

Washington State Department of Health Division of Environmental Public Health Office of Drinking Water

A New Approach to Source Water Protection in Drinking Water Watersheds

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PUBLIC HEALTH
Promoting a Healthier Life & a Safer and Healthier Washington



HELPING TO ENSURE SAFE AND RELIABLE DRINKING WATER

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Mission

To protect the health of the people of Washington State by ensuring safe and reliable drinking water.



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This Presentation

- ◆ Source water protection background
- ◆ Forest Practices Application Review System (FPARS) in Washington State
- ◆ How to consider forest practices in source water protection
- ◆ Available tools and strategies
- ◆ FPARS demonstration
- ◆ Case studies
- ◆ Challenges, successes, tips...

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What is Source Water Protection?

- ◆ First barrier in “Multiple Barrier Approach”
- ◆ Planning process that emphasizes protection of:
 - Wellhead ▪ Surface water
 - Aquifer ▪ Watershed
- ◆ Prevents loss of drinking water quality *and* quantity
- ◆ Focuses on prevention because of cost and difficulty to replace source

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Regulations

- ◆ Safe Drinking Water Act 1986 – Wellhead Protection Program
- ◆ Safe Drinking Water Act 1996 amendments – Source Water Assessment Program (SWAP)
- ◆ State drinking water regulations require:
 - Mandatory wellhead and source water protection.
 - Sanitary control.
 - Watershed control.

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Benefits of Source Water Protection

Source protection is first line of defense in “multiple-barrier” protection approach. It helps with:

- Public health protection.
- Preventing emergencies.
- Economic benefits.
- Environmental benefits.
- Public confidence.

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Contamination is Expensive

- ◆ A community may spend millions of dollars responding to contamination.
- ◆ Responding to contamination is about 200 times more costly than prevention.

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Potential Sources of Contamination

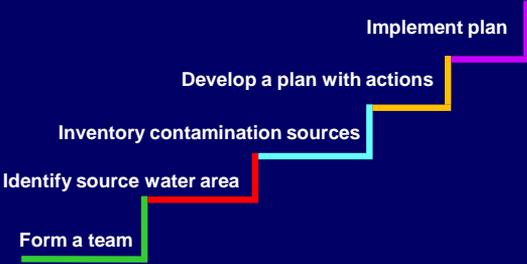
- ◆ Industrial and commercial activities
- ◆ Animal feeding operations
- ◆ Agriculture
- ◆ Forestry – forest practices
- ◆ Septic systems
- ◆ Underground storage tanks
- ◆ Landfills and surface impoundments
- ◆ Nonpoint source pollution



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Source Water Protection Steps



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Plan Must Include Actions

Action is Critical for Protection!

- ◆ Sanitary control and watershed control
 - Land acquisition or easements
 - Restrictive covenants
- ◆ Public education
- ◆ Best management practices (BMPs)
- ◆ Regulations and ordinances
- ◆ Monitoring and surveillance
- ◆ Water conservation
- ◆ Emergency preparedness and response plan

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Watershed Control Planning

- ◆ It's required of all surface and groundwater under the influence of surface water (GW) systems (WAC 246-290-135 and 246-290-668)
- ◆ Watershed Control Plan must include:
 - Watershed description.
 - Inventory of potential contamination sources and activities.
 - Identification of landowners.
 - Watershed control measures.
 - System operation including emergency provisions.
 - Documentation of water quality trends.

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Watershed Control Planning (cont.)

Effective watershed control includes:

- ◆ Regular patrols.
- ◆ Landowner meetings.
- ◆ Landowner agreements.
- ◆ Land acquisition strategy.
- ◆ Monitoring.
- ◆ Evaluation of the watershed every six years.

Land ownership is the most effective means of protection!

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Forest Practices Act (FPA)

- ◆ Enacted in 1974 – Title 222 WAC and chapter 76.09 RCW
- ◆ Its purpose is to protect public resources while maintaining a viable timber industry.
- ◆ Public resources include:
 - Water.
 - Fish.
 - Wildlife.
 - Capital improvements.
- ◆ It's based on "adaptive management" – science based approach.



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FPA (cont.)

- ◆ Forest Practices Board, an independent state agency, adopts forest practices rules and resolve disputes.
- ◆ Department of Ecology approves water quality rules.
- ◆ Washington has strongest forest practices laws in the country.
- ◆ Forest practices aren't necessarily bad for drinking water.
- ◆ FPA wasn't designed to protect drinking water.
- ◆ DNR website: www.dnr.wa.gov

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FPA (cont.)

A "Forest Practice" is:

- ◆ Any activity on forested land which relates to growing, harvesting, or processing of timber.
- ◆ Examples include:
 - Road construction.
 - Timber harvest (logging).
 - Pre-commercial thinning.
 - Reforestation.
 - Applying chemicals (fertilizer, pesticides).



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FPA (cont.)

Types of forest practices applications:

- Class I – No direct potential to damage a public resource. No permit required.
- Class II – Public resources not on site, therefore potential for damage is minimal.
- Class III – Public resources on or near site, therefore potential for damage exists.
- Class IV Special – Has significant potential to impact public resources.
- Class IV General – Conversion from forest land.

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Available Tools & Strategies

- ◆ Track forest practices activities with FPARS
- ◆ Work with local planning departments
- ◆ Regular meetings with landowner
- ◆ Negotiate with landowner
- ◆ Develop cooperative agreements

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Available Tools & Strategies (cont.)

- ◆ Establish a protective covenant
- ◆ Purchase conservation easements
- ◆ Purchase land (fee simple)
- ◆ Ordinances
- ◆ Monitoring (for example, sampling)
- ◆ Patrolling

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How to Negotiate With Landowners

- ◆ Before you can negotiate, build trust.
- ◆ Begin with regular meetings.
- ◆ Invite DNR regional forester and our staff; other experts as needed.
- ◆ First, assume good intent.
- ◆ Be kind but firm.
- ◆ Avoid blame or aggression.
- ◆ Consider taking a negotiation class.

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How to Negotiate With Landowners (cont.)

- ◆ Remind them that timber employees often live in the community and drink the water.
- ◆ Ask questions.
- ◆ Actively listen to the answers.
- ◆ Repeat what you heard.
- ◆ Ask for what you need in a non-threatening way:
 - Can we be partners?
 - Would you be willing to go above and beyond regulatory requirements?

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How to Negotiate With Landowners (cont.)

Questions to ask once you've established trust:

- ◆ Anything extra that can be done to help protect fragile drinking water supplies?
- ◆ Are unstable areas being protected? How?
- ◆ Has a forest geologist surveyed the area? If not, request that they consider this.
- ◆ Can water system representatives tour the area with the landowner to map and flag sensitive/unstable areas?

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How to Negotiate With Landowners (cont.)

Keep in mind:

- ◆ Buffers don't prevent landslides.
- ◆ Buffers prevent surface erosion, protect stream temps.
- ◆ Certain BMP's for roads can help protect from landslides.
- ◆ Roads = FPA is protective, but additional protection may be warranted for drinking water.
- ◆ There may be a benefit to leaving forest intact in unstable areas – FPA rules may not be fully protective.
- ◆ There may be a benefit to larger riparian buffers (temp, turbidity).

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How to Negotiate With Landowners (cont.)

Chemical spraying (pesticides, herbicides, fertilizers):

- ◆ Primary reasons?
- ◆ Method being used?
- ◆ Schedule for spraying?
- ◆ Contact local weed control board for guidance.
- ◆ Surface water is more susceptible to contamination.
- ◆ Treatment doesn't remove chemicals.
- ◆ Understand the correlation between watershed spraying and public health. (Oregon study)

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How to Negotiate With Landowners (cont.)

Chemical spraying

- ◆ Use herbicide formulation certified for aquatic use (like Garlon 3A).
- ◆ Don't spray within 200 feet of any surface water (lakes, streams, rivers).
- ◆ Minimize wind drift with larger droplet size.
- ◆ Spray during calm weather.
- ◆ Notify water system of exact dates.
- ◆ Water system should collect synthetic organic compound (SOC) samples.

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Collaboration Example

- ◆ Worked with DNR on EHSB 2541 – payments for watershed services
- ◆ Developed great working relationship concerning drinking water needs in forested watersheds.
- ◆ Two outcomes:
 - City of Olympia watershed protection pilot
 - Boistfort Water Association – Weyerhaeuser coordination effort

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Ordinances

- ◆ Growth Management Act requires most counties and cities to adopt critical areas ordinances.
- ◆ Drinking water watersheds should be considered a “critical area.”
- ◆ Ordinances give you authority to enforce.
- ◆ These ordinances vary, there are many good examples out there (Aberdeen, Redmond, Vancouver, Spokane).
- ◆ For assistance call Kitty Weisman, 360-236-3114.

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Short Break!! 10 minutes

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Forest Practices Application Review System (FPARS)

- ◆ FPARS is DNR’s online Forest Practices Application Review System.
- ◆ Public can review proposed forest practices activities.
- ◆ Requires *Secure Access Washington (SAW)* account.
- ◆ See handout for instructions.

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FPARS (cont.)

- ◆ First, complete and send in a *Reviewer Profile*.
- ◆ Second, register through SAW.
- ◆ FPARS sends you email notices of new applications.
- ◆ For FPARS assistance, contact:
Stephen Harmon
360-902-1416
stephen.harmon@dnr.wa.gov

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FPARS Demonstration

- ◆ Visit www.dnr.wa.gov and click on forest practices.
- ◆ Fill out and send in reviewer profile.
- ◆ Then go to <https://secureaccess.wa.gov/> and register for SAW account.

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Case Studies

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City of Aberdeen

- ◆ 7,400 acre watershed
- ◆ City owns 1,200 acres near intake and dam
- ◆ Remainder owned by Simpson, Rayonier, and Forest Service

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City of Aberdeen (cont.)



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City of Aberdeen (cont.)

- ◆ City worked with Grays Harbor County to pass ordinance in 1971.
- ◆ Developed agreement with Forest Service in 1978.
- ◆ In early 1990s, they developed agreements with private timber companies.
 - Initially done to gain filtration avoidance.
 - Agreements useful today to make sure activities in the watershed do not result in excessive turbidity.

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City of Aberdeen County Ordinance

- ◆ City worked with Grays Harbor County to pass an ordinance that protects entire watershed.
- ◆ Ordinance passed in 1971.
- ◆ Prohibits:
 - Unlawful entry.
 - Dumping or other activities that pollute the watershed and water bodies.
- ◆ Grays Harbor County Sheriff's office has authority to enforce.
- ◆ Defines penalties for violation (fines or jail time).

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City of Aberdeen Forest Service Agreement

- ◆ Agreement executed in 1978.
- ◆ Both parties mutually agreed that the objective is maintain high quality water from the Wishkah River Municipal Watershed.
 - Forest Service responsible for administration of forest lands and all applicable laws/regulations.
 - City responsible for all improvements and operations of the water system.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ City agrees to:
 - Inform Forest Service (FS) of any changes that affect the watershed.
 - Obtain FS permits to erect gates, signs, or any other improvements.
 - Provide feedback to FS within 30 day on FS proposals.
 - Notify FS of unauthorized entry.
 - City not allowed to take law enforcement action.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ Forest Service (FS) agrees to:
 - Exercise authority for control and management of FS land.
 - Construct, erect, and maintain signs on FS roads at entrances to Wishkah River Watershed.
 - Signs will state the land is in a managed watershed and include list of restricted activities.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ Forest Service (FS) agrees to:
 - Hunting and fishing will be controlled by Washington Department of Fish and Wildlife (WDFW).
 - If WDFW closes the watershed to hunting or fishing, FS will support the decision.
 - Gate FS roads that ingress and egress into FS administered lands and restrict off-road vehicles.
 - FS will not assign a patrolman to the area.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ Forest Service agrees to:
 - Conduct and schedule timber harvesting in a manner to protect water quality.
 - Prompt revegetation of bare areas.
 - Partial or full suspension of logs during yarding.
 - Control number of acres disturbed by logging and road construction.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ Forest Service agrees to:
 - No campgrounds or trails in the watershed.
 - City will be notified if FS contemplates a change.
 - Make employees aware of restrictions placed on the watershed and take all reasonable steps to assure restrictions are enforced.
 - Not use herbicides and will notify City if herbicides will be used.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ City and Forest Service mutually agree to:
 - Annual meeting to review previous year and discuss future year's activities.
 - Consultation meetings, if necessary or desired by either party.
 - Inform each other prior to issuance of informational or news media releases related to management of the watershed.

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City of Aberdeen Forest Service Agreement (cont.)

- ◆ City and Forest Service mutually agree to:
 - Share records of water quality data collected.
 - Determine cause of changes in raw water quality if water quality approaches unacceptable drinking water standards.
 - Both parties will develop a joint program to correct the situation, if remedial action is needed to address degradation in water quality.

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ Agreements are similar in nature.
- ◆ Agreements were signed in 1993 and 1994 in an effort to obtain filtration avoidance.
- ◆ They reference county ordinance.
- ◆ Grants the owner (Rayonier or Simpson) the right to enter the watershed for harvest activities and management of its properties.
- ◆ City granted use of its road in return for acceptance of restrictions in the agreement.

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ The agreement specifically states:

“THE CITY AND OWNER RECOGNIZE IT IS IN THE BEST INTEREST OF BOTH PARTIES TO ESTABLISH CLEAR PROCEDURES AND POLICIES GOVERNING THE CITY’S EXERCISE OF ITS AUTHORITY WHILE RECOGNIZING OWNER’S RIGHTS IN ORDER TO AVOID FUTURE DISPUTES AND TO PROTECT THE DRINKING WATER SUPPLY OF THE CITIZENS OF ABERDEEN.”

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ Allowed activities include:
 - Forest management and harvest.
 - Growing, protecting, cultivating, and producing timber, trees, and forest growth.
 - Constructing, maintaining, and using roads, trails, and other improvements.
- ◆ Any other activities not allowed without prior written consent by the City.

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ Owner must also:
 - Avoid activities that could harm city’s domestic water supply.
 - Agree to cease any operations that don’t comply with the agreement.
 - Disagreements will be resolved by the agency’s regional engineer (Simpson) or arbitrator (Rayonier).

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ Owner must also:
 - Provide chemical toilets for all persons hired to perform logging or other management activities.
 - Have a spill response program.
 - Obtain City approval to use any agricultural chemicals (fertilizers, pesticides, and herbicides) or treatments.

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ **Owner must also:**
 - Submit road construction plan to city for approval prior to any road construction.
 - Provide city staff access to logging sites at any reasonable time and provide keys to gates.
 - Report at least annually to the City Director of Public Works on forest activities.

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City of Aberdeen (cont.) Rayonier and Simpson Agreements

- ◆ **Owner must also:**
 - Not permit its employees, agents, or contractors to carry firearms, fishing poles, or any other device to hunt or fish on the property.
 - Use reasonable effort to prevent trespassers.
 - Use best effort to protect against fires.
 - Follow any reasonable rules adopted by the city upon written notice from the city.

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City of Hoquiam

- ◆ **Davis Creek and West Fork of Hoquiam River watersheds**
- ◆ **Approximately 9,000 acres**
- ◆ **Mixed ownership**
- ◆ **City owns 49 percent of the watershed**
- ◆ **Private logging companies own 45 percent of the watershed**

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City of Hoquiam (cont.)



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City of Hoquiam (cont.)



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City of Hoquiam (cont.)



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City of Hoquiam (cont.)

- ◆ Access to watershed is controlled with locked gate.
 - City controls keys and access.
 - Check gates at intakes.
- ◆ City has contract forester who actively patrols city-owned portion of watershed.
- ◆ Logging occurs in the watershed.

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City of Hoquiam (cont.)

- ◆ City coordinates with DNR on logging on private land.
- ◆ City noted short-term increase in raw water turbidity when areas near the creek logged.
 - Never resulted in plant shutdown.

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Boistfort Valley Water

- ◆ Primary surface water source is Stillman/Little Mill Creek.
- ◆ Treated by Wildwood WTP constructed in 1993.
 - CAC/filter package plant.
- ◆ Up to 2007, used intake on Stillman Creek.
 - Lost intake in 2007 floods.
 - Relocated main intake on Little Mill Creek above the confluence of Stillman and Little Mill Creeks.

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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)

- ◆ Stillman/Little Mill Creek watershed is 27 square miles, mostly forested.
- ◆ Multiple landowners, major land owner is Weyerhaeuser who actively harvests in this area.
- ◆ BVW has good relationship with Weyerhaeuser and has relied on verbal agreements.
 - Weyerhaeuser granted easements to BVW for intakes and roads at no cost.

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Boistfort Valley Water (cont.)

- ◆ Gated entrance- Weyerhaeuser controls locks on gate.
- ◆ Limited hunting allowed by leases granted by Weyerhaeuser.
- ◆ No overnight camping allowed.

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Boistfort Valley Water (cont.)

- ◆ Many changes in watershed and source turbidity.
 - Flooding
 - Logging/road construction
 - Land sloughing
- ◆ Current watershed control plan very weak.

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Boistfort Valley Water (cont.)

- ◆ BVW has invested over one million dollars in constructing presedimentation facilities.
- ◆ Wildwood WTP still periodically shut down due to high turbidity.
- ◆ CAC/filter plant difficult to operate, if influent turbidity exceeds 30 NTU.

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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)



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Boistfort Valley Water (cont.)

- ◆ Two meetings to date with Weyerhaeuser, BVW, DNR, DOH, and Lewis County.
- ◆ Weyerhaeuser is actively participating.
 - Postponed logging on 100-acre parcel until Jan 2014.
 - Closely coordinating with BVW on hunting leases.
 - Designated contact person for BVW to call.
 - Offered to help with re-locating intake.
 - Providing data from hydrologist.

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Boistfort Valley Water (cont.)



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City of Olympia

- ◆ McAllister Springs watershed boundary is approximately 590 acres.
 - City owns 200 acres immediately around the springs.
- ◆ 3,060 acres in McAllister Springs Drinking Water Protection Area (DWPA), based on 10-year time-of-travel.
- ◆ McAllister Springs classified as surface water.

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City of Olympia (cont.)



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City of Olympia (cont.)

- ◆ Mixed use includes low residential use, vacant land, forested, and agricultural.
- ◆ In early 1990s, Thurston County enacted special zoning.
 - Includes limited high density residential and commercial development.
 - Developed more stringent standards for on-site wastewater systems in the designated Geologic Sensitive Area .

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City of Olympia (cont.)

- ◆ Source water protection area lies outside city limits.
 - City works with County Environmental Health.
 - Extensive review of new developments under County review, including hydrogeologic assessment.

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City of Olympia (cont.)

- ◆ **City activities include:**
 - Extensive ground water monitoring.
 - Ground water modeling.
 - GIS database.
 - Public outreach, education, tours of McAllister Springs.

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City of Olympia (cont.)

- ◆ **The City:**
 - Has a spill prevention and response program to address spills on the public roadways and railways that transect the watershed.
 - Conducts weekly inspections.
 - Works with large landowners on BMPs.
 - Installed "No Trespassing" signs on perimeter of area surrounding.

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City of Olympia (cont.)



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City of Olympia (cont.)

- ◆ **The City:**
 - Walks the watershed area four times per year to assess dumping, trespassing, or breaks in chain link fence.
 - Limits access to spring area with gate and card reader.
 - Installed video cameras that are monitored by City staff.
 - Conducts quarterly monitoring for *Cryptosporidium* and *Giardia*.

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City of Olympia (cont.)

- ◆ **The City:**
 - Has a special source water protection reserve account through Capital Facilities Plan appropriation.
 - Agreed to participate in DNR "payment for watershed services" study.
 - Investigating possibility of using reserve to purchase land or conservation easements for new McAllister Wellfield.

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Town of Carbonado

- ◆ Small rural low-income town
- ◆ Surface water system – springs and stream
- ◆ White River School District owns the watershed
- ◆ History of logging and mining
- ◆ Future forest practices could harm water supply

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Town of Carbonado (cont.)

- ◆ \$30,000 grant from the agency to:
 - Negotiate with landowner.
 - Develop options for watershed protection and control.
 - Develop source water protection plan.
 - Begin implementing priority protection actions, including:
 - Fundraising.
 - Land acquisition or forest practices agreement.
 - Educational programs for school kids.

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Bellingham Source Water Protection

- ◆ Surface water watershed
- ◆ Source water protection program emphasizes:
 - Land acquisition – protection.
 - Landowner agreements.
 - Surveillance.
 - Education.
- ◆ Funded with \$12 per month fee

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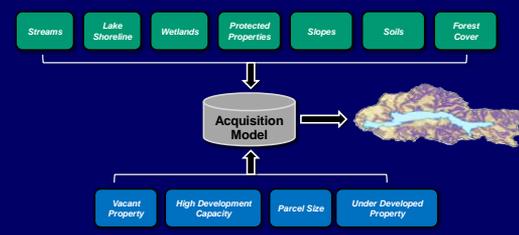
Bellingham Source Water Protection (cont.)

- ◆ Land acquisition
 - Mostly fee-simple (with some easements)
 - Whatcom County Land Trust agreements for most protected properties
 - Use a ranking formula and GIS to select best parcels

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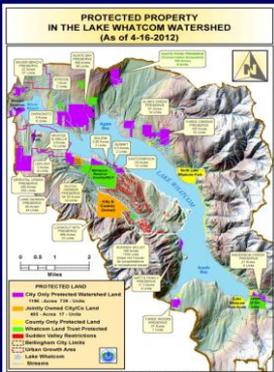
Lake Whatcom Watershed: GIS Acquisition Model



City of Bellingham Planning & Community Development March 2012

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Bellingham

- ◆ 30,000 acre watershed
- ◆ 1,600 protected acres
- ◆ Focus land acquisition around surface water

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Bellingham Source Water Protection

- ◆ Landowner agreements
 - DNR agreement = Lake Whatcom Landscape Plan (complements acquisition program)
 - Enhanced forest practices to ensure protection
 - Logging
 - Road building
 - Aerial spraying of pesticides/herbicides
 - Informal agreements with other landowners
 - Considering formalizing agreements in line with DNR Landscape Plan

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Bellingham Source Water Protection (cont.)

- ◆ **Monitoring**
 - Restoration contractor inspects properties and reports monthly.
 - Field and survey staff help inspect.
 - Adjacent property owners keep eye out.

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Bellingham Source Water Protection (cont.)

- ◆ **Education**
 - Emphasizes stewardship and personal responsibility of watershed residents
 - Couple of staff
 - Lake Stewards Program
 - Various issue-specific campaigns include:
 - Phosphorous reduction.
 - Boat-related pollution.
 - Stormwater.

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Other Examples

- ◆ **City of Ilwaco**
 - Negotiating with landowner on forest practices – going above and beyond.
- ◆ **City of Long Beach**
 - Negotiating with landowner on aerial spraying to control noxious weeds.
- ◆ **Skagit PUD**
 - Hired former timber company employee to be watershed steward.

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Available Tools & Strategies

- ◆ Track forest practices activities with FPARS
- ◆ Work with local planning departments
- ◆ Regular meetings with landowner
- ◆ Negotiate with landowner
- ◆ Develop cooperative agreements

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Available Tools & Strategies (cont.)

- ◆ Establish a protective covenant
- ◆ Purchase conservation easements
- ◆ Purchase land (fee simple)
- ◆ Ordinances
- ◆ Monitoring (for example, sampling)
- ◆ Patrolling

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Challenges

- ◆ Keeping on top of forest practices and negotiating with landowners takes time.
- ◆ Protecting land through easements or purchase requires partners and money.
- ◆ In certain fragile watersheds, risks are high especially with bad weather.

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Opportunities

- ◆ Upcoming expanded Forest Practices Act training in 2014
- ◆ Funding opportunities available include:
 - Agency source water protection grants.
 - CDBG and USDA grants.
 - Private foundations.
- ◆ Consider partnering with local land trusts, conservation districts, parks departments.
- ◆ Ask for help when you need it!

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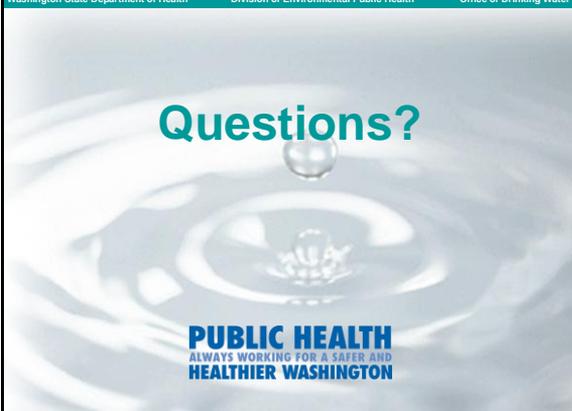
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Questions?

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