

## OREGON'S INTEGRATED WATER RESOURCES STRATEGY

JUNE 23, 2011 DRAFT RECOMMENDED ACTIONS

### BULLETIN 1: UNDERSTANDING OREGON'S WATER RESOURCES/SUPPLIES

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#### ACTION 1.A: "MAP" OREGON'S WATER-RELATED INSTITUTIONS

There are more than 15 state agencies whose responsibilities touch upon some aspect of water management and data collection, as well as dozens of federal agencies and hundreds more private and local entities. Document the major agencies involved in water management and supply in Oregon, describing their areas of responsibility and available data sets to further integrate across jurisdictions and improve coordination. [State - Universities]

#### ACTION 1.B: FILL IN DATA GAPS IN SPECIFIC ISSUE AREAS


Collect and process data, and share more information related to the state's water resources, in order to determine how best to meet Oregon's water needs. This is a long-term funding commitment in the area of surface water and groundwater data collection, monitoring, and studies. Basin-led efforts could help prioritize the funding of water quality and quantity data collection [See Action 10.c]. Generally, agencies have identified the following statewide priorities. [State – Federal – Local]



- Conjunctive Management of Groundwater and Surface Water.
  - ~ Further our understanding of the relationship between groundwater and surface water. State and federal agencies have already undertaken three basin-wide groundwater investigations in Oregon, and future investigations are planned. [WRD – USGS]
  - ~ Maintain and install additional surface and groundwater monitoring systems in prioritized areas, for both water quantity and quality.
  - ~ Collect information about "other" habitat conditions, such as channel morphology, substrate, and fish passage issues.
  - ~ Monitor changing surface water and groundwater conditions related to climate change [see Climate Change Action 5.a]. Establish new surface water gages and monitoring wells, where appropriate.
- Integrate Water Quality and Water Quantity Efforts.
  - ~ Fully incorporate water quantity into DEQ's TMDL requirements. [DEQ]
  - ~ Monitor and evaluate pollutants that do not yet have water quality standards, but that are present in Oregon and of concern (e.g., nutrients, sediments, emerging contaminants, toxics)
  - ~ Evaluate ecosystem health as it relates to water quality and quantity [see Action 12A-D].
  - ~ Evaluate wetland, riparian, and other restoration mitigation programs for the purposes of identifying best management practices. Identify future restoration and mitigation projects with the greatest potential to improve water quality and quantity; utilize funds from the Oregon Watershed Enhancement Board to do so.
- Integrate Federal, State, and Local data collection efforts [See Action 10.C]. Use OWEB and other grant monies to provide training to local partners, in data collection methodology, to ensure more data collection and wider application of data.

### BULLETIN 2: UNDERSTANDING OREGON'S' OUT-OF-STREAM NEEDS

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#### ACTION 2.A. UPDATE LONG-TERM WATER DEMAND FORECASTS

- Update the Statewide Demand Forecast. Update the Department's fifty-year forecast of water needs across sectors and locations (state, basin, and county levels). Identify trends in economic development, irrigated agriculture, urban-rural population growth/shift, future industrial and energy needs, and more. Survey planners and economic recruitment officers as part of this process. Some stakeholders take this recommendation further, calling for the state to create standards to evaluate claims of demand and publish common standards for water demand forecasts. [WRD – Local – OUS] 
- Improve the long-term water demand forecast by enhancing the state's water-use reporting program and coordinating with the U.S. Geologic Survey to compile consistent water-use information. [WRD – USGS]

- Develop models / studies on the “economic value of water to Oregon.” This information is of critical importance to the U.S. Bureau of Reclamation and other major funding agencies, where economic information is needed to assess the cost-benefit of potential water resource projects or proposals. 
- Establish Legislative requirements and funding for five-year updates to these comprehensive forecasts. 

#### **ACTION 2.B. IMPROVE WATER-USE MEASUREMENT**

- Increase investments and partnerships in qualified staff, measuring equipment, and real-time access to data in order to measure significant diversions in high priority watersheds. Partner with the Bureau of Reclamation, Bonneville Power Administration, and the USDA-Natural Resources Conservation Service to help fund the purchase and installation of measurement devices. Conduct follow-up inspections to ensure that measurement devices are properly installed and maintained. [State – Federal – Local]
- Conduct studies to determine the average demands of exempt well use. [See Land-Use Action 6B]
- Determine how remote sensing technologies could help to better define water use in data-limited or problem areas. [WRD – Federal – Local]
- Encourage corporations in Oregon to participate in the Carbon Disclosure Project’s (CDP) Water Disclosure Project (see link below).

#### **ACTION 2.C. COMPLETE WATER RIGHT ADJUDICATIONS**

Complete areas of the state that have not undergone the adjudication process, including reserved water right claims that still exist for tribal or federal lands.

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### **BULLETIN 3: UNDERSTANDING OREGON’S INSTREAM NEEDS**

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#### **ACTION 3.A. COMPLETE OUR UNDERSTANDING OF FLOWS NEEDED TO SUPPORT STREAM FUNCTIONS**

- Base Flow Needs Studies. Identify which streams already have these studies, then prioritize and complete those that are still needed and those that need updates. Base flows are the instream flows needed to sustain basic life stage functions and are important for maintaining habitat, scenic waterways, water quality, and recreational needs. [ODFW – WRD – DEQ – OPRD]
- Elevated Flow Needs Studies. Conduct studies on a basin-by-basin or on a project-by-project basis to collect information about the elevated flows needed to maintain and restore stream channel complexity and ecological functions. [ODFW – WRD]

#### **ACTION 3.B. IMPROVE OUR UNDERSTANDING OF THE RELATIONSHIP BETWEEN GROUNDWATER & ECOSYSTEM NEEDS\***

- Prioritize springs for further analysis, using U.S. Fish and Wildlife Service’s 2011 inventory as a basis. Evaluate the cooling and water quality effects they have on spawning, downstream areas, and surrounding ecosystems. [WRD – USGS – ODFW]
- Categorize groundwater-dependent ecosystems statewide. [public and private sector]
- Complete WRD / USGS Groundwater Studies [See Action 1.B.]

\* Build upon the work of ODFW’s *Conservation Strategy*, ODF’s *Forestry Plan for Oregon*, WRD/USGS Groundwater Studies, and the *Oregon Plan for Salmon and Watersheds*.

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### **BULLETIN 4: THE WATER-ENERGY NEXUS**

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#### **ACTION 4.A. ANALYZE THE EFFECTS ON WATER DEMAND FROM ENERGY DEVELOPMENT POLICIES**

- A variety of policy drivers, including the Renewable Portfolio Standard, encourage the development of renewable energy sources in Oregon. Compare the effect these energy development policies have on water demand. [Universities]

#### **ACTION 4.B. TAKE ADVANTAGE OF WATER INFRASTRUCTURE TO DEVELOP HYDROELECTRIC POWER** 🔑

- Encourage the addition of power generation facilities to already-existing infrastructure (dams, pipes, canals, wells). This includes encouraging water right holders with certificated water rights to add hydroelectric capacity onto existing, durable, infrastructure. [State – Federal – Local]
- Engage with Bonneville Power Administration to gain access to unallocated water in the Columbia River when high flow events have exceeded spill maximums. [State – Federal – Local]

#### **ACTION 4.C. INCREASE ENERGY EFFICIENCY AND RENEWABLE POWER PRODUCTION AT WATER AND WASTEWATER TREATMENT FACILITIES**

- Encourage greater energy efficiencies and water efficient management practices at water and wastewater facilities, providing targeted training on Energy Management Best Practices to operators and supervisors. [State – Local]
- Promote Installation of biogas, solar, wind, and hydropower projects at water and wastewater facilities to offset power demands and utility costs on site. [State – Local]
- Promote development of “green” infrastructure facilities, to alleviate water and power loads at wastewater treatment facilities. Examples include natural wastewater and stormwater treatment systems, constructed wetlands, and habitat restoration. [State – Local]
- Set energy targets for water and wastewater treatment facilities. Start by developing a baseline of total energy use by water and wastewater utilities, which would include water transmission and treatment; treated water distribution; and wastewater collection, treatment, and disposal energies (not just energy use at the plant level).\* [ODOE – Universities]

#### **ACTION 4.D. PROMOTE STRATEGIES THAT CONSERVE BOTH ENERGY AND WATER** 📖

- Partner with Oregon’s 10-Year Energy Plan to promote these strategies.
- Continue to implement and evaluate building codes that improve water and energy efficiency. In Oregon, these are the Statewide Mandatory Building Codes, the 2011 REACH Code, and the Statewide Alternate Method to Oregon building codes. \* [DCBS – Local]
- Partner with water users to find and promote combinations of on-site water savings and energy production that can result in overall conservation savings. [State – Federal – Universities]
- Design energy efficiency programs that capture and publicly report water savings data, along with energy savings data. [Oregon Department of Energy – Energy Trust of Oregon – Bonneville Power Administration – Oregon Department of Agriculture – Infrastructure Finance Authority]

\* These items are drawn from “Addressing the Energy-Water Nexus: A Blueprint for Action and Policy Agenda,” Alliance for Water Efficiency and American Council for an Energy Efficient Economy, May 2011.

## **BULLETIN 5: CLIMATE CHANGE**

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#### **ACTION 5.A. SUPPORT CONTINUED CLIMATE CHANGE RESEARCH EFFORTS** 📖

The state of Oregon should continue to collaborate with existing organizations, institutions, and researchers to improve climate change data and tools. [Federal – State – Local – Tribes]

- Continue and improve long-term monitoring of surface and groundwater resources (See Action 1.B).
- Improve real-time forecasting of water delivery, basin yields, monthly streamflow, flood frequency projections, and drought frequency projections.
- Downscale climate data (work largely residing with Oregon’s Climate Change Research Institute). Finer resolution will enable agencies to prepare to respond to climate changes on a more local scale.
- Collaborate with the Oregon Climate Change Research Institute and Pacific Northwest Climate Decision Support Consortium on basin-specific studies.

#### **ACTION 5.B. DEVELOP CLIMATE CHANGE SCENARIOS/MODELS** 📖

- Climate Ready Water Utilities (CRWU). Support and promote the U.S. Environmental Protection Agency’s CRWU program, a resource for water providers to develop and implement long-range plans that account for climate change impacts. See <http://water.epa.gov/infrastructure/watersecurity/climate/index.cfm>.
- Analyze crops needs and water rights. Determine the likely evolution of crops under various climate change scenarios in Oregon. Determine changes in growing seasons and water needs, by updating Oregon’s 1999 *Crop Water-Use and Irrigation Requirements* report (See <http://extension.oregonstate.edu/catalog/pdf/em/em8530.pdf>). Compare how those results do or do not match with existing water rights and junior water users. [ODA – OUS - WRD]
- Develop basin-specific scenarios, illustrating the impact of climate change on future water use and water availability. Show how climate change could affect the ability to access water when it’s needed, and sketch out alternatives.

#### **ACTION 5.C. ASSIST WITH CLIMATE CHANGE ADAPTATION STRATEGIES**

- Help restore and protect wetlands, uplands, forests, and riparian zones to increase the capacity for natural water storage.
- Integrate water resource and land management in a way that helps Oregon prepare for natural disturbances, particularly sea-level rise, storm surges, flooding, landslides, wildland fires, etc. Include sensitivity analyses and risk-based planning in city and county comprehensive plans for consideration in state and local permitting processes. Partner with emergency preparedness community and potential funders, including public health and safety interests. [State – Federal - Local]
- Provide assistance to water users to increase storage capacity, water conservation, reuse, and efficiency.

### **BULLETIN 6: THE WATER AND LAND-USE NEXUS**

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#### **ACTION 6.A. ENSURE THAT LOCAL GOVERNMENTS HAVE ACCESS TO DATA NEEDED FOR DECISION-MAKING**

- Develop and share information regarding the location and available quantity and quality of water resources, particularly groundwater. Provide this information to land-use planners. Fund the collection and dissemination of such data. [State – Federal – Local—Tribes]

#### **ACTION 6.B. DEVELOP LAND-USE SCENARIOS / MODELS**

- Sourcewater Protection Scenarios. Identify land critical to the long-term management of Oregon’s drinking water resources. Develop rules associated with land development that could impinge on the ability of that land to protect sourcewater.
- Identify the potential effect of stricter requirements for land practices to protect water resources (protecting wetlands, forestlands, floodplains, etc.,) on the available stock of developable land.
- Identify water-related ecosystem services; determine the economic benefits and market value of these services. [See Action 11.D].
- Conduct studies to determine the number and location of historic exempt use wells and average water usage per well. Use this information to help inform local land-use decisions [see Action 2.B].

#### **ACTION 6.C. FULLY INTEGRATE WATER INFORMATION INTO LAND-USE PLANNING (AND VICE VERSA)**

- Help local governments integrate information about water availability into land-use decisions and plans, including Capital Improvement Plans, Water Management and Conservation Plans, and other local water provider plans that may help inform land-use decisions. [WRD – Local]
- Recognize the role of forest land in protecting watersheds and drinking water supplies; strengthen the limits on forest land conversion in Statewide Planning Goal 4. [DLCD]
- Help local governments integrate water quality information into land-use decisions. More specifically, emphasize Oregon’s Statewide Planning Goal 5 to protect public drinking water sources, wetland, and riparian corridors, by completing land-use planning at the local level. [DLCD-OHA-DEQ-DSL]
- Develop rules to implement Statewide Planning Goal 6. Although Goal 6 directs local governments to consider the effects of land-use on water quality, it does not contain details about how to address water quality concerns when making land-use decisions. Build a coalition of non-governmental organizations, agencies, water providers and others to serve as a rule-making advisory group. [DLCD - DEQ]

- Ensure that State Agency Coordination Agreements with the Department of Land Conservation Development are up-to-date.
- Improve location information of Underground Injection Control Systems (UICs) to prevent conflicts with future well development. Improve existing UICs to protect groundwater quality. [DEQ-WRD]

## BULLETIN 7: WATER RELATED INFRASTRUCTURE

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### ACTION 7.A. ENCOURAGE REGIONAL (SUB-BASIN) APPROACHES TO WATER AND WASTEWATER SYSTEMS

- Evaluate land-use goals, regulatory and funding programs, to identify and remove barriers that prevent the development of regional water and wastewater systems. Regional systems could include physical consolidation, or shared contracts, services, purchases, etc. [State - Local]
- Provide incentives for “regionalizing” water and wastewater infrastructure, by ranking grant and loan applications more favorably when applicants are part of a regional effort. Provide grants and loans specifically for the purpose of regionalizing. [State – Federal]

### ACTION 7.B. DEVELOP AND UPGRADE WATER AND WASTEWATER INFRASTRUCTURE

- Use an “asset management” approach to rehabilitate or replace infrastructure that no longer serves its purpose.
- Upgrade facilities to address emerging contaminants and growing populations.
- Ensure that basic maintenance (fixing leaks, replacing wooden pipes, measuring, automating) are counted in the definition of “green infrastructure” so that these projects can continue to compete for grant and loan funding.
- Recapitalize the state’s Special Public Works Fund, to continue providing low interest loans and grants to partially offset capital costs.

### ACTION 7.C. IMPROVE DAM SAFETY

- Evaluate the impact of potential dam failure on water supply systems. 
- Encourage efforts to evaluate and retrofit Oregon’s dams in anticipation of seismic events, aging, and other conditions. Resources are needed to conduct seismic evaluations that will identify deficient structures.
- Consider anticipated changes in low-frequency flood events, due to climate change predictions, in the design of spillways for existing dams. Resources are needed to conduct a statewide evaluation of problematic structures.
- Encourage the development of emergency action plans (EAP) for all high hazard dams in Oregon. Thirty-two percent of high hazard dams in Oregon have no emergency action plan, which is a predetermined plan of action to be taken, including roles, responsibilities and procedures for surveillance, notification and evacuation, to reduce the potential for loss of life /property damage in an area affected by a failure or mis-operation of a dam. Partner with emergency preparedness community.

## BULLETIN 8: EDUCATION AND OUTREACH

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### ACTION 8.A. PROVIDE IMPROVED PUBLIC ACCESS TO INFORMATION

- Water Education and Training Program. Develop a statewide “Water Education and Training” Program, providing free, water quality and water quantity information to the public in a variety of formats. Partner with the private sector, OSU extension, universities, tribes, watershed councils, soil and water conservation districts, watershed councils, all levels of government, non-governmental organizations, and industry associations. This would constitute a broader effort, with more real-time data and policy information than K-12 curricula produced at the national level. [State – Local — Tribal — Private Sector Partners]
- On-Line Water Information Center. Under a “Water Education and Training Program,” launch an on-line water information center with links to local, state, and federal water resources. Make databases searchable and extractable. Scan and post public documents. Translate “raw data” to “useful information” for the public and for decision-makers. Include information about best management practices, available grants and basic water curricula (i.e., the water cycle and the importance of conservation), as well as “ongoing research needs,” with questions that students in K-12, college, and graduate levels could assist with.

- Marketing the Value of Water. Under a “Water Education and Training Program,” reach audiences through public broadcasting, newspapers, advertisements, community meetings, and electronic media. Start with a baseline survey of public knowledge. Use simple terminology. Encourage local journalists to write water articles. Conduct a “Celebrate Oregon’s Waters!” campaign. Use the Water Trails Program at Oregon Parks and Recreation Department to increase access to water-related recreational opportunities and promote interest in protection of water resources.
- Focus on issues where individuals can do something to make a difference: pharmaceutical take-back, non-point source pollution prevention, water conservation, etc.
- Provide domestic well and septic system owners with information about testing / monitoring, treating for contamination, technical resources, and funding.

#### **ACTION 8.B. ENCOURAGE THE NEXT GENERATION OF WATER EXPERTS**

- Build a corps of experts in engineering, hydrology, hydrogeology, water law, farming and irrigation techniques, and other technical specialties. Smaller communities have a growing need for water and wastewater treatment facility operators, and other expertise.
- Provide technical training to soil and water conservation district staff, watershed councils, public agency employees, irrigation district managers, etc.
- Offer internships, fellowships, and other opportunities for exposure to careers in water.

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### **BULLETIN 9: FUNDING**

#### **ACTION 9.A. ESTABLISH A WATER MANAGEMENT FUND FOR THE STATE OF OREGON**

- Establish a water management fund with public and private funding sources. Use this to fund state natural resource agencies at a level to ensure state oversight, management, and technical assistance related to water resources. Funding sources could include the General Fund, lottery dollars, federal funds, a water rights management fee, wastewater fee, or other sources.
- Dedicate monies to state water management (including data collection and applied research, operational costs, and funding reserves for drought or other emergencies).

#### **ACTION 9.B. CAPITALIZE FUNDS FOR LOCAL WATER PROJECTS**

- Capitalize a number of already-existing water related grant funds (“OWSCI Planning Grants,” “SB 1069 Feasibility Study Grants for Water Conservation, Reuse and Storage,” “HB 3369 Implementation Grants,” and “OWEB Grants”) that encourage public benefits.
- Capitalize loan programs that provide low interest loans for water development projects.

#### **ACTION 9.C. COORDINATE STATE AND FEDERAL FUNDING PROGRAMS**

- The state and its partners should make investments in water resource planning, data, protection, and restoration using a more strategic and coordinated watershed approach. The Bureau of Reclamation has competitive basin-studies grants available for these activities. [see Action 10.C].
- Show applicants, at-a-glance, various funding programs available for water-related projects.
- Agencies should review the schedules and application criteria for state grants to determine if dates, forms, or criteria could be modified to facilitate a streamlined approach through reduction of duplicative efforts. Communities are spending too much time chasing water and energy-related dollars with slightly different criteria and requirements.

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### **BULLETIN 10: PLACE-BASED APPROACHES**

#### **ACTION 10.A. ENCOURAGE A REGIONAL (SUB-BASIN) APPROACH TO WATER AND WASTEWATER SYSTEMS [ACTION 7.A]**

- Evaluate land-use goals, regulatory and funding programs, to identify and remove barriers that prevent the development of regional water and wastewater systems. Regional systems could include physical consolidation, or shared contracts, services, purchases, etc. [State - Local]

- Provide incentives for “regionalizing” water and wastewater infrastructure, by ranking grant and loan applications more favorably when applicants are part of a regional effort. Provide grants and loans specifically for the purpose of regionalizing. [State – Federal]

#### **ACTION 10.B. PARTICIPATE IN TRANSBOUNDARY AGREEMENTS**

Continue to participate in Transboundary efforts related to water management and long-term planning. These include the Columbia River Treaty, the Klamath Basin Restoration Agreement and its related work groups, and Oregon’s Territorial Sea Plan.

#### **ACTION 10.C. FACILITATE REGIONAL (SUB-BASIN) WATER RESOURCE PLANNING**

This Strategy provides an opportunity to pursue a more integrated approach, when it comes to protecting, sharing, or developing water resources at the basin and sub-basin level. Recognizing the value of both “bottom up” and “top down” approaches, developing water resource plans with local, state, and federal partners at the table will ensure that the best of both processes are utilized. These plans should integrate water quantity, water quality, and ecosystem issues.

- **Ways the State can help:**

- Provide a framework for local basin planning.
- Help coordinate each basin or sub-basin that wants to take this approach.
- Share basin-level data gathered by local, state, and federal partners in an on-line format.
- Establish incentives, including grants, for communities to conduct this planning at the basin or sub-basin level. (The Bureau of Reclamation also has competitive basin-studies grants available for these types of activities.)
- Identify permitting, funding, or other management issues that would be ripe for simplifying or streamlining.
- Conduct a pilot project at the basin-level that clearly identifies a water resource need, and then brings together partners, funding, and technical assistance / programs to address this need.

- **Regions should use the following tools and ideas:**

- Conduct an assessment, determining whether land-use laws, regulations, or ordinances are getting in the way of regionalization efforts.
- Determine needed improvements in water-use efficiency, water quality, public health, and ecosystem protections.
- Use scenario planning as part of the decision-making process.
- Consider data modeling to facilitate decision-making at the local level.
- Use adaptive management; re-visit assumptions periodically.
- Account for economic values and impacts of intact/healthy watersheds. Provide incentives for protection.
- Identify sources of water (freshwater, recycled water, stormwater, etc.). Conduct assessments, matching reclaimed water quality to end uses (e.g., flushing or irrigating with non-potable water).
- Identify demands for water.
- Consider conservation pricing (define and charge “full cost,” not flat rates for water).
- Consider water sharing between communities.
- Commit to implementation as part of this process.
- Document and publicize best water management practices in the basin.

- **Regions and localities may want to ask themselves the following questions to jumpstart planning:**

- Define your water needs and water quality levels of those needs. Whose wastewater could you use?
- Define your wastewater streams and their water quality levels. To whom could you deliver your wastewater?
- How many times could you use water before returning it to the environment?
- Identify the most critical wetlands in your region. Prioritizing their protection creates a market / credits system.
- What ecosystem services could this community provide? What revenue would such an ecosystem service need to generate in order to help it stay in place?

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## **BULLETIN 11: WATER MANAGEMENT**

#### **ACTION 11.A. INCREASE WATER CONSERVATION & WATER EFFICIENCY**

- Establish and fund an on-line water conservation clearinghouse that documents water conservation’s “best practices.” The clearinghouse could include information on existing state and federal conservation programs, grant opportunities,



and technical resources. State agencies with water conservation programs include OWRD, ODA, Building Codes' REACH Program, and ODOE. Provide "on-the-ground" resources to help explain the benefits of water conservation, best management practices, and to provide technical information, and resources.

- Focus on agricultural water efficiency. Using more than 80 percent of Oregon's diverted water, agriculture is the largest consumer of water in Oregon, and increased efforts in water efficiency in this sector could result in significant water savings statewide. To begin the process, encourage more irrigators to develop Agricultural Water Management and Conservation Plans. Provide grant funding for this purpose through the Water Resources Dept. and make use of Oregon Dept. of Energy tax incentive credits or Oregon Dept. of Agriculture efficiency grants.
- Engage industrial users to see if any regulations currently stand in the way of greater water efficiency.
- Publicize and clarify existing conservation programs at the local, state, and federal level, particularly the Allocation of Conserved Water Program and the Water Management and Conservation Planning Program to help with water conservation. Look for ways to expand the Conserved Water Program to reward more types of efficiency efforts. Partner with the Alliance for Water Efficiency and EPA's Water Sense Program.

#### **ACTION 11.B. INCREASE BUILT STORAGE**

- Encourage greater use of Artificial Recharge as a water treatment technique to help meet water quality standards for Aquifer Storage and Recovery, as demonstrated in the Umatilla Basin Aquifer Restoration Project. Areas of the State designated as 'groundwater limited' or 'critical groundwater areas' may be especially good candidates. Continue to make planning and feasibility study grants available for these projects. [WRD – DEQ – local communities]
- Allocate and reauthorize existing storage projects [Corps – BOR – WRD – local communities]. Seek funding to facilitate work between the state and federal agencies for allocating water stored behind federal dams, particularly in the Willamette, Columbia, and Crooked River Basins. Authorize a full range of beneficial uses, including anadromous fish and water quality needs, municipal, agricultural and industrial water supply, and recreation.
- Expand or improve existing storage projects [DSL – WRD – Federal Agencies – local communities]. Increase the storage capacity of existing storage projects, using various methods including raising dam height or dredging.
- Develop new off-channel storage sites [ODFW – DEQ – WRD – Federal Agencies - local communities—Tribes]. This alternative includes storing water behind dams constructed on side channels to the main stem and tributaries where no known fish habitat may exist. Natural runoff can be stored during the wet season and released during the dry season.

#### **ACTION 11.C. ENCOURAGE ADDITIONAL WATER RE-USE**

- Ensure that Oregon has the right policies and regulations in place to facilitate municipal and industrial water re-use.
- Conduct a statewide assessment of the potential for water re-use to fulfill current and future water supply needs, matching the water quality of reclaimed water to appropriate end uses.
- Maintain funding for the Water Resources Department's grant program for conducting water conservation, re-use, and storage feasibility studies.
- Encourage and incentivize increased industrial water re-use.

#### **ACTION 11.D. ASSIST IN THE DEVELOPMENT OF ECOSYSTEM CREDITS AND MARKETS**

Value and invest in ecosystem markets. Build upon Senate Bill 513 (2009), which sets the stage for ecosystem markets in Oregon. Specifically identify ecosystem service benefits or credits that can be sold outside of Oregon.

## **BULLETIN 12: ECOSYSTEM HEALTH AND PUBLIC HEALTH**

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#### **ACTION 12.A. RESTORE NATURAL STORAGE AREAS**

The function of these natural storage features has been lost over time due to stream channeling, land grading, and other activities. Do more to protect these systems during land-use planning.

- Maintain forested areas. Promote the maintenance of forestland in forest uses and promote the establishment of new forests as key elements in promoting high quality water and protection of soil productivity. (Oregon Department of Forestry's Draft 2011 "Forestry Program for Oregon")
- Develop a rapid assessment methodology, to determine storage capacity and system health of wetlands and streams. Local governments could use these assessments to make permitting decisions, evaluate the effectiveness of



mitigation and restoration practices, and bolster their efforts under Statewide Planning Goal 5. [DSL – USACE – US EPA]

- Develop a statewide riparian policy, building upon language that exists in executive order. Draw upon already existing authorities at ODA, DSL, DEQ, ODF, and local governments to protect riparian areas.
- Develop a statewide floodplain policy, to set the framework for regulation and permitting work. [DSL, State, Federal, Local]
- Restore floodplain functions (Action 3.8 in ODFW’s Conservation Strategy). Reconnect rivers and streams to their floodplains; restore stream channel location and complexity; remove dikes and revetments; allow seasonal flooding; restore wetland and riparian habitats; and/or remove priority high-risk structures within floodplains.

#### **ACTION 12.B. PURSUE ADDITIONAL INSTREAM PROTECTIONS** [contingent upon implementing Action 3.A]

- Recommend the designation of additional scenic waterways. [OPRD]
- Apply for new instream water rights, including those that protect a suite of flows (base, peak, ecological and other flows). [DEQ, ODFW,OPRD]
- Expand programs to restore streamflows, such as instream transfers and related OWEB grant programs.
- Private sector funders could acquire water from willing sellers to restore and protect water instream. Evaluate the pricing of such efforts; ensure they are economically competitive with other uses of water.

#### **ACTION 12.C. IMPROVE POLLUTION PREVENTION**

- Reduce the Use of Toxics
  - ~ Establish an interagency toxics chemicals reduction team that is charged with developing a list of “toxic chemicals of concerns” and a toxics use reduction strategy. Identify specific actions the state can take to reduce releases of and exposures to listed chemicals.
- Sourcewater Protection
  - ~ Establish “take back programs” for unused and outdated products, including pharmaceutical take-back programs for communities, pesticide collection programs for farmers and ranchers, and hazardous waste. [See Action 8.A]
  - ~ Provide technical and funding assistance to clean-up contaminated aquifers
  - ~ Ensure consistent riparian buffers and restoration requirements for all land uses.
  - ~ Encourage techniques that decrease turbidity and sedimentation (e.g., no till farming).
  - ~ Promote consistent application of state water quality standards across land uses.
  - ~ Encourage the Oregon Treasurer’s Office and Department of Administrative Services to incorporate water quantity and water quality issues into investment and purchasing decisions. Use state and local purchasing power to demonstrate preference for products made without toxic or persistent pollutants, such as certain soaps or cleaners.
  - ~ Continually improve water quality standards, including the Priority Persistent Pollution list (P3), Total Maximum Daily Loads (TMDLs), new water quality standards for toxics, non-point source pollution, and toxic reduction plans.
- Prevent and Eradicate Invasive Species
  - ~ Support efforts by state and federal agencies, including the use of boat inspections stations, to prevent the spread of invasive species. More specifically, support the Oregon Conservation Strategy’s six statewide actions aimed at preventing new introductions, and the scale and spread of infestations.

#### **ACTION 12.D. IMPROVE HABITAT AND HABITAT ACCESS FOR FISH**

- Build on the successes of habitat improvement, including large wood placement or riparian improvement.
- Build on the successes of the Oregon Plan for Salmon and Watersheds by removing fish passage barriers (e.g., replacing culverts with bridges, installing larger culverts, construction of fish ways, and stabilization of road fill material, installing fish screens, and retiring push-up dams).