water Systems

Group B systems within the WWWS service area include:

- Schneider Water System
- Gollersrud Water System

Future expansion of these systems would require state health department approval, and may require connection to a municipal system, or management by a certified agency. The creation of additional Group B systems would need to be under the purview of a Satellite Management Agency (SMA).

Puget Island Water System

- Residents of Puget Island receive water through the Wahkiakum PUD, who serves as a wholesale distributor of water from the Cathlamet Water System. The Cathlamet Regional Water System is owned and operated by the Town of Cathlamet, and supplies water to Puget Island through an Interlocal Agreement with the Wahkiakum PUD. The first interlocal agreement was signed in 1941, and in 1942 the first water main was installed on Puget Island. An agreement to purchase water to supply Puget Island was first signed in 1977. There is no formal allocation of water supply for the Puget Island Water System. For detailed information, refer to the Wahkiakum County PUD District No. 1 Water System Plan for Puget Island Water System, February 2008.

Cathlamet Regional Water System

- The Cathlamet Regional Water System is owned and operated by the Town of Cathlamet, with the exception of the distribution facilities on Puget Island. The regional water system serves the Town, areas outside the town limits, and Puget Island. Wahkiakum County P.U.D. owns and operates the distribution system on the island. The Town and the P.U.D have an interlocal agreement which establishes the wholesale water rate paid by the P.U.D. The Cathlamet Town Council, consisting of the Mayor and five council members, oversees the management of the system. The Town's three full-time and one part time public works employees maintain and operate the water system, the sewer system, streets and parks. The PUD has maintenance personnel who are responsible for the distribution system on Puget Island. For detailed information, please refer to the Town of Cathlamet Water System Plan, February 2008.

Other Water Systems

There is only one other Group A or municipal public water system within the eastern portion of the county, located at County Line Park. This is a transient, non-community system that serves visitors to the park.

Group B systems (2-14 connections) within the eastern portion of the county include:

- West Cape Horn Water System
- Nassa Point Water System
- Elochoman Salmon Hatchery Water System (2) – 4 connections

These systems do not have to meet standards of the federal Clean Water Act; however, they must meet state and local requirements for water quality and operations. Expansions of Group B systems require state health department approval. The ***Crista Vista*** area is served by the Regional Water System in Cathlamet. At one time, this was classified as a small system with 14 connections but it has no water source of its own, and is connected to the regional system. Improvements to mains must meet the specifications of the regional system.

Skamokawa Water System

The village of Skamakowa is located at the confluence of the Columbia River and Skamokawa Creek. Skamokawa is a Native American word for "smoky water" given to the area by the Wahkiakum band of the Chinook Tribe. The name reflects natural conditions that create the unusual appearance of the fog on the Columbia River at this location. Visitors to Skamokawa Vista Park often return home with jugs of water they have filled from the artesian well that provides naturally pure water to the area. Two wells provides water to Vista Park and to the West Side Water Works.

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System Description

West Side Water Works is a Group A private, non-profit system that serves the unincorporated village of Skamokawa. The current system was built in the early 1990's to address water quality and water quantity issues and replaced a system that served approximately 18 households form a spring and covered storage that were subject to contamination as well as low summer flows. The new system successfully addressed the issues of water quality and water quantity.

In 1992 the system well was drilled and a 35,000 gallon holding reservoir constructed in Vista Park. The gravity-fed system has two main transmission lines that cross Skamokawa Creek via the pedestrian bridge and the S.R. 4 highway bridge. Distribution lines serve Town Center, Swede Town, Pleasant Point, surrounding residences, and loops at the Wahkiakum County Fairgrounds. A second phase installed 6-inch lines for fire hydrants. Mid-term improvements will expand service along East Valley Road to Sleepy Hollow. Long range plans include extending service lines along Steamboat Slough Road to the Skamokawa Nursery and along S.R. 4 to the east end of town. This private system serves approximately 33 connections. A maximum of 43 connections are currently allowed, due to water storage limitations, rather than water source capacity.

The 80' deep artesian well serving the system has a flow of 15 gallons per minute (gpm), which has been increased to 35-40 gpm with a pump. There are seven fire hydrants on the system which have been used for fire suppression. It is unknown whether the system meets ISO fire flow standards. Water quality standards are met without additional treatment, due to the natural purity provided by this artesian well.

Extension of service to Sleepy Hollow would absorb the remaining system capacity. To extend lines for long-term improvements, an additional 35,000 gallon reservoir would be needed. Reservoir costs run approximately $1.00 per gallon. The Sleepy Hollow area is served by shallow springs that present water quality and water quantity concerns.

The Skamokawa Vista Park water system was constructed in the 1980's by the Port of Wahkiakum No.2. The system serves Vista Park, a highly visited recreational facility located on the Columbia River. and operates as a special district. It provides water for park visitors and facilities as a Group A transient, non-community water system. The pressurized system includes an artesian well with a 3,000 gallon storage reservoir within several hundred feet of the Westside Water System. It has a limit of 11 connections.

Water System Issues

There are several issues facing the Skamokawa water system:

- Future expansions of the system may require expanded storage capacity or exploration of another source. The recently completed watershed management plan use of tidally-influenced water sources to meet water demands without impacting stream flow. The watershed plan recommends a survey to determine where the zone of tidal influence is located within Skamokawa Creek. However, the water system can be adequately served for some time simply by increasing storage capacity. An additional 35,000 gallon reservoir would allow an addition 40 or so connections, essentially doubling the current system capacity.
- Extension of water lines to serve growth could be cost-prohibitive, unless growth is focused in areas that provide economy of scale. Cost is estimated at $750,000 for 60 additional connections beyond the current service area.
- Extensions of service are limited by staff capacity. There are no employees of the West Side Water Works. Work proceeds as customer interest and volunteer time allows.

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Other Water Systems

Several Group B water systems (2-14 connections) are located within the general area, and are not subject to the federal Safe Drinking Water Act; however, they must meet state and local requirements for water quality and operations. These systems include:

- Brooks Slough Water Association
- Duck Inn Water System – private system with one connection
- Steamboat Slough Water Association – private system with 4 connections
- Sleepy Hollow Water Company

State requirements for Group B systems include: sampling for water quality, record-keeping and reporting, system maintenance and operations. The State Department of Health does not regulate two-connection water systems. Expansions of Group B systems require health department approval. For systems that exceed 5,000 gallons per day, or irrigation of more than 0.5 acres, a water right must be obtained from the Washington Department of Ecology.

REGIONAL/STATE/FEDERAL ISSUES

Watershed Management & Water Availability

Watershed planning requirements are now in effect at federal and state levels of government. These plans contain locally-developed strategies to approach watershed management. Coordination of watershed protection, land use planning, and utility planning is the lynch pin of successful watershed management. The recently completed watershed plan for WRIA 25/26 includes Wahkiakum County. Population growth can have adverse effects on water quality within the watershed that larger systems draw upon for public water supplies, as well as individual domestic wells. Recharge of groundwater is essential for ensuring adequate water supplies and for protecting endangered fish species. Population growth methodology from the WRIA 25/26 plan is based on a slightly higher rate (1.86% per year) than that proposed in the planning process for the county comprehensive plan (1.5% per year); therefore, these plans are well synchronized in the growth envisioned for the area. Both plans employ the concept of "carrying capacity" for purposes of identifying the maximum amount of growth that can be accommodated without compromising environmental qualities.

The pattern and location of growth as well as the infrastructure policies established to serve growth is just as critical as the amount of growth. There are several concepts from the watershed plan that need to be kept in mind when thinking about utility services for growth:

- Septic systems return approximately 70% of the water drawn from groundwater supplies by domestic wells. Thus, on-site waste disposal is a key ingredient of maintaining adequate water supply.
- Proper siting, installation and maintenance of septic systems are essential for protecting water quality. The cumulative effect of on-site waste disposal within a drainage basin needs to be addressed. Land use planning can be effective in addressing these concerns, by using tools such as zoning to establish adequate minimum lot sizes to protect water quality from cumulative impacts.
- When water services are to be provided to an area, this helps to maintain the water supply because water is not taken from groundwater sources. This is even more ideal when the source of the municipal water supply is from a tidally-influenced source or a deep aquifer source. Locating a public water system intake in the zone of tidal influence provides a "cushion" in terms of water supply. Because this source isn't drawn from groundwater, it has fewer limitations on the amounts that can be used to meet drinking water needs.

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- In cases where water service is offered without accompanying sewer services, septic systems can prove beneficial in furthering the recharge of groundwater supplies.
- Sewer services alone—without the provision of municipal water service—can have a deleterious effect on water supply. In this case, water is withdrawn from the groundwater from domestic wells, but no recharge is accomplished from on-site waste treatment.

Because the watershed plan and the county comprehensive plan use somewhat similar growth projections, the number of households that can ultimately be accommodated under each planning scenario is not at issue. However, depending upon the service mix (water only, sewer only, water + sewer, or no service) the number of households that could ultimately be accommodated could vary considerably. If municipal water systems derive their future water supplies from the zone of tidal influence, and perhaps even relocate existing wells to be more favorably located within these zones, far more growth could potentially be served through municipal water systems without depleting groundwater supplies and in-stream flows essential for fish. Although the watershed plan allocates adequate water supplies to meet projected population growth, the mix of allocation between municipal systems, group B systems, and domestic wells could vary considerably, depending on local utility service policy and comprehensive plan policy.

Implementation of the watershed plans lies largely with the Department of Ecology, which has indicated that they will monitor the number of new domestic wells within a watershed over time. This will help them to determine when a watershed is reaching its maximum capacity to serve growth while providing adequate stream flows for wildlife. What will happen if this point is reached is of keen interest at the local level, as it could potentially lead to enactment of development moratoria.

Reference: WRIA 25/26 Watershed Management Plan

Water Storage

In 2000 the Washington Legislature formed a Water Storage Task Force that reviewed a range of above-ground and underground water storage approaches, identified the benefits and limitations of these approaches, and found in its February 2001 *Report to the Legislature* that "storage can be an important and useful water supply and environmental management tool…[that] can:

- Address the needs of all water users,
- Provide supplies for economic development and population growth,
- Be used to restore fisheries and help preserve the biological integrity of our watersheds, and
- Enhance recreational activities and provide protection from destructive floods"

The position of the State PUD Association and its members is that the state should pursue and establish innovative approaches and funding sources for water storage projects that reflect the public benefits of such projects and include funding through aggressive use of state and federal salmon recovery funds and the state's bonding capacity. They recommend using the established watershed planning process to determine:

- The current and future water supply and demand in their watersheds, including in-stream and out-of-stream needs,
- The types of storage projects feasible for individual watersheds that enhance and improve water supply and are consistent with prudent environmental management,
- Possible storage site locations that meet the needs of individual watersheds.

Source: Washington PUD Association

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Land Development & Urban Services

Where urban services such as water and sewer are available, development densities can have unanticipated consequences:

- Higher development densities can support economical growth of utility systems due to economies of scale. This also provides a higher level of environmental protection, such as maintaining stream flows by preventing groundwater withdrawal, or protecting water quality from the cumulative impact of septic systems, particularly in environmentally sensitive areas or near drinking water sources.
- Sparse development undermines the economical extension of centralized services because the cost per user is much higher when lines must travel greater distances to serve fewer customers. Users are reluctant to hook up to the system for a variety of reasons, and so invest in on-site systems (wells and septic systems) that have a long depreciation period. These on-site systems also create long-term maintenance issues that affect water quantity and quality.
- The provision of utilities to an area with sparse development will typically promote a denser pattern of development, once services are available. Centralized water service and wastewater treatment—as well as a regional decentralized waste treatment system—will most likely change the character of an area from a more rural community to a more suburban or urban environment.
- Land use controls—or more commonly, the lack of controls—can result in mandatory water and/or sewer services where groundwater has become contaminated or drinking water is not adequate. Failure to plan adequately can result in situations where options are severely limited or very expensive, due to existing development patterns.

Joint land development standards between the Town, the County and all utility providers would assist in guiding development appropriately, where services are needed. Coordinated land planning and development would support water quality with wellhead and source protection. ***Four units per acre is generally cited as the break-even point for urban services***. This can be accomplished through land use controls such as zoning, or by ordinances or development review processes that require connection to the system. This ensures that growth is focused in a manner that protects the original—and subsequent—investments in capital facilities.

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WASTEWATER

Types of Wastewater Treatment Systems

Wastewater treatment involves a complex interaction of physical, chemical and biological processes that work together to remove pollutants. There are three basic categories of wastewater treatment, which are defined by size and where treatment takes place:

1. Large centralized systems – A large, conventional municipal system with a gravity-fed collection system and a centrally located treatment plant.
2. Small community systems – Small, decentralized systems that collect waste from two or more homes or waste generators, with treatment occurring at a nearby location.
    A. Cluster systems – Small, decentralized systems serving 2 – 50 residences
    B. Small centralized community systems – serving more than 50 residences
3. On-site systems (OSS) – Waste treatment and disbursal on the same site that generates the waste, most often with a septic tank/soil absorption system on an individual homeowner lot.

Wastewater treatment systems for communities can include either decentralized or centralized systems, or even components of each. Centralized systems (conventional sewer systems) involve an extensive wastewater collection system, typically a gravity collection system that connects to a large wastewater treatment plant. Decentralized systems can include conventional and alternative on-site systems, as well as cluster systems. The choice of system depends upon economics, land use densities, and environmental factors—in particular, the environmental sensitivity of the area receiving the discharged waste.

Technological advances have brought an array of decentralized treatment solutions to market, including recirculating sand filters, biofilters using geotextile, peat or plastic media, small aeration plants, constructed wetlands, sequencing batch reactors, and conventional activated sludge treatment using oxidation ditches. These technologies have enabled many small communities to offer high quality treatment at reasonable cost. One reason that the regulatory community has been slow to accept small decentralized systems is that they will ultimately fail unless they are properly operated, maintained, and managed. This requires a professional management entity.

Clustered systems can achieve economies of scale that make advanced on-site technologies more cost effective than they would be on individual lots. This approach also allows waste treatment to take place on the soils best suited for that purpose. Small, decentralized (cluster) systems will eventually fail unless sound operational practices, routine skilled maintenance, and reliable management systems are in place. Cluster systems can be owned and managed by a homeowners association, owned by homeowners but managed by a local government, or owned and managed by a local agency. Washington State requires that a small system serving new development be owned and/or operated by a management entity.

On the other hand, small centralized community systems are usually owned and operated by the local jurisdiction, due to the scale of these systems. Developers can use a variety of on-site wastewater treatment system options, as alternatives or as enhancements to conventional septic systems. Types of alternative community systems and their limitations and advantages are outlined below.

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Table 8
Alternative Community Wastewater Treatment Systems

Type	Limitations	Advantages
Lagoons	▪ Large land area required (e.g., 1 acre/200 persons)	▪ Low maintenance & operations ▪ Several types for different conditions
Sequencing Batch Reactors	▪ Expensive to construct ▪ Higher than average operations cost	▪ Small land area required ▪ Meet strict effluent standards ▪ Easy to expand ▪ Fewer operational/maintenance problems
Oxidation Ditches	▪ Expensive to construct ▪ Noisy ▪ Odor problems	▪ Can accommodate 1,000's of people ▪ Limited land area required ▪ Moderate energy demand ▪ Moderate operator skill level required
Trickling Filter	▪ Highly visible ▪ Odor problems ▪ Not suited for cold climates	▪ High quality wastewater meets strict environmental standards
Membrane bioreactor (MBR)	▪ Cost; per user cost has become comparable to engineered, on-site systems	▪ Plant "footprint" is 1/10 the size of conventional plant; frees up land ▪ Can "hide" treatment facility with building ▪ Modular & expandable; grows with the population ▪ High quality wastewater

Reference: Individual Homeowner & Small Community Wastewater Treatment & Disposal Options, 1996; 2003 Town of Cathlamet General Sewer/Wastewater Facilities Plan

Because collection systems represent approximately 70% of total costs, selecting an appropriate collection system is quite important. Collection systems rely on a variety of factors, including topography, development density, and total costs. The collection system types listed below provide an economical alternative to conventional gravity-fed sewer systems that are designed for high density urban and suburban areas. Because gravity-fed systems must slope at a uniformly steep gradient throughout the system, lines may require lift stations, which adds considerably to the expense of a conventional system.

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Table 9
Alternative Wastewater Collection Systems

Type	Suitable for	Limitations
Small Diameter Gravity Sewers	▪ Low density development ▪ Where septic tanks are already present	▪ Not suitable for hilly terrain
Pressure Sewers	▪ Hilly areas	▪ Requires higher Operation & Maintenance costs than small diameter gravity sewers
Vacuum Sewers	▪ Flat or gently rolling terrain ▪ Higher densities	▪ Higher Operations & Maintenance costs ▪ Steep terrain will require lift stations

Reference: Individual Homeowner & Small Community Wastewater Treatment & Disposal Options, 1996.

The principal advantage of alternative collection systems is the lower cost of installing the network of collection pipes. These can be laid in much shallower and narrower trenches, more easily avoiding obstacles. The primary disadvantage is that they often require separation of solids or a mechanical device to propel sewage through the system. When the population density is

relatively high for a given area, and the required length between service connections is short, the additional requirements of alternative system can make them more costly than a conventional system. Alternative collection systems should be considered when:

- The system will be serving a small community (less than 10,000 people)
- Many properties currently have on-site systems such as septic tanks or aerobic treatment units
- The average lot size per property is more than ½ acre
- There will be fewer than 100 homes per mile of sewer pipe
- The system will serve a community on very hilly terrain
- There are subsurface obstacles, such as bedrock or groundwater close to the surface

Choosing the proper system requires attention to several factors. Site evaluations of soils, topography and precipitation are necessary. Peak and average volumes of wastewater determine if the waste is sent to a mass drainfield or requires further treatment for direct discharge into a waterway. Land values are important because it may be cheaper to build a more expensive system in a high-cost area, if it requires less land. Impacts on housing costs for the community should be considered. Two communities with similar site characteristics may be better served by different types of systems. ***The cost of using a particular system will vary depending on the characteristics of the community it will serve in the future. This makes it important to know where future growth is likely to occur and what changes in land use patterns are anticipated.***

On-Site Systems

Less than 1/3 of all soils in the U.S. are suitable for conventional septic systems. The key concept in on-site treatment is a design that provides an adequate area to limit discharges to what the soil can accept. A conventional septic system may not be suitable for a location due to site or soil conditions such as:

- The volume of water entering the system is too large for proper treatment
- The soil where the drainfield is located does not efficiently filter and treat effluent
- The size drainfield required for a conventional system is not possible on the site
- The water table under the drainfield is too close to the surface
- The system is located in an environmentally sensitive area, such as near a waterway

The types of soils of Wahkiakum County vary considerably, which has a direct bearing on the use of on-site waste treatment, such as septic systems. The presence of a high water table can also adversely affect the suitability of a particular property for septic waste treatment; such areas are extensive in some portions of the county. Other factors limiting the suitability of development and/or on-site septic systems include environmentally sensitive areas such as wetlands, floodplains, steep slopes, area subject to erosion, and geologically hazardous areas, all of which are found in abundance in Wahkiakum County.

The Wahkiakum Health Department estimates that 25% of the septic systems for new and existing development can function using a conventional gravity system, approximately 50% will need an engineered system, and 25% of all properties cannot accommodate a subsurface soil absorption system (SSAS) of any type. Homes using septic treatment are generally required to be sited on at least one acre, as a minimum. Homes connected to public water can use a septic system on a lot as small as one-half (0.5) acre.

Wastewater may be treated and disposed of on-site by individual septic systems or by community on-site systems. The Washington State Department of Health issues standards for these systems. Approval is through the county health department for systems under 3,500 gallons per day. The state Department of Health approves systems over 3,500 gallons per day but less than 14,500, and the Department of Ecology regulates systems with capacity greater than 14,500 gallons per day. Septic systems are prohibited within the town limits of Cathlamet. All properties are required to connect with the sewer system.

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An alternative system is defined as an on-site sewage system other than a conventional gravity system or conventional pressure distribution system. If properly operated and maintained, these systems provide equivalent or enhanced treatment performance that provides a environmentally acceptable and economical means of disposing of domestic wastewater.

On-site treatment alternatives include:
- Sand filters – where soil conditions are not conducive to percolation, or there is high groundwater
- Mound systems – useful in soils where slow or fast permeability is a problem, areas with high groundwater, or shallow rock over porous bedrock
- Low-Pressure – useful where soils would be come clogged as a result of overloading the soil, high groundwater conditions, or saturated soils
- Leaching field chambers – used on areas with steep slopes
- Irrigation systems – spraying of effluent after treatment for uptake by plants
- Trickling filter systems – for use with high concentrations of organic material in wastewater
- Aerobic treatment units – used where septic systems have failed or where lot size is not large enough for a standard drain field
- Constructed wetlands – provides an additional treatment state when a conventional system is not enough to overcome site limitations
- Various proprietary systems – used when conventional septic systems or sewer hook-ups are not feasible

Owners of individual septic systems are often guilty of a "bury it and forget it" mentality, and fail to maintain their systems on a regular basis. This is only somewhat less of a problem when an engineered system costing in the thousands of dollars is required to site a new home. New Washington State Department of Health (DoH) regulations that went into effect on September 15, 2005 can require the owner of a failing system to abandon the old system and rebuild it as a conforming system, where possible. Or, the health officer can require a connection to a sewer, if one is within 200 feet. The DoH also delegates authority to the local health officer to require connection to a public sewer system in cases where it is needed to protect public health. New development or owners of failing systems can be required to connect to sewer in cases where the comprehensive plan or development regulations require it.

Where urban services such as water and sewer are available, development densities can have unanticipated consequences:
- Higher development densities can support economical growth of utility systems due to economies of scale. This also provides a higher level of environmental protection, such as maintaining stream flows by preventing groundwater withdrawal from wells, or protecting water quality from the cumulative impact of septic systems, particularly in environmentally sensitive areas or near drinking water sources.
- Sparse development undermines the economical extension of centralized services because the cost per user is much higher when lines must travel greater distances to serve fewer customers. Users are reluctant to hook up to the system for a variety of reasons, and so invest in on-site systems (wells and septic systems) that have a long depreciation period. These on-site systems also create long-term maintenance issues that affect water quantity and quality.
- The provision of utilities to an area with sparse development will typically promote a denser pattern of development, once services are available. Centralized water service and wastewater treatment—as well as a regional decentralized waste treatment system—will most likely change the character of an area from a more rural community to a more suburban or urban environment.
- Land use controls—or more commonly, the lack of controls—can result in mandatory water and/or sewer services where groundwater has become contaminated or drinking water is not adequate. Failure to plan adequately can result in situations where options are severely limited or very expensive, due to existing development patterns.

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Joint land development standards between the Town, the County and all utility providers would assist in guiding development appropriately, when services are needed. Coordinated land planning and development would support water quality with wellhead and source protection. Four units per acre is generally cited as the break-even point for urban services. This can be accomplished through land use controls such as zoning, or by ordinances or development review processes that require connection to the system. This ensures that growth is focused in a manner that protects the original—and subsequent—investments in capital facilities.

EXISTING CENTRALIZED SYSTEMS

There are two waste treatment systems operating in Wahkiakum County. The Town of Cathlamet operates a large, centralized sewage treatment plant within its service area. The village of Skamokawa operates a small, centralized community system that was constructed in 2000. Taken together, these systems represent a little over 20% of the county's households. This is the opposite of national trends. Across the U.S., publicly owned wastewater systems serve about 75% of the population, and 25% are served by on-site wastewater systems.

Cathlamet Wastewater Treatment System

The Cathlamet wastewater treatment, collection, and disposal system was originally constructed as a combined system in the 1940's, handling both stormwater and sewage flows. The original Waste Water Treatment Plant (WWTP) was constructed in 1964 and consisted of a single cell, 3.45-acre lagoon located on the banks of Birnie Creek. It was designed to serve a population of 480 persons.

In 1982, the lagoon was subdivided into three cells with mechanical aeration in the first two lagoons. The effluent is chlorinated and discharged through an outfall diffuser in the tidally-influenced Cathlamet Channel and into the Columbia River. The permitted flow for the plant is 0.135 million gallons per day (MGD). It was at this time that the system was also reconstructed into separate storm and sanitary systems and service expanded to the entire town.

The Cathlamet wastewater collection system contains:

- 25,340 feet of gravity pipe
- 2,045 feet of force main
- 4 pump stations.

The system serves a population of 565 persons within the town and approximately 163 persons outside of town limits. The system also serves the elementary, middle and high schools and approximately 50 commercial customers, including schools, apartments, care facilities and other commercial establishments. A total of 339 sewer accounts are shown in the billing system in 2001.

In addition to the town-owned systems, there are several privately owned and operated systems that enter into the city systems. These include a gravity system from Indian Village Mobile Home Park, a pump station from the Elochoman Marina owned by Port of Wahkiakum No. 1, and a gravity system from Marv's RV Park, which is partially served by a drain field.

For detailed information, refer to the Town of Cathlamet Sewer Wastewater Facilities Plan dated January 2003.

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Skamokawa Sewer System

The Skamokawa Sewer District was formed in response to Washington State Department of Health concerns about water quality. Operations are governed by a three-member board elected by the district voters. The system was constructed as a result of multiple septic system failures and the presence of a high water table due to the community's low elevation. In 2001 construction of a STEP system was completed and now serves 55 residences at a cost of $1.6 million.

A STEP (septic tank effluent pump) system requires a septic tank at each residence properly sized to handle the flow and settling of solids. Instead of relying on gravity lines, pressure sewers use the force supplied by pumps to deliver wastewater to the system from each individual property. Effluent is discharged into a mass drainfield in Vista Park for treatment.

System Needs

Costs of developing the system have resulted in monthly sewer rates that are higher than originally estimated. Customer dissatisfaction has created governance issues. There is no method in place to require residences to hook up to the system so that costs are spread among more users. Washington State regulations require connection to a sewer system in the event of a septic failure, or in situations where the water quality may be placed in jeopardy due to inadequate waste disposal. The system does not have significant capacity for future growth. Proper maintenance of individual septic systems is needed. This would require an inspections and maintenance program.

LOCAL/REGIONAL/STATE ISSUES

Affordable Wastewater Treatment

New Washington State Department of Health (DoH) regulations that went into effect on September 15, 2005 can require the owner of a failing system to abandon the old system and rebuild it as a conforming system, when possible. Or, the health officer can require a connection to a sewer, if one is within 200 feet. The DoH also delegates authority to the local health officer to require connection to a public sewer system in cases where it is needed to protect public health. New development or owners of failing systems can be required to connect to sewer in cases where the comprehensive plan or development regulations require it. Each of these situations affects affordability.

Options for alternative wastewater disposal can become increasingly constrained due to a variety of factors. The topography and soils of a particular area help define what type of treatment is needed. Densities of existing development can limit those options even further, as a system suited for a certain terrain at a low density would no longer be feasible if growth is unchecked. The cost of using a particular system will vary depending on the characteristics of the community it will serve in the future. This makes it important to know where future growth is likely to occur and what changes in land use patterns are anticipated.

The need for upgrades and possible relocation of the Cathlamet Wastewater Treatment Plant brings both of these issues into focus. Retooling an existing centralized system is expensive. Projects are more economically feasible when shared between greater numbers of users. Consideration of watershed protection is an added concern. The eastern half of the county has had significant growth rates over the past 15 years, at an average annual rate of 3.7%. Continued growth raises the issue of the issue of cumulative impacts of on-site septic systems upon the watershed. The county health department estimates that only 25% of properties are suitable for conventional septic systems; 50% would be suitable for a more costly engineered system; and 25% are not suitable for any type of on-site waste treatment and disposal.

Each of these factors raises the question of a regional wastewater management approach. A comprehensive approach could include both centralized and decentralized systems in the eastern

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half of the county. Washington State Department of Health regulations now require local health officers to develop a written plan by 2007 that will provide guidance to local health jurisdictions regarding development and management for all on-site sewage systems within the jurisdiction. Such a plan could include strategies to encourage appropriate on-site technologies in the short-term, with conversion to centralized systems as an area is built out. One approach could be to encourage cluster wastewater systems for small lot developments in areas designated for higher density, eventually incorporating these into the centralized system. If an area currently has low to moderate density, but is planned for higher densities, then cluster on-site systems may offer the best interim option. The cluster systems would encourage higher densities that would eventually be suitable for a centralized system. Another approach could be to designate future sewerage areas in the comprehensive plan and require connection to the system as development occurs within those areas. As build out is approached, there would be more users to support the expanded system.

Watershed Protection

The watershed plan identifies sewer service as offering two opposing functions within the watershed. While sewer service can make huge differences in water quality within a watershed, provision of sewer services means that groundwater supplies are not being recharged. It is estimated that about 70% of water taken from groundwater for domestic wells is returned via clean septic system discharges. In cases where sewer service is the only utility offered, the consequence to in-stream flows can be significant. For purposes of providing groundwater recharge and maintaining stream flows, the watershed plan recommends:

- Provision of water service from a municipal source taken from a water source within the zone of tidal influence and continued reliance on septic systems to recharge groundwater;
- Provision of combined water and sewer service, as this approach does not deplete groundwater supplies, though it does prevent recharge through septic systems. Recharge is not as critical when on-site wells are not removing water from the source.
- Provision of sewers where water quality is an issue and the cumulative impact of septic systems should be avoided. In these circumstances, provision of water service in tandem with sewer service is recommended for the least impact on groundwater supply.

The Elochoman planning area/watershed has had the highest growth rate of any other areas in the county since 1990. It is expected that the eastern half of the county will continue to lead the county in residential and commercial/industrial growth for the foreseeable future. Extensions of water and sewer services should be carefully evaluated for impacts on land use patterns within the planning area, as well as impacts to the Elochoman watershed. In 2005 the county adopted a larger (one acre) minimum lot size for residential lots that contain a well and septic system, in compliance with state law. These requirements should assist in reducing the cumulative effects of septic systems upon water quality.

On-Site Wastewater System Maintenance

Septic system maintenance is a growing area of concern. Many homeowners simply forget about their on-site waste treatment systems until or unless they fail. Regular inspections and routine maintenance can be a great assistance in maintaining the viability of on-site systems while protecting the groundwater quality of an area. Many homeowners do not understand how their system works, and what they can do (or avoid doing) to prolong the life of the system. A local ordinance can require septic systems to be inspected, along with a report on any problems with their functioning. Pacific County, in partnership with ShoreBank Pacific and the USDA, offers a low/no interest loan to qualifying homeowners to repair, improve or install engineered systems where the original system has failed.

A new Washington Department of Health regulation requires counties to develop a plan for managing on-site systems. Given that half of all systems in the U.S. are more than 30 years old, with few of these systems receiving proper maintenance, the potential exists for a county

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approach to ensure proper maintenance of decentralized waste systems. This would require, at minimum, an inventory of existing systems and a determination as to their level of performance.

Malfunctioning or failing on-site waste treatment systems can be a significant source of pollution, with communitywide impacts on drinking water sources. Most systems designed within recent years are adequately designed, sited and constructed. It is long-term maintenance of these systems that is at the core of most on-site system failures. Some communities have established management districts, a wastewater utility, or some other community program to ensure proper maintenance. These may be established communitywide, or targeted to specific areas, such as homes within a certain distance of a shoreline. Maintenance systems require support from the community in order to work, since the cost of inspections is borne by the homeowners, as is the cost of remediation or replacement. Many times, management districts are formed only in response to a significant failure. Another suggested approach is the use of private insurers who collect annual premiums that cover regular inspections, remediation, and replacement of failing systems.

Cluster/Community System Maintenance

Some jurisdictions have an established public or private wastewater utility to handle the management of cluster or community systems constructed to serve new development. This insures proper maintenance and system management from day one, throughout the life of the system. The management entity typically charges a base fee and monthly or quarterly rate billings to cover costs. Washington State requires that an on-site sewerage system serving a development establish a responsible management entity (RME) and demonstrate the financial viability to manage the system in the short and long-term.

The EPA has established voluntary guidelines for the management of onsite and clustered wastewater treatment systems. A description of each model is provided below.

- **Homeowner Awareness Mod**el – Used where soils allow conventional septic systems. An inventory of all systems is conducted. The database is used to provide owners with reminders of maintenance needs.

- **Maintenance Contract Model** – Used in areas of low to moderate environmental suitability where engineered systems or small cluster systems are appropriate. An inventory of all systems is conducted. Owners are required to maintain service contracts for proper maintenance; compliance with these contracts is monitored.

- **Operating Permit Model** – Used in areas of moderate environmental sensitivity, such as wellhead protection areas, recreational waters, and with large-capacity systems or those that treat high-strength waste. An inventory is conducted; system performance standards and monitoring requirements are established. Renewable operating permits are issued and may be revoked for noncompliance. The monitoring identifies noncompliant systems and initiates corrective actions. Permit tracking and regulatory enforcement powers are required.

- **Responsible Management Entity (RME**) – Used in areas of moderate to high environmental sensitivity where reliable system operation and maintenance is required, such as wellhead or source water protection zones, critical aquatic habitats, or where clustered systems are in place. An inventory is conducted; system performance and monitoring standards are established. Regulatory oversight is assured by having operating or NPDES permits issued directly to the RME, which tracks compliance of individual properties. Operating and maintenance responsibilities are transferred from the homeowner to a professional RME. The RME must have owner approval for repairs, with an easement or right of entry. Oversight of the RME is recommended.

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- **Responsible Management Entity (RME) Ownership Model** – Used in areas of greatest environmental sensitivity where reliable management is required, such as critical aquatic habitat wellhead or source water protection areas. This is the preferred management program for clustered systems serving multiple properties under different ownership (such as multiple subdivisions). Qualified trained owners and licensed operators provide professional management of all aspects of decentralized systems through public/private RMEs that own or manage individual systems. This model is similar to a centralized sewerage, and provides effective area-wide planning and watershed management. It also reduces or removes potential conflict between users and the RME. This model offers the greatest protection of environmental resources and owner investment. This approach may require greater financial investment by the RME for installation and/or purchase of existing systems. Formation of a special district may be required. Under this model, private RMEs may limit competition, and homeowner associations may have limited authority.

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STORMWATER

The Federal Clean Water Act (CWA) is the primary basis for all water quality programs—federal, state and local. The CWA was originally enacted with the goal of making all U.S. waters swimmable and fishable. Subsequent amendments to the Act have included stormwater runoff as a key cause of water pollution, which can be generated by a specific land use or activity (a point source) or from the cumulative effects of many activities (nonpoint pollution).

As areas grow and develop, impervious surfaces (e.g. roads, buildings and parking lots) increase, which reduces the absorption of rain into the ground. This causes an increase in the volume of water and the rate of runoff, which can cause flooding and stream bank erosion. Stormwater runoff has been shown to be a significant source of water pollution in developing areas. Stormwater will wash pollutants such as sediment, oil and grease, pesticides and fertilizers, salts, heavy minerals and other substance from the surface of the land and into nearby streams and groundwater.

The design of stormwater management best management practices (BMPs) is mandated and regulated by regulatory requirements at the federal, state, regional and/or local levels. At the federal level, the agencies involved in regulating impacts of storm water include the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce, and the U.S. Fish and Wildlife Service (USFWS)

The Environmental Protection Agency (EPA) delegates authority for compliance with the Clean Water Act to states, which work with local governments to improve water quality. In Washington State, the Department of Ecology serves in this capacity. States were also delegated the authority to administer the National Pollutant Discharge Elimination System (NPDES) in 1975. This program regulates all point source discharges to surface waters, including municipal and industrial stormwater discharges. The intent is to reduce or eliminate pollutants in stormwater runoff from certain municipal stormwater systems and industrial activities. The Cathlamet Waste Water Treatment Plant holds an NPDES discharge permit for flows released into the Lower Columbia River.

Federal and state water quality programs that address point and nonpoint sources have continued to evolve, as understanding has grown regarding the significant effects of stormwater upon water quality. Several sections of the CWA apply to urban runoff, both as point and NPS of pollution, as well as impacts of any activities that may result in the disturbance of natural wetlands (regulated by Section 404 of the Act). EPA's current approach is to focus on managing watersheds—rather than political jurisdictions—to protect and improve water quality. The process requires the development of Total Maximum Daily Loads (TMDLs), which set the amount of pollution that may be discharged into a body of water, while still complying with water quality standards. These watershed TMDLS are implemented through the issuance of national NPDES permits that require waste load allocations for point sources and load allocations for nonpoint sources (NPS).

The Elochoman River and the West Fork of the Grays River were surveyed and included in the state listing of impaired water bodies; thus, are both on the EPA's 303d list for compliance with water temperature. The Lower Columbia River is listed for multiple factors, such as heavy metals, temperature, dissolved oxygen, pesticides and other pollutants. New State of Washington regulations regarding NPDES permits for stormwater discharge into impaired waterways now require periodic monitoring for compliance with established surface water quality standards.

Phase 1 of the EPA's stormwater program went into effect in 1990 under the Clean Water Act. It relies on NPDES permit coverage to address three categories of activity:

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1. Municipal separate storm sewer systems (MS4s) in urbanized areas with population of 100,000 or more
2. Ten categories of industrial activities, including certain types of manufacturing, transportation, oil and gas, hazardous waste and other facilities. Government facilities, such as landfills, airports, and large wastewater treatment plants also require permits.
3. Any construction activity disturbing 5 or more acres of land.

The Stormwater Phase II final rule was formulated in 1999 expands the Phase I program by including small municipalities with populations less than 100,000—but within an urbanized area—and requiring them to develop stormwater management programs regulated under the NPDES permit. The Department of Ecology has developed a list of towns under 10,000 that it is proposing for compliance under NPDES due to growth rates, proximity to impaired water bodies, and other criteria. As of December 2005, the Town of Cathlamet is not on this list, though the list could be expanded at some future point. Phase II rules also added to the list of industrial activities subject to NPDES permits. ***More significantly, it requires operators of small construction sites—one acre or greater—to implement programs and practices to control polluted storm water runoff through the use of NPDES permits.*** Construction sites less than one acre can be added in by the State where it is determined necessary to protect water quality. The federal statute encourages the use of general NPDES permits to cover most of these activities.

The Washington Department of Ecology will issue a new Construction Stormwater General Permit in mid-November of 2005 to cover sites of one acre or more, and to add in new inspection and sampling requirements by a Certified Erosion and Sediment Control Lead at least once every week and within 24 hours of any rainfall event that causes a stormwater discharge from the site. There are new specific benchmarks for determining whether erosion and sediment controls are working as intended. In the event the standards are not met, the new state permit outlines additional steps that must be undertaken to improve performance. Non-compliance can result in fines and permit revocation.

The operators of small sites will have to submit a Stormwater Pollution Prevention Plan as part of the NPDES permit. The SWPPP is an erosion and sediment control plan with best management practices specified for that project site. Submittal of the SWPPP is now required at the time a permit application is filed, instead prior to commencing construction. Federal litigation has resulted in an additional requirement that the Department of Ecology ensures that the SWPPP is available for public review during a public comment period.

Small construction sites of 1 to 5 acres can be waived from the NPDES permitting program based on two factors: the rainfall intensity anticipated for the project period (the "R" factor from the Revised Universal Soil Loss Equation) or a water-quality analysis that shows construction controls are not necessary to protect water quality. The state permitting authority has discretion on whether or not to allow waivers. The new construction regulations include a specific exemption from permitting requirements for routine maintenance performed on small sites.

The Endangered Species Act (ESA) also applies to activities directly affecting water resources designated as “critical habitat” areas and may include receiving waters from highway or urban runoff. For example, stream quality in the Pacific Northwest has become an important issue with regard to protection of the salmon population. Highway construction, runoff quality, mitigation activities and maintenance may be subject to review under the ESA due to the identification of certain receiving waters as "critical habitat" for salmon runs.

The Coastal Zone Management Act of 1972 (CZMA) was passed by Congress in order to "preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations." Areas subjected to CZMA planning include wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, fish and wildlife and their habitat. The Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) specifically charged state coastal programs and state nonpoint source programs to address nonpoint source pollution issues affecting coastal water quality, including coastal stormwater control. Coastal stormwater control programs are not intended to supplant existing coastal zone management programs or local nonpoint source management programs. They are intended to

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assist in updating and expanding existing programs and should be coordinated closely with other nonpoint source management plans.

Local & Alternative Approaches

The primary role of local government in stormwater management is to address local problems and needs, while complying with state and federal regulations in the most cost-effective manner. All citizens and land managers should utilize measures to minimize the generation of stormwater runoff, such as limiting the amount of impervious surfaces, and maximizing the infiltration rate of runoff on the site in question. Their actions can pollute stormwater runoff, or they can implement prevention and control measures to protect water quality. Stormwater issues are caused by many individual activities; everyone must do their part to prevent or solve these problems.

A variety of approaches can be helpful at the local level in addressing stormwater problems. One is the creation of user-fee stormwater utilities to improve urban watershed and stormwater management. New federal requirements for stormwater permits that affect smaller cities and broader enforcement of the Clean Water Act on a watershed basis are causing many cities to consider a user-fee concept for dedicated funding for improved stormwater management. At the watershed scale, local governments are beginning to coordinate a regional water resource management plan that addresses water supply, sanitary sewage, stormwater drainage, and wildlife protection under an integrated water utility.

Stormwater management begins by defining the problem. This is accomplished through determining local water quality conditions, identifying pollution sources, and inventorying the stormwater management system. Prevention activities are more cost effective than remedial actions. Prevention can include identifying local government practices that reduce stormwater pollution, identifying illegal connections to the sanitary sewer system, land use planning techniques such as reducing impervious surfaces and increasing vegetative buffers, and public education and involvement. These outreach efforts help citizens understand the link between water quality and environmentally sound lawn care and proper disposal of used oil, yard wastes and pesticides or other chemicals.

The only area within Wahkiakum County with a designated stormwater collection system in place is the town of Cathlamet. It is currently not listed on the Department of Ecology's proposed list of small regulated MS4s in Washington State. The Cathlamet area storm drainage system consists of a network of natural and man-made drainage ways and facilities that store and conduct surface water by gravity flow. The natural drainage ways include the Columbia River, Birnie Creek, and other permanent or intermittent creeks, drainage ways and wetlands. The man-made component of the system is composed of streets, curbs, gutters, underground storm pipe, French drains, roadside ditches and culverts. This "gray infrastructure" is typical of most urbanized areas. But urbanized areas—as well as more remote rural sites—could benefit from using "low impact development" and by utilizing "green infrastructure" to reduce stormwater runoff.

Low impact development involves minimizing the footprint of buildings as well as other impervious structures, reducing road widths, and adding natural draining areas where water can percolate into the soil without creating erosion, flooding, or adding pollutants. This can be accomplished by adding drainage swales, plantings, and other methods to slow the flow of water and detain it until it can be absorbed. Green infrastructure is an interconnected network of stream corridors, wetlands, woodlands and other natural areas that help maintain natural processes. Green infrastructure can help maintain native plant species, provide connected corridors for wildlife movement, and offer natural storage of stormwater in areas that are already difficult to develop, such as wetlands and floodplains. This approach to a connected network of natural areas, open spaces and greenways has the effect of decentralizing stormwater management and saves taxpayer investment in expensive "gray" infrastructure. This approach of "designing with nature" can reduce environmental impacts while protecting the rural landscape as well as improving the marketability of residential areas.

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There are many areas throughout the county where steep terrain, wetlands, floodplain and other natural features are damaged by stormwater runoff. Construction activities in close proximity to these areas can aggravate the situation, due to sedimentation and other materials carried with excessive volumes of water. These conditions may persist or worsen after development is completed. Although the county is largely rural and has very low density, the topography and hydrology of the region combine to create conditions where storm water can become a critical factor affecting site stability and surface water quality.

Local government obligations under these federal and state requirements include:

- Compliance with stormwater management recommendations in areas covered by the Coastal Zone Management Program
- Ensuring that stormwater directly affecting water resources designated as "critical habitat" is properly addressed
- Compliance with the new Department of Ecology NPDES permits for governmental construction activities on sites of 1 or more acres
- Information and technical assistance to contractors developing sites of one or more acres regarding compliance with the Washington State NPDES program.

Other beneficial activities that local government could encourage include:

- Encouraging "low impact development" techniques for new construction
- Encouraging property owners to utilize the concept of "green infrastructure" in the subdivision of property.

Sources: Environmental Protection Agency, Washington Department of Ecology, Reason Policy Institute

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SOLID WASTE

The Washington State Solid Waste Management, Reduction and Recycling Act requires local governments to develop a comprehensive solid waste management plan spanning a 20-year planning period. These plans must develop a program for solid waste handling facilities and address issues such as monitoring, waste reduction and recycling. The 2002 plan was conducted as a city/county joint plan.

Legal authority for solid waste collection is shared among four public agencies. The Washington State Department of Ecology evaluates solid waste management plans for compliance with state guidelines on collection and recycling. The Washington Utilities and Transportation Commission issues certificates or franchises for solid waste collection. Certificates exist in perpetuity for the areas to which they apply, although poor performance can be grounds for another collector to petition to serve the area. WUTC also has authority to issue certificates for specialized waste collection such as medical and hazardous waste. WUTC does not regulate waste collectors operating in cities or towns. Under state law, counties may operate solid waste collection systems, and they may also establish solid waste collection districts in unincorporated areas and incorporated areas (with city consent) for mandatory collection. Mandatory collection must be demonstrably related to protection of the public health. Cities and towns can contract with private haulers for waste collection, issue licenses and establish regulatory control, or they may operate their own solid waste collection system. Cities and towns may also require mandatory collection.

Please refer to the Wahkiakum County Comprehensive Solid Waste Management Plan 2007.

ENERGY

Public utility districts (PUDs) are nonprofit, community-owned and governed utilities that provide electricity, water, wholesale telecommunications and sewer service. Other common methods of delivering power to consumers include public utilities, municipal utilities, public cooperatives, investor-owned utilities and private industry.

Washington's first initiative to the legislature, approved by voters in 1930, gave citizens of each county the right to form a PUD. The Washington State Grange sponsored the PUD initiative because private power companies at that time refused to bring electric service to farms and small communities. Today, twenty-eight PUDs serve more than 1.7 million citizens across the state. They may offer electricity, water, wholesale telecommunications, sewer and other services, depending on local needs.

PUDs are structured with a board of locally elected commissioners who set policy for their PUD. Most boards have three commissioners; some have five. Commissioners are elected by the community served by the PUD, and serve six-year terms on a nonpartisan basis. A PUD hires professional staff to operate the PUD. The PUD board is required to hold open meetings, where members of the public can observe and participate in decisions made by the PUD board of commissioners. Utility rates based on the cost of service. Because PUDs are nonprofit utilities owned by the public, not by stockholders, they are in business solely to provide service, not to make a profit from utility service.

There are 28 operating PUDs in Washington State; two are non-operating. Twenty-three provide electric service; 14 of these also provide water or water and sewer service; five provide water or water and sewer service only. PUDs provide electricity service to 28 percent of Washington's population. Publicly-owned PUDs and municipal utilities combined serve 49 percent of the state's population, with co-ops and mutuals serving an additional 5 percent. Nationally, 14 percent of the population is served by public power utilities and 11 percent by cooperatives. Total electric power and energy generated by PUDs, including Energy Northwest: is approximately 10 percent of

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electric generation in the Northwest. Approximately 26 percent of Bonneville Power Administration revenue comes from Washington PUD purchases. Collectively, PUDs are the largest customer of BPA.
Source: Washington PUD Association

Bonneville Power Administration (BPA)

The Bonneville Power Administration, headquartered in Portland, Oregon, is a federal agency under the U.S. Department of Energy. BPA serves the Pacific Northwest through operating an extensive electricity transmission system and marketing wholesale electrical power at cost from federal dams, one non-federal nuclear plant and other nonfederal hydroelectric and wind energy generation facilities.

BPA provides about half the electricity used in the Northwest and operates over three-fourths of the region's high-voltage transmission. Major construction from the 1940s through the 1960s created networks and loops of high-voltage wire touching most parts of BPA's service territory. The system now includes more than 15,000 miles of line and 300 substations.

Congress and the Roosevelt Administration created BPA in 1937, just before completion of Bonneville and Grand Coulee dams in 1938 and 1941. They anticipated the need to market energy from these new power sources. One of BPA's early missions focused on electrifying farms and small communities with public power. These rural areas were not profitable for private utilities to serve. Today, BPA markets the power generated at 31 federal dams, one nonfederal nuclear plant at Hanford, Wash., and some nonfederal power plants, such as wind projects.

BPA's service territory covers all of Washington, Oregon and Idaho, and western Montana, as well as small contiguous portions of California, Nevada, Utah, Wyoming and eastern Montana. BPA's wholesale customers include public utilities, public utility districts, municipal districts, public cooperatives, some investor-owned utilities and a few large industries such as aluminum companies.

Some of these customers buy all their power from BPA, while others supplement their supply with nonfederal power. In years when the Northwest experiences heavy snow and rain, the Columbia River system can generate more electricity than BPA customers need. BPA offers this surplus energy to its Northwest customers first. Only then, if there are no takers, utilities and municipalities outside the region can buy it. Money generated from surplus sales helps keep power rates in the Northwest low.
While BPA is part of the Department of Energy, it is not tax-supported through government appropriations. Instead, BPA recovers all of its costs through sales of electricity and transmission and repays the U.S. Treasury in full with interest for any money it borrows. Because BPA markets energy and transmission at cost, rather than at market prices, it has traditionally provided some of the lowest cost electricity in the nation. This low-cost power has been a cornerstone of the Northwest economy, stimulating growth and new jobs. BPA also funds measures to protect and enhance fish and wildlife populations affected by hydropower development. In addition, the agency provides a number of public benefits including incentives for energy conservation programs and research and development of renewable resources and promising technologies, such as fuel cells. BPA also works with other federal agencies to coordinate operations of the Federal Columbia River Power System to ensure maximum efficiency in the system and minimum environmental impacts.

BPA invests in new renewable generating resources for the Northwest such as wind and geothermal projects. BPA also works with the nonprofit and independent Bonneville Environmental Foundation to sell certified environmentally preferred power at a premium to interested buyers. The premium pays for still more investments in renewable resources, energy conservation and fish and wildlife protection.
Source: Bonneville Power Administration

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Wahkiakum Public Utility District No. 1

On August 10, 1937 the Wahkiakum Public Utility District was officially formed to provide electricity to customers in Wahkiakum County. The Bonneville Power Administration is currently the sole source of power for the PUD and its customers. The BPA provides transmission of power, while the PUD distributes power within the county within its service area. PUD distribution facilities operate at 12.5 KV or 12,500 volts. The PUD owns a substation adjacent to the BPA's East County Station on Jacobson Road, and another in Grays River. These stations are supplied by 115,000 volt BPA transmission lines from Oregon which crosses the Columbia River at Puget Island. The BPA transmission line bisects Wahkiakum County from Skamokawa westward to Pacific County.

There are 2,300 customers throughout the county. A small portion of western Wahkiakum County, along Salmon Creek Road, is served by adjoining Pacific County PUD. This area was split out from the service area years ago due to topography and service issues. All areas of the county are served with single phase electrical services, which is suitable for residential uses. V-Phase or 2-phase power has limited capacity to serve non-residential uses, and is not in wide usage within Wahkiakum County. Three phase power is available in certain areas of the county including:

- Town of Cathlamet
- S.R. 4 from Cathlamet to Skamokawa (ends at the bridge over Skamokawa Creek)
- Elochoman Valley Road (runs for 7 miles northeast from its intersection with SR 4)
- Approximately 70% of Puget Island has access to 3-phase; capacity issues limit service to 50% due to the size of the feeder across the SR 409 Bridge; these limitations would make it possible to serve a strip mall or small industrial park.
- West End locations – SR 4 from Fair View Road to Rosburg and west to Deep River Road

Approximately 70% of the PUD's distribution lines are aerial, or above ground. The remaining 30% are underground in cases of subdivisions where this is requested and where there are severe tree issues that could cause outages.

The PUD recently replaced an old switching station and more recently replaced overhead feeder cables with underground cables at the Cathlamet switch yard. A three-phase distribution intertie across KM Mountain with the Grays River switching station has been evaluated to increase system reliability in case of BPA substation failure, but has been determined to be cost-prohibitive.

On three occasions since the 1950's, the PUD has considered constructing a dam in the Grays River to generate hydroelectric power. In 2001 the idea was proposed by Energy Northwest, an entity created in 1957 to construct power plants. Such a dam would have to be 300-400 feet high in order to generate enough power to be cost-effective. The upper and lower ends of the Grays River gorge have been examined for such a facility. This project could also provide habitat enhancement as well as flood control. The PUD is continuing to explore the feasibility of this idea.

The electrical substation that serves the Eastern portion of Wahkiakum County is reaching its capacity and this will require the District to add an additional substation within a few years. The addition of a second substation should provide enough capacity for the Eastern end of our county for another 20 plus years. Due to relatively small load growth on the West end of Wahkiakum County our existing equipment should have ample capacity although the District is considering purchasing an additional transformer as a back up. The district's office and warehouse are located in Cathlamet.
Source: Wahkiakum PUD interview

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Natural Gas

There are no natural gas mains in Wahkiakum County at present. A Liquefied Natural Gas (LNG) plant has been proposed in 2005 at Bradwood, Oregon, which is directly across the Columbia River from Puget Island. The proposal also calls for construction of a transmission line under the Columbia River from the Oregon side, running east to the Wauna Mill and on to other industrial properties in the Clatskanie area, and ending at River Ranch before turning north and heading under the Columbia River to the Mill Creek area in Cowlitz County, at the east end of Wahkiakum County**.** Wholesale and/or retail distribution of natural gas to Wahkiakum County is not included in this proposal, and there are no current plans to extend natural gas service to the area. Container propane service is available through several businesses in the Longview area.

The 2005 Federal Energy Act encourages the exploration for natural gas in the United States as part of the national energy plan. As a result, oil and gas companies have shown interest in drilling for natural gas in Wahkiakum County. There has also been interest in drilling to find suitable underground natural gas storage areas within the county. At this time, Washington State is regulating and permitting this industry within the state.

FEDERAL & REGIONAL ENERGY ISSUES

Power Management & Service Reliability

For nearly two years, representatives from Northwest public and investor-owned utilities have discussed ways to restructure the region's electricity transmission system to improve reliability in service and cost. These discussions began as alternatives to the federally preferred Grid West (then RTO West) plan, which would create a new institution with an independent board that would fall under the Federal Energy Regulatory Commission's jurisdiction. However, in 2004 discussions switched to developing near-term improvements that don't require a regional transmission organization. This effort is spearheaded by the Transmission Improvements Group (TIG), with the goals of:

- Finding ways to adapt and enhance the region's existing institutions without creating a new entity
- Maintaining local control of the region's power grid.

The Northwest's electricity transmission system faces increasing demands every day as more homes are built and businesses expand. Changes are needed to maintain the system's reliability, efficiency and security. In 2005, the Bonneville Power Administration (BPA) agreed to study four areas of TIG transmission:

1. Single point of access **-** The TIG will study ways to improve operation of a single point of access (a common Open Access Same-Time Information System) and a common approach for determining transmission availability for the West, which should improve access and make it easier for transmission customers to do business.
2. Security and reliability **-** The TIG study will examine how to improve the transmission system's security and reliability — including a study of voluntarily combining control areas — to maintain service to Northwest customers even as the system becomes more congested. The result can be a more reliable and lower-cost transmission system.
3. 'One-utility' upgrades **-** TIG will work on an approach to create and implement a regional transmission plan based on the "one-utility" principle for planning system upgrades. This should encourage a variety of entities to participate in the same upgrades.
4. Market monitoring **-** There is no formal market monitoring structure in the region, which means consumers could be the victims of power market abuse as they were during the West Coast energy crisis of 2000-01. The TIG effort will look at creating a "market monitor" to study the competitiveness of Northwest energy and transmission markets, respond to complaints and issue reports.

Source: Bonneville Power Administration

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Energy Sources & Generation

Energy has become a key issue during 2005, as costs of various energy sources has soared and availability has become more difficult. Oil and natural gas supplies have been particularly hard-hit. Federal de-regulation has allowed energy producers to submit a variety of proposals for facilities throughout the U.S. to meet current and projected demand. These facilities would bring enormous impacts—some yet to be fully understood—to localities where they will be constructed.

Portland General Electric is constructing a $285 million 400-megawatt, gas-fired generating plant that will help meet the Northwest's long-term energy needs. PGE identified the need for additional energy and capacity resources to meet the future forecasted energy needs because customer usage is forecasted to increase about 2.5 percent annually for the next few years. PGE contracts with the Bonneville Power Administration (BPA) are scheduled to expire in the short-term. The plant is scheduled to come on-line in 2007.

The Port Westward site was selected due to several factors, including:

- Existing electrical transmission and gas transportation infrastructure. Construction of a transmission line from the Port Westward site to PGE's decommissioned Trojan site will allow delivery of power directly into PGE's grid, thus avoiding connecting to the Bonneville Power Administration's system and the related transmission fees.
- A western Oregon side location is close to the population centers that will depend on the plant's output.
- An Oregon site location avoids incurring the Washington State tax on natural gas purchases.
- Community support for the plant proposal.

The proposed route will involve 20 miles of new transmission line, connecting into PGE's system at the decommissioned Trojan nuclear power plant complex. That facility's existing electrical switchyard along with some required new equipment is a low-cost way to connect the new plant's output to PGE's transmission system. Because the new plant will be connected directly to PGE's system, it will not be necessary for PGE to pay transmission fees to an outside entity, which helps keep costs lower.

Existing natural gas transportation rights to the site will be utilized, but PGE remains open to other viable, safe alternatives to deliver natural gas to the new plant as well. The close proximity of PGE's existing 524 MW Beaver power plant made the Port Westward site an efficient and convenient location to build a new power plant. The proposed Port Westward facility is estimated to consume up to 73,000 decatherms a day of natural gas using firm gas transportation that already connects to the Beaver Generating Plant, plus possible storage nearby. Other gas supply options for this plant, such as liquefied natural gas (LNG) are also possible. One such facility is proposed at Bradwood, directly across the Columbia River from Puget Island in Wahkiakum County. PGE will continue to evaluate gas supply, transportation and storage options

Westward Energy plans to construct another natural-gas fired power plant at Port Westward, with construction to begin in 2006. Westward Energy, Inc. was formed to market renewable and alternative energy and to manage on-site energy solutions through Combined Heat and Power (CHP). CHP involves the integrated generation of electrical and thermal energy. Typically less than 40% of energy released from a single fuel source is used for electrical production by conventional standards. With cogeneration over 80% of the energy from a single fuel source is utilized at point of use. The thermal output of the system can be used for processes such as building heating systems, steam generation, and cooling systems.

Source: Portland General Electric

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TELECOMMUNICATIONS

No longer does modern society rely solely upon telephone service to stay connected with the outside world. A 2002 U.S. Department of Commerce report, "A Nation Online: How Americans Are Expanding Their Use of the Internet" states that U.S. households with a computer soared from 8.2% in 1984 to 56.5% in 2001. By September 2001, approximately 54% of Americans also had Internet access; however, only 20% have high-speed (broadband) access. This report found that only 39% Americans in rural communities have Internet access, compared to the urban household level of 42%. Broadband continues to represent a low percentage of these numbers.

Local government applications for high speed technology—including wireless—are increasingly common. High-speed data and voice communications can enhance basic functions such as asset management and tracking, automated water meter reading, remote monitoring and control of critical infrastructure components such as water and sewer pipelines, field access to maps and data, and networking in remote office locations. Medical providers benefit from fast, reliable network connectivity to hospitals and universities for secure transmission information such as x-rays, MRI, CT scans, medical and insurance records. Care providers can offer remote monitoring of patients with chronic illnesses, and first responders can access to vital patient information and medical assistance Schools rely on the Internet to provide educational tools, research sharing, and distance learning opportunities.

The Federal Communications Commission has allocated a 4.9 GHz band to broadband technologies for public safety uses. All state or local governmental entities and public safety services are eligible to hold 4.9 GHz licenses, which became available in mid-2003. Communications must be related to the protection of life, health or property. A wireless network can enable a law enforcement vehicle equipped with a laptop or handheld computer to function as a mobile office. Officers get real-time access to the central database(s), surveillance cameras and reporting tools that enable them to be more efficient while in the field. Wireless local area networks (LANS) can be used for incident management at the scene, provision of mobile data, voice-over-Internet telephony (VoIP), and other uses. Private entities which perform support operations can negotiate sharing agreements. The discontinuation of CDPD (cellular digital packet data) networks has given rise to other private wireless data and data/voice networks, as well as the 4.9 GHz band as an option to meet business and government needs for wireless communications.

High speed and wireless access has turned towards promoting economic development in urban as well as rural areas, via wireless internet service provider (ISP) partnerships, providing homes and small business with low-cost, high-speed Internet access, creating an inviting atmosphere for conventioneers, tourists, and visitors, and attracting new businesses, entrepreneurs and young professionals. Wireless "hot spots" or WIFI Internet access is becoming increasingly common in small downtowns and other activity centers, as a means of furthering business and consumer activity.

In the spring of 2000, the Washington Legislature passed a telecommunications bill giving public utility districts in the state the authority to provide access to high-speed fiber-optic cable networks on a wholesale basis. Excess bandwidth capacity is made available by PUDs on a low-cost wholesale basis to Internet Service Providers (ISPs) and to Incumbent and Competitive Local Exchange Carriers (ILECs & CLECs). These local telephone companies can then retail this access to their customers for high speed communications, data transmission, and Internet connectivity.

NoaNet is a nonprofit company that has licensed public purpose fiber optic cables from the Bonneville Power Administration (BPA) and has run their fiber network parallel to BPA's transmission lines. NoaNet partners include nonprofit community-owned electric and water utilities located in the BPA service areas throughout Washington, Oregon, Idaho and Montana.

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These communities use the NoaNet fiber optic system for utility purposes such as real-time metering, energy management, load control and networking among remote utility facilities. NoaNet provides excess capacity to others on a cost-based, nondiscriminatory basis. Communities are using the NoaNet system to interconnect schools, hospitals, judicial systems, libraries, and emergency services. Fiber optic service in adjoining Pacific and Grays Harbor County is offered in this manner. A portion of the NoaNet system runs through Cowlitz County, beginning in Kelso and heading north along the Interstate 5 corridor until it heads west to Grays Harbor County and south into Pacific County. The system has not been extended into Wahkiakum County.

There are two primary Internet service providers (ISP) in Wahkiakum County. Century Tel Communications provides dial-up and high speed access through digital subscriber line (DSL) Internet service in the vicinity of Cathlamet. Western Wahkiakum Telephone provides dial-up, DSL and satellite Internet services in western Wahkiakum County. The telecommunications industry is required to provide service upon demand. Both Century Tel and Wahkiakum West indicate they have sufficient capacity to meet future service needs.

Other wireless providers are also entering the Wahkiakum market, such as Cascade Solutions out of Kalama. As this technology improves, it may become an increasingly preferred choice for rural areas. Wireless technologies currently depend on line-of-sight transmission; however, other wireless applications are constantly being improved for broader deployment.

Century Tel

Basic telephone service is provided throughout the eastern half of Wahkiakum County though Century Tel Communications from their regional facility in Gig Harbor, Washington. Century Tel offers DSL high-speed internet services to customers within 18,000 feet of its facility located in downtown Cathlamet on River Street. DSL service is available within a three-mile radius of that facility. Beyond this distance, customers must negotiate directly with the company about sharing the cost of construction needed to provide the type of service desired, particularly for larger or complex installations. Century Tel plans to install a combination of aerial and buried copper lines extending from town.

Wahkiakum West

The western half of the county is served through Wahkiakum West Telephone Company, located on Miller Point Road. Wahkiakum West Telephone offers local and long distance telephone service to customers in the west end of Wahkiakum County. Satellite television is available to subscribers through Direct TV. Internet service is available through three options, which include dial up service, digital subscriber lines (DSL), and satellite service. Ninety percent (90%) of the customer base currently has T-1 or DSL Internet services, which was launched in 2002.

Dial-up and DSL service is offered through a fiber optic network that parallels the main highways in western Wahkiakum County. Redundancy offered by the looped service means that customers will rarely experience service interruptions and can access the Internet with broadband speed. Download speeds vary from 256K to 1024K, and upload speeds range from 128K to 512K, depending on the service selected. The system has a satellite feed located at the end of the Astoria-Megler Bridge. Satellite service currently cannot offer users the security provided by a land-based feed. Recent discussions with Century Tel have the potential to result extension of land-line feeds from Pacific County.

Wahkiakum West Telephone also offers WildBlue satellite internet service, with high-speed Internet connections to homes and small businesses throughout Southwest Washington. The two-way, wireless high-speed service is “always on” and offers download speeds of up to 1.5 Mbps. Speeds are comparable to DSL and cable modem services.

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Cable & Satellite Television

Cable television service to the eastern portion of the county is provided by Charter Communications, which offers a full range of broadband services and products, including analog cable television, digital video programming services, high-speed internet access, Internet access over cable television, and Wink interactive television. Digital cable and video on demand is also available. Wahkiakum West offers digital satellite television to subscribers through Direct TV and satellite Internet as a separate service. Satellite TV and Internet are commonly available in most areas through various franchise operations.

PUBLIC SAFETY

Fire & Emergency Medical Services

Wahkiakum County is served by four fire protection districts and the Cathlamet Fire Department. Emergency communications dispatching is provided by Wahkiakum County through the Communications Center at the county courthouse. Each district is served by a volunteer crew which conducts regular, mandated training exercises. Fire districts and departments within the county include:

- Fire District 1 – Puget & Little Islands
- Fire District 2 – Skamokawa
- Fire District 3 – Grays River
- Fire District 4 – East County
- Cathlamet fire Department

Fire Protection District No. 1

Wahkiakum Fire Protection District No. 1 serves Puget and Little Islands. The station is located on east side of State Route 409, about one-half mile south of the intersection with Birnie Slough. The all volunteer department respond primarily to fire suppression calls. The district has mutual aid agreements with Cathlamet Fire Department and District No. 4, located on Boege Road.

- ⇒ The fire station will need an interior renovation in the short-mid term, to create space for an office and storage, at an estimated cost of $25,000.
- ⇒ Fire flow capability is a concern to the department. Fire hydrants are not currently capable of providing the required volume of water over a sustained period.

There are approximately 30 fire hydrants located throughout the system, though none with pumps, which limits fire suppression water supplies to those from boxes or tanker trucks. The Puget Island Water System does not provide fire flow, which is rated at 500 gallons per minute (gpm) for a period of 60 minutes for residential service, as established by the Washington Department of Health. Fire flow for non-residential uses is established at 1,000 gpm for one hour. Fire flows to existing hydrants on Puget and Little Islands range from 100-400 gpm.

The Cathlamet Fire Department and Fire District 4 provide fire protection to Puget Island through a mutual aid agreement. Tanker trucks respond from the Town of Cathlamet and District 4, if necessary. Nearby water sources, such as sloughs and irrigation ponds, have historically been used to provide enough water for emergency needs. Provision of fire flow would require extensive upgrading of existing lines to increase size. The only location where adequate volumes for fire flow currently exist is the west side of Little Island. Provision of fire flow would require upsizing of distribution piping to an 8” standard, plus upgrades to several others, at a cost of $3,106,000. The improvements needed for fire flow are listed in the accompanying chart.

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There are no plans at this time to provide fire flow to the users of the system. If provision of fire flow is contemplated in the future, fire flow should be analyzed through a reservoir and hydraulics study.

Fire Protection District No. 2

The Skamokawa Fire Station is located at 33 East Valley Road and serves District 2, which is comprised of the unincorporated community of Skamokawa, Middle/West/East Valleys, Steamboat Slough and Brooks Slough. The all-volunteer department responds to approximately 40 calls per year, 20% of which are related to fires, with the remaining 80% for medical assistance. The station houses three vehicles—an engine, a pumper truck and an ambulance. The fire station will need to be remodeled and expanded in the future. The districts capital needs include:

- ⇒ Expansion to house two additional vehicles—a brush truck and a compressed air trailer—at an estimated cost of $30,000.
- ⇒ Purchase of brush truck and compressed air trailer. No cost estimates for equipment are currently available.
- ⇒ Remodel to add a restroom, shower and laundry facilities at an estimated cost of $17,000. A reliable water source is needed in order to undertake the remodel. The district participates in the mutual aid agreement for Emergency Medical Service with Grays River Fire District and the Cathlamet Fire Department. Mutual aid agreements for fire suppression are countywide, between all districts and the Cathlamet Fire Department.

Fire Protection District No. 3

The west end of the county is served by WFPD #3 with three stations at the following locations:

Station #1: 3751 State Route 4, Grays River
Station #2 4631 State Route 4, Rosburg (Raistakka Road Station)
Station #3 335 Salmon Creek Road, Naselle

The district's capital needs include:

- ⇒ Relocation/replacement of Grays River Station #1 at an estimated low-end cost of $300,000

This project is needed due to the fact that the current fire hall is located within a frequently flooded area.

Although fire hydrants are located throughout the system, none have pumps, which limit fire suppression water supplies to those from boxes or tanker trucks. The WWWS does not provide fire flow, which is rated at 500 gallons per minute (gpm) for a period of 60 minutes for residential service, as established by the Washington Department of Health. Fire flow for non-residential uses is established at 1,000 gpm for one hour. Both of these standards also require the simultaneous provision of maximum instantaneous domestic demand. Maximum instantaneous demand for the WWWS is 300 gpm. Fire Districts 3 provides fire protection to the west end of the county, and can respond with tanker trucks. Provision of fire flow would require extensive upgrading of existing lines to increase size. Provision of fire flow would cost approximately $700,000. Because it is a rural area with minimal commercial and multi-family users, fire flow is not required. Because of the substantial cost involved in providing improvements for fire flow, the PUD has decided not to pursue this within the 6-Year planning horizon.

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Fire Protection District No. 4

The main station for District 4 is located at 13 Boege Road in Cathlamet, with a substation at 703 Elochoman Valley Road. The district covers the eastern portion of the county with the exception of Cathlamet and Skamokawa. The district has an ISO fire rating of 8A, which is used for fire insurance rating.

The district has first-responder status for approximately 100 square miles of service area. The district is also designated as first responder for wildland fires on nearby private and public timberlands. Written mutual aid agreements with local fire districts, Washington Department of Natural Resources and Cowlitz 2 Fire & Rescue provided expanded coverage to the district. An informal mutual aid agreement with Cowlitz Search & Rescue assists with rope, water, and diving rescues. An agreement with U.S. Fish & Wildlife is under development. The district does not provide emergency medical services. There are, on average, 40-50 calls for service per year, all of which are for fire suppression.

The main station was built in 1983 and expanded to its present size in 1998. The Elochoman station was constructed in the 1980's and has never been expanded. Future capital needs of the district include:

⇒ Expansion of the Elochoman Station to add 2 full bays at a cost of approximately $50,000
⇒ Expansion of the Boege Road Station for addition of 2 full bays, regrading of the parking area, elimination of the septic system/hook up to sewer system, and increase the footprint of the training center. This short-term need is estimated to cost $75-$100,000.

Both of these expansions are due to population growth and property development in the Elochoman Valley and surrounding Cathlamet.

Cathlamet Fire Department

The Cathlamet Fire Department was organized in 1931 and provides fire suppression within town limits. As land is annexed into the city, it becomes part of the service area. The department is funded through the town's general fund. The town has mutual aid agreements with surrounding fire districts. The fire department also provides emergency medical aid to the town and to an extended area which runs from a point approximately halfway between Cathlamet and Skamokawa, east to the county line.

The fire department consists of approximately 25 volunteer firefighters and 15 emergency medical technicians and paramedics. The department also has a 5-member water rescue team. In 2004 the department responded to 230 calls for medical aid and 13 residential fire calls. The department makes fire and life safety inspections on all existing buildings and premises, except for single-family and duplex residences. The fire department also reviews all site plans, subdivision plats, and building plans for compliance with the Uniform Fire Code and city codes. Major fire investigations are handled through contract by the Longview/Cowlitz 2 Fire and Rescue. Minor fire investigations are handled by fire department staff.

The newly construction (2007) main fire station is located at 255 Second Street and includes an office, training room, and crew quarters. Station Two is located at 265 2nd Avenue.

Capital needs for the Cathlamet Fire Department include:

⇒ Conversion of the old Main Street Fire Station to provide more space for the library, town offices and a meeting room.

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With the construction of the new fire station and the addition of the new combination pumper, the town will eliminate most of the fire department infrastructure deficiencies. The town is striving for a 30 to 35 year apparatus replacement rotation; currently it is a 50-year rotation. The town has a fire insurance rating of 6, due to the addition of new rolling stock and recent improvements to the water system, which increased fire flows.

Local Issues & Needs

Fire and emergency services are provided primarily by volunteers in rural areas. This is an economical approach to fire protection and emergency medical service as a consequence of a lower population density (persons per square mile), a lower level of land development, and a lower tax base. Given current population trends in the county, there is cause for concern for the future viability of volunteer services. In Wahkiakum County, the death rate currently exceeds the birth rate, with all net growth coming from in-migration. Much of the in-migration can be attributed to retirees moving to Wahkiakum County. There has been a gradual and steady decline in the numbers and proportions of children and persons under 45 years of age over the past 20 years. These are being replaced by retirees moving to the area, who typically have higher expectations and higher demands upon emergency services. The volunteer base has been eroding for some time due to demographic shifts. This issue is compounded by the fact that many volunteers must find work out of the county, and are not available to respond during the day.

The costs of a tax-payer supported, professionally run fire department can easily run upwards of $300,000 per year with 5 full-time equivalent staff. For 24-hour coverage, four persons would be needed to cover a 2-in/2-out shift, plus another for incident response, at three persons per fire engine. Four districts (not including Cathlamet) would easily run into personnel costs of $1.2 million annually. This would be a significant increase in local taxes needed to support these services.

Current and future issues identified by the fire districts include:

- Lack of an adequate tax base to support EMS service and to adequately maintain fire suppression stock and apparatus
- An aging population on fixed incomes
- Small volunteer pool of younger adults, and few nearby employment opportunities for those willing and able to volunteer
- Duplication of fire services throughout the county
- Lack of fire flow/fire hydrant service and capacity
- Provision of emergency medical services, due to increasing calls for service; number of “active” EMTs available for calls
- More stringent regulations, as well as mandated state and federal standards without additional funding

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MEDICAL AND EMERGENCY FACILITIES

Emergency medical assistance is provided by Emergency Medical Technicians (EMTs) and paramedics operating out of District 2 in Skamokawa, District 3 on the west end, and the Cathlamet Fire Department in the east end of the county. If paramedics are available, they will provide critical transport. If unavailable or non-critical transport is needed, volunteers will rendezvous with medical transport and/or advanced emergency medical services (paramedics) from nearby facilities. On the east end of the county, emergency patients are usually transported to St. John Medical Center in Longview, which has a 24-hour emergency department. This facility is approximately 29 miles/43 minutes away from Cathlamet.

Hospitals located in neighboring areas are closer to residents on the West End of the county. These include:

- Willapa Harbor Hospital – Located in South Bend, Washington, about 46 miles/67 minutes from Rosburg
- Columbia Memorial Hospital – Located in Astoria, Oregon, approximately 33 miles/54 minutes from Rosburg
- Ocean Beach Hospital – Located in Ilwaco, Washington, about 36 miles/56 minutes from Rosburg

Wahkiakum Family Health Clinic

Health care, as in many small rural communities, is a high priority. This is especially true in Wahkiakum County, which is ranked with seven other counties in Washington as having a significant proportion of citizens over the age of 65. The health care infrastructure faces pressures from growing demand, rising costs, increasing numbers of uninsured, growing emergency room visits, and a widening gap between costs and revenue. Rural Health Clinics (RHCs) make up a large part of the auxiliary safety net for primary health care services in rural Washington. Most private clinics have closed or severely restrict taking on new public patients. Certification as a Rural Health Clinic provides a higher rate of federal reimbursement for Medicare and Medicaid patients than urban clinics receive, thus allowing more persons access to health care. Rural health clinics are growing in Washington State, primarily due to the conversion of private clinics to RHCs. RHC status represents federal certification for profit/non-profit clinics outside of urbanized areas and located in a Health Professional Shortage Area. While RHCs are not required to serve uninsured or publicly insured patients, the typical Washington RHC serves a significantly greater share of these patients than do private clinics, which generally limit their share of these patients to 25%-50%.

Wahkiakum Family Practice Clinic operated in Cathlamet at 335 Una Street under the auspices of Peace Health/St. Johns for many years, until it announced in 2004 that it was no longer economically feasible to operate, and would close. Problems attaining certification as a Federally-designated Rural Health Clinic was a key factor in the financial viability of the clinic. Wahkiakum County officials determined that it could not afford to lose its only medical clinic; therefore, in 2004 it took over ownership of the clinic and received RHC certification. In 2005 the clinic began operating as a Rural Health Clinic under the auspices of the county, using most of the existing medical personnel. Wahkiakum County's conversion from private to rural health clinic represents a growing trend, as these clinics help preserve access to Medicaid and Medicare health coverage. Federal and state cuts in funding will continue to present challenges to adequate health care access.

The county's share of aging population will continue to grow at a significant rate for at least another decade, before demographic shifts begin to show growth in the proportions of children and young adults. Medical care is as important to families as it is to elders. Quality medical care will continue to be an important piece of the county's strategy to balance out its demographic profile through economic development and provision of community amenities. A private dental practice and a private vision clinic are also located in Cathlamet.

Ocean Beach/Naselle Clinic, located at 21 N. Valley Road in Naselle, is a family practice clinic located just a few miles past the western boundary of the county. It offers internal medicine, women's health, minor surgical procedures, diabetic management, well child check-ups, immunizations, urgent care, and orthopedic surgery. The clinic accepts Medicare, Washington Medicaid, Blue Cross/ Blue Shield, Molina, and most other commercial insurances. This clinic is also a federally designated Rural Health Clinic.

Coordination of Services

The inventory conducted in this element does not include information about the quality of the services provided through the local government, educational facilities, churches, emergency services, and the library. However, changes in the population will affect these services and will

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require the planning of appropriate facilities with adequate services. Entities managing community facilities need to work together and coordinate planning efforts.

Centralization of county health services can offer the ability to deliver a variety of services in a more efficient manner. A ***"one-stop" center*** would address medical needs—including physical health, mental health, dental health, and other health needs—for families and individuals of all ages, from infants to elders. Consolidation of existing services into one facility would be most efficient if located in the more populated east end of the county.

Law Enforcement

The Wahkiakum County Sheriff's Department provides law enforcement to all of Wahkiakum County, including the Town of Cathlamet. These services include police patrol and response, jail service, emergency communications dispatching, overtime parking patrol and enforcement of the dangerous dog ordinance. The county sheriff's department, jail and 911 dispatch center are located at 64 Main Street in the basement of the Wahkiakum County Courthouse. Jail improvements were completed in 1998 to expand office space and the emergency communications center, at a cost of approximately $1.5 million.
There are eight sworn officers in the department, all of whom are on call at any given time that they are on duty, and one civilian employee. This staffing level provides a county-wide service level of 2.0 officers per 1,000 persons. The FBI Uniform Crime Report found in 2004 an average of 1.7 sworn officers per 1,000 population in the Western U.S. and 1.6 sworn officers per 1,000 in the Pacific region. The department consists of the sheriff, an undersheriff, five deputies (including a chief civil deputy), and one detective, as well as eight reserve deputies. The jail has 14 beds and serves Cathlamet and Wahkiakum County as well as Long Beach, South Bend and Raymond. 911 dispatchers provide coverage in the emergency communications center.

The Sheriff's Office has a canine unit to assist patrol units, other Sheriff Office units and outside government agencies. The canine for the Wahkiakum County Sheriff's Office is trained in narcotic detection work. One deputy is DRE certified by the Washington State Patrol as a drug recognition expert, and is "on loan" to the region, including Pacific County. The department is an active member of the national Meth Watch Program and delivers community trainings to citizens and businesses. The county is also served by the Cowlitz-Wahkiakum Narcotics Task Force, which investigates drug-related crimes. The department owns two all-terrain vehicles (ATVs) which are used for homeland security issues, search and rescue, and marijuana eradication.

Deputies receive training in a variety of special areas, including firearms, patrol, and EVOC (emergency vehicle operations course). The department's D.A.R.E. school program for grades 5 and 6 is currently inactive due to lack of funding. In the past, it provided an on-campus School Resource Officer. The school district and the sheriff's department have a crisis response plan in place. The department hosts a Citizen's Police Academy each year, block watch and the Citizen Emergency Response Training (CERT) program.

Search and Rescue Unit
A rural county with extensive waterfront areas must address the need for search and rescue operations to assist persons in distress or believed to be lost. An interstate agreement with Search and Rescue Teams allows neighboring counties to respond when a search is in progress, and provides reimburse responding units for damages incurred during a search. Cowlitz County Search and Rescue serves as the backup unit for Wahkiakum County. The Wahkiakum County's Search and Rescue unit is staffed by volunteers over the age of 16. Due to the small size of the county and the amount of out-of-county commuting, the county has arranged with local school authorities to have qualified students available during school hours, if needed. There are currently 28 volunteers in the Search and Rescue unit, 10 of which are students. Equipment and resources available to the unit through community members include a hydrocraft, ultra-light airplane, and

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hunting hounds. The Wahkiakum County Unit has had training in First Aid, CPR, Basic Survival, and Land Navigation provided by Cathlamet Ambulance and the Cowlitz County Search and Rescue Unit.

Marine Patrol Division
The mission of the Marine Patrol is to protect lives and property threatened by incidents in the Columbia River. The division provides boating assistance (towing), search and rescue, body recovery, and enforcement of marine safety. The division owns a 20-foot Alamar patrol vessel with outboard motor, purchased with the assistance of the Washington State Parks and Recreation Commission. There is a working agreement in place to provide assistance as needed for water-based recreational areas. The division works closely with the U.S. Coast Guard, Clatsop and Columbia County marine divisions in Oregon, and the Cowlitz County marine division.

Department of Emergency Management (DEM)
The mission of the Wahkiakum County Emergency Management Department is to provide a rapid, coordinated response in the event of a major natural or man-caused disaster. Their goal is to protect lives, prevent injury, and protect property and the environment utilizing available materials, equipment, and personnel resources. The emergency management response system includes the Department, local governments, individual and group volunteers, organizations, and the private sector. The Department consists of a Director, who is the Wahkiakum County Sheriff, and an Emergency Management Coordinator, and is co-located at 64 Main Street. The DEM provides emergency management for the town of Cathlamet and all unincorporated areas of Wahkiakum County. Responsibilities include:

- Coordination of efforts among all disciplines to manage the response to and recovery from disasters and emergencies that affect Wahkiakum County
- Development of plans and procedures for response to and recovery from major emergencies such as floods, earthquakes and hazardous materials.
- Developing and conducting exercises to test emergency response plans and procedures.
- Facilitating warning and notification activities during times of emergency.
- Equipping, maintaining, and managing the County Emergency Operations and acting as the County's representative and liaison for all levels of government, the private sector and the citizens of Wahkiakum County.

The climate and topography of Wahkiakum County increases its vulnerability to flooding, landslides, and other similar events. The most recent such case was in 1996, when most of Western Washington was inundated by floodwaters exceeding 100- and 500-year flood events in some areas. Alternate evacuation routes often involve the use of the Wahkiakum Ferry and the cooperation of private land owners in using logging roads.

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GENERAL GOVERNMENT

General Government

The Wahkiakum County Courthouse is located at 64 Main Street in Cathlamet and houses the County Assessor, Treasurer, Auditor, Building Department, Public Works, and County Commission. The Sheriff's Department, municipal and superior courtrooms, and the county jail are located on the ground floor. The county Department of Health and Human Services is located on Elochoman Valley Road.

Cathlamet Town Hall, located at 100 Main Street, currently houses town offices and the Cathlamet Public Library.

Civic/Recreation Center

The county has considered constructing a civic center as a venue for special events and programs to serve county residents and visitors. A multipurpose facility could help meet the recreational/cultural needs of all residents, including youth and seniors. It would assist in promoting economic growth by hosting events that attract visitors to the county. A preliminary study to evaluate need, feasibility and programming has yet to be conducted. During the comprehensive planning process, there were suggestions for an amphitheatre, performing arts center, and/or a folk art center. These could be considered potential uses for a civic center.

Geographic Information System (GIS)

Capacity for digital mapping and database management would offer county residents a cost-effective method of managing geographically-based information, such as property ownership, land subdivisions, and locations of infrastructure. While efficient data management and up-to-date information are the primary goals, there are other benefits to such a system, including public access to information of interest. Development of a geo-database is a very labor-intensive and time-consuming effort. Electronic mapping services are currently provided by the Council of Governments; however, these maps are limited in accuracy because a digital database of property parcels has not been completed. Once the database is developed, a GIS program would need dedicated funding for equipment, software and personnel to implement and maintain such a system.

Public Libraries

Cathlamet

The Cathlamet Public Library is located in Town Hall at 100 Main Street, after relocating from the historic Bradley House in 1989. The library serves the entire Wahkiakum County population. The library is open on a part-time basis and is staffed by one part-time employee and a volunteer. The library is part of the Western Library Network (WLN) which operates out of Vancouver, B.C. Inter-library loans are also available from the Longview Public Library, Kelso City Library, and Lower Columbia College library. The library has a small historical collection. The genealogical collection was donated to the Skamokawa library.

Decisions concerning library administration are made by a five-member board appointed to four year terms by the mayor, with the consent of the town council. The overall budget is controlled by the town council. Donations, memorials, book sales and an annual county government donation provide additional resources.

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The library currently has used all of the available space in the upper floor of the existing building. To better serve the library's constituents, the existing complex needs to be expanded. The expansion would allow for additional books and library technology to be acquired.

Skamokawa

Skamokawa has a small public library located at 11 Schoolhouse Road. The genealogical collection includes clippings, files of obituaries, published and unpublished materials regarding county biography and history, oral histories and cemetery records. Genealogical searches are available. The Washington Commission for the Humanities awarded a grant to the Friends of Skamokawa Foundation in 2004 for an historic preservation workshop. In 2003, the foundation received funding for the purchase of storage materials and the re-housing of photographs, maps, drawings and cultural collection materials related to the pioneer history of the lower Columbia River region and housed in the River Life Interpretive Center.

Naselle Library (TRL)

The west end of the county is served by the Timberland Regional Library (TRL) system, with a branch located at Parpala Road and State Route 401 in Naselle. The library is open four days per week.

The Timberland Regional Library has a Board of Trustees that makes policy decisions and provides direction for the five-county library system. The TRL Foundation raises funds and supports the activities of the library system. Most TRL libraries in cities have local library boards that advise the cities on library issues and Friends groups that raise funds to support special projects and activities.

Library service in Naselle started on April 21, 1986 in a stationary bookmobile near Lion's Park. The Naselle Library was originally opened as an experimental "mini-library" to serve patrons formerly served by the bookmobile. A new library was built and opened in November 1991. The library offers books, videotapes, DVDs, CDs, audio cassettes, newspapers and magazines for readers and library users of all ages. The regional system offers inter-library loans to members upon request. The Naselle branch offers programs for children and adults as well as computers with access to the Internet, Microsoft Office, and online reference databases. The Naselle Library has a public meeting room that can be reserved for community meetings and programs by calling the library.

Washington State Library

The Washington State Library (WSL)operates under the auspices of the Secretary of State. The WSL is the only agency in Washington that is specifically designated to assist public and non-profit libraries and to ensure that residents of the entire state have access to library and information services.

Member libraries serving Wahkiakum County include all school libraries and the Cathlamet Public Library, the Skamokawa Library, the Wahkiakum County Law Library, and the Naselle branch of TRL. Cathlamet received funding for online periodical database access subsidy (matched by the local library). The Naselle School District and the Naselle Library received funding for connectivity/technology enhancements.

Consulting services provided to libraries have included training for library employees, electronic library services, enhancing the public's ability to locate, use and evaluate information, providing library services to the blind and institutionalized, subsidies for access to an online database, connectivity and technology enhancement grants, training and materials for community partnerships for at-risk children. Inter-library loans are also offered.

WSL staff provides in-depth research and advice for libraries and government in areas such as: legal and governance issues, development of policies and services, relationships between boards and government officials, board responsibilities and interrelationships, setting up library districts,

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and other service issues. WSL employees develop, conduct, and facilitate continuing education retreats for library staff and boards of trustees.

PUBLIC EDUCATIONAL FACILITIES

Wahkiakum School District #200

Wahkiakum School District 200 is located at 500 3rd Street in Cathlamet and serves the eastern portion of the county. The district covers Wahkiakum County from KM Mountain east to the county line, with the majority of the school population centered in the Cathlamet area.

At present, the school district has a maximum capacity of approximately 600 students. Enrollment in the 2005-2006 school year, as of the official October count, was 490 full-time equivalent students.

The district currently has three school buildings located on 46.6 acres. All are located on one campus north of the downtown district. Wahkiakum High School has 36,986 square feet and was built in 1962. It houses students in grades 9-12. Three portable classrooms are used for Spanish, Special Education, Art, Traffic Safety, and classroom overflows. John Thomas Middle School has 14,960 square feet and was built in 1993. It currently houses students in grades 7 and 8. This building consists of four classrooms, a gymnasium and two locker rooms. Julius Wendt Elementary is a 28,694 square foot building originally built in 1952 and extensively remodeled at a cost of $3.4 million in 2001. It houses grades K-6 and provides shared administrative offices, a multi-purpose room and cafeteria, a library and science classroom for grades 7 and 8. Four portable classrooms are used on an ancillary basis.

The high school, which is approximately 40 years old, will probably be the next scheduled facility remodel, most likely within the next ten years. Existing facilities are expected to have capacity to house any increases in student enrollment until 2010.

A summary of known improvements needed by the district include:

- Replace 4 grade school portables (within 3 years)
- Remodel high school building (within 8 years)

Naselle-Grays River Valley School District

The Naselle-Grays River Valley School District is located in Naselle at 793 State Route 4, and serves southeastern Pacific County and students from the West End of Wahkiakum County. There were 333 students enrolled in the 2002-2003 school year, from kindergarten through 12th grade, rising to 462 students when Naselle Youth Camp is included.

The school district is a result of a series of mergers with neighboring non-high school districts between the years of 1930 and 1956. The school was built in 1959 and major remodeling was completed in 1996 through a $3.9 million bond measure. The elementary, middle, and high schools each operate on the Naselle site.

Improvements recommended by district facilities committee include construction of a concession facility, expanded/improved parking and driveway access, music and shop upgrades, stadium seating, construction of an auxiliary gymnasium, updated facility study, and short-term maintenance of the Rosburg School. Existing facilities are expected to have capacity to house increases in student enrollment over the short- to mid-term.

The school district operates the Naselle Youth Camp (NYC), a medium-security institutional high school offering education, vocational and treatment for troubled youth in grades 7-12. The school offers traditional high school curriculum, vocational education, GED completion, and Running Start in partnership with Grays Harbor Community College. In the fall of 2005 there were 115

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students attending. The camp contains five living units, or lodges, housing 123 youth. Due to an actual and projected decrease in juvenile crime, funding has been cut from the Juvenile Rehabilitation Administration. NYC will shut down its oldest lodge building, by December 31, 2005, losing 20 beds. When these changes will go into effect the camp will have a rated capacity of 101 beds. Naselle Youth Camp is the only medium-security juvenile facility and the only remaining work camp for youth in the State of Washington. Working with the Department of Natural Resources, NYC trains and supervises four work crews who fight forest fires, plant and thin trees, pick up road brush, develop trails, maintain park and recreation areas, and can be deployed during certain emergency situations.

Community Education Classes

The Wahkiakum School District offers community education classes on an as-needed basis. Recently, the district offered after hour classes in computers and in Spanish. General education development (GED) test preparation is offered at the St. James Family Center, located just outside town limit, and at Lower Columbia College in Longview, and at Grays Harbor College in Ilwaco.

Higher Education

There are several institutions of higher education located in reasonable commuting distance to either end of the county. Lower Columbia College (LCC), located 28 miles east of Cathlamet in Longview primarily offers associate degree programs, but has some bachelor degree programs and continuing education classes in cooperation with other colleges and universities. LCC operates the Running Start Program for Wahkiakum School District students. This program provides academically accelerated courses for college credit.

Grays Harbor Community College offers another alternative for West End residents, and serves the Naselle-Grays River District Running Start Program. The main campus is located in Aberdeen, 70 miles from Rosburg. A branch campus in Ilwaco is only 36 miles from the Grays River/Rosburg area. The community college system offers two year Associates degrees in Arts, Business and Science that can transfer to a four year college. Community colleges also offer occupational programs for those intending to enter the job market after completion with an Associates Degree in Applied Science or Applied Technology. Distance learning opportunities are available from Grays Harbor College through Washington On-Line or “i-TV” interactive television.

Community colleges offer transfer degrees to four year schools across the state, as well as partnership Bachelor Degrees with Washington State University. WSU has a branch campus located 60 miles from Cathlamet and 86 miles from Rosburg, near the junction of 1-5 and I-205 in Vancouver. It offers a variety of bachelor and masters degree programs. Other colleges and universities within commuting distance include:

- Clark College in Vancouver, WA
- University of Portland in Portland, Oregon
- Portland State University in Portland, OR
- South Puget Sound Community College in Olympia
- Evergreen State College in Olympia
- George Fox University in Newberg, Oregon

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PARKS AND RECREATION

Existing Facilities

An inventory of recreational facilities in Wahkiakum County was conducted as part of the 1984 comprehensive plan. Additional facilities have been constructed since 1984. An inventory of current facilities includes:

***County Line Park** – Operated jointly by Cowlitz and Wahkiakum counties, this waterfront park serves as the eastern gateway to Wahkiakum County. This heavily-used day use park offers tent camping, RV camping, fishing and opportunities for enjoyment of the Columbia River waterfront. The park is approximately six acres and has 3,000 feet of shoreline. The park was originally developed through a partnership with six state and federal agencies, as well as both Cowlitz and Wahkiakum counties.*

***Bradley Truck Trail** – This three-mile trail is located along Beaver Creek Road and was developed by the Washington Department of Natural Resources for use by all-terrain vehicles and equestrians.*

***Elochoman Marina** – The moorage basin is operated by Wahkiakum Port District #1,and has moorage for 190 vessels, including 10 live-aboards. Trailer parking is available. The marina contains 15 RV spaces. Five park model units are available for overnight rental. Restrooms with showers are available, as well as a covered picnicking area. An RV dump station is connected to the town's sewer system.*

Erickson City Park - This nine-acre park is located adjacent to the school complex. The town, with the assistance of state and federal grants-in-aid, has redeveloped the park. It includes restrooms, a multipurpose shelter, tennis courts, basketball and multipurpose court, horseshoe pits, playground equipment, nature paths, drinking fountain, and a parking area. A skate park is planned, with the concrete pad foundation in place.

Julia Butler Hanson Swimming Pool – This pool was built in 1973-74 with the assistance of a grant-in-aid from the Interagency Committee for Outdoor Recreation. The pool is used by people of all ages, residents and visitors to the county. Financial support is provided by the town and the county. Facility includes changing room and showers.

Strong Park & Waterfront Trail – This two acre park is located on the Cathlamet waterfront on the shoreline of the Columbia River adjacent to the Wahkiakum County Museum. The trail crosses Bernie Creek and the G. Alan Johnson lighted "waterfront trail", connecting Strong Park to the Elochoman Marina and to the Columbia River beach area. The park contains an historical locomotive and mural, four picnic tables, two benches, an FFA fish-rearing project, and a Master Gardener's "Butterfly Garden"

Wahkiakum School District

Wahkiakum School District owns facilities available to the community for recreational purposes. These include:

- Weight Training Room (high school site)
- Two gymnasiums (high school/middle school)
- Multi-Purpose Room (elementary school)

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- Outdoor playground - updated in 2003 with new playground equipment built by community volunteers at Julius A. Wendt Elementary School

The high school site also accommodates the Julia Butler Hansen Swimming Pool, which is owned by the Town of Cathlamet and operated jointly by the Town and Wahkiakum County.

Wahkiakum Forest

This 100-acre forested site adjacent to SR 4 is owned by the school district and used as an outdoor classroom. The area was designated as a "national environmental education landmark" by the federal government, one of only two such designated areas in the State of Washington. The site has an extensive trail system.

Wahkiakum Youth Athletic Facility *– Funded through the Interagency Council on Outdoor Recreation and constructed entirely by community volunteers, this facility offers a lighted multi-field complex for baseball, softball and little league play. The site also includes an indoor hit and pitch facility, restrooms, and concession. Though located on school district grounds, this facility is open to community sports teams, and was completed in 2007.*

Buffington Memorial Park *– Located at the end of SR 409 adjacent to the Wahkiakum Ferry Landing, this pocket park has two picnic tables, dog exercise area, and portable toilet.*

Svensen Park *– A boat ramp, boat trailer parking, restroom and picnic area are planned for this 4 acre park under development by Wahkiakum Port District #2 located on Puget Island at West Sunny Sands Road, near its intersection with SR 409.*

Julia Butler Hansen National Wildlife Refuge or the Columbian White Tailed Deer

Two miles west of Cathlamet is the entrance to the Julia Butler Hansen National Wildlife Refuge for the Columbian White Tailed Deer. An information kiosk and wildlife observation platforms are located along SR 4. The 5,600 refuge offers wildlife viewing, an interpretive center, and camping. Lewis and Clark noted that these deer were a separate species and remarked upon their unusual gait. The deer are protected as a threatened species. The refuge also offers birding opportunities year-round. Julia Butler Hansen was the first Congresswoman from Washington State. There is a five mile loop through the Wildlife Refuge for hiking, biking or driving.

Brooks Slough Boat Launch *– Located at Milepost 39 on SR4, this 2.5 acres site hosts a small boat launch with limited parking. This water trail can be used to explore the Wildlife Refuge.*

Skamokawa Vista Park *- This full-service campground for RV's and tents is over 70 acres along the Columbia River. It offers day use facilities, picnic tables and shelters, tennis courts, baseball diamond, showers, public restrooms, dump station, small boat launch facilities, hiking trails, and expansive views of the Columbia River. The park is connected to the fairgrounds via the pedestrian bridge over Skamokawa Creek. A community library sits adjacent to the park site, in the port office. Port District 2 owns and operates the park.*

Wahkiakum County Fairgrounds & Day Use Park*– This site consists of the county fairgrounds, containing several exhibit buildings on eight acres. Grange and county volunteers constructed a horse arena in the 1990's. The day use park has picnic tables and fire pits, a playground, horseshoe pits, and a covered area. Recent discussions have focused on expanding the use of the fairgrounds for more activities year-round, with a goal of becoming a self-supporting entity. The Steering Committee has recommended that a master plan be developed to identify potential*

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uses. In addition, community members have expressed interest in restoring the Skamokawa Grange, which has fallen into disrepair in recent years. It is located adjacent to the fairgrounds at the foot of the pedestrian bridge over Skamokawa Creek.

W.N. & H. Alta Meserve Memorial "Pocket" Park

This "pocket park" is located at the intersection of S.R. 4 and Loop Road. It stands on the former location of the Meserve General Store, which served area residents in the early 1900's. W.N. Meserve served in the Washington State Legislature. The site contains interpretive signage regarding the Lewis & Clark expedition, a picnicking area and portable toilet.

Ahlberg Park -*This park was established in 2007 and was named after the Ahlberg family, who pioneered the Grays River area and helped finance the building of the Grays River Covered Bridge in 1905. The park is located on the south side of the Covered Bridge and includes five acres of waterfront property. The Grays River Covered Bridge Festival is held each summer at this park to celebrate the local heritage and history.*

Rosburg Boat Launch *– Located behind the Rosburg community Hall, this boat launch on the Grays River is the only one in the area.*

Salmon Creek Roadside Park *is between SR4 Mileposts 8 and 7, about 3 miles west of Deep River. It has a picnic table and a portable toilet. Some overnight camping is permitted, but the park is unimproved.*

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Museums, Historical & Cultural Sites

An inventory of historic structures was conducted by the Cowlitz-Wahkiakum Council of Governments in the 1980s. It details buildings and sites of local and state historical significance, including the National Historic District in Skamokawa. Several buildings have decayed or been demolished by natural or man-made forces since the inventory was conducted. Other resources may have become eligible for listing in the 25 years or so that have since passed. An updated inventory would assist in identifying current resources around the county that may merit special attention. In addition, federal tax credits and incentives need to be publicized so that interested persons may participate.

Many recent additions to the county's recreational and community facilities are historic structures that are being adaptively re-used by the community. The Wahkiakum Community Foundation was created in 2003 to assist local non-profit agencies to grow towards self-sufficiency, to establish an endowment for bequests that could remain in the county to serve the local community, and to preserve and enhance community assets.

Wahkiakum County Museum – The county museum is located in downtown Cathlamet at 65 River Street & Division. The museum is operated and maintained by the Wahkiakum County Historical Society and contains a sizable collection of local and regional historical artifacts, including a photography collection and exhibits of early day logging, fishing and pioneer life.

Julia Butler Hansen Heritage Center *– This building and surrounding gardens were donated by the Hansen family to the Wahkiakum Community Foundation in 2004. Community volunteers*

have installed a new kitchen and made improvements in the foundation and the grounds around the building. Officially opened in 2005, it is actively used and available for community and special events

Pioneer Church – This church, formerly the Congregational Church, is a Cathlamet landmark. Located at 320 South First Street, it is built into a rock outcropping that overlooks the village. The building has been renovated by the Friends of Pioneer Church for a performing arts venue. Recent improvements include public restrooms. The Pioneer Church Association hosts a number of local events, among them the Annual Quilt Show over Labor Day Weekend.

Redmen Hall/River Life Interpretive Center – Redmen Hall sits at the top of a rocky knoll located at 1394 SR 4, and houses a museum and bookshop that is open four days a week. The River Life Interpretive Center offers stunning views of the mouth of Skamokawa Creek and the broad expanse of the Lower Columbia River. The Queen Ann style school was designed by Portlander Allen Riley and was dedicated on July 4, 1894. The schoolhouse held four grades on the first floor and four grades on the second story. The school served the community for 32 years and was later sold to the Order of Redmen, a nationwide fraternal organization, for use as a lodge and community center. The Center depicts the early life in the region when the river was the source of livelihood and travel. Opened in 1992, River Life Interpretive Center uses interpretive panels to depict the story of Skamokawa and its surrounding area. . It features a permanent exhibit of the Lewis and Clark journey through this region. Revolving exhibits feature local artists and authors. The River Life Interpretive Center is supported by Friends of Skamokawa, a non-profit, member-supported organization.

Deep River Pioneer Lutheran Church – This historic church building celebrated its 100th year in 2005 and was recognized with a State Historic Preservation Officer's Award to the Wahkiakum Community Foundation. Originally built by Finnish settlers in 1905, the building has been restored with $26,000 in community donations that resulted in a new cedar shake roof, windows, paint and other exterior improvements. The building is owned by the Wahkiakum Community Foundation, which has helped organize community events and fundraising. The building has no running water or electricity; however, the church has enjoyed relatively frequent use for community services and special events with a new spinet piano.

Johnson Park (formerly Rosburg School) – Currently owned by Wahkiakum County, this building is currently used for a community technology center, through funding from the Washington State Grange Association. The school originally served grades K-6, with older students attending the Naselle schools. The original building contains seven classrooms, a cafeteria, gymnasium and stage on a three-acre site. The Johnson Park Advisory Board was formed to identify potential future uses of the facility and to manage the facility and its events. The future land use map designates the area around the site for future development as a community activity center, which could include residential and commercial uses that would be compatible with the school as a centerpiece.

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Grays River Covered Bridge – The 158-foot-long one-lane covered bridge was built in 1905 at a cost of $2,700 and is the last one of its kind in Washington located on a public roadway. In 1971, the structure received National Historic Site designation, but winter storms in 1982 and 1986 battered it --- ripping off the top and tearing out the center pier that held it up. The county replaced the pier in 1987 and restored the bridge at a cost of nearly $296,000. The site is adjacent to a grassy field and a porta-potty is available. The Wahkiakum Community Foundation and Friends of the Covered Bridge have been hosting fundraising efforts to protect the bridge and its setting from disrepair.

Identified Recreational Needs

Wahkiakum County Parks & Recreation Plan

Conduct a countywide assessment of existing recreational facilities and assessment of future needs. Required for IAC funding consideration and must be updated every six years.

Aquatic Center - Improvements to the Julia Butler Hanson Pool to create a Wahkiakum County Aquatic Center that would allow year-round use and replace aging pool equipment, modernize locker rooms, and add other amenities including a spa, water slide and recreation pool with water play equipment. The formation of a special district has been considered to upgrade and improve the facility.

Civic/Recreation Center

The county has considered constructing a civic center as a venue for special events and programs to serve county residents and visitors. A multipurpose facility could help meet the recreational/cultural needs of all residents, including youth and seniors. It would assist in promoting economic growth by hosting events that attract visitors to the county. A preliminary study to evaluate need, feasibility and programming has yet to be conducted. This concept is very similar to one that emerged in the comprehensive planning process. The planning group recommended an evaluation of potential sites and costs for a central venue that could be programmed to serve a variety of uses, such as folk art, visual arts, arts and crafts demonstrations, performing arts, and a concert pavilion or amphitheatre.

Fairgrounds Master Plan

Conduct a master plan for the county fairgrounds that examines current as well as potential uses, development and maintenance costs. Include a market or feasibility study for the county-owned parcel to determine potential and best uses, development and maintenance costs. This might include an RV Park, campground, or similar use. The fairgrounds is currently being considered as a central venue for small farmers, offering classes, exhibit space, farmers market and other uses geared towards strengthening this traditional segment of the local economy.

Equestrian Center

Develop a feasibility study to examine market potential and an optimal location for a public access equestrian center.

Waterfront Public Access & Ports of Call

Identify existing and potential sites for expanding public access to the waterfront. Include fixed locations as well as trails. Identify potential acquisitions and improvements as well as development and maintenance costs. Suggested areas include Grays Bay, Hoikka Road, Brookfield, Hornstra's Beach, JBH Wildlife Refuge, as well as historic sites and buildings. Identify

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potential sites for multiple Ports of Call for sternwheeler/tour boats (City Dock, Elochoman Marina, Skamakowa, other potential deepwater sites, etc.)

Countywide Trails Network

Identify natural/built corridors for pedestrian, bicycling, equestrian use; identify potential routes, needed improvements, acquisition/development/maintenance costs. Consider Covered Bridge area, Pillar Rock, Grays River, Skamokawa.

Waterway Trails

Potential locations for trails that provide access to local creeks and streams are located at Brooks Slough, Skamokawa Creek, Welcome Slough, Cathlamet Channel, Grays River, Deep River, and Grays Bay Estuary. Examine needs to dredge for flood control and to expand recreational and commercial activities.

Barrier Free/Standard Shoreline Trails

Identify locations for barrier-free public access along the Columbia River. Access to shorelines was identified as a key issue in the initial public meetings held for the comprehensive plan. Residents as well as visitors have increasing difficulty locating areas where they can enjoy the scenic and recreational qualities of the county's shorelines without intruding on private owners.

Bikeway & Walking Trails

Consider feasibility and funding for trails at the following locations:

- Oneida Road and/or Deep River Road
- SR 4 from Cathlamet to Skamokawa
- Julia Butler Hanson Refuge to Steamboat Slough Rd.
- SR 409 from the Julia Butler Hanson Bridge to the Wahkiakum Ferry Landing.

Oneida Boat Ramp & Park

Acquisition of public launch area; widen ramp and improve courtesy dock; construct transient moorage slips; construct campground/restroom improvements

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CAPITAL FACILITIES & FINANCING

The Capital Facilities Program outlined within this element is a six-year financing plan for capital expenditures to be incurred each year. It sets forth each capital project that is planned and presents estimates of the resources needed to finance the project. The first year of the Capital Facilities Program may be converted to the annual capital budget, while the remaining five-year program will provide longer-term planning. The Capital Facilities Program is a six-year rolling plan that will be revised and extended annually to reflect changing circumstances.

Definition of Capital Improvement

The Capital Facilities Element is concerned with needed improvements which are of relatively large scale, are of generally non-recurring high cost, and may require multi-year financing. The list of improvements has been limited to major components in order to achieve a level of detail that is both manageable and reasonably accurate.

Smaller scale improvements can be addressed in the annual capital budget as they occur over time. The criteria outlined below apply to budgeting purposes.

- For the purposes of capital facility planning, capital improvements are major projects, activities or maintenance, requiring the expenditure of public funds over and above annual operating expenses.
- Capital projects have a life expectancy of more than 10 years and result in an addition to fixed assets and/or extend the life of the existing capital infrastructure.
- Capital improvements do not include capital outlay items such as equipment or rolling stock, nor do they include the capital expenditures of private or non-profit organizations. Minor projects, activities, or maintenance are considered minor maintenance and are not a part of capital improvements.
- Capital projects may include design, engineering efforts, permitting, environmental analysis, land acquisition, construction, major maintenance, site improvements, energy conservation projects, landscaping, initial furnishings and equipment.

Assumptions

The following assumptions about future conditions in local government and the economy were considered in development of the Capital Facilities Program:

- The cost of running local government will continue to increase due to inflation and increased operating costs, while revenues will decline.
- New revenue sources, including new taxes, will be necessary to maintain and improve services and facilities.
- Significant capital investment is needed to maintain, repair and rehabilitate infrastructure and to accommodate future growth.
- Public investment in capital facilities is the primary tool of local government to support and encourage economic growth.
- A consistent and reliable revenue source to fund necessary capital expenditures is desirable.
- A comprehensive approach to review, consider and evaluate capital funding requests is needed to aid decision-makers and the citizenry in understanding the county's capital improvement needs.

Coordination with Other Public Service Providers

Local goals and policies as described in the comprehensive plan elements are used to guide the location and timing of development. However, some local decisions are influenced by state agencies, special purpose districts and utility providers. The planned capacity of public facilities operated by other jurisdictions must be considered when making development decisions. Coordination with other entities is essential not only for the location and timing of public services, but also in the financing of such services. Information exchange with these entities is essential for ensuring that public services are available and that the quality of the service is maintained. Public services will be improved to maintain existing service levels and to accommodate the impacts of new development in a timely manner.

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The timing and location of development will be influenced by identifying locations with excess capacity that can easily support new development or by delaying new development until it is feasible to provide needed public facilities. The provision of public services may be phased in over time to ensure that new development and projected public revenues keep pace with public planning

Urban Area Boundary
The Urban Area Boundary is designated as the area where urban services will be available for urban densities of development. The boundary was initially established in the Cathlamet Comprehensive Plan. It was drawn based on environmental constraints, the presence of resource lands, concentrations of existing development, and existing infrastructure and services. It would be logical to extend sewer and water, drainage facilities, utilities, telecommunication lines, and local roads to development within this area.

Capital Facility Strategies
In order to realistically project available revenues and expected expenditures on capital facilities, all current policies that influence decisions about the funding mechanisms as well as those policies affecting future obligation for public facilities must be considered. The County should continually seek out new sources of funding and revenue.

There are two basic approaches to financing improvements, with the distinguishing feature being who pays for the facility—existing or future residents?

Pay As You Go –This approach does not incur debt, but current users provide future users with "free" facilities". The advantages of PAYGO are that it offers:

- Interest savings which can reserve more funding to actually carry out the project.
- Flexibility is available to stop work on projects if there is an economic downturn. There are no fixed debt service payments to make.
- Fiscal responsibility, because less debt is assumed.
- A legacy for the future, with infrastructure in place for the next generation.
- Low administrative costs, since there is no cost incurred for bond issues or administration of the debt service .

Pay As You Use – This approach involves debt financing. Proponents have some solid supporting arguments:

- Most equitable approach, since those who use the facility after it is built will help bear some of the costs.
- Preserves the reserve fund, since there is on-going debt service that must be paid.
- Reduces the effects of inflation, since debt will be paid off with "cheaper" dollars.
- Effectively lowers tax rates, because costs are spread over a longer time period with more people that help pay, with a higher assessed valuation
- Projects can be built as needed, without waiting for funds to accumulate

Lively discussions can result from determining whether to asses costs to current residents or to spread them to future residents. Many current residents do not want their taxes raised to pay for growth that they never desired. New growth is seen as the impetus for new and expanded facilities. Sometimes, a community will support a financing measure as long as new growth is paying at least a portion of the costs. Others believe the entire community benefits from the positive impacts of growth. This perspective often acknowledges that growth can come from within, as much as it can come from outsiders.

Many believe that those who benefit should be the ones to pay. If some of the beneficiaries are outside of the community, a regional or state funding approach may be considered fair. Assigning benefits is not always clear or easy. If a new development creates traffic impacts, shouldn't they pay for road improvements? If the improvements increase the level of service that everyone enjoys, shouldn't everyone pay?

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Methods for Addressing Shortfalls
No local government is capable of financing all proposed capital facility projects. Alternative strategies for addressing shortfalls are needed, as well as guidance on how these options will be exercised. The equity of a particular decision as well as the efficiency of the resulting decision should be guiding factors. Capital facility projects are generally reviewed on an individual basis rather than a system-wide basis. This involves lower administrative costs and can be employed in a timely manner. However, this method is not particularly efficient in dealing with multiple needs. When evaluation of a particular project identifies a shortfall, the following options are available:

- Increase revenues
- Decrease the level of service
- Decrease the cost of the facility
- Decrease the demand for the public service or facility

Projection of Capital Facility Needs & Monitoring of Needs
A Six-Year Schedule of Improvements has been developed and will be used to identify and rank projects for streets and transportation, water and sewer service, solid waste, stormwater management, parks and recreation, fire protection and facilities for the conduct of government and its services.
Data from the Six Year Street Plan, comprehensive water plans, waste treatment plan, and the Steering Committee recommendations were used to develop the Six-Year Schedule of Improvements.

The Six-Year Schedule of Improvements (Table 15) is the mechanism for staging the timing, location and projected costs for needed capital improvements. It lists the capital improvement project by facility type, indicates which projects are needed to correct existing deficiencies, and provides estimates of project costs by year. The notation "D" has been used to indicate that the project is required to correct an existing deficiency. The notation “G” is used to indicate projects to serve projected growth. Top priority is generally given to projects that correct existing deficiencies, followed by those required for facility replacement and those needed for future growth. The planned expenditures for each project from FY 2006 through FY 2012 are shown by year. As the element is updated annually, yearly amounts beyond FY 2012 will be identified.

Monitoring and evaluation are essential in ensuring the effectiveness of the Capital Facilities & Utilities Element. This element should be reviewed annually as the Six Year Plan is updated and the availability of fiscal resources and needs is re-evaluated. The annual review will be the responsibility of county government. The review should include the following considerations:

- ⇒ Corrections, updates and modifications concerning costs and revenue sources
- ⇒ Acceptance of facilities pursuant to dedication which are consistent with the element, or the date of construction of any facility specified in this element;
- ⇒ Continued consistency between the Capital Facilities & Utilities Element and the Land Use Element
- ⇒ Priority assignment of existing facility deficiencies
- ⇒ Progress in meeting needs determined to be existing deficiencies
- ⇒ Criteria used to evaluate capital improvement projects in order to ensure that projects are being ranked in their appropriate order of priority
- ⇒ Review of the impacts of state programs that provide public facilities within the county
- ⇒ Effectiveness of assessing new development with the costs associated with that development
- ⇒ Impact of special districts and regional facilities that affect desired service levels
- ⇒ Secured grants or private funds that can be used to finance capital improvements
- ⇒ Criteria used to evaluate proposed plan amendments and requests for new development or redevelopment

Approaches to Financing Capital Improvements
Financial regulations and funding mechanisms are subject to change and market conditions; therefore, the County should periodically review the impact and appropriateness of their financing systems. The following list of sources includes all major financial resources available and is not limited to those sources that are currently in use. The list includes the following categories:

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- Debt Financing
- Local Multi-Purpose Levies
- Local Single-Purpose Levies
- Local Non-Levy Financing Mechanisms
- State Grants and Loans
- Federal Grants and Loans

Debt Financing

Short-Term Borrowing - The extremely high cost of many capital improvements requires local governments to occasionally utilize short-term financing through local banks.

General Obligation Bonds - These bonds are backed by the value of the property within the jurisdiction. Voter-approved bonds increase property tax rate and dedicate the increased revenue to repay bondholders. Revenue may be used for new capital facilities, or maintenance and operations at existing facilities. These bonds should be used for projects that benefit the community as a whole. Washington State law permits a general obligation bonded debt equal to 0.75 percent of the assessed property valuation without voter approval. By a 60 percent majority vote of its citizens, local government may assume an additional general obligation bonded debt of 1.75 percent, bringing the total for general purposes up to 2.5 percent of the value of taxable property. The value of taxable property is defined by law as being equal to 100 percent of the value of assessed valuation. A local government may incur another general obligation bonded debt equal to 2.5 percent of the value of taxable property with voter approval, when it is for the purpose of supplying municipally-owned electric, water, or sewer service. An additional general obligation bonded debt equal to 2.5 percent of the value of taxable property may be approved by the voters for parks and open space. Thus, under state law, the maximum general obligation bonded debt cannot exceed 7.5 percent of the assessed property valuation.

Revenue Bonds - These bonds are not subject to a limit on the maximum amount of debt that can be incurred, and have no effect on tax revenues because they are repaid from the sale of services. These bonds are financed directly by those benefiting from the capital improvement. Revenue obtained from these bonds is used to finance publicly owned facilities, such as parking garages or electric power plants. The debt is retired using charges collected from the users of these facilities. In this respect, the capital project is self-supporting. Interest rates tend to be higher than for general obligation bonds, and issuance of the bonds may be approved without the voter referendum.

Industrial Revenue Bonds - These bonds are used by a local government, but are actually assumed by companies or industries that use the revenue for construction of plants or facilities. The attractiveness of these bonds to industry is that they carry comparatively low interest rates due to their tax-exempt status. The advantage to the jurisdiction is that the private sector is responsible for retirement of the debt.

Local Multi-Purpose Levies

Ad Valorem Property Taxes - The tax rate is measured in mills (1/10 cent per dollar of taxable value). Due to the passage of Initiative 747, local governments in the State of Washington are prohibited from raising levy more than 1 percent of the highest allowable levy since 1985, before adjustments for new construction, improvements to property, any increase in the value of state assessed property, and annexation. A temporary or permanent excess levy may be assessed with voter approval. Revenue may be used for new capital facilities, or maintenance and operations at existing facilities.

Local Option Sales Tax - This is a retail sales and use tax of up to 1 percent. Local governments that level the second 0.5 percent may participate in a sales tax equalization fund. Assessment of this option tax requires voter approval. Revenue may be used for new capital facilities, or maintenance and operations at existing facilities.

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Utility Tax - This tax comes from gross receipts of electric, gas, telephone, cable TV, water/sewer, and storm water utilities. Voter approval required for an increase above 6 percent of gross receipts. Revenue may be used for new capital facilities, or for maintenance and operations at existing facilities.

Real Estate Excise Tax - The original 0.5 percent was authorized as an option to the sales tax for general purposes. An additional 0.25 percent was authorized for capital facilities, and the Growth Management Act authorized another 0.25 percent for capital facilities. For counties and cities within those counties that chose to plan, i.e., those which "opt in" under the Growth Management Act, the additional tax requires voter approval. Revenues must be used solely to finance new capital facilities, or maintenance and operations at existing facilities, as specified in the capital facilities plan. An additional option is available under RCW 82.46.070 for the acquisition and maintenance of conservation areas if approved by a majority of the voters of the county.

Local Single Purpose Levies

Emergency Medical Services Tax - A property tax levy of $0.25 is permitted for emergency medical services. Revenue may be used for new capital facilities, or maintenance and operations at existing facilities.

Motor Vehicle Fuel Tax - These taxes are paid by gasoline distributors. The Department of Licensing distributes state-shared revenue. Revenues must be spent for highway construction, maintenance, or operation (county roads and state highways), policing of local roads, or related activities.

Local Option Fuel Tax - A countywide voter-approved tax equivalent to 10 percent of the statewide Motor Vehicle Fuel Tax and a special fuel tax of 2.3 cents per gallon may be collected. Revenue is distributed on a weighted per capita basis. Revenues must be spent for highway construction (city streets, county roads, and state highways); maintenance, or operation (city streets, county roads, and state highways); policing of local roads; or highway-related activities.

Commercial Parking Tax - A tax on commercial parking businesses, based on gross proceeds or the number of parking stalls, or on the customer rates. This tax is imposed by local referendum. Revenues must be spent for general transportation purposes including highway construction, maintenance, or operation (city streets, county roads and state highways),policing of local roads, highway-related activities, public transportation planning and design, and other transportation related activities.

Local Non-Levy Financing Mechanisms

Reserve Funds - This is revenue that is accumulated in advance and earmarked for capital improvements. Sources of funds can be surplus revenues, funds in depreciation reserves, or funds resulting from the sale of capital assets.

Fines, Forfeitures, and Charges for Services - This includes various administrative fees and user charges for services and facilities operated by the jurisdiction. Examples are franchise fees, sales of public documents, property appraisal fees, fines, forfeitures, licenses, permits, income received as interest from various funds, sale of public property, rental income, and all private contributions to the jurisdiction. Revenue from these sources may be restricted in use.

User Fees, Program Fees, and Tipping Fees - These fees or charges are for using park and recreational facilities, solid waste disposal facilities, sewer services, water services, and surface water drainage facilities. Fees may be based on measure of usage, a flat rate, or design features. Revenues may be used for new capital facilities, or maintenance and operations at existing facilities.

Street Utility Charge - Fees of up to 50 percent of actual costs of street construction, maintenance, and operations to businesses and households may be charged. The tax requires local referendum. The fee charged to businesses is based on the number of employees and cannot exceed $2.00 per employee per month. Owners or occupants of residential property are charged a per household fee that cannot exceed

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$2.00 per month. Both businesses and households must be charged. Revenue may be used for activities such as street lighting, traffic control devices, sidewalks, curbs, gutters, parking facilities, and drainage facilities.

Special Assessment District - This is a district created to service entities that are completely or partially outside of the jurisdiction. Special assessments are levied against those who directly benefit from the new service or facility. The districts include Local Improvement Districts, Road Improvement Districts, Utility Improvement Districts, and the collection of development fees. Funds must be used solely to finance the purpose for which special assessment district was created.

Special Purpose District - Districts may be created to provide a specified service. Often the district will encompass more than one jurisdiction. Included are districts for fire facilities, hospitals, libraries, metropolitan parks, airports, ferries, parks and recreation facilities, cultural arts/stadiums and convention centers, sewers, water, flood control, irrigation, and cemeteries. Voter approval is required for airport, parks and recreation, and cultural arts/stadium and convention districts. The district has authority to impose levies or charges. Funds must be used solely to finance the purposes for which the special purpose district was created.

Lease Agreements - This is an agreement allowing the procurement of a capital facility through lease payments to the owner of the facility. Several lease-packaging methods can be used. Under the lease-purchase method the capital facility is built by the private sector and leased back to the local government. At the end of the lease, the facility may be turned over to the local government without any future payment. At that point, the lease payments will have paid the cost of construction plus interest.

Privatization - Privatization is generally defined as the provision of a public service by the private sector. Many arrangements are possible under this method, ranging from a totally private venture to systems of public/private arrangements, including industrial revenue bonds.

User Charges and Connection Fees - User charges are designed to recoup the costs of public facilities or services by charging those who benefit from such services. As a tool for affecting the pace and pattern of development, user fees may be designed to vary for the quantity and location of the service provided. Thus, charges could be increased for providing services to sites that are some distance away from an urbanized area.

Mandatory Dedications or Fees In Lieu Of (FILO) - The jurisdiction may require, as a condition of plat approval, that subdivision developers dedicate a certain portion of the land in the development to be used for public purposes, such as roads, parks, or schools. Dedication may be made to the local government or to a private group. When a subdivision is too small or because of topographical conditions a land dedication cannot reasonably be required, the jurisdiction may require the developer to pay an equivalent fee in lieu of dedication.

The provision of public services through subdivision dedications not only makes it more feasible to serve the subdivision, but may make it more feasible to provide public facilities and services to adjacent areas. This tool may be used to direct growth into certain areas.

Negotiated Agreement – This tool involves an agreement whereby a developer studies the impact of development and proposes mitigation for the town's approval. These agreements rely on the expertise of the developer to assess the impacts and costs of development. Such agreements are enforceable by the jurisdiction. The negotiated agreement requires lower administrative and enforcement costs than impact fees.

Impact Fees - Impact fees are paid by new development based upon its impact to the delivery of services. Impact fees must be used for capital facilities needed by growth. They cannot be used to address current deficiencies in levels of service or for operating expenses. These fees must be equitably allocated to the specific entities that will directly benefit from the capital improvement, and the assessment levied must fairly reflect the true costs of these improvements. Impact fees may be imposed for public streets and

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roads, publicly owned parks, open space, recreational facilities, school facilities, and fire protection facilities (in jurisdictions that are not part of a fire district).

Impact fees may be used to affect the location and timing of infill development. Infill development usually occurs in areas with excess capacity. If the local government chooses not to recoup the costs of capital facilities in under-utilized service areas, infill development may be encouraged by the absence of impact fees on development(s) proposed within such service areas. Impact fees may be particularly useful for a small community that is facing rapid growth and with new residents desiring a higher level of service than the community has traditionally offered.

An impact fees is a **c**harge applied to new development that generates revenue for construction or expansion of capital facilities located outside the boundaries of a new development, but which still benefits the development. Impact fees are valid if they can present a **rational nexus** - a close fit between the fee itself, and the problem it is intended to solve. This feature renders it similar to a user fee, as it is based upon the benefit received.

Proponents of impact fees argue that the fees:

- Ensure that new development will pay its fair share (or at least a share) of infrastructure development costs. Impact fees rarely pay the total cost of new or expanded facilities. The rest of the cost is met by property taxes, user fees, sales taxes and other sources.
- Ease pressure on the community's other financial resources.
- Provide a politically acceptable alternative to property taxes. Growth may be more politically acceptable when impact fees are imposed because residents perceive that new home buyers will pay for their own services.
- Avoid the effect of a moratorium on development, as a result of tax and debt limits on local government expenditures for facilities.
- Provide revenues earmarked for infrastructure.
- Assess the developer only for the cost of providing infrastructure for the new development. The costs to the developer are specified upfront.
- Allow local government to commit to constructing public facilities in a planned and systematic manner since a Capital Improvements Plan is required to impose the fee.

Opponents of impact fees believe that:

- Infrastructure improvements are the responsibility of the entire community.
- Their use helps create a society of “haves” and “have-nots”. Because impact fees are based on the costs of improvements (and not ability to pay) they represent regressive public finance policy. Fees adversely impact housing affordability by driving up market prices for new and existing housing.
- Impact fees reduce financing flexibility, because they must be earmarked as revenue.
- Impact fees have potential for abuse by government and must be carefully crafted.
- If one jurisdiction has impact fees and adjoining areas do not, development may be displaced from one area to another.
- The administration of impact fees can be quite expensive.

The Washington State Growth Management Act (GMA) states that jurisdictions required to plan or choosing to plan under the GMA can impose impact fees. The fees must be used for system improvements that "reasonably" benefit the new development.

State Grants and Loans

Community Development Block Grant - Grant funds are available for public facilities, economic development, housing, and infrastructure projects that benefit low- and moderate-income households. Grants are distributed by the Department of Community Development primarily to applicants who indicate prior commitment to project. Revenue is restricted and may not be used for maintenance and operations.

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Community Economic Revitalization Board - Low interest loans (rate fluctuates with state bond rate) and occasional grants are available to finance infrastructure projects for a specific private sector development. Funding is available only for projects which will result in specific private developments or expansion to manufacturing and other businesses that support the trade of goods and services outside of the state's borders. Projects must create or retain jobs. Funds are distributed by the Department of Trade and Economic Development to applicants who indicate a prior commitment to proceed. Revenue is restricted and may not be used for maintenance and operations.

State Office of Community, Trade & Economic Development – A broad array of financial and technical assistance programs are available to local governments for downtown revitalization, implementation of economic development strategies, and general community development. This agency also oversees the CDBG program and the Historic Preservation Program for the State of Washington, among many others.

Historic Preservation Grants - The state Office of Archaeology and Historic Preservation (OAHP) makes annual grants available to local historic preservation programs for four purposes: (1) historic preservation planning; (2) cultural resource surveys and inventories; (3) nomination of properties to the National Register of Historic Places; and (4) public education and awareness. To be eligible for grants, communities must be a Certified Local Government (CLG) as approved by OAHP. When funds are available, OAHP awards grants for acquisition or rehabilitation of properties listed or eligible for listing on the National Register. Grant awards are predicated on the availability of funds and require a match.

Public Works Trust Fund - Low interest loans are available to finance capital facility construction, public works emergency planning, and capital improvement planning. To apply for the loans a capital facilities plan must be in place and the local jurisdiction must already levy the original 0.25 percent Real Estate Excise Tax. Funds are distributed by the Department of Community, Trade & Economic Development. Loans for construction projects require matching funds generated only from local revenues or state shared entitlement revenues. Public works emergency planning loans are available at a 5 percent interest rate. Capital improvement planning loans are zero interest loans, with a required 25 percent match. Revenue may be used to finance new capital facilities, or for maintenance and operations at existing facilities.

State Parks and Recreation Commission Grants - These grants are for capital facilities, acquisition and construction related to parks and other forms of recreation. They are distributed by the Inter-Agency Commission on Outdoor Recreation to applicants with a 50 percent match requirement.

Transportation Improvement Account – The Transportation Improvement Board has two programs oriented towards smaller communities: the Small City Program and the Pedestrian Safety & Mobility Program. The Small City Program will provide matching funds for TEA-21 projects. Funds are also available for reconstruction or rehabilitation of roadways, sidewalks, storm draining, lighting, landscaping and other improvements. Projects must be eligible for inclusion on the TIB Arterial System. The intent is to reduce traffic congestion and improve areas where safety, design or structural problems exist. The Pedestrian Safety & Mobility Program has funds to construct sidewalks that are used primarily for transportation purposes. Communities with a population of 500 or more have a 5 percent minimum local match requirement.

State Department of Transportation Grants - The Washington State Department of Transportation has two programs available to small cities: Small City Pavement Preservation Program and Traffic Safety Near Schools Program. The Small City Pavement Program provides funds for cost-effective pavement maintenance. When funds are available, small cities are limited to one $74,000 project per city. The Traffic Safety Near Schools Program provides funds to improve specific locations that constitute a danger to pedestrians or vehicles near school locations. Projects are limited to $150,000 with a 50 percent local match requirement.

Centennial Clean Water Fund - Grants and loans are available for the design, acquisition, construction, and improvement of Water Pollution Control Facilities, and related activities to meet state and federal water pollution control requirements. Grants and loans distributed by the Department of Ecology require

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a 25 to 50 percent matching share. Use of funds is limited to planning, design, and construction of water pollution control facilities, stormwater management, ground water protection, and related projects.

Water Pollution Control State Revolving Fund - These low interest loans and loan guarantees for water pollution control projects are distributed by the Department of Ecology. The applicant must show water quality need, have a facility plan for treatment works, and show a dedicated source of funding for repayment.

Department of Health Water Systems Support - Grants are made for upgrading existing water systems, ensuring effective management, and achieving maximum conservation of safe drinking water. Grants are distributed by the State Department of Health through intergovernmental review and have a 60 percent local match requirement.

Federal Grants and Loans

Transportation Equity Act for the 21st Century (TEA-21) - TEA-21 provides funds for maintenance, operation and improvements related to surface transportation. Revenue is available for improvements to arterial and collector roads included in the regional plan. Funds may also be used for non-highway public transit projects. Programs for small cities include enhancements grants for historic preservation, recreation, beautification, and environmental protection; statewide or regional competitive grants for general improvements; hazard elimination funds for improvements at specific locations which constitute a danger to vehicles or pedestrians; Rural Economic Vitality (REV) program funds; and bridge replacement or rehabilitation through the BRAC program. Bridges must be on the State of Washington Inventory of Bridges. These programs are administered by the Washington Department of Transportation and the regional transportation planning organizations (RTPOs).

Federal Aid Emergency Relief - Revenue is available for restoration of roads and bridges on the federal aid system which are damaged by extraordinary natural disasters or catastrophic failures. The local agency declares an emergency and notifies the Washington State Department of Transportation and, upon approval, entitlement funds are available with a 16.87 percent local matching requirement.

USDA Programs – The USDA offers a wide variety of loan and grant programs to assist local governments in addressing major facility and service needs. These programs address water, sewer, public safety, housing, and other needed community facilities. Programs vary by purpose, population, and financial support available. The Rural Utilities Services is also a branch of the USDA which offers a broad array of assistance in meeting these community facility needs.

Federal Emergency Management Agency (FEMA) – Financial and technical assistance is available from the agency for needs relating to public safety and emergency response and recovery. Various programs can provide assistance for equipment and capital facilities.

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Transportation Element

Introduction

The Transportation Element establishes the county's goals and policies for developing the transportation system. It is intended to serve as a guide for making transportation decisions to address mid-term as well as long-range needs. The Transportation Element discusses accessibility, enhancement, safety, pedestrian travel, and impacts of future land development activity. The Transportation Element is consistent with the regional transportation plan.

The Comprehensive Plan recognizes the importance of coordination and strong inter-jurisdictional action because transportation connections and project impacts do not stop at local boundaries. Inter-jurisdictional coordination is necessary for the region to maintain the relevance of connections between land use and transportation goals.

In 1990 the State of Washington developed a regional transportation planning program. This program led to the formation of the Southwest Washington Regional Transportation Planning Organization (SWRTPO), which consists of Cowlitz, Lewis, Wahkiakum, Grays Harbor and Pacific counties as well as the cities, ports transit agencies and other organizations within them. A board of directors addresses planning issues across county lines and is responsible for the adoption of the regional transportation plan. This plan addresses levels of service for regional facilities. Level of service (LOS) in turn determines deficiencies and needed improvements in the regional system, which must be funded through a capital improvements plan.

As Wahkiakum County grows and new infrastructure is needed to support additional development, levels of service provide the means to test whether existing regional roads are adequate or whether facility improvements or other strategies are needed to preserve traveler mobility. The regional plan will be critical to the future of transportation planning within the county because regional projects will be prioritized against projects elsewhere in the five-county region by the SWRTPO.

The Transportation Element of the Wahkiakum County Comprehensive Plan describes the existing condition of the transportation network that serves the county. This section also sets forth policies and objectives, which integrate the network functionality with the land use element of the comprehensive plan. Performance standards are also set forth. The standards continue to support the rural nature of Wahkiakum County and the primary functions of the county's transportation network.

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Inventory

State Route 4

State Route 4 (SR 4) runs the entire east-west length of Wahkiakum County, from milepost 45 at County Line Park to milepost 9 at the Pacific County border. The highway is designated by the Washington State Department of Transportation as a Highway of Statewide Significance. The highway provides the most direct link to the I-5 corridor for both Wahkiakum and Pacific County communities located on the Long Beach Peninsula. A needs assessment completed in 1994 called for safety and capacity improvements, which resulted in the completion of passing lanes along the roadway in several critical locations. The highway experiences rock and land slides on a regular basis, with the most severe event occurring in the early 1990's, with the massive KM mountain landslide, which closed down the highway in the west end of the county for an extended period of time.

The average annual daily traffic (AADT) for SR 4 in Wahkiakum County in 2003 ranges from a low of 1,500 vehicles at Loop Road in the west end of the county to a high of 3,500 vehicles at the Greenwood Road/Cathlamet City Limits intersection with SR 409. Taking these volumes into account, the Washington State Department of Transportation completed an analysis to determine the capacity of the highway to accommodate future growth. The highway will continue to operate at an acceptable level of service for a rural highway for the 20-year horizon anticipated by the comprehensive plan and beyond. The state's

acceptable level of service for rural highways is "C". This indicates that the level of growth the county is anticipating over the next 20 years will be accommodated adequately with the existing configuration of SR 4. This acceptable level of service indication also supports the proposed land use patterns contained within the Land Use Element of the this comprehensive plan.

The 1994 SR 4 Corridor Needs Study detailed several key findings:

- ⇒ Level of Service (LOS) "C" is the service standard for SR 4 in rural areas; LOS "D" in urban areas
- ⇒ Passing lanes every 0.5 miles is recommended, especially east of Cathlamet
- ⇒ Bridges along the highway do not meet modern bridge standards, particularly regarding width
- ⇒ Sites for notable viewpoints and vistas are listed
- ⇒ Pullouts and shoulders for slow moving traffic (RV's, tractor-trailer rigs and cyclists) are needed
- ⇒ Beautification efforts are indicated along the corridor.

SR 4: Funded Improvements: Short-term Projects

There are two projects in the state's current Highway System Plan for SR 4:

- ⇒ Add a lane just east of the junction with SR 409, making it a four-lane segment coming into Cathlamet for approximately two miles, which is currently a three-lane roadway
- ⇒ Reconstruction of Svensen's Curve at Miller Road in Grays River (Right-of-way acquisition difficulties may result in reprogramming these monies to another county project, subject to state approval.)

SR 4 Proposed Improvements (unfunded): Long-term

Major improvements to improve capacity and reduce congestion along SR4 to serve population growth are not anticipated. SR 4 can reasonably be expected to support the level of growth the county anticipates and will continue to function well into the future.

The need to accommodate alternative transportation modes is increasing along the SR 4 corridor. With the rise in popularity of bicycle touring, interest in cycling SR 4 is becoming widespread among bicycle enthusiasts. The Lewis and Clark Trail Scenic Byway, which includes SR 4 along its route, is bringing national attention to this highway. Within the current highway system plan, the state has recognized the need to widen shoulders to accommodate bicyclists. There are 12 projects identified within the system plan under the "Economic Initiative Strategies" to widen segments of the shoulders along SR 4 to a minimum of four feet to accommodate bicyclists and create a more consistent bicycle touring route.

It is difficult to secure funding for these types of projects due to the manner in which improvements are prioritized. The priorities are, in descending order of importance:

1. ***Safety***
2. ***Highway preservation***
3. ***Capacity***
4. ***Congestion***
5. ***Alternative transportation modes***

With increased emphasis on tourism as an important segment of the local economy, the need to improve the shoulders along SR 4 to accommodate bicyclists should continue to be pursued and accepted as a primary goal for future transportation network improvements. Improving SR 4 to accommodate more bicycle travel throughout the Lower Columbia region supports the economic development goal of increased tourism.

Bridges along SR 4 in the vicinity of Grays River are circa 1930 and do not meet current modern standards for bridge design. Although there is no need to increase the capacity of these bridges, their narrow footprint and lack of safety shoulders make them functionally obsolete. Increased tourism traffic has resulted in increased numbers of large recreational vehicles using SR 4 to get to the coast. These vehicles compete with large logging trucks for continued use of the highway, making a much greater potential for conflict on these bridges. Replacement of these bridges would not be difficult because there are few structures to remove; however, bridges are, by their nature, located in environmentally sensitive

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areas, which will have to be taken into consideration. The impact of bridge replacement on maintaining the rural heritage of the community will need to be addressed by county residents, elected officials and Washington State Department of Transportation (WSDOT).

The Skamokawa Bridge along SR 4 is another narrow, older bridge that does not meet modern design standards. The challenge presented to improving or replacing the bridge is its location in a densely developed area, with little leeway on all sides. Replacing it with a modern structure would have a tremendous impact on the Skamokawa community. It is difficult for pedestrians to access several points of interest in the Skamokawa area, such as the paddle center and bed and breakfast, Redman Hall, Vista Park and the county fairgrounds. As tourism grows to become a larger share of the county's economy, pedestrian safety and access in the Skamokawa area will need to be addressed by the county, residents and WSDOT. A creative approach to this problem will need to be a collaborative community effort.

SR 4 is a designated traffic safety corridor by the State of Washington Traffic Safety Commission. This designation is a result of high traffic fatality rates. The corridor begins at County Line Park and goes eastward into the Longview urban area. Although the emphasis of the program has been in the urban area, the fact that the road has obsolete bridges, narrow shoulders and poor sight distance in the rural portion of the highway should encourage residents and visitors to slow down, enjoy the scenery and take their time driving through the county.

Passing lanes were constructed in the mid-1990s to allow for safe passage of vehicles where sight distance and other impediments to safety were problems. Widening SR 4 is not feasible because traffic volumes are projected to remain low and widening would only cause increased speeding and more accidents. The financial costs and benefits, land uses and traffic volumes do not "pencil out" for major capacity improvements.

As a portion of the Lewis and Clark Scenic Byway, SR 4 continues to function as a rural, state highway. It is a highway of statewide significance, linking the county to the Pacific Coast and the I-5 corridor. It serves as a link to Oregon via the ferry Wahkiakum and connects to SR 401 in Naselle and US 101 at Johnson's Landing in rural Pacific County. It is an arterial that is used by a wide variety of residents and visitors accessing the Lower Columbia region.

SR 4 Scenic Byway Designation & Amenities

The 1994 *S.R 4 Corridor Needs Study* suggested that the National Scenic Byway Program would be a good avenue to pursue funding for increased awareness of the historical and interpretive opportunities along SR 4. SR 4 was designated as a Scenic Byway in the State of Washington in 1993. The National Lewis and Clark Trail is located along SR 4. The State of Washington and the Wahkiakum Chapter of the Friends of Lewis and Clark have been successful in locating places and funding for interpretive signing along the trail in Wahkiakum County. The state Lewis and Clark Trail Committee successfully obtained a Scenic Byway Grant to place signs along the entire length of S.R. 4 through the state. The grant allowed signs to be placed in Wahkiakum County along SR 4, and in the Skamokawa area within the Julia Butler Hansen National Wildlife Refuge, along with additional signs obtained by the Wahkiakum Friends of Lewis Clark. As a function of the state's interpretive plan, WSDOT has placed brown "heritage" signs denoting the location of each interpretive sign along the state highway. Scenic Byway funds are available on a competitive basis for marketing and continued work by the community to emphasize historical attractions throughout the county. Additional improvements under the Scenic Byway Program will require designation of a citizen group to work with WSDOT.

State Route 409

State Route 409 links the Wahkiakum Ferry terminus on Puget Island to SR 4.at Cathlamet. WSDOT completed a major rehabilitation of the Puget Island Bridge in 2005, which links the island to the mainland just south of Cathlamet. The land use proposals for Puget Island allow the bridge to continue operation at an acceptable level of service for the foreseeable future. The traffic counts for the island are relatively low and reflect the rural land uses prevalent on the island. There is adequate capacity for both the bridge and the highway to absorb future growth projected for the island.

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Following rehabilitation of the bridge there are no future projects denoted in the state's Highway System Plan for SR 409. There is continued local interest in upgrading the state highway and county road system on the island to accommodate more bicyclists and pedestrians visiting the island. The major function of the improvement to accommodate the bicyclists would be widening the shoulders along the state highway and county roads. This is an expensive undertaking because some of the roads essentially function as a dike to protect the island from flooding. However, the low volumes of traffic on the highway, the flatness of the area and the ample sight distances would provide a relatively safe location for bicyclists, if shoulders could be added. This can be enhanced with community awareness and education. Areas of emphasis should be rules of the road, reflective clothing and adherence to the speed limit. All of this would assist in making SR 409 an adequate bicycling route for both residents and visitors to the island. Proposed improvements to SR 409 and the Puget Island Ferry to address emergency transportation needs is discussed in the section on "Current Trends & Issues."

Puget Island Ferry

The Puget Island ferry links Puget Island on the Washington side of the Columbia River to Westport in Clatsop County on the Oregon side. The ferry is the last one in active operation on the lower Columbia River, and is the only crossing available between the Lewis & Clark Bridge in Longview and the Megler-Astoria Bridge. The Puget Island ferry is used by residents and visitors alike, and is also called into service during major/emergency repairs to State Route 4 or either of the bridges in Longview and Astoria.

Ferry traffic volumes continue to increase. The county is planning for a near-term improvement at the landing dock to better accommodate tractor trailer trucks and recreational vehicles. The following table indicates the growth in the different types of users between 2000 and 2004. Note the increase in volume for 2003 and 2004, which was caused by the evening closures of the Lewis and Clark Bridge in Longview because of the deck rehabilitation project.

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Table 1
"Ferry Wahkiakum" Traffic Volumes
2000 – 2004

	2000	2001	2002	2003	2004
Cars	51,097	53,632	54,303	69,456	62,388
Trucks	1,008	816	869	1,014	869
Trailers	190	166	215	250	281
Motorcycles	816	1,197	1,101	1,401	1,363
Bicycles	565	511	606	676	575
Foot Passengers	826	967	809	1,093	1,055

NOTE: Increased traffic beginning in late June due to closures on the Lewis & Clark Bridge

Ferry Amenities

The ferry is a joint venture between Wahkiakum County and Washington State Department of Transportation. The joint venture for operation and infrastructure is considered more economical than building a bridge linking Puget Island and Westport. The county is responsible for maintaining the dock and the ferry, while the State funds a share of the operation of the service.

The continued operation of the ferry supports the comprehensive plan on several fronts. The ferry is a much-needed transportation service that connects the county to Oregon and brings visitors into the county from the U.S. 30 corridor. The ferry is also the most cost-effective means of making this connection. Residents that use the bridge to access jobs in Oregon do not have to use SR 4, which helps to maintain the capacity of the highway. The ferry promotes tourism as a one-of-a kind travel experience for visitors to the Lower Columbia region. Finally, the ferry service supports economic development. Residents of Wahkiakum County have access to good jobs in Oregon at the Georgia Pacific Mill, Astoria area and Port Westward in Clatskanie.

Public Transit

The creation of a community van service in July 2004 added another layer to the county's transportation network. "Wahkiakum on the Move" community van offers service seven days a week throughout the county on a scheduled basis, and offers connections with Naselle and Longview. The service is heavily used by students and seniors and has grown to 300 or more riders a month in just over one year. During the third quarter of 2005 the system had 338 passengers and had logged 11,702 miles.

The "Wahkiakum on the Move" community van service provides a link to the Longview area, which has several private airport shuttle services. The community van also stops at the Amtrak station in Kelso for connections to Amtrak and Greyhound. On the other end of the county the van stops in Naselle and makes a connection with Pacific Transit. Pacific Transit provides service to Astoria and north to Raymond and South Bend, with connections to Aberdeen.

The van is also available for weekend charters, taking civic groups and tourists all over the county and into the larger urban areas for cultural activities, shopping, and access to facilities such as Lower Columbia College. Van service includes access to Amtrak and Greyhound intercity bus service. The van allows senior citizens to stay in their homes in the rural areas by offering them access and eliminating the transportation barrier of dependence on others for mobility.

Studies have shown that the average benefit/cost ratio of rural transit to be approximately 3.1:1 which means that for every dollar spent on transit (typically by a transit agency), rural areas derive about 3.1 dollars in benefits. Those with the highest ratios significantly expanded access to employment facilities, fostered independent living, and provided access to critical medical services (e.g. dialysis treatment).

Transit can also assist in economic development efforts by supplying businesses in growing rural areas with access to workers, providing access to educational opportunities, and enhanced access to services.

Commuting Patterns

As is common in many rural and suburban places throughout the country, a sizeable number of people commute to work, both within and outside of Wahkiakum County. The 2000 Census collected extensive data regarding workplace flows between counties and states. The findings are outlined below.

Worker Inflow

- Of the 1,021employment opportunities within Wahkiakum County in 2000, 188 jobs (18.4%) were filled by persons commuting from other areas; 81.6% were filled by Wahkiakum County residents (833 jobs).
- Over half of commuters into the county come from Cowlitz County (100 of 188), with the next-largest segment (36 workers) commuting from neighboring Pacific County.
- Five workers commute from as far away as Maryland. Only seven entered from Oregon.

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Worker Outflow

- 697 persons lived in Wahkiakum County and commuted to jobs elsewhere at the time of the 2000 Census. This represents 45.5%--almost half—of workers surveyed.
- Almost half of those who leave the county for work go to neighboring Cowlitz County (318 jobs). Another quarter or go to nearby Oregon counties (143 persons) and almost another quarter go to neighboring Pacific County (151 persons). Other workers commute as far as Florida, New Jersey, and Alaska.

Table 2
Comparison of Commuting Patterns, 1990 - 2000

Means of Transportation to Work	1990 Census	2000 Census
Drove alone	68.1%	67.9%
Carpooled	**15.7%**	**22.9%**
Public transportation	0.2%	0.3%
Bicycle or walked	6.1%	5.0%
Motorcycle or other means	1.0%	0.3%
Worked at home	**8.9%**	**3.6%**
Travel Time to Work	**1990 Census**	**2000 Census**
Less than 5 minutes	**15.0%**	**12.9%**
5 to 9 minutes	**18.3%**	**16.7%**
10 to 19 minutes	22.3%	22.1%
20 to 29 minutes	5.8%	6.6%
30 to 44 minutes	**14.6%**	**19.1%**
45 or more minutes	24.0%	22.7%
Mean travel time to work (minutes)	25.1	28.1

Source: CTTP, Census 2000

Between 1990 and 2000 several changes occurred. More people began carpooling to work, a trend which is likely to increase with price spikes in petroleum early in the 21st century. The proportion of people who worked at home dropped considerably, by more than half. This could be due to the increasing numbers of retirees moving to the area. Commute times under ten minutes took a noticeable dip, and longer commutes of 30-44 minutes increased significantly. This could also be due to less people working from home, but appears that longer commutes and increased carpooling would correlate.

In 1993, the Cowlitz-Wahkiakum Council of Governments sponsored an economic summit. Participants from Wahkiakum County envisioned growth coming from three sources:

⇒ An increase in the number of new commuters to Cowlitz County and Oregon
⇒ Immigration of retirees
⇒ Future in-migration of telecommuters for lifestyle choice purposes

It appears as though each of these predictions is having an impact on the county thirteen years later. In 2000, there were 612 commuters to Cowlitz, Pacific and Oregon counties. Growth over the past 15 years has relied solely upon in-migration, as deaths have outnumbered births. Retirees have been a huge part of this wave, with the county now ranking in the top 8 counties for having high proportions of population over 65 years of age. Telecommuters are becoming more common, with professionals able to forego long commutes to the Puget Sound Region, and consultants able to market services and deliver work via the Internet.

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County Road System Elements

Wahkiakum County contains about 150 miles of county roads connecting residential and other land uses to the SR 4 corridor, as well as to SR 409 on Puget Island. These roads are also used for timber hauling and are impacted by heavy log trucks.

Federal Functional Classification Designation

Major county roads that are included on the state federal functional classification map are eligible to receive federal funding for improvements and are **shown in the accompanying map as a separate electronic file**. A listing by category is provided below.

Table 3

Functional Road Classification Network

Classification	Road or Section
Principal Arterials	State Route 4
Minor Arterials	None designated
Major Collectors	State Route 409
	Columbia Street
	Beaver Creek Road
	Elochoman Valley Road
	Foster Road
	Risk Road
	Little Island Road (East/West)
	Birnie Slough Road (East/West)
	Sunny Sands Road (East/West)
	Welcome Slough Road (North/South)
	Schoolhouse Road
	Ostervold Road
	Skamokawa Valley Road
	Loop Road
	Barr-Durrah Road
	Altoona-Pillar Rock Road
	Salmon Creek Road to Salmon Creek-Naselle Cut Off Road (and including Naselle Cut off Road)
Minor Collectors	Cross Dike Road
	Jacobson Road
	East Valley Road
	Middle Valley Road
	Ingalls Road
	Eden Valley Road
	East Deep River Road
	Salmon Creek Road (Pacific County to Naselle Cut Off Road)

Source: Washington State Department of Transportation

Roads are typically classified by the state and by local jurisdictions using the following general guidelines:

Principal Arterials

- Provide service to longer distance trips
- Serves major activity centers, highest traffic volume corridors, cross-town trip desires
- Land access may be limited
- Typically on 1-mile grids in developed areas
- Usually comprise 5-10% of the system miles

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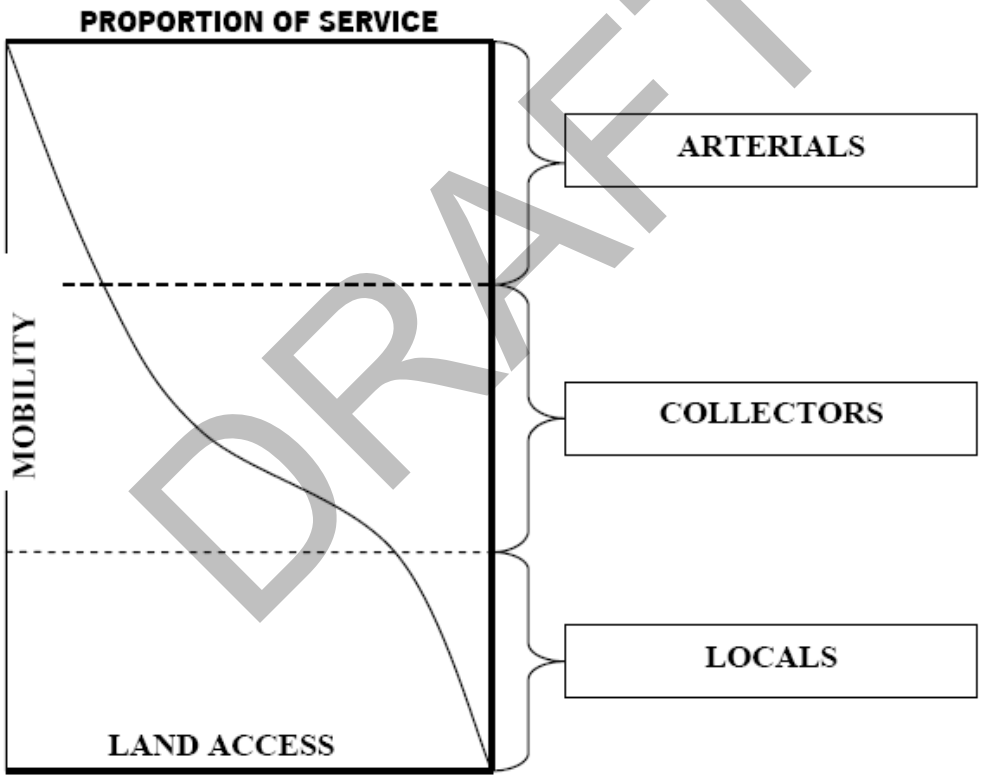
Minor Arterials
• Interconnects and augments the principal arterial system
• Serves moderate length trip desires at a somewhat lower mobility than principal arterials
• Distributes traffic to smaller geographic areas than principal arterials
• Represents 10-15% of system miles

Collectors
• Provides land access & traffic circulation within residential neighborhoods, commercial & industrial areas
• Collects traffic from local streets and channels it to arterials
• Represents 5-10% of street system
• Lowest urban class of road eligible for Federal funding

Local Streets
• Provide direct access to abutting land use
• Provide access to higher order parts of the system
• Represents 65-80% of street system

Figure 1
Roadway Function by Type



Source: Kirkland Public Works Department

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Wahkiakum County Freight and Good Transportation System

During the mid 1990's the state designated a system of freight and goods transportation highways. SR 4 and SR 409 are designated within the state system. Wahkiakum County has worked in the past with the County Road Administration Board (CRAB) to get portions of its county road system designated as freight and good roads. These are primarily linked to those county roads that experience heavy log truck traffic. This designation assists with competitive funding programs for improvements. **Designations are indicated on a map as a separate electronic file.**

Table 4

Freight & Goods Transportation System

Tonnage Class	Road or Section
T3 (300-4,000 tons)	State Route 4
	Elochoman Valley Road
T4 (100-300 tons)	State Route 409
	Salmon Creek Road (Seasonally Restricted)
T5 (over 20 in 60 days)	Skamokawa Valley Road (Seasonally Restricted)
	East Valley Road (Seasonally Restricted)
	Middle Valley Road (Seasonally Restricted)

Source: Washington State Department of Transportation

Six Year Transportation Needs

Each county in Washington develops a Six-Year Transportation Improvement Plan (TIP) which outlines needed improvements. This is a rolling list, which means that on an annual basis, projects are dropped from the previous year ("Year 1") and additional projects are added for a new "Year 6." Refer to the current Six-Year Transportation Improvement Program for more information.

While county roads do not carry the volume of state highways or freeways, statistically they experience a higher rate of accidents due to road conditions. Wahkiakum County received a federal grant of $500,000 in 2005 to carry out a number of projects through the Rural County Two-Lane Roadway Pilot Program, which is administered by WSDOT. Work to add guardrails, fix curve elevations, improve night-time visibility of road signs and expand shoulders with rock area planned in several locations:

- ⇒ Elochoman Valley Road
- ⇒ Beaver Creek Road
- ⇒ Barr-Durrah Bridge
- ⇒ Shoulder rock along edge of roads to eliminate drop-offs
- ⇒ Repaint center-line and fog-line striping along eligible county roads.

Projects included in the Washington State STIP for Wahkiakum County through the regional (SWRTPO) transportation plan include:

Table 5

Washington State Transportation Improvement Program (S.T.I.P.)
2006 - 2008

Construction Year	Road	Improvement	Estimated Cost
2007	SR 4/Kandoll Road Vicinity to Grays River Bridge	Paving	$200,000
2007	SR 4-SR 401	Roadside safety improvements	$50,000

Source: Washington State STIP

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Current Trends & Issues

Wahkiakum County's transportation network continues to support the rural character of the county. The network contains elements of the county's original transportation system, most notably the ferry Wahkiakum on Puget Island. The network has been modernized and improved for safety and capacity with the construction of passing lanes along SR 4 in the mid 1990's. There are some design and obsolescence issues with several bridges along SR 4, most evident in Grays River and Skamokawa. Built in the 1930's when log trucks, cars and recreational vehicles were much smaller, these bridges are narrow and cannot readily accommodate two large vehicles passing each other. They have no pedestrian walkways or safety pullout areas. The topography and the built landscape make the highways and county roads prone to slides along the hills and flooding in the valleys, both of which are exacerbated by years in which record rainfalls occur.

The intensity of land use, topography, and landscape determine the capacity of the highways and county roads. Wahkiakum County has remained rural in nature over the past century and the network serving the land uses is adequate for now and into the foreseeable future. The projected growth resulting from the land uses in the comprehensive plan can be accommodated on the state and county highway network. Improvements are needed to provide safer bridges and wider shoulders for bicyclists and pedestrians. These improvements support the desire to improve the quality of life for Wahkiakum County residents, as well as traveler amenities for its visitors.

Emergency & Alternative Transportation Routes

Rockslides and flooding are two relatively common occurrences within Wahkiakum County, as profiled in the *Natural Environment Element*. Several rockslides affected SR 4 for brief periods during 2005, which is typical during a wet winter. These events did not cause major disruption in travel, frequently with one lane closure of only one or two day's duration. Beaver Creek Road has served as an SR 4 detour during road closures affected Mill Creek Road to Cathlamet. The Emergency Management Department has a system of designated alternative routes that rely upon unimproved logging roads that can be deployed to address most situations.

The February 4th slide located west of Stella (in Cowlitz County) occurred during windy conditions tht followed weeks of heavy rainfall that saturated the ground. The impacted section of the highway is at mile post 50 near Bunker Hill Road. This event completely closed SR 4 to through traffic for one week, with very limited one-lane travel permitted over an extended time period. This event has generated serious disruptions to daily activities in Cowlitz and Wahkiakum county residents. Due to the location of the slide, there are no alternative back roads or logging roads that can be utilized for services. Commuters faced hours-long commutes to use the Ferry Wahkiakum or commuted to Astoria, Oregon and U.S. 30 to Longview, which is a lengthy detour. Childcare schedules, daily work commutes, medical appointments and deliveries of food, fuel, and pharmaceuticals were affected. Detours during the winter are not uncommon due to flooding of roadways. Many of the roadways have seasonal (winter) weight restrictions in place. Without a break in the unusually heavy rains during those weeks, these alternative routes may not have been feasible, effectively shutting the county off from the rest of the world.

Given the geology, topography and climate of the area, these landslide events cannot be predicted, but they can certainly be foreseen. Wahkiakum County is beginning a dialogue with surrounding governments and transportation officials to develop an alternative, emergency route between the Mill Creek area of Cowlitz County and Wahkiakum County. Replacement of the "Ferry Wahkiakum" is being explored due to its age (44 years) and the need for frequent repairs and servicing. Planned improvements to the ferry

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landing could accommodate a larger vessel. Widening of SR 409—which runs north-south from Cathlamet to the ferry landing—would allow passage of emergency vehicles during long waits for ferry service.

Road Standards

The county road system which serves residential, commercial and industrial (logging) uses is a multi-use network. Adequate design standards should encourage that the roads be safe for access to the different land uses, as well as for emergency vehicles. It is impossible for a county as small as Wahkiakum to generate the financial resources that would allow for all of the county roads to be 30-40' wide two-lane, paved arterials. Road should be brought up to or maintained to a reasonable standard consistent with the character of the use they receive. Improvements to the roadway for basic maintenance and preservation should include adequate width for cars, as well as log trucks to maneuver safely. Gravel roads which serve far-flung residential areas with little logging activity should be kept in good condition. The county currently relies on WSDOT Local Area Guidelines and the *American Association of State Highway and Transportation Officials Policy on Geometric Design of Highways and Streets* for design of roadways. These include gravel as well as paved roadways. The county's goal is to have all of its log-haul roads in good condition to cut down on the high cost of keeping them in operation. Roads with an improved base could be removed from the list of those that are seasonably weight restricted.

Private logging roads which are built to haul timber are used on an emergency basis—such as during the KM Mountain landslide—which completely blocked off access to SR 4 for months. There have been many instances where the network of logging roads provided an alternative, albeit long and circuitous route around landslides and other road closures. There is also an emergency flood route along logging roads when floods interrupt the ability to cross the Grays River Valley.

Capital facilities planning should include policies that standardize the construction and characteristics of the roads that serve the residents of the county. These standards should be based on land use densities as well as the type and character of use. A poorly built road results in a financial burden and may be a detriment to the environment if it is easily washed out and erosion is accelerated.

Current Issues

Provision of Transportation Improvements

There is an ever-increasing disparity between road costs and the revenues needed to build and maintain them. Roads are paramount in determining where development will occur. Despite the fact that private companies rent seats on airplanes, automobiles and trains, the vast majority of the transportation network is publicly funded, due to the land area and the amount of funding required. Many times, planners and local governments deal with the effects of the transportation system, rather than helping make these decisions on the front end.

State and federal transportation planning processes identify needed improvements and rank them regionally in order to determine allocation of state and federal resources. Although these funds are limited by decisions made in places away from local government, these do provide the lion's share of funding for transportation improvements. These funds can be earmarked in certain categories—e.g., expanding roadway capacity (construction, widening projects), preservation of roadways (repaving), enhancement (pedestrian access, tourism facilities, trails and cycling) as well as development of new facilities (airports) to expand travel options. Additional funds for county roads come from local taxation, and are typically used for maintaining minimum safety standards or to expand capacity of low volume roads (paving gravel roads).

Because funding can become such a constraining factor, local governments have also taken other approaches to maintaining adequate transportation systems at the local level. These approaches fall into three general categories: growth restrictions, adequate facilities, and facility limits. Tools that are typically used in each approach are outlined below.

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Table 6
Approaches to Provide Transportation Facilities

Adequate Facilities	Facility Limits
⇒ Impact Fees	⇒ Private Road Requirement
⇒ Concurrency Requirement	⇒ Public Road Acceptance Area Policy
⇒ Elevate Road Construction Standards	⇒ Higher Development Density
⇒ Improvement & Service Districts	

Source: "Roads, Growth Management, and Rural Planners of the West," Mark Reid, Western Planner Review, 2005

Impact fees require payment on a per-unit basis to address the impacts created by a development. In high growth areas, these fees do provide a reliable revenue source for improvements. Impact fee systems must meet the test of mitigation for the new problems created by development, and cannot be used to address existing deficiencies. In addition, these systems can be somewhat cumbersome to administer.

Concurrency is a requirement in Washington State for counties required to plan under the Growth Management Act. Wahkiakum County is not included in that category. Concurrency requires that developments do not decrease the current level of service within an area, including maintenance. This requirement can relate to roads, water, sewer and other public facilities. This requirement often results in developer-installed improvements in order to maintain the pre-development level of service. It is one way of attempting to pass the costs of growth on to those who generate it. Critics contend that it has deleterious effects on housing affordability, thus encouraging further sprawl. The intent is for developers to locate projects in areas adequately served with capacity for growth.

Appropriate road construction standards will reduce long- and short-term maintenance for local governments. This approach often results in less development because the costs are higher. Sound reasons for higher standards must be used to pass muster against arguments of arbitrary standards and exclusionary practices that discourage affordable housing.

Establishing improvement and service districts at the time development is approved provides a vehicle for long-term maintenance of facilities. Although this approach can be cumbersome for local governments to administer (collection and tracking assessments, etc.) it does place the burden directly on those generating the need for the facility. This approach does not offer much assistance in directing growth to appropriate areas, and can result in "exclusionary" developments that are less affordable.

Requiring private roads to be constructed to serve new development will limit long-term maintenance by local government. While there are tools to ensure that private roads will be built to standards set out by local governments, there is no mechanism to ensure that they will be properly maintained. Homeowner associations may be used for this purpose, but there are inherent weaknesses in this approach. Lack of uniform signage and maintenance standards can create problems for emergency responders.

A public road acceptance area policy is one in which the local governing body establishes a geographic boundary outside which new public roads will not be accepted by the local government. This concentrates growth in a certain area, and increases efficiency in maintenance, lowering costs. This approach can inflate land prices where the "more desirable" properties are located (those with publicly funded roadways). This approach can push development beyond the boundary as a trade-off for cheaper land. Areas within the boundary would theoretically receive higher rates of use and need more maintenance.

Source: "Roads, Growth Management, and Rural Planners of the West," Mark Reid, Western Planner Review, 2005

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Viewpoints & Public Access

Wahkiakum County is the location of one of the most famous sites along the entire Lewis and Clark Trail. Pillar Rock, south of Rosburg, is where the expedition thought they had sighted the Pacific Ocean. In 1805, the expedition believed they were viewing the Pacific Ocean, but actually they were looking at the vast mouth of the Columbia River from Pillar Rock. Access to Pillar Rock should be considered for the future, if the opportunity presents itself. Because of the historic significance of the site, it is anticipated that the county could partner with the Washington State Historical Society, Washington State Parks and the National Park System to include this site in the Lewis and Clark National and State Historic Park. With this inclusion, interpretation and construction for a better road to the site could be undertaken with public lands highways funds.

The county's Columbia River shoreline is also a part of the Lower Columbia River Water Trail, a 140 mile trail from Bonneville Dam to the mouth of the Columbia River. Adequate facilities to allow for overnight camping by kayakers on the river should be pursued and marketed. Access to the County Line Park, Cathlamet Marina, Vista Park and other sites should include good pedestrian facilities, camping, showers and other amenities.

There are several scenic viewpoints that need to be preserved and enhanced in the future. The first site is located along SR 4 east of Cathlamet. There is a small turnout in place that allows the visitor to see the entire town, the marina, Pioneer Church and other landmarks. The county should take interest in enlarging this pullout and encouraging local efforts to interpret the site. This is truly one of the great views west of I-5 along the Columbia River. Other areas along SR 4, in the eastern end of the county, should have adequate pullouts for recreational use, such as sturgeon fishing and windsurfing. These are located west of Little Cape Horn and West Cape Horn.

Privacy issues are paramount in communities throughout the county. A balance must be struck between the interests of citizens in maintaining the privacy that living in a somewhat remote, rural area provides, and the interests of visitors as well as county residents who are unable to afford property with waterfront access. One of the key draws of the county for future growth is its waterfront amenities. Providing areas for all residents, regardless of income, to enjoy the county's waterfront assets is important to maintaining a rural lifestyle. Decades ago, before the current heightened interest in private property rights, "roaming" was well tolerated. Publicly owned areas are needed in order to maintain this enjoyment of natural beauty, in order to protect private landowners from trespass and other intrusions.

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Water-Borne Transportation

The Wahkiakum Ferry on Puget Island is a unique element of the county's transportation network. Future opportunities to provide more water-borne service should not be overlooked. The Cathlamet Marina area, Vista Park/Skamokawa, Hornstra's Beach, Altoona/Pillar Rock, Brookfield, Cathlamet Town Dock and Hoikka Road all have potential to be destinations for water-borne traffic, whether it is kayaks, catamarans; motor boats, sailboats, etc. Many of these could serve as locations for "Ports of Call" for tourism activities. The county's location along the Lower Columbia River Water Trail will enhance the marketing and name recognition of the sites along the river which can be used by kayakers and other recreational boaters. Windsurfing—especially at the eastern end of the county—continues to be popular. All of these activities will require safe access from the water to the highway, access into communities and traveler amenities.

Bicycling & Hiking

Safe accommodation of bicycling and pedestrians is a key concern. Residents as well as visitors are impacted by the lack of safe bicycling and pedestrian facilities. Adequate shoulders to accommodate bicyclists along SR 4 are listed in the state's current highway systems plan. Emphasis on these shoulders is also noted in the Washington Transportation Plan. SR 4 is critical for bicycling activities, as it links I-5 to the coast and U.S. 101, bringing travelers into the region from the Seattle and Olympia areas.

State improvements SR 409 should include widening of the shoulders along the roadway to better accommodate bicyclists and pedestrians. Visitors to the region via bicycle can access Wahkiakum County from the highway side, along SR 4 and also by the Wahkiakum Ferry, via SR 409 on Puget Island. The flat terrain of Puget Island lends itself well to bicycling, not only for visitors but for area residents. As the island is more fully developed, improvements to both the state highway and county roads should encourage bicycling to become the alternative mode of transportation for island residents, young and old. Education and enforcement of speed limits will go a long way towards making the roadways friendly to bicyclists in this rural, low traffic volume area.

Bicycling and driving loops focused on the area's attractions is a key feature of the county's economic development strategy for tourism. Support services where transportation modes change are viewed as an economic development tool as well as an appropriate transportation strategy. For instance, services at the ferry landing or Elochoman Marina that include bicycling rentals and visitor services would be beneficial. Transit access to these points of mode change would increase accessibility for county residents.

Areas for equestrian and hiking trails may be located along the county's "green infrastructure", that is, along the borders of streams, wetlands, and other areas less suitable for development. Incorporating these natural features into "green infrastructure" to absorb excess rainfall and provide walking areas as an alternative to concrete sidewalks would enhance the county's rural qualities. This approach is discussed in more detail in the land use element.

Aviation

The county lacks facilities for general aviation. Public or privately-owned airports, landing strips, air taxi and float planes offer potential for economic growth. There is a residential subdivision in Skamokawa along East Valley Road that incorporates a small airstrip of 1800 feet for the use of adjacent property owners. Henderson Field is a small field that allows ultralight aircraft to land.

Residents have access to local general aviation airports in Kelso and Astoria, as well as access to Portland International Airport for domestic and international flights. Airports certified for carrier operations nearest to Cathlamet include:

- ASTORIA REGIONAL (about 34 miles; ASTORIA, OR; ID: AST)
- OLYMPIA (about 63 miles; OLYMPIA, WA; ID: OLM)
- PORTLAND INTL (about 70 miles; PORTLAND, OR; ID: PDX)

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Other public-use airports near Cathlamet include:

- VERNONIA AIRFIELD (about 27 miles; VERNONIA, OR; ID: 05S)
- KELSO-LONGVIEW (about 36 miles; KELSO, WA; ID: KLS)
- SEASIDE MUNICIPAL (about 39 miles; SEASIDE, OR; ID: 56S)

Airports certified for carrier operations near Naselle include:

- ASTORIA REGIONAL (about 16 miles; ASTORIA, OR; ID: AST)
- OLYMPIA (about 75 miles; OLYMPIA, WA; ID: OLM)
- MC MINNVILLE MUNI (about 94 miles; MC MINNVILLE, OR; ID: MMV)

Other public-use airports near Naselle include:

- PORT OF ILWACO (about 16 miles; ILWACO, WA; ID: 7W1)
- WILLAPA HARBOR (about 22 miles; SOUTH BEND/RAYMOND/, WA; ID: 2S9)
- SEASIDE MUNICIPAL (about 27 miles; SEASIDE, OR; ID: 56S)

The prevalence of fog, rain, and wind—as well as the county's steep terrain—present siting challenges for air travel. Suggested locations have included Rice Island, Puget Island, south of Beaver Creek Road, and farmland along SR 4. Future provision of air service should take into account land use planning to include adequate buffers for safe access to landing strips or facilities.

General rules for siting a new airport include:

- ❑ Minimum site size of about 200 acres
- ❑ Driving distance of 30 minutes or more from the nearest existing airport
- ❑ No significant residential densities within one mile of the site

The economic impact of an airport is estimated at about $400 per visit, per person for travel. Cargo and other uses would increase that return.

There are two basic types of airports: ***public use*** and ***private use***. Public us airports are open to the public and may be owned by private or public interests. Public-use-public owned airports qualify for State Aid Grants up to 95% with a local match of 5%. Public use-public owned airports may also qualify for Federal Aviation Administration (FAA) grants of up to 95% and State Aid match of 2.5%, with a local match of 2.5% if the airport is located within the National Plan of Integrated Airport Systems (NPIAS). Private use airports are not open to the public and may be owned by private or public interests. These airports are not eligible for state or federal funds.

The FAA Airport Classification System identifies four types of airports:

1. Commercial Service Airports are publicly-owned airports that have at least 2,500 passenger boardings each calendar year and receive scheduled passenger service. Passenger boardings refer to revenue passenger boardings on an aircraft in service in air commerce whether or not in scheduled service. Non-primary commercial service airports have at least 2,500 and no more than 10,000 passenger boardings each year, while primary airports have more than 10,000 passenger boardings per year.

2. Cargo Service Airports are airports that are served by aircraft providing air transportation of only cargo with a total annual landed weight of more than 100 million pounds. "Landed weight" refers to the weight of aircraft transporting only cargo in intrastate, interstate, and foreign air transportation. An airport may be a commercial service and a cargo service airport.

3. Reliever Airports are designated by the FAA to relieve congestion at commercial service airports and to provide improved general aviation access to the overall community. These may be publicly or privately owned.

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4. Other Airports are commonly described as Genera Aviation Airports. This is the largest single group of airports in the U.S. system. The category also includes privately owned, public-use airports that enplane 2,500 or more passengers annually and receive scheduled airline service.

The state also classifies airports according to function, e.g. commercial, regional, local, recreational, emergency, and seaplane.

Washington State Department of Transportation outlines the following steps to establish an airport:

- ⇒ Determine the purpose and need for an airport.
- ⇒ Identify possible locations that will meet state and federal regulations.
- ⇒ Identify an airport sponsor, which may be public or private. Public sponsors include towns, cities, counties or ports. Airports may also be jointly owned.
- ⇒ Check local permits required for establishing an airport.
- ⇒ Evaluate the facility in terms of "essential public facilities" as required by state law.
- ⇒ Submit a 7480-1 application to the FAA for review. The FAA conducts an airspace analysis to ensure that the proposed location will not impact other airports or aviation needs.
- ⇒ Consider transportation access, height hazards, hazardous wildlife issues and land use. All towns, cities and counties must discourage incompatible land uses through comprehensive plan policies and development regulations for all public use airports, whether privately or publicly owned. Technical assistance is available from WSDOT upon request.

During the 2005 legislative session ESSB 5121 was adopted, which now requires a statewide facility and capacity assessment and market forecast and analysis. The new law charges WSDOT with assessing the aviation facilities in the state for both general and commercial aviation, identifying the market needs and making recommendations to a governor-appointed advisory committee on how to best meet those needs by the year 2030. Preliminary indications forecast a gap in Southwest Washington.

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Land Use Element

Introduction

Land use planning can be thought of weaving a fabric that will bring an attractive result—and one that will "wear well." Mountains, rivers, and streets form a framework for houses and buildings that dot the landscape, creating private and public spaces in pleasing patterns.

Wahkiakum County Values & Concerns

- ⇒ **Maintaining the rural character of the county (rural qualities and rural lifestyles)**
- ⇒ **Stimulating economic growth (diversification and value-added resource industries)**
- ⇒ **Securing family wage jobs, retaining our young people and attracting young families**
- ⇒ **Keeping taxes reasonable by developing a sound tax base**
- ⇒ **Maintaining a strong volunteer base (firefighters, emergency medical, granges, etc)**
- ⇒ **Provision of adequate public services and infrastructure**
- ⇒ **Addressing environmental issues (flooding, erosion, siltation, landslides, etc.)**

Many of these goals are economic in nature. You cannot attract young people and families without good jobs. You cannot achieve a reasonable tax structure without a balanced tax base. Volunteers are not available if they must commute out of the county to earn a living. Public services and infrastructure become prohibitively expensive without an adequate tax base. Many environmental issues are big ticket items that either rely on outside funding or promote appropriate economic development.

Only one value does not rely solely on economics: ***Maintaining the rural character of the county.***

In this respect, maintaining rural character supersedes all of the other values. It is **why** people chose to live or stay in Wahkiakum County. Growth and development that accomplishes all of the other goals will fail if it destroys the rural qualities that Wahkiakum County residents value so highly.

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GUIDING PRINCIPLES

Cultivate economic prosperity

- Promote value-added industries related to the natural resource base.
- Establish programs and services needed to create a vibrant tourism sector that builds upon natural, historical, and cultural community assets.
- Assist entrepreneurs and existing businesses with the tools needed to develop their businesses, diversify from the natural resource base, and reduce sales "leakage" to surrounding communities.
- Improve the readiness of the local workforce for future employment opportunities.
- Create functional communities by encouraging a mix of land uses (residential, workplace, commercial, schools, recreation).
- Develop strong commercial districts serving local communities.

Promote distinctive, attractive communities with a strong sense of place

- Encourage development types that respect and reflect local character (e.g., the natural setting, historical development patterns, architectural traditions, etc).
- Conserve scenic, environmental, historic and cultural resources.
- Encourage a range of housing opportunities and choices.
- Promote growth and re-development within existing communities.
- Define communities by creating or maintaining a clear "edge" between town, village and countryside.

Use existing natural, historical, and social community assets to their best advantage

- Maintain an integrated network of green infrastructure (wild, working and recreational lands; natural buffers, etc.).
- Encourage conservation of farmland, woodlands, scenic views and other natural areas
- Encourage preservation of historical and cultural assets
- Limit "gray" infrastructure in favor of linked networks of "green" infrastructure (e.g. stream corridors that serve as wildlife habitat, stormwater overflow, trail networks, recreational opportunities).
- Reduce impacts of development (storm runoff, water quality, open space) with tools such as low-impact development, green (vs. gray) infrastructure, and open space design.

Develop methods to preserve rural character

- Explore market-based approaches to land use and resource land management
  - Community Forestry/Ag Bonds
  - Open Space Design
  - Land pooling
- Green infrastructure
  - Link key areas such as resource lands, natural features, recreation spots, trail networks
  - Reduce costs of infrastructure development and maintenance
  - Protect "critical areas" required for protective measures (frequently flooded areas, steep slopes, wetlands, etc.)

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Existing Land Use Patterns.

Wahkiakum County is rich in working resource lands that are dominated by138,573 acres in active forest uses, with private timber representing 60.1% of the county's land area, and state timber trust lands 21.8%. Agriculture and Forestry together represents 89.3%.of the county's land base Residential uses represent almost one percent of land uses, at 0.9%. Commercial and industrial land uses consume so little land that these proportions are not significant. Public lands cover 3.8% of the county land area—excluding state timber trust lands and including the Julia Butler Hansen Wildlife Refuge.

Table 1

Wahkiakum County Existing Land Use

Land Use	Acreage
Farms	12,386
Private Forests (73.4%)	101,666
State Forest (26.6%)	36,907
Resource Uses	150,959
Commercial	188
Industrial	74
Residential	1,523
Cathlamet	323
Developed	2,108
Public	6,414
Utility	1,003
Undeveloped	8,668
Total	169,152

Source: CWCOG

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Note: The following maps are shown in a separate electronic file:

- **Existing Land Use**
- **Forest Ownership**
- **Prime Agricultural Soils and Ag Lands**
- **Mineral Resource Lands**
- **Future Land Use Recommendation**

The Forest Ownership and Prime Agricultural Soils maps illustrate private forest land ownership and the extent of resource land use within Wahkiakum County. Taken together, agricultural and forest uses comprise 89% of all land uses. Some conversion of these lands to other uses is occurring to generate income and reflecting changes in resource management. The basis of the economic development strategy was to explore alternative means of continued resource use, primarily through value-added production, but also utilizing flexible networks, cooperative marketing and distribution, and other tools to increase viability and profitability. The idea is to reduce the export of raw product and increase the export of value-added products.

The development of the future land use map involved examination of alternative development techniques and other approaches that could be employed to minimize the impact of growth on resource lands.

Land uses are not designated in locations where significant mineral rights are known. One exception is the Beaver Creek Road area, where housing has been developed over lands with mineral rights. The locations of areas where the Department of Natural Resources retains mineral rights are shown in the attached file.

Table 2

Comprehensive Plan Growth Projections by Planning Area

	Puget Island	Elochoman	Skamokawa	West End	Total
POPULATION					
2000 Population	798	1,200	425	836	3,259
+ Cathlamet		565			3,824
2025 Population Project @ 1.5%	1,158	1,741	617	1,213	4,729
+ Cathlamet @ 1.3%		780			5,509
Population Increase	360	541	192	377	1,470
+ Cathlamet		215			1,685
HOUSEHOLDS					
2000 Households	332	470	164	337	1,307
+ Cathlamet		246			1,553
2000 Average Household Size	2.4	2.53	2.59	2.48	2.42
Cathlamet		2.06			
2025 Households	482	684	238	489	1,893
+ Cathlamet		350			2,243
HOUSING UNITS					
Additional Units/ Households	150	214	74	152	590
+ Cathlamet		104			694
Number of New Units Needed, @ 5% Vacancy Rate	158	225	78	160	620
+ Cathlamet		109			729
Maximum Residential Units in Designated Growth Areas	377	1.092	176	985	2,630

Source: Cowlitz-Wahkiakum Council of Governments

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Based on the anticipated growth rate, approximately 590 new housing units would be needed to serve the growing population. When growth in the Town of Cathlamet is factored in another 104 units would be added, for a total need of 694 housing units. A 5% vacancy rate was selected to allow for a healthy market variation. Higher rates indicate an excess of housing, while lower vacancy rates indicate a shortage of available housing. Although there are a significant number of vacant housing units on the West End, by and large these units have been vacant for extended periods, resulting in the potential for significant structural deterioration. For this reason, these units are not deducted from the number of new units needed to accommodate population growth.

The last column shows how many homes could be accommodated within each designated residential growth area over the next 20 years or more. This is considerably more than the number of units that is anticipated, and represents development at the smallest lot sizes recommended in each range. (See

"Future Land Use Classifications," below.) Similarly, one could accommodate about half that number of units (1,315 houses) using the higher end of the range, that represents larger lot sizes and lower densities.

Recommended Future Land Use Classifications

The categories and density ranges below are recommended for the Future Land Use Map through the year 2025. This range of uses provides for resource land conservation as well as residential growth. No private forest lands are converted to residential use under this recommendation, although some prime agricultural soils (not necessarily in use as farms) are converted to housing..

Ag/Resource/Conservation **20+ acres**

Consists of active farms, prime ag soils, wetland areas; farm income does not have to be documented to receive agricultural tax exemption for 20+ acres.

Forest Resource **20+ acres**

Includes forest lands for the growing and harvesting of trees and those uses which are directly related to timber management or recreational uses which do not conflict with three production and harvesting.

Rural Residential **2.5 - 20 acres**

Land suitable for residential development at rural densities, or which has been divided into 5-10 acre parcels, and/or which presents some environmental constraints

Medium Density **1 – 2.5 acres**

Land suited for moderate densities, or located near major roadways, or land that has been divided into 1-2.5 acre parcels.

High Density **Less than 1 acre**

Land suited for higher residential densities; land in high demand due to amenities such as waterfront; land located in close proximity to utilities; land previously subdivided into small lots.

Activity Centers **Less than 1 acre; Mixed Use**

Land suited for high densities, active recreation, and commercial or industrial uses due to convenient highway access, presence of infrastructure, absence of limiting environmental features, and/or historical development patterns.

Most activity centers may include high density residential uses, except for those that are oriented to tourism and recreation.

Activity Center Descriptions:

- Hoikka Road – Tourism/Recreation
- Wainamo Road – Tourism/Recreation
- Deep River – Commercial/Tourism

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- SR 4 & Miller Point Road – Commercial/Industrial/Recreation
- Seal Road to Kandoll Road - Commercial/light industrial areas
- Altoona-Pillar Rock Road & SR 4 – Commercial/High Density Residential
- Grays River –Commercial/Tourism
- Skamokawa – Commercial/Light Industrial/Tourism/Recreation/High Density Residential
- Beaver Creek Road – Recreation
- SR 4 & Elochoman Valley Road – Industrial.
- SR 409 & Welcome Slough – Commercial/Tourism/High Density Residential
- SR 409 & Ferry Landing – Commercial/Tourism
- South Welcome Slough – Mixed Commercial/Tourism/High Density Residential

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Planning Area Demographic Comparisons

	Grays River	Deep River	Rosburg Pillar Rock	West End Total	Skamokawa	Elochoman	Puget Island
POPULATION							
2000 Population	245	196	395	836	425	1,188	798
TREND	Unknown	Unknown	Unknown	Down	Up	UP	Up
Percent 65 & Over Years of Age	12.2	14.3	17.7	15.3	10.8	20.0	18.4
1990	n/a	n/a	n/a	16.0	19.3	18.9	19.5
TREND				Down	**DOWN**	Up	Down
Percent Under 45 Years of Age	n/a	n/a	n/a	51.9	59.3	53.0	54.3
1990	n/a	n/a	n/a	61.2	62.2	54.9	64.2
TREND				**DOWN**	**DOWN**	Down	**DOWN**
Household Size	2.43	2.65	2.44	2.48	2.59	2.29	2.4
TREND				**DOWN**	Same	**Up**	**DOWN**
2000 Households	101	74	162	337	164	470	332
HOUSING							
# Housing Units	113	88	203	404	202	505	404
Vacancy Rate	10.6%	15.9%	20.2%	16.6%	7.9%	10.1%	17.8%
Non-Seasonal Vacancy Rate	8.2%	10.8%	16.1%	12.7%	3.6%	unknown	7.0%
Seasonal Units	3	5	10	18	9	unknown	47
Average Home Value	$110,000	$119,400*	$125,700	$105,800	$86,300	$142,300*	$190,400
MIGRATION							
Different House, 1995	40.6%	43.2%*	43.6%	39.7%	30.9%	41.9%	31.5%
Different County	**87.9%**	**67.4%***	**73.0%**	79.7%	57.4%	57.6%	**73.8%**
Different State	25.0%	27.2%*	**45.7%**	41.4%	**0.0%**	25.0%	**52.5%**

*Calculated by zip code
n/a = data not available

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Plan Implementation Tools

Material below excerpted from: ""Common Questions: PLANNING AND ZONING TECHNIQUES FOR PROTECTING QUALITY OF LIFE" by Nan Stolzenberg, AICP.

What can a community do to protect its quality of life and its resources?

There are a variety of tools and techniques that can be put to work in a community to maintain or enhance quality of life and environmental resources. The options encompass regulatory, non-regulatory, and administrative measures. Like many other complex land use problems, it is unlikely that only one technique will adequately protect environmental resources or meet the needs of your community. Rather, a combination of techniques should be carefully evaluated and implemented to meet the environmental and political needs of your area. This booklet outlines regulatory, non-regulatory, and administrative planning options that a community can use to protect these resources.

What policy or administrative tools can be used to protect resources in a community?

Comprehensive Plans: Comprehensive plans help your community understand and plan for its future needs. It is a set of policy and goal statements that provide a roadmap for the community to follow. A comprehensive plan helps your community to determine the kinds of growth that is desired, as well as identifies important natural resources to protect. The New York Planning Federation has outlined the following benefits of preparing a comprehensive plan: 1) to attract the right future and help avoid the wrong future, 2) to establish a community vision, 3) to ensure economic stability and predictability, 4) to protect important natural and cultural resources, 5) to provide direction to other agencies, 6) to avoid surprises by understanding your assets and liabilities, 7) to improve access to government and non-government assistance, and 8) to back up your land use tools. In short, your community can have a positive influence on water, wildlife, aesthetics, and other important resources that contribute to quality of life by adopting policies that will guide the activity and actions of public and private land uses.

Building Inspection and Zoning Enforcement: Building inspectors and zoning code officers usually have special significance over the manner in which development occurs in a community. Decisions made by these local officials can positively or negatively impact important resources. Local building inspectors and code enforcement officers can greatly assist in efforts to protect natural resources and they should be trained so that they understand local, state, and even federal laws relating to resource protection. They should have a clear understanding of the local comprehensive plan, other local policies, and decisions made by planning and zoning boards. Most important, they can be directed by local legislative boards to rigorously enforce local laws protecting important resources. Additionally, local legislative boards can direct inspectors and code enforcement officers to ensure that the appropriate Best Management Practices (BMPs) are implemented as needed. BMPs can be required or voluntary and are specific management techniques that protect important resources.

Implement SEPA: The State Environmental Protection Act (SEPA) is a state law that mandates environmental review of certain actions. Local communities can adopt policies and procedures to ensure full implementation of SEPA. It is an important tool in resource protection because it creates a process by which decision-makers at the local level can identify, measure, interpret and mitigate the potential impacts of an action on the environment. The law emphasizes the importance of protecting the natural environment, and requires the consideration of environmental factors along with social and economic considerations when land use decisions are being made.

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What regulatory techniques are available to communities?

Zoning is a widely used technique for controlling land uses and growth in a community. Traditionally, zoning has meant the separation of uses into sections or districts. Zoning also states allowable densities for development and specific requirements for setbacks, road frontage, and lot sizes. This type of zoning is common in many areas. However, communities should expand their understanding and use of zoning to include several newer techniques such as performance and incentive zoning. Performance zoning pays less attention to regulating uses and more attention regulating the impact a use may have on the community and the environment. Performance zoning gives more flexibility, but at the same time, demands that new development meets certain performance criteria set by the community. Incentive zoning offers developers various bonuses, usually in the form of increased density, in exchange for providing something the community feels is in its best interest. Incentive zoning has been used to protect stream corridors, open space, recreational areas, and other environmentally important locations.

Various zoning techniques can be used. They include:

Large Lot Zoning: A minimum lot size is set (usually 40 to 160 acres) with one residence per lot allowed. Lot sizes in this technique vary tremendously, and can range from 10 to 700 acres. Lot sizes of three to five acres are not considered large lot zoning. If parcels are in excess of 40 acres, this technique can better protect larger parcels while allowing some development and flexibility. The larger the lot size, the lower the overall population density. Lower densities are desirable for environmentally sensitive areas. The disadvantage of this technique is that density standards or minimum lot sizes must not be too small (parcels become too small to protect natural resources) or too large (unlikely to gain political support). Small minimum lot size increases consumption of land, land speculation and leapfrog development. This technique has high risk of creating low density urban sprawl spread across the landscape and has not been very successful at protection natural resources unless the lots are quite large.

Quarter/Quarter Zoning: This is a variation of large lot zoning. The name refers to 1/4 of 1/4 of 640 acres, or about 40 acres. This is roughly equal to a 1/4 of 1/4 section of a United States Geographical Service topographic quadrangle. It is a fairly straightforward technique, with each landowner being entitled to one buildable lot per 40 acres of farmland. Once the entitled lots have been built, the entitlement for the entire parcel is utilized. Usually, performance standards for setbacks, septic, and road access are required as well. The one buildable lot is one acre in size. This is more restrictive than large lot zoning and results in densities far less than 1 Dwelling Unit (DU) per 40 acres. It is designed to maintain large tracts of land. However, this technique cannot be applied everywhere. It has had most success in rural areas showing moderate growth pressure. It can only work where ownership of large parcels is by few individuals (i.e., this would not work in areas with heavily fractured ownership). It is often used as a tool where farmland protection is the goal; however, development may be pushed onto more environmentally sensitive lands.

Sliding Scale Zoning: This technique allows each landowner a certain number of buildable lots based upon the size of the parcel. The number of potential buildable lots decreases as the parcel increases in size. Thus, tract size governs density. Smaller tracts are allowed to have higher densities than larger ones. Both minimum and maximum lot sizes are set (usually one and two acres, respectfully). Sliding scale zoning can be coupled with standards that restrict development to the least productive soils or restrict development on environmentally sensitive lands such as steep slopes. These standards help direct the location of development to protect important natural resources. Sliding scale zoning encourages cluster development, which splits smaller parcels further to direct growth onto already fragmented land. This leaves larger, undivided land undeveloped, it directs growth to smaller, already fragmented parcels, and may create affordable housing. The main advantage of sliding scale zoning is limited subdivision of environmentally sensitive and prime agricultural lands. Farmers and large landowners have supported it but sliding scale zoning can meet the needs of small landowners too. The disadvantage is that it can be rezoned, like other zoning techniques. This is especially significant after development allotments are used. When this happens, landowners may pressure local governments for more lots. It also requires more administration and ongoing monitoring.

Open Space Zoning: This technique uses clustering and other creative designs of building lots to permanently retain open space. Clustering of buildings is heavily relied upon because less land is consumed. There is much

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variation in use of this technique and many communities throughout the northeast have incorporated open space zoning.

One variation mandates Open Space Development Design, or Conservation Subdivisions. Here, a community can designate a district where new subdivision development is not permitted to consume more than a certain percentage (often 50%) of any parcel. The remaining land is permanently restricted and further subdivision is not allowed.

Some regulations have a sliding scale for setting aside open space. The sliding scale allows the gross density to rise only if the net area consumed by development is reduced. Thus, as more open space is preserved, the number of lots can increase, but the maximum lot size decreases.

Open space zoning implemented through an overlay district, tied to specific environmentally sensitive areas, is another variation. It allows variable lot sizes and land uses, retains open space, recreational areas, scenic areas, and environmentally sensitive areas and preserves prime farmlands. It can also promote affordable housing because the smaller lot sizes require fewer roads, utilities and other infrastructure, reducing the costs of development. However, this technique requires more effort to create and implement properly and unless open space is permanently set aside through a conservation easement, rezoning can erode open space and protected lands.

Contract or Conditional Zoning: A special use permit approach, contract zoning places conditions on certain uses based upon certain standards. Special permits are usually given if the proposed use is consistent with the zone. Standards can be built in to manage land use compatibility, environmental protection, and public service costs.

Planned Unit Developments: A Planned Unit Development, or PUD, allows a combination of housing types along with open space, agricultural, recreational, commercial, or professional uses. It is grounded on the basis of incentives and often uses clustering. PUDs are flexible, allow a mixture of uses, and foster negotiations between the municipality and the developer. When implemented, PUDs allow increased review powers, and offer local governments opportunities to assemble adequate amounts of land to protect resources. PUDs also allow municipalities greater control over the timing and sequence of development. Because the developer saves in individual lot and infrastructure costs, PUDs require that these savings pass to the municipality as preserved open land. Thus, a PUD can encourage the creation of self-sustaining amenities such as agricultural, open space, and recreational lands.

Overlay Districts: A resource protection overlay district can direct development away from sensitive or environmentally important lands. Overlays are commonly used to increase protection of specific stream, scenic, watershed, or other sensitive lands. It is a set of regulations that are in addition to the base zoning district and is usually applied to specific locations within a community. Open space development design and other standards protecting resources can be incorporated into an overlay district. Techniques such as conservation subdivisions, buffer strips, and numerous performance standards are usually included in overlay regulations. Overlay districts are often more politically acceptable because it is not a question of **if** an area can be developed, but rather **how**. The underlying densities are not changed. They are frequently used to maintain rural character and protect resources such as streams, wetlands, aquifers, watersheds, etc.

Are there other regulatory techniques available that are not zoning?

Yes. There are several other useful techniques. They include single purpose ordinances such as floodplain regulations; watershed rules and regulations; stormwater, erosion, and sedimentation control; Best Management Practices (BMPs); site plan review; building envelopes; buffer strips; and subdivision regulations.

Best Management Practices: Preventive and remedial land conservation practices are often called Best Management Practices. They are used to protect and conserve streams and other water bodies, often by

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controlling nonpoint sources of pollution. There are many references and resources on best management practices for development, farming, and forestry.

Single Purpose Ordinances: Many communities that have no zoning adopt a variety of single purpose ordinances to protect resources. Floodplain regulations designate flood-prone areas and limit their uses to those compatible with the degree of risk associated. These may be very important because flood insurance is only available to landowners subjected to local floodplain regulations. Watershed rules and regulations lay out specific requirements and standards that must be met in a designated watershed to protect water quality and quantity. Stormwater, erosion, and sedimentation control can also be single purpose ordinances to ensure that activities do not pollute waterways and wetlands.

Site Plan Review: Site plan review is a process that can be used with or without zoning to evaluate the potential impact a development has on a community. The evaluation comes in the form of reviewing and permitting the development's intended design, arrangement, and land use as well as how well the proposal meets the specific standards and criteria of the community. Site plan review is an important tool that helps a community understand the physical, social, and economic effects of a proposed development. Commercial, retail, industrial and large residential developments typically undergo a site plan review that is administered by local planning boards. Site plan review results in a proposal's denial, approval, or approval with modifications.

Building Envelopes: Building envelopes are defined as that portion of a lot located within the minimum prescribed front, rear, and side yard setbacks. As lot size increases, the percentage of a lot within a building envelope increases. In order to protect important community resources, there is no reason to permit a development. Flexible siting of reduced building envelopes can protect development that would allow for disturbance to take place within a large area of a lot. Thus, a community can narrowly define building envelopes and the most suitable areas for development in their subdivision ordinances. Areas beyond these reduced building envelopes should be restricted against wetlands, steep slopes, scenic areas, or other resources that need not be disturbed.

Subdivision Regulations: Subdivision regulations lay out how the community wants development to occur. It can fashion development in specific ways and regulates private land use to meet the broader goals of the public interest. Subdivision regulations often include requirements to protect wetlands and floodplains, prescribe how and when open space or recreational lands must be set aside, and set standards for lot layout.

Buffer Strips: Buffer strips are a barrier between conflicting land uses or between development and important community resources. Located at the edge or boundary between two uses, a "green" buffer can reduce conflicts and protect sensitive lands from the negative impacts of development. Buffers are usually areas of vegetation, but can also be landscaped berms. Buffer strips along streams and wetland boundaries are common.

What non-regulatory mechanisms can a community use to protect resources and preserve its quality of life?

It is important to keep in mind that in most communities, environmental resources, including aesthetic and historic resources, contribute greatly to the quality of life. When certain regulatory mechanisms are not available or adequate enough to provide resource protection, many communities have turned to mechanisms such as conservation easements, the purchase, transfer or donation of development rights, and the outright purchases of important lands.

Conservation Easements: Many state and local governments and private land trusts acquire conservation easements (development rights) on properties to preserve land. This requires legally splitting the development rights of a property from other property rights and held so that development is prevented. All conservation easements are voluntary and may be permanent or short-term. Land with a conservation easement can be sold or transferred to others, but the land use is limited by the restrictions of the easement. For example, a parcel of land may have a conservation easement that allows one single-family residence to be built, with the rest remaining as open space.

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Voluntary agreements are negotiated between the landowner and the government or land trust. Those entities holding a conservation easement are responsible for monitoring and enforcing the provisions of the easement. The terms of conservation easements are flexible and specific to each property. Some allow development on a parcel but it usually is limited to existing buildings. Others allow for some use such as agricultural or recreational. Still others might restrict agricultural practices if environmental concerns exist. Land with a conservation easement remains privately owned and managed. It also remains on the tax rolls. Only donations of perpetual easements are considered a tax-deductible charitable contribution. Limited term easements are not tax-deductible. The value of a development right is generally determined based on the difference between the land's value for development and its present non-developed value. According to federal law, easements donated for conservation purposes must provide "significant public benefit." Benefits include recreational, ecological, open space, and historical.

A donation of a conservation easement to a government or nonprofit organization allows the owner to realize tax benefits. The advantages of donated conservation easements include: may make it more acceptable than regulatory programs due to the voluntary nature; potential estate, income and capital gains tax relief; a creative, flexible technique meeting landowner needs; permanence and easier administration. However, the voluntary nature means that a landowner may not choose to donate.

Purchase of Development Rights: When a conservation easement is bought, it is called a PDR, or purchase of development rights. Some state and local governments and many private land trusts have programs established to purchase development rights. PDR programs are all voluntary and once a participant sells the development rights of the land, it is permanently protected from land use conversion. This type of land transaction protects open space, recreational, ecological, agricultural, or historic resources. Nine states have established PDR programs and voters in many of these states, including New York, have approved tax expenditures for purchasing conservation easements.

Purchased conservation easements can help a landowner turn a fixed land asset into a liquid cash asset that can be reinvested or used to pay off debt. PDRs will protect resources from future development and may reduce property and estate taxes. Disadvantages include the expense, possible loss of taxable property, lack of landowner participation, and potentially cumbersome administration.

Transfer of Development Rights (TDR): Transfer of Development Rights transfers development to another part of a community where development and infrastructure may already exist. The goal of a TDR is to direct growth to an already developed, or developing, area. New growth directed to urban lands can make development less costly and it can preserve land at no direct cost to taxpayers. TDRs direct development to underutilized space in urban or suburban areas. Like PDRs, protected lands remain in private hands and on municipal tax roles. To be effective, lands are identified as eligible for a development rights transfer and ineligible for conversion to new uses. Landowners of these properties (senders) sell development rights to developers in urban areas (receiver). A local government holds the rights transferred and the developer in the receiving area obtains a density bonus. This density bonus allows a higher density than the current zoning permits and higher densities mean an increase in developer profits. The only public cost is for program administration.

TDR programs can be either mandatory or voluntary, but most are voluntary. TDRs allow the preservation of farmland or environmentally sensitive lands while simultaneously providing landowners compensation. They can be tailored to meet community land use goals, help implement local comprehensive plans and zoning ordinances, and they can provide permanent land protection. TDRs also allow efficient use of urban land. However, there may be a lack of willing buyers at the time there is a willing seller, there may not be a demand for higher density development in receiving areas, and TDRs are often complex to administer.

Outright Land Purchases or Donations: Outright public purchases are efficient mechanisms to protect land. Purchases can be accomplished through a conservation sale, a fee-simple acquisition, or a land donation.

A **conservation sale** involves a landowner selling their property at less than full market value to a public agency or private land trust. The difference between this value and the market price is considered a charitable gift.

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Landowners receive both monetary compensation and tax benefits. The buyer can prevent future development on the property by placing a conservation easement on it.

A **fee-simple acquisition** is an outright purchase of the land. Once purchased, the land can be leased or sold back into private ownership with attached conservation easements. Governments in New York can purchase land on a voluntary basis on the authority of the General Municipal Law 247. Local governments can also acquire property by eminent domain to protect the general health and welfare of its population.

A **land donation** occurs when landowners donate their property to a public agency or private not-for-profit organization. As with donated development rights, parcel donations are considered charitable allowing a tax benefit. Landowners who donate land often retain the right to use the land for a specified length of time, usually until death, and they may also request a conservation easement protecting the land from *development.*

Excerpted from: "Common Questions: PLANNING AND ZONING TECHNIQUES FOR PROTECTING QUALITY OF LIFE: Resource Protection Options for Communities' by Nan Stolzenberg, AICP.

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Appendix A - Future Land Use Designation Method and Tools

Method Used to Designated Future Land Uses

The Citizen Steering Committee conducted an exhaustive analysis to identify areas suitable for accommodating future growth. An outline of these steps includes:

1. Identify environmentally sensitive areas that are less suitable for development. National, state and local geographic databases were used to identify:
   - Geologic hazards
   - Wetlands
   - Flood-prone areas
   - Wildlife habitats & sensitive species
   - Prime agricultural Soils
   - Commercial forestland
   - Mineral resources

2. Identify areas where soils are more suited for rural development (e.g. on-site waste disposal), AND which do not contain large expanses of environmentally sensitive areas OR large areas devoted resource production (forestry and agriculture).

3. Develop a series of potential growth scenarios and model the effects of these densities and patterns for public input. Five basic "build-out" scenarios were developed for each planning area:

   - 1984 Comprehensive Plan build-out at one dwelling per acre, with no conversion of agricultural resource lands for housing
   - 1984 Comprehensive Plan build-out on 1 acre lots, including conversion of agricultural lands to housing
   - 1984 Comprehensive Plan build-out at 2 dwellings per acre, including conversion of agricultural lands to housing
   - "Mini-farms" on 2.5 acre building lots
   - "Hobby farms" on 5 acre building lots
   - Designated development areas with varying densities, depending on site characteristics

4. Project expected population growth through the 20-year "plan horizon" for the county as a whole, and by planning area. The rate of growth selected for this purpose is a 1.5% annual growth rate. This rate reflects actual population growth over the past 15 years as well as building permit growth over the past 5 years. Over the next 20 years, selection of a 1.5% growth rate represents an "upper bounds" limit for designating growth areas and providing needed services and facilities.

5. Compare the capacity of the watershed to accommodate projected population growth (for domestic wells), OR compare the capacity of existing and planned water/sewer infrastructure to address projected population growth.

6. Identify categories for future land use designations that reflect the county's rural qualities, and which can be implemented using an array of approaches at both the community and county levels.

7. Incorporate future land use designations from the Cathlamet Comprehensive Plan.

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8. Assign residential densities that fit with the character of the area. Density can be used both as a tool to protect rural character, as well as a factor to project the number of future households that each planning area could accommodate.

9. Designate mixed use “activity centers” throughout the county where they:
   - offer convenient access to the arterial transportation network
   - serve nearby residential areas
   - provide local opportunities for employment within each community.

10. Re-evaluate the capacity of the infrastructure (e.g., transportation, water, sewer) to serve designated future land uses.

11. Re-evaluate land use designations to ensure that impacts and limitations to resource uses are minimized.

12. Ensure that supplemental land area is designated to serve projected population growth, e.g. that there is more land designated than the minimum needed, to avoid scarcity and promote affordability.

Note: The future land use map recommendation is shown in a separate electronic file.

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Land Use Tools & Approaches to Achieve the Rural Vision

Tool #1: Community Forestry

Community Forestry is an alternative approach to forest ownership and management to accomplish more than simply management of a long-term asset for financial gain. This approach is designed to achieve specific community values, such as public recreational access, watershed protection, and stabilizing local employment opportunities. It involves creating a private, non-profit entity with a board appointed by local government to represent diverse community interests. The board's duty is to develop a resource management plan that meets financial and community objectives.

A sound management plan is developed that will generate adequate revenues to retire the costs of acquiring the timberlands. The management plan also includes other activities—such as public access for hiking, recreation, and hunting—which are the public purposes that allow the use of tax-exempt bond financing for the initial land purchase. This typically means that the rate of harvest is lower than conventional forestry practices—but adequate to retire debt—in order to accomplish other community objectives, such as recreation and watershed protection. The use of tax-exempt bonds to acquire the resource has the effect of lowering the costs that must be recouped through harvest revenues, which in turn provides the flexibility to accommodate other activities, such as public recreation on lands set aside and managed for that purpose.

A management plan may include conventional softwood timber management, plantings of alternative or niche species for high-value specialty products, public access and recreation, or any combination of desired activities. Any excess revenues can be used to retire the debt early or to fund other projects of interest. One possibility might be manufacture of value-added forest products, which would increase the local tax base. The resource lands are owned outright by the community entity once the original debt is retired. Revenues after that point can be used for funding a variety of projects or activities of local importance.

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How Community Forestry and Agriculture Bonds Work

- Nonprofit or public instrumentality formed
- Discussions with willing landowner
- Resource management plan that:
  - exceeds state and federal environmental law
  - includes a permanent conservation easement held by a third party
- Appropriate governmental entity *on behalf of the buyer* issues bonds to investors
- Bond proceeds are used by buyer to purchase lands from the landowner
- Timber harvested to service the debt *in accordance with the plan*
- When the bonds are paid off, the buyer operates in any matter that complies with their community & conservation purposes

Tool #2: Rural Cluster Development

Rural Cluster Development is also known as "conservation subdivision design" and "open space development." This market-friendly concept improves upon the conventional "clustered" subdivision. While clustered development is generally encouraged in order to create open space for the enjoyment of all, it often uses fragments of "leftover land" that is difficult to develop or too small to meet local codes.

The benefit of using open space design is that the open space created through this approach is of much higher quality, which increases property values and enhances marketability. Conventional suburban subdivisions are based upon the premise that large lots create higher property values. Market studies of open space developments built across the U.S. have shown that lot size is much less of a factor in property value than once thought. A small lot which is located near high quality open space that the property owner is not obligated to maintain frequently sells for as much—if not more—than the larger lot in the conventional "checkerboard" subdivision development.

This high quality open space helps maintain the rural character of the area. It also provides an interconnected network of green space (sometimes called "green infrastructure") that accommodates environmental values, such as wildlife habitat and migration corridors, stream buffers, and flood zone protection. Open space can also accommodate human values, such as recreation (pedestrian & bridle trails, wildlife watching) as well as economic efficiency (low cost stormwater management, shared areas for utilities). This is accomplished by reversing the typical sequence of activities in the land development process. That process is described below.

1. Identify "primary" and "secondary" conservation areas on the site.
Primary conservation areas include environmentally sensitive areas, such as wetlands and steep slopes, which local governments are required to protect. These areas become the open space components of the project. Secondary conservation areas include scenic, cultural, or historic resources that give a community its unique qualities. These secondary features can often be incorporated into the development, e.g., converting an old farmhouse or barn to a community center, or making landmark trees the focus of other site improvements.

2. Identify the development area, and locate home sites for maximum open space and privacy.
This step helps maximize financial return on the property. It usually does not result in fewer lots than the conventional approach. Privacy is enhanced because homes are not located directly across from each other. In conventional development, the sequence is to divide the property into lots, and then lay out streets to provide lot access—most often involving "double-loaded" streets, with lots facing each other.

3. Align infrastructure (streets and trails) to serve the home sites
Connect the homes with a network of streets and trails leading to the open space. This approach usually results in several features that lower development costs, e.g. street lengths that are shorter (and therefore cheaper) than those found in conventional developments.

4. Draw in the lot lines.
By doing this step last, the preceding steps have provided for high-quality open space that can be managed in common or private ownership. This approach can work with or without conventional zoning. It can work at the town, village or rural level on small or large tracts of land or for individual home sites. Advantages of this approach include:

- No stringent, pre-set requirements as found in conventional zoning, e.g. does not have minimum lot sizes, building setbacks, minimum yard areas or prohibited uses. A flexible approach that is adaptable to each building site.
- Complies with environmental protection requirements through effective site design
- Cheaper to develop due to lower infrastructure costs (shorter, narrower roads, sidewalks, curbs & gutters replaced by trails and open space, etc.)
- Highly marketable due to proximity to usable open space that is maintenance-free.

Costs studies have demonstrated reduced development costs as well as increased sales price.

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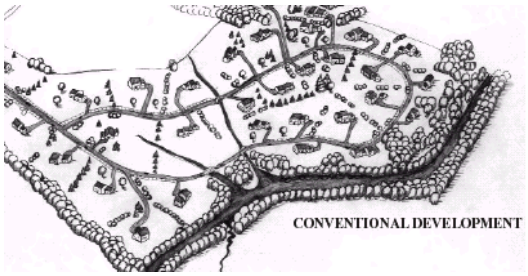
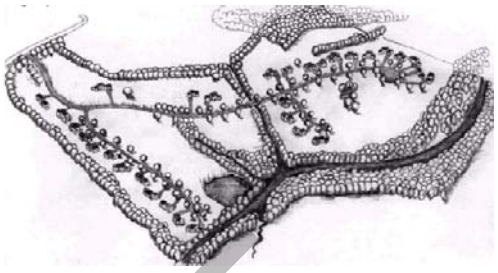
Rural Cluster Design Examples



Conventional Subdivision



Rural Cluster Design

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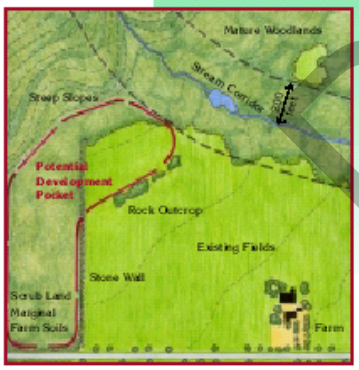
How to Create Conservation Subdivisions

Step 1
Require a map of the open space system for the parcel and surrounding area.

Step 2
Conventional sketch layout determines maximum lot count under existing three-acre zoning.

Step 3
The same number of houses can fit in to the landscape while preserving 80 percent of the open space.



Locate Development Pocket

A sketch analysis of the area provides all the basic information to calculate how a development can fit into the landscape - what land should be protected and potential development pockets.

Typical Superimposed Subdivision

- Productive farmland lost forever.
- Pleasant view from road eradicated.
- Stream corridor cut off by backyards.
- Large lots divide up and dominate the landscape.
- Individual road for each subdivision.
- Costly road and bridge construction.
- No chance for residents to enjoy special site features.

Conservation Subdivision

- Large farm field protected.
- Rural view from road retained.
- Trail system allows access to stream.
- Smaller, but substantial individual lot sizes with central green.
- Potential connection to adjacent parcel.
- Less expensive construction costs.
- Residents have views of open field and direct access to woods.

Tool #3: Low Impact Development

WHAT IS IT?

LID is a new, low cost, effective alternative storm water control technology. It combines resource conservation, hydrological site design, and pollution prevention measures in order to reduce development impacts in a way that better replicates natural watershed functions.

Images courtesy of AHBL

Low impact development techniques include retaining forests, clustering houses and adding open space and rain gardens.

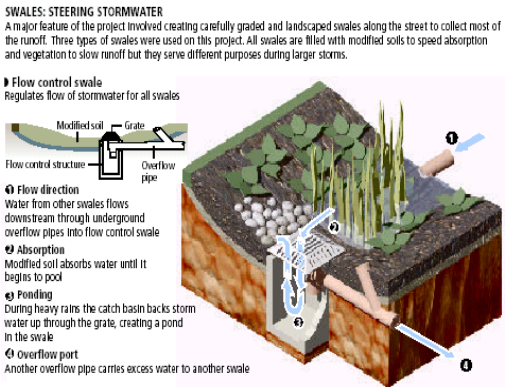
HOW IS IT DONE?

There are several approaches to lowering the impact of development. They include:

- **Conservation of Open Space**
- **Reduce the Extent of Impervious (paved) Surfaces**
  - Narrower streets
  - Use of pervious materials for streets, parking (pavers, special materials, etc.)
- **Careful attention to site disturbance activities, such as grading and planting**
- **Use of Small-Scale Storm Water Controls (bio-retention areas and grassed swales)**
  - Add natural drainage areas such as bio-retention areas ("rain gardens")
  - Create filtering and conveyance systems, such as stormwater wetlands and swales
  - Minimize the use of piped infrastructure with on-site French drains and infiltration fields

BENEFITS OF LOW IMPACT DEVELOPMENT

- Reduces development costs related to land clearing, grading, and infrastructure (streets, sidewalks, curbs, gutters)
- Reduces maintenance costs of infrastructure
- Potentially increases the number of developable lots
- Increases marketability due to "mature landscaping" and "open space"
- Protects forest and farm lands through efficient site planning
- Preserves integrity of natural systems, such as groundwater recharge
- Protects against sedimentation and erosion by managing storm water at its source
- Reduces impacts to plants and wildlife habitat, wetlands, and aquifer recharge areas



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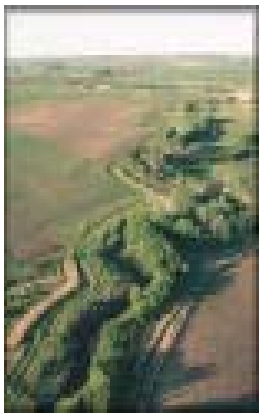
Tool #4: Green Infrastructure



What is it? Green Infrastructure is an interconnected network of waterways, wetlands, woodlands, wildlife habitats and other natural areas; greenways, parks and other conservation lands; working farms, ranches and forests; and wilderness and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources, and contribute to the health and quality of life for communities and people.

Why is it important?

The Brookings Institution reported that over a 15-year period from 1982-1997 there was a nationwide rise in land development of 47%, compared to a population increase of only 17%. The Delaware Valley Regional Planning Commission found that from 1930 to 1990, the amount of developed land increased five times faster than the total population over this 60-year period. The rate of land consumption in recent decades far exceeds the rate of population growth.

WHAT DOES IT LOOK LIKE?

Natural Areas

Sites largely undisturbed by humans, with native vegetation naturally occurring across the landscape. Examples include wildlife refuges, pristine preserves, and native forests.

- Provide a wide range of ecological services, such as nutrient cycling, soil enrichment and flood control
- Provide valuable habitat for fish, wildlife and plants
- Assist in protecting environmentally sensitive areas, as required by law.

Open Spaces

Undeveloped sites that have been disturbed by human activity, but still provide habitat, scenery, and other benefits. Open spaces can include areas such as farmlands, forests, parks and recreational areas, golf courses and utility corridors.

- Provide areas for restoration, and to buffer adjacent natural areas
- Provide recreational areas and scenic qualities
- Create a sense of community identity by conserving working lands and scenic vistas

Greenways

Continuous or patchy areas of vegetation that provide corridors for the movement of humans and wildlife. They often follow natural waterways or land features, and may connect natural areas and open spaces. Highest quality greenways provide habitat and allow for movement of wildlife, plants and water from one area to another.

- Function as linkages and increase habitat connectivity
- Provide alternative transportation options (walking & cycling)
- Stimulate business development focused around recreation and tourism

Benefits of Green Infrastructure

- Protects rural character by preserving working landscapes and scenic rural views
- Offers protection for designated working lands as well as environmentally sensitive areas
- Decentralizes functions such as stormwater management, saving taxpayer monies
- Offers recreational opportunities to residents and visitors, promoting tourism and economic development
- Increases quality of life for citizens by providing an interconnected network of open spaces for multiple uses (recreation, wildlife habitat, stormwater management)

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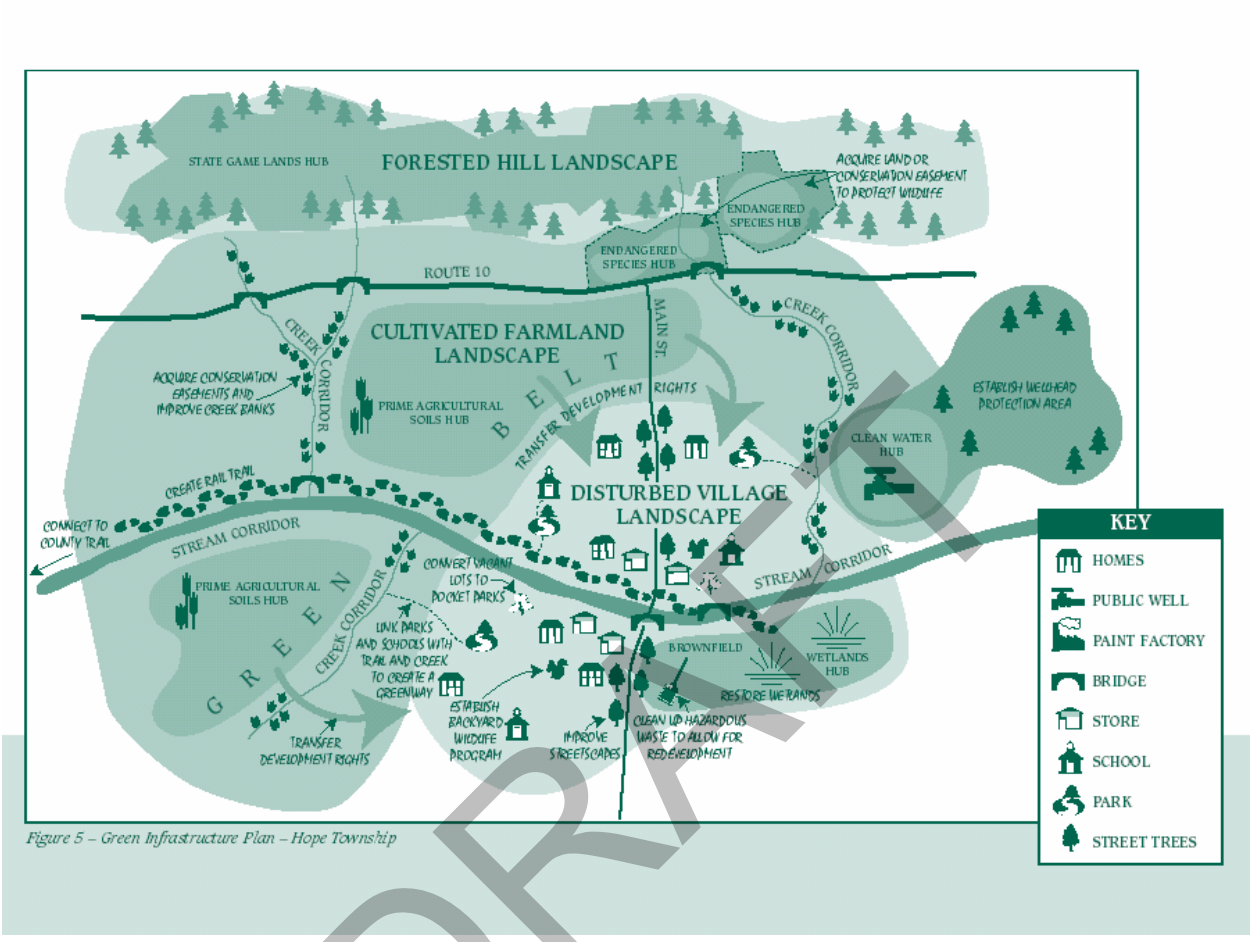

Figure 5 – Green Infrastructure Plan – Hope Township

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An interconnected network of green infrastructure

⇒ Reduces the need for engineered infrastructure by reserving landscape features so that they can serve natural functions, such as stormwater storage and bio-filtration, and lowers development costs

⇒ Links people with nature through a “trail system” connecting woodlands, wetlands, and waterfront areas

⇒ Protects environmentally sensitive areas such as frequently flooded areas, wildlife habitat and migration corridors, geologically hazardous areas, wetlands, aquifer recharge areas, etc., as required by the State of Washington.

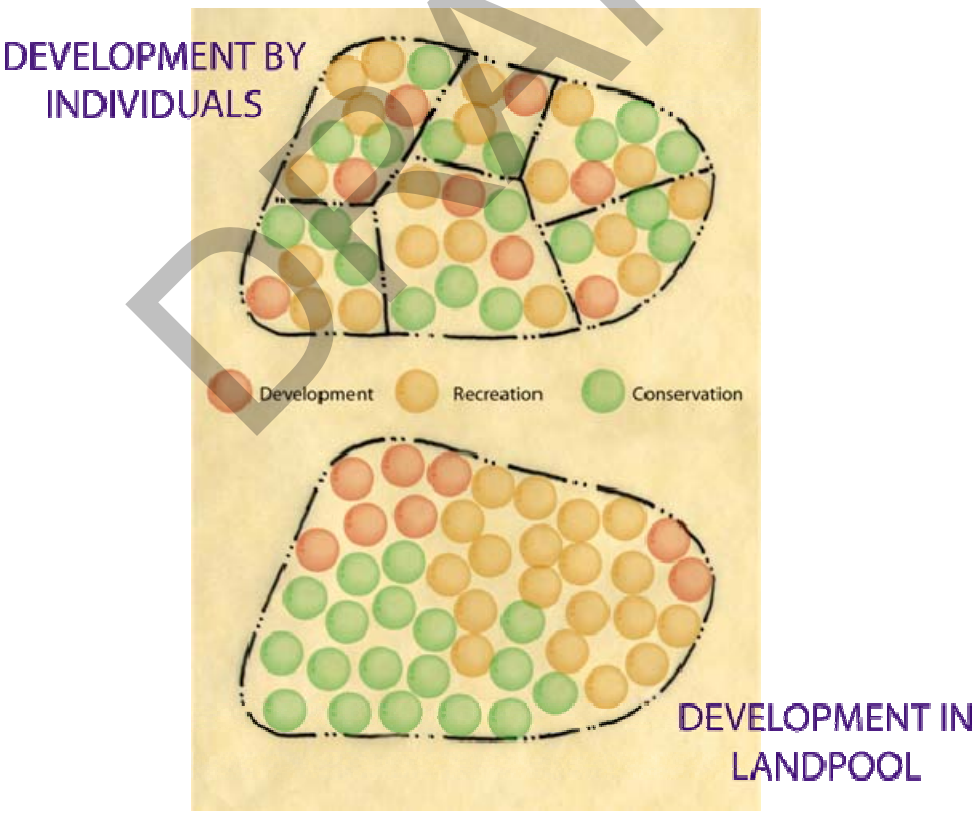
Tool #5: Landpooling

This market-based approach to development involves a business partnership among local property owners and results in consolidating properties that are environmentally and economically linked. The partnership develops an equitable and efficient plan to preserve or enhance the value of land through identifying appropriate areas for development as well as conservation within the project site. Landpools are formed to increase local control, protect natural resources and habitats, increase property values, and to enhance real estate investment liquidity.

To organize a landpool, property owners set project goals, identify potential partners and resources, conduct a suitability analysis, delineate the landpool boundary, and perform a baseline appraisal of market value. Members assign development rights to the landpool in proportion to their share in the project. A conceptual development plan is drafted to achieve project and participant goals. The plan identifies opportunities for potential land rent (e.g. recreation, tourism), sale/leaseback of agricultural land, and sale/joint venture of development parcels. The implementation plan outlines the costs, financial plan, and phasing of activities. Members form a limited liability corporation (LLC) to implement the plan. The plan may include development, recreation, resource enhancement programs, new venture development, and conservation easements.

Landpools are viewed as an attractive alternative to parcel-based development because:

- It provides a private, market-based mechanism to implement the best of regional and local planning techniques.
- Added value is directed to participating landpool members
- Environmentally sensitive or agriculturally productive land can be protected.
- Development can be concentrated, efficient and locally appropriate.
- Redevelopment can be instigated and financed to most suitable locations and timeframes.
- Landpool equity creates income stream for shareholders regardless of development location.



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Planning Area Limitations & Potential

WEST END PLANNING AREAS

Vision/Opportunities

Grays River: A "cobblestone village" offering tourism, arts, and community retail activity in keeping with heritage elements: grange, creamery, cemetery and Meserve Park/Trail. Separate areas for a business/ residential campus in Rosburg offer high-tech utilities that can also serve home-based professionals in the area.
Key elements:

- Grange
- Creamery
- Grays River Cemetery
- Meserve Park
- Meserve Trail – connecting the cemetery, creamery, grange, park, café area
- Gray's Café/Tourism Center – a nature-based tourism activity area taking advantage of the view beside the café (equestrian facility/B&B/etc.)

Rosburg: A west-end employment and housing activity center offering village style housing (smaller lots around a village green).

- ❑ High quality, mixed-use "wooded campus" community based around the Rosburg School and focusing on technology/business incubation and a high quality residential community. Community focal points:
  - Rosburg School/Village Green
  - Post Office
  - Rosburg Cemetery/Store
  - Grange
- ❑ Intensive employment center with potential light industrial uses west of the main area of town in a buildable area currently not used for farming/forestry. Could feature:
  - Resource-based custom goods; e.g., value-added ag or forestry products
  - Fabrication/manufacturing

    - ✓ 767 acres designated for future residential growth
    - ✓ 456 acres designated for potential residential/commercial activity centers

Deep River: A scenic gateway to the Willapa Hills, offering high-quality, low density residential areas that blend well with its remote natural setting, and offering opportunities for nature-based and heritage tourism activities for visitors.

- ✓ 1,515 acres designated for future residential growth
- ✓ 168 acres designated for potential commercial/tourism activity center
- ✓ 221 acres designated for conservancy

Altoona: A secluded residential area well suited for seasonal and high-end housing offering privacy and exceptional scenic vistas of the Columbia River, along with unique historical, natural and cultural sites accessible to visitors.

- ✓ 933 acres designated for future residential growth
- ✓ No commercial activity center designated

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Limiting Conditions/Concerns:

- Western Wahkiakum PUD Water System Expansion/Development Pressures/Water Quality
- Fire Flow
- Flood Plain
- Rugged terrain

Optimal Conditions/Advantages:

- 3-Phase Available from Fairview Road to Salmon Creek
- Redundant High Speed Internet from Grays River to Naselle

Skamokawa Planning Area

Vision/Opportunities

Skamokawa: A bustling village built around water-based commerce and recreational opportunities. Nearby amenities include a scenic wildlife refuge setting, offering environmental education, training and guided tourism activities. Development of "Skamokawa Harbor" will expand industry to serve commercial fisheries and marine commerce. A public market as the centerpiece of an historic district will complement tourism efforts. Low density residential growth in designated areas of the valley.

Potential Economic Activities for Skamokawa:

- Custom canneries
- Direct sales
- Bottled water/microbrewery
- Environmental Tourism/Outdoor Training
- Connect Vista Park to Pillar Rock w/trail & monument?
- Bike trail throughout the JBH refuge

  - ✓ 1,036 acres designated for residential growth
  - ✓ 37 acres added to existing activity center

Limiting Conditions/Concerns:
Water Service (in town) – 33 customers; future expansions needed
Future need for fire flow
Sewer Service (long term) – 55-60 customers

Optimal Conditions/Advantages:

- Water Service Expansion – Extend to 2nd Street, E. Valley to Sleepy Hollow;
  Long Range: SR 4 to JBH Refuge; Steamboat Slough Road to Nursery
- Electrical Service – 3 Phase
- Fairgrounds/Market Area – e.g. Farmers Market
- Town Center
- Skamakowa Harbor – hydraulic hoist/dock/flash freezer
- Refuge/Vista Park/Nature Tourism – Seattle/Olympia market draw
- Natural Water/"Smoky" Water

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Elochoman Planning Area

Vision/Opportunities

Elochoman: A "place in the country" for young families who want to get away from city life; offering job opportunities within reasonable commuting distance and near areas designated for future manufacturing and light industrial employment.

- ✓ 4,262 acres designated for residential growth
- ✓ 359 acres designated for industrial activity center

Limiting Conditions/Concerns:

- ❑ Water/Sewer System Expansion to meet Development Pressures
- ❑ Water Quality/Water Flow (Elochoman River)

Optimal Conditions/Advantages

- ❑ City/PUD Water
- ❑ City Sewer
- ❑ 3-Phase Power Available
- ❑ High Speed Internet 18,000 feet radius of Cathlamet
- ❑ Industrial employment potential with city services
- ❑ Commuting distance to nearby employment centers

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Puget Island Planning Area

Vision/Opportunities

Puget Island: A flourishing village for those seeking a unique way of living life on "island time". Economic activities will focus on traditional themes of the community, including its scenic river setting, fishing and farming economy, and unique cultural heritage.

- ✓ 1,555 acres designated for residential growth
- ✓ 48 acres designated for commercial/tourism activity centers
- ✓ 2,970 acres designated for agricultural uses
- ✓ 48 acres designated for conservancy

Limiting Conditions/Concerns:

- ❑ Fire Flow
- ❑ Fire Station
- ❑ Long-term potential need for sewer service
- ❑ Electrical Capacity (70% is 3-phase; at 50% capacity)

Optimal Conditions/Advantages:

- ❑ Water Service Improvements

IMPLEMENTATION TOOLKIT

Least Restrictive

Conserve Resource Lands & Heritage Sites

1. Offer **technical assistance** to farmers on estate transfers, development rights, other tools and incentives.
2. **Landpooling** – Assembling property owners holding resource lands, environmentally sensitive areas, and optimal development areas to form a development organization that allocates economic benefit to working lands and sensitive environmental features that add value to a development project (as open space, scenic view or other amenity value).
3. **Conservation easements**/transfer of development rights/installment purchase agreements
4. **Right-to-Farm**/Right-to-Forestry Regulations
5. **Subdivision Regulation + Rural Cluster Design** - A subdivision/development process that begins by identifying significant on-site features and locating development in a way to keep those features intact so that they become site amenities such as open space, trails, scenic views, working landscapes, etc. Accommodates a mix of housing types and land uses; pedestrian friendly; lowers infrastructure costs; protects environmentally sensitive areas from development.
6. Designate as long-term resource land under county **Critical Area Ordinance**, with/without opt-out provisions
7. Establish one or more **zoning** techniques, depending on desired result. These include:
   - **Performance Zoning –** which establishes off-site standards for noise, smoke, light, etc.
   - **Conventional Zoning** – establishes use districts (residential, commercial, etc.) and densities (one acre minimum lots, five-acre minimum lot size, etc.)
   - **Conservancy or Ag Zoning** overlay district based upon vegetation, soil, and topographical conditions with prohibition on conventional development. Ag zoning designates farmable-sized blocks of land. Rural lands zoning have large minimum parcel sizes (e.g., 80-160 acres). Prohibits uses that are incompatible with commercial farming.
   - **Form–Based** – Regulates building standards, not uses. (e.g. no buildings over 2 stories, and more than 50,000 square feet.) Used primarily in large downtown areas.
8. Establish **design standards** that control appearance. Regulation of color, building materials, landscaping, etc. Used primarily in resort areas and upscale commercial developments.

Most Restrictive

Ensure compatibility between land uses; address impacts to adjoining property owners and the community.

1. Use the **comprehensive plan** to review development proposals. Has no leverage mechanism to ensure compliance with community objectives.
2. **Landpooling** – An association of property owners with economically and environmentally related properties who identify an agreeable development plan. Does not address external impacts on owners beyond the landpool or those within who decline to participate
3. **Rural Cluster Design** – A subdivision/development process that begins by identifying significant on-site features and locating development in a way to keep those features intact so that they become site amenities such as open space, trails, scenic views, working landscapes, etc. Accommodates a mix of housing types and land uses; pedestrian friendly; lowers infrastructure costs; protects environmentally sensitive areas from development.
4. **Performance Standards** – Establish standards for noise, smoke, odors, glare, and other undesirable impacts and apply
5. **Conventional Zoning** – Establish general districts for segregating land uses (e.g. residential, commercial, industrial), with various subcategories of each further limiting use or intensity of use (density). Increases automobile usage; promotes homogenous developments.
6. **Design Standards** – Establish appearance codes to govern building styles, materials, colors.

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Appendix B Insert

See Wahkiakum County Website link to Appendix B – Selected Land Use Preferences by Planning Area at www.co.wahkiakum.wa.us. Click on the link to Appendix B.

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