

SHARED COMMUNITY STEWARDSHIP

Goal: Basin residents collectively commit to watershed stewardship by understanding their impacts on, and contributions to, watershed health and each other.

Individuals, organizations, and agencies across the basin are already actively engaged in addressing their impacts on watershed health. Watershed councils and Soil and Water Conservation Districts are playing critical roles in fostering resource stewardship at the local level. In urban areas, municipal agencies and other local groups are also active in restoration efforts.

Every agency, enterprise, and individual resident of the basin contributes to activities that threaten water quality and habitat health. For this reason, individuals, private enterprises, non-profit organizations, and government agencies all must be engaged in efforts to achieve the basin's restoration goals.

Priority actions to support stewardship efforts include:

- **educating residents throughout the basin about their impacts on water and habitat;**
- **developing a unified plan to guide activities at all levels; and**
- **providing adequate financial and technical support for local efforts.**

While regulatory approaches rely on rules and restrictions on behavior, a stewardship approach depends upon the commitment of individuals and organizations across the region. Such commitment cannot be mandated.

As the Initiative's goal statement suggests, understanding is the foundation of shared community stewardship. Incentives can also play an important role in encouraging stewardship. Establishing clear goals that allow for a variety of approaches at local level will be another key element of a basin-wide, stewardship-based restoration strategy.

Education for Increased Understanding

Educating basin residents about our impacts on the health of the basin and about how we can help enhance the quality of the region's ecological, social, and economic environment will be a key element of a restoration strategy. The development of information and community education is one of the key roles played by watershed councils (City Club of Portland 1999). Councils undertake a range of activities, including education and consciousness raising about watershed issues. The Yamhill Basin Council describes one of its primary activities as improving

“knowledge about watershed conditions to help everyone – landowners to local government – make better management decisions” (Yamhill Basin Council, informational materials). Soil and Water Conservation Districts (SWCDs) also play an important role in outreach and education in the basin by assisting farmers in developing management plans and in accessing technical assistance to support conservation efforts.

Municipal agencies are also helping educate communities about restoration efforts. Portland’s Bureau of Environmental Services has undertaken several programs aimed at informing the public about their role in protecting and enhancing watershed health. Their Stewardship Program, for example, promotes citizen monitoring and watershed evaluation, provides training in stewardship skills, and supports the formation of partnerships for watershed activities.

Involving communities in the development of indicators can also help local residents understand their ecological, economic and social goals and can empower them to take action to achieve these goals. The process of developing indicators can “bring many different sectors of a community together, foster new alliances and relationships, provide all citizens with a better compass for understanding community problems and assets, and drive community change” (Redefining Progress 1999).

A regional entity like the Initiative can assist the educational efforts of local groups by developing educational materials that simplify the complex relationship between a strong economy and resource sustainability. The Initiative can also assist local efforts by developing and communicating a “unified plan” for restoration of the entire basin, so that local groups understand how their efforts fit into a regional framework. Sponsoring an annual workshop on the state of the basin would be one way to help local groups understand how their activities fit within the larger context of the basin (Watershed Council Needs Assessment 1999).

Incentives for Involvement

The voluntary nature of stewardship efforts makes the use of incentives particularly powerful. Incentives may involve direct financial assistance, educational programs, provision of appropriate information, regulatory relief, public recognition, or market-based mechanisms.

An effective incentive program should target regional needs, but allow for local variation in responses to these needs. Incentive programs should also be cost-effective; easy to understand, administer and implement; acceptable to those they are targeting; and flexible enough to adapt to changing conditions (Vickerman 1998).

Regulatory Relief and Local Variability

One of the most critical elements of the success of the Natural Community Conservation Planning (NCCP) effort in southern California has been the ability to create incentives for all stakeholders to participate in this voluntary form of conservation planning (Rempel et al. 1999).

This habitat conservation planning effort seeks to identify and protect important habitat areas and their resident native species in advance of land development (Gunderson 1995). The Plan encouraged participation by providing a streamlined regulatory process for compatible and appropriate development.

Recognizing that sub-regions face different challenges and constraints, NCCP developed different incentive programs depending on the characteristics of local conservation plans. In areas with a large number of private landowners, state and federal agencies agreed to contribute a portion of the acquisition, management, and monitoring resources as an additional incentive to private landowner participation.

Clear Goals, Varied Means

A clear but flexible framework for action at the regional level can help support stewardship efforts (Bradbury 1999). Providing a “unified plan” for the basin as a whole can help ensure that local investments target priority issues that will contribute to the achievement of regional goals. Without a clear regional framework that directs efforts toward the health of the basin as a whole, investments at local levels may be wasted.

Providing a clear regional framework will be particularly important in supporting water management efforts. The issues of availability and seasonal flows that affect water quality and habitat require coordinated action at a basin-wide level. Providing clear regional water management guidelines can assist local efforts in water conservation.

While watershed councils and Soil and Water Conservation Districts (SWCDs) throughout the basin need to share clearly defined goals to ensure that the health of the overall basin is restored and maintained, they also need flexibility in terms of how they achieve these goals. Reliance on local leadership facilitates efforts to incorporate ecological variability into management practices. Local, state, and federal agencies need to recognize that every watershed community is different, and allow for culturally and ecologically appropriate strategies at the sub-basin level.

Several examples of the ways that different SWCDs provide outreach help illustrate the importance of recognizing that “one size” will not “fit all” in planning, implementation, and funding restoration efforts in the valley. The Yamhill SWCD funds a “stream walker” to provide outreach and education to landowners about the activities of the watershed councils and the District. In Marion County, the SWCD board plays an active role in bridging the gap between urban and rural interests in their district through outreach and education. In East Multnomah county, staff from the SWCD and the Natural Resources Conservation Service provide outreach through backyard conservation and nature-scaping programs. Although the efforts of the SWCDs are coordinated with other groups in each of these cases, the means by which the message is delivered has been adapted to reflect local needs, capacities, and conditions.

The role of SWCDs also differs in different parts of the region. In the southern parts of the Willamette valley, the SWCDs play a well established role in supporting watershed councils by providing administrative support, fiscal management, and institutional memory. In the central and northern parts of the basin, organizations such as city bureaus play the role that the SWCDs play in the southern basin. A basin strategy needs to recognize the variety of conditions throughout the basin, and support flexible approaches to outreach and restoration efforts.

Stewardship Challenges

The recent Watershed Council Needs Assessment identified a number of challenges facing watershed councils, SWCDs, and other voluntary stewardship efforts. Lack of access to technical resources, expertise, and financial support is a significant obstacle for some councils, particularly

those located in more remote areas. The different institutional environment for local stewardship in urban and rural areas also poses challenges to achieving a consistent regional restoration effort.

For example, the Oregon Watershed Enhancement Board (OWEB) has developed watershed assessment and action planning protocols to develop some consistency in how resource conditions are assessed and how strategic restoration plans are developed. Although use of these protocols is required to receive OWEB funding, however, only a very small percentage of watershed councils have used these guidelines. In some cases, this may reflect lack of capacity or expertise in the local councils. In urban areas, however, where watershed councils serve in an advisory capacity to local and regional land use planning processes, OWEB has not traditionally funded watershed activities. Because urban watershed councils have come to rely on alternative sources of support, they only partially embrace State plans, processes, and protocols. This may lead to inconsistencies in planning, assessment, and implementation of a basin-wide restoration strategy (Watershed Council Needs Assessment).

Ensuring that all players are at the table is critical to the long-term success of community-based efforts. However, including all stakeholders in the process also requires a significant investment in ongoing conflict resolution among participants. The recent watershed council needs assessment found that watershed councils and SWCD staff would benefit from training to develop consensus building, facilitation, dispute resolution. There may also be a role for a regional player in facilitating relationships between local players and state and federal agencies.

The needs assessment also found that local groups would benefit from training in strategic planning, project management, and administration skills. A number of programs already contribute to skill development and to the watershed restoration efforts of local groups. DEQ has supported monitoring activities, For the Sake of Salmon has sponsored workshops and regional forums, and METRO has convened monthly meetings of local watershed council coordinators (Watershed Council Needs Assessment). However, councils in more remote areas often have difficulty accessing these support systems. The Initiative could help channel these resources to under-served communities.

Table 12. Shared Community Stewardship Matrix

Goal	Setting	Needs	Possible Strategies
Basin residents collectively commit to watershed stewardship by understanding their impacts on, and contributions to watershed health and each other.	<ul style="list-style-type: none"> Watershed councils and soil and water conservation districts provide a local framework for stewardship efforts. 	<ul style="list-style-type: none"> Need to respect role of local groups as stewardship leaders. 	<ul style="list-style-type: none"> Recognize central role of local groups in restoration strategy development and implementation.
	<ul style="list-style-type: none"> There is still no clear regional plan guiding local efforts. 	<ul style="list-style-type: none"> A regional plan is needed to ensure local efforts support basin-wide goals. 	<ul style="list-style-type: none"> Develop a clear regional plan to guide local efforts.
	<ul style="list-style-type: none"> Stewardship is not a “one size fits all” issue – flexibility is important. 	<ul style="list-style-type: none"> Need a regional framework that is flexible and will support different approaches in different sub-basins. 	<ul style="list-style-type: none"> Develop a flexible restoration strategy that recognizes local differences in needs and approaches.
	<ul style="list-style-type: none"> In some areas, local groups lack adequate technical and financial resources. 	<ul style="list-style-type: none"> Need a system to channel resources to underserved groups and communities. 	<ul style="list-style-type: none"> Develop a way to channel technical assistance to local groups to help them address priority issues.
	<ul style="list-style-type: none"> The actions of individuals – particularly in urban areas – have significant impacts on the valley’s health. 	<ul style="list-style-type: none"> Individuals of all ages need to understand their role as stewards. Need to engage the public in restoration and monitoring efforts to address ecological integrity. 	<ul style="list-style-type: none"> Educate the public about how individual behavior affects the valley’s health. Engage the public in restoration and monitoring efforts to address ecological integrity.

ACCOUNTABLE INSTITUTIONS

Goal: Watershed health efforts by government, businesses, and local groups are managed in a cooperative, business-like way, with clear roles, measurable objectives, and specific performance measures which are carefully tracked.

The Initiative's goal statement highlights several key elements of institutional accountability. Participants in the "Willamette Confluence '98" echoed these characteristics, identifying the need for on-going, reasonable prioritization, coordination and guidance; on-going stable and accountable funding; and a single centralized information gathering and dissemination source (Willamette Confluence '98"). In summary, clear regional goals, coordination, an adequate information system, and adequate funding form the foundation of an accountable institutional framework. Achieving a balance between regulations and expanded use of incentives will also be important.

Clear Regional Goals

A broad range of organizations, agencies, and individuals are already engaged in restoration activities, as the US Army Corps of Engineers' inventory of restoration activities in the basin illustrates (USACE, 1999). The range of efforts underway is encouraging and essential, as no one agency or sector can achieve the basin's restoration goals alone.

However, without a clearly defined strategy guiding these multiple activities toward an overall goal, the cumulative effect of these efforts is difficult to predict. Are resources being invested on priority issues? Are we leveraging our resources strategically? Are our best efforts being compromised by lack of investment elsewhere?

Accountability requires that resources be used effectively and efficiently. However, effectiveness and efficiency are impossible to assess without clearly defined goals. The preceding discussion of stewardship efforts emphasized the importance of a clear regional framework to guide actions at the local level. Clarity about regional goals will also help ensure that agencies at the federal and state levels apply their resources in ways that provide the most leverage in achieving restoration objectives.

In developing a restoration strategy, specific objectives for restoration need to be defined. One of the challenges for the basin will be to develop clear regional restoration goals that are flexible enough to support an adaptive management approach.

Adaptive Management

Because control over the basin ecosystem is fragmented, a successful restoration effort will require "sharing analytical information, identifying tradeoffs and coalitions for joint actions; and

learning from surprising outcomes” (Lee 1995). To learn from such “surprising outcomes” requires an adaptive management strategy.

Adaptive management acknowledges that there will always be uncertainty and unpredictability on managed ecosystems, both as new situations arise and as management itself results in change. Adaptive management views policies as hypotheses or questions; management actions need to be structured to evaluate or test these hypotheses. Programs need to be flexible enough to take advantage of unforeseen restoration opportunities as they arise.

Both institutional and internal goals need to support an adaptive management approach. Remaining open to learn what works and what doesn’t requires that risk-taking be acceptable (Gunderson 1995). One of the biggest obstacles to applying adaptive management successfully is that a failed experiment can be politically unacceptable. Reinforcements and rewards for risk-taking and experimentation need to be in place within agencies and organizations involved in adaptive management.

Because institutional goals define institutional roles, the goals of agencies must reflect the overall regional goals for an integrated strategy to succeed. Currently, institutional goals are often poorly defined and are often in conflict with regional objectives. In part, this is because historically government agencies have been focused on specific objectives, with little consideration for the impacts of their activities outside their particular area of focus. Some dealt with air pollution or water quality, others with fish and wildlife, still others with transportation, but with little communication between them. As concern over sustainable development has focused attention on the integrated nature of social, economic, and environmental systems, the narrow focus of these agencies has posed an obstacle to integrated planning and management.

The critical challenge to ensuring the effectiveness and efficiency of efforts in the basin will be ensuring that institutional goals, incentives, and indicators speak directly to the critical issues in the basin. These goals, incentives and indicators must also direct and reward individuals – staff and private citizens – to coordinate efforts with others engaged in valley restoration efforts. In many agencies, internal incentives need to be examined and re-oriented to support integrated resource management.

Coordination

The nature of adaptive management makes ongoing coordination between agencies and across communities critical. However, while the fragmentation of responsibility for resource management has long been recognized, little has been done to address this issue (OBC 1996). There is currently no framework for ongoing communication and coordination among basin agencies and organizations involved in restoration activities.

Lack of coordination between local government agencies is particularly problematic. Agencies and organizations at the local level often lack the resources and expertise to conduct comprehensive planning, assessments, and monitoring. State and federal agencies need to assess

how they can support local governments in restoration efforts by orienting their grant and technical assistance programs toward integrated planning and resource management.

Although the land use planning framework in Oregon can provide a useful tool to address many restoration issues, lack of coordination between natural resource agencies and land use agencies also poses a significant challenge. While land use planning laws allow for the integration of water resource issues, for example, water and land management rarely take place in a coordinated fashion. Until recently, there were few efforts to coordinate water quality investments in Portland with efforts to address habitat issues under the Endangered Species Act.

However, some local jurisdictions are working to improve coordination between bureaus and agencies. To integrate efforts to address water and habitat issues, the city of Portland is developing an integrated watershed program. Other local communities, including Eugene, are also coordinating their local planning efforts.

The approach that is being taken to address contamination in the Port of Portland is another example of cooperative engagement. DEQ has worked with EPA, other federal and state natural resource management agencies, the Portland Harbor Group, expert consultants and scientists, and members of the community to develop a Portland Harbor Sediment Management Plan (June 1999). The plan involves a combination of voluntary and enforcement mechanisms to investigate and remediate harbor contamination.

One of the most promising opportunities to achieve better coordination among agencies and programs is the recent designation of the Willamette as an American Heritage River. This designation provides a means to evaluate the impact of every federal program on the health of the river and coordinate federal resources to ensure they support regional restoration goals.

Information, Monitoring and Feedback

Coordination and adaptive management both require ongoing monitoring of conditions and measurement of progress toward overall goals (Gerlitz et al. 1999). Having appropriate performance measures and an information system that provides feedback loops to agencies and decision-makers are essential elements of an adaptive management approach.

Currently there is no integrated system in place to collect and disseminate information about conditions in the Willamette basin. In part, this is because institutional differences at various levels of government “often make it difficult to establish cooperative approaches to inventory and monitoring” (Gerlitz et al. 1999). Inconsistent laws, regulations, and mandates often lead to conflicts over the responsibility for different government entities.

Having appropriate indicators is particularly important. Indicators of performance need to reflect the region’s ecological, social, and economic goals (See Box on next page). At present, performance in conservation efforts is not measured in consistent and meaningful ways, and existing monitoring and evaluation activities do not always focus on appropriate information.

For example, indicators such as status of stocks and habitat quality are more supportive of regional restoration goals than measures such as catch or number of licenses sold. However, most resource management agencies rely on the latter types of indicators to assess their performance (OBC 1996).

The State of the Environment Report currently under development will serve as the basis for indicators of environmental health. The Sustainable Ecosystems Institute is also developing a set of indicators reflective of the Willamette Valley's economic, social, and environmental conditions.

Providing a mechanism for ongoing information collection and feedback among the region's watershed councils and SWCDs can assist these groups in tracking their progress and learning from their efforts. The Oregon Watershed Enhancement Board (OWEB) grant program offers one of the most promising opportunities for strategic investment, knowledge building, and economic and ecological accountability. OWEB will soon be administering more grant funding than any other organization in Oregon. Its recent efforts to implement a monitoring program and to include the cost of monitoring in watershed grants will provide for greater accountability for the investment of funds, as well as supporting better information management (Bradbury 1999).

Local Engagement in Monitoring

Because decisions made at local, regional, state and federal levels affect the health of the basin, information is needed to support decision-making at all of these scales. Incentives are needed for landowners, agencies, scientists, and other individuals to participate in inventory and monitoring efforts.

The results of inventory and monitoring also need to be communicated in ways that are meaningful to a broad spectrum of audiences (Gerlitz et al. 1999). The City of Corvallis has an ongoing program to survey local residents about local conditions, values, and priorities and to keep them informed about changes in these conditions. This approach could serve as a model for other basin communities.

Indicators

The following criteria can be helpful in developing effective indicators:

Policy relevance

- Indicators should be easy to interpret.
- They should show trends over time.
- They should be responsive to changes in underlying conditions.
- A threshold or reference value must be established against which conditions can be measured.

Analytical soundness

- Indicators should be well founded in technical and scientific terms.

Measurability

- Indicators should be calculated from data that are readily available or available at reasonable cost.
- Data should be documented and of known quality.
- Data and indicators should be updated at regular intervals.

(Adapted from Monitoring Environmental Progress, World Bank)

Better integration of existing inventory and monitoring systems will require improved coordination across institutional boundaries. In some cases, the legislative mandates of federal, state, and municipal agencies may need to be revised to support cross-agency collaboration. Adequate long-term funding for inventory and monitoring efforts will also be critical, as monitoring programs can be expensive and skill-intensive (Gerlitz et al. 1999).

Funding

The importance of having dedicated, long-term funding that supports the region's restoration efforts cannot be under-stated. The allocation of funds sends particularly strong signals to local communities. Organizational and individual efforts to support restoration will be undermined if the way money is allocated is not consistent with overall priorities, goals and objectives. Federal and state funds need to be applied in ways that provide incentives to local government and other organizations to work together toward overall societal goals and objectives.

It would be all too easy to put off these investments, particularly as some may impose politically uncomfortable costs on particular sectors and communities in the basin. However, it is easier to conserve and protect water and habitat than to restore these resources once they have been degraded. Investing now can save in the longer term.

In addition to identifying and committing adequate financial resources to restoration efforts, existing financial incentives can be used more effectively to support restoration efforts. The tax system is one important financial mechanism that can guide actions toward the achievement of regional restoration goals. Many groups have highlighted the ways in which the federal estate tax system creates pressures to harvest, sub-divide, or sell farm and forest lands. Tax relief could be offered in priority areas to limit inappropriate development. Other tax options include deductions for resource restoration costs and tax incentives for managing habitat. Senate Bill 791, mentioned earlier, can be used to encourage restoration and conservation of wildlife habitat.

Oregon's riparian tax incentive law also could be applied more extensively. This law has not been used to its potential to date because agricultural land is taxed at such a low rate. Allowing people to deduct investments in riparian maintenance from their income taxes might enhance the effectiveness of this law (Vickerman 1998).

The Role of Regulations and Incentives

A restoration strategy will need to balance the use of command and control regulations and expanded use of incentives. Although the Oregon Plan relies on voluntary stewardship as its centerpiece, laws and regulations can and must play a powerful role in supporting and validating non-regulatory efforts. The Endangered Species Act and the Clean Water Act, for example, have played an important role in directing attention to critical resource management issues.

For the most part, existing laws may provide sufficient support for the valley's restoration efforts – if they are applied and enforced where necessary. For example, although the system of water rights is often considered to be an obstacle to water management, a 1987 state law allows holders

of water rights to assign them elsewhere for beneficial reasons rather than losing them. The Oregon Water Trust makes use of this law by leasing or purchasing water rights to retain water instream. Land use planning laws likewise support the integration of water management and land management issues; however, in reality this integration rarely happens (Bastasch 1998).

What is most important is that laws and regulations provide appropriate incentives and disincentives supporting efforts toward the goals and objectives of the strategy. Existing laws, policies, and codes need to be examined to see whether they support regional goals.

Table 13. Accountable Institutions Matrix

Goal	Setting	Needs	Possible Strategies
Watershed health efforts by government, businesses, and local groups are managed in a cooperative, business-like way, with clear roles, measurable objectives, and specific performance measures that are carefully tracked.	<ul style="list-style-type: none"> Restoration goals for basin are not clearly defined. 	<ul style="list-style-type: none"> Clearly defined goals for basin restoration efforts are needed to guide efforts at all level. 	<ul style="list-style-type: none"> Develop clearly defined restoration.
	<ul style="list-style-type: none"> Institutional goals and related performance indicators often conflict with restoration objectives. 	<ul style="list-style-type: none"> Internal incentives need to be examined and re-oriented to support integrated resource management. 	<ul style="list-style-type: none"> Reassess institutional goals and disincentives within ensure that they are consistent with regional goals.
	<ul style="list-style-type: none"> There is no framework for ongoing communication and coordination among basin agencies and organizations. 	<ul style="list-style-type: none"> Need a framework for communication and coordination to leverage resources and support adaptive management. 	<ul style="list-style-type: none"> Develop an information communication system adaptive management at regional scales.
	<ul style="list-style-type: none"> Existing monitoring and evaluation activities don't always focus on appropriate information. 	<ul style="list-style-type: none"> Monitoring and information gathering need to address critical issues and support decision makers. 	<ul style="list-style-type: none"> Inventory ongoing information gathering and monitoring and ensure they focus on relevant to restoration goals.
	<ul style="list-style-type: none"> Agencies and organizations at the local level often lack the resources and expertise to conduct planning, assessments, and monitoring. 	<ul style="list-style-type: none"> Incentives and other support provided by state and federal governments need to support integrated planning and resource management. 	<ul style="list-style-type: none"> State and federal governments can provide incentives for local governments to focus on planning and resource management.
	<ul style="list-style-type: none"> Existing laws, policies and codes often provide disincentives to restoration efforts. Those that support restoration often are not enforced. 	<ul style="list-style-type: none"> Laws, policies, and codes need to support regional goals. Where they do support restoration, they need to be enforced. 	<ul style="list-style-type: none"> Existing laws, policies, and codes should be reviewed and needed to support regional goals.
	<ul style="list-style-type: none"> Lack of adequate long-term funding committed to restoration efforts. 	<ul style="list-style-type: none"> Need to identify sources and gain commitments of long-term funding to support restoration efforts. 	<ul style="list-style-type: none"> Challenge federal, state agencies to commit adequate funding for restoration efforts.

VI. Concluding Remarks

The residents of the Willamette basin face significant challenges in achieving the region's restoration goals. However, the basin community also has a unique opportunity. Local residents care deeply about protecting the basin's unique attributes and quality of life. The richness of the basin's natural and human resources represent extraordinary wealth. The challenge is to invest these resources wisely.

One of the most important contributions that a regional strategy can make is to ensure that state, federal, and regional agencies support local efforts to meet regional goals. These agencies provide significant amounts of funding and other incentives to local communities.

Challenges

The nature of the impact on the basin's health requires that all residents participate in the achievement of regional restoration goals. Engaging key players in restoration efforts will be challenging and will likely require a combination of incentives, regulation, and education.

It will also be difficult to invest in the near term in the actions needed to address the regions critical ecological issues. While it is more effective - and in the long run, cheaper - to conserve than to restore, it is also easier to procrastinate than to act.

Opportunities

There are several promising opportunities for action in the near term that will advance progress toward the region's restoration goals. Providing better access to information about conditions and opportunities in the basin can provide critical support to local groups, as well as state and federal agencies, in their restoration efforts. Supporting educational efforts to ensure basin residents understand their role as stewards is another critical need.

Knowledge and Adaptive Management

The actions we take must be based on solid science. This science needs to be demand driven so that it addresses the needs of its intended audience, but at the same time it must be free from the influence of interest groups. Science is not a collection of facts, but a process for understanding the world around us, based on hypothesis formation, observation and experimentation, and verification. Like adaptive management, science has no end result -- it is a continuous process.

Several characteristics of environmental science may be worth considering as the Willamette Restoration Initiative develops its strategic plan:

- Ecological systems are dynamic, evolutionary, and often unpredictable. In defining a restoration goal, it is important to acknowledge that there is no fixed "natural condition" for the valley.

- Restoring the basin's functions and maintaining its' health will need to rely on a connected mosaic of natural and altered landscapes and systems.
- Natural cycles and human decision-making often function at different scales. Floods, fire, and ecosystem regeneration function at scales that will be challenging to harmonize with our economic and social planning cycles.
- The most important natural condition to restore to the valley is the capacity to respond, adapt, and evolve in response to broader physical and societal pressures.

While solid science must be used to guide the development of this strategy, the strategy itself will be policy driven. As the Initiative's board explores issues and forms its strategic plan, we should remember that the issues we address and questions we ask, no matter how objective and measurable, will be influenced to some degree by our individual and collective social and cultural values.

Regional efforts in the Chesapeake Bay and the Great Lakes, as well as the Pacific Northwest's own FEMAT process, offer examples of how scientific information can be effectively integrated into the decision-making process.

The Willamette Restoration Initiative and stakeholders will need to engage in an adaptive restoration process that includes at a minimum the following linked cyclical steps: environmental planning, coordinated decision making, monitoring results and integration of monitoring feedback into subsequent environmental planning. This learning/action cycle, or some variation on it, will be critical for the Initiative to implement its strategic plan. Indeed, such a process should be explicitly integrated into any strategic plan.

Definitions

At Risk	Populations, species or subspecies facing near term extirpation or the threat of near term extirpation from a geographic area.
Basin	The area of land that drains water, sediment, and dissolved materials to a common point along a stream channel. River basins are composed of large river systems.
Buffer Strips	Strips of vegetation left to protect streams during forest operations or other types of human activities.
Eco-efficient	Technologies or practices that provide both economic and environmental benefits through reduced resource use are “eco-efficient.”
Ecosystem	A complete, interacting system of organisms and its non-living physical environment in a given area (e.g., watershed).
Ecosystem Services	The conditions and processes that natural ecosystems provide that sustain human life. They include, for example, air and water purification, flood mitigation, crop pollination, and renewal of soil fertility.
Erosion	The wearing away of the land surface by running water, wind, ice, gravity, and other geological activities. Erosion is a natural process that can also be intensified or caused by human activities.
Existence Value	The value that derives from the sheer contemplation of the existence of a resource, apart from any possible direct or indirect use it provides.
Floodplain	The portion of a river valley or level lowland next to streams that is covered with water when the river or stream overflows its banks at flood stage.
Groundwater	Water that sinks into the soil and is stored in slowly flowing and slowly renewed underground reservoirs called aquifers.
Habitat	A place that provides seasonal or year-round food, water, shelter, and necessities for an organism, community, or population of plants and animals.
Mainstem	The main channel of the river basin, as opposed to the streams and smaller rivers that feed into it. The Willamette River mainstem begins where the Coast and Middle forks of the Willamette merge, near Eugene. Twelve major tributary rivers flow into the mainstem Willamette River.

Metapopulation	A cluster of interacting populations of plants or animals.
Native Species	Species that normally live and thrive in a particular ecosystem without having been introduced by humans.
Nonpoint Source	Any source of pollution that does not result from a discharge at a specific, single location or point source (such as a single pipe) but generally results from runoff, precipitation, atmospheric deposition, or percolation and normally is associated with land management.
Nutrients	Chemical elements (e.g., nitrogen and phosphorous) essential to plant and animal nutrition; in high concentrations, they can be contaminants in water.
Option Value	The premium people are willing to pay to preserve a resource for possible future use.
Point Source	Any pollutants or waste water discharged from a specific source such as a pipe.
Pollution	The addition to water, air or soil, of matter or energy that has a negative or injurious impact to human, plant or animal life.
Restoration	Reestablishment of predisturbance aquatic functions and related physical, chemical and biological characteristics.
Riparian	The vegetated area immediately adjacent to a river or stream; includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation.
River Basin	The area of land that drains water, sediment, and dissolved materials to a common point along a stream channel.
Sediments	Solid materials, both mineral and organic, in suspension or transported by water, gravity, ice, or air. Eventually settles to the bottom.
Stewardship	Resource management in which individuals, institutions, and corporations take full responsibility for the economic, environmental, and social consequences of their actions.
Species	Any productively isolated population of organisms.
Suspended Sediments	Particles carried in water without being dissolved.

Toxics	Pollutants that kill or injure organisms through chemical, physical or biological action. Examples include pesticides, heavy metals, dioxin and furans and others.
Tributaries	Streams that carry water to other bodies of water.
Upland	The portion of the Willamette River Basin above the valley floor or stream and beyond the riparian area. Generally land above 500 feet elevation; this land is dominated at low to mid elevations by Douglas-fir/western hemlock forest, and at higher elevations in the Cascades by subalpine forests and alpine environments.
Watershed	The land area drained by a stream or stream system. Uplands often comprise more than 99 percent of a watershed, with the floodplain and stream channel making up the remainder. The Willamette Watershed drains 11,420 square miles of land.
Watershed Council	A voluntary local organization designated by a local government group and convened by a county governing body to address the goal of sustaining natural resource and watershed protection and enhancement.
Wetlands	Areas that are either permanently wet, or intermittently water covered, such as swamps, marshes, bogs, swales and overflow land of river valleys. Standing surface water, may, or may not be present depending on the type of wetland and the season of the year.

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