Shoreline Restoration Plan

City of Dayton, Washington
Shoreline Master Program Update

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1. Introduction

1.1 Shoreline Restoration in the SMP Update Process (Overview)

Under the Washington State Shoreline Management Act (SMA), each city and county with "shorelines of the state" must adopt a Shoreline Master Program (SMP) based on state laws and rules but tailored to the specific geographic, economic, and environmental needs of the community. The primary goal that must be addressed in an SMP update is how to achieve "no net loss of ecological shoreline functions necessary to sustain shoreline natural resources" (Ecology 2004). This shoreline restoration plan describes actions intended to compensate for anticipated future shoreline habitat degradation associated with development and increased land use pressure. Incorporating shoreline restoration planning into the SMP update process allows the City of Dayton (Dayton) to balance anticipated shoreline habitat degradation and enhancement in a manner that maintains the overall existing ecological condition of shorelines.

Within Dayton, only the Touchet River has a mean annual flow over 200 cubic feet per second, which means that its shorelines, and associated uplands, meet the definition of "shorelines of statewide significance." There are no lakes in Dayton that fall under the jurisdiction of the SMA.

Updating the SMP involves several elements, including a baseline inventory of regulated shoreline areas, an assessment of key issues and opportunities for improvement within such areas, and a restoration plan to provide guidance for carrying out restoration in a comprehensive manner. The baseline characterization and the assessment of key issues and opportunities have been completed by URS Corporation (URS) in coordination with RLO & Associates, LLC and Dayton's Planning Department.

This restoration plan establishes overall goals and objectives for citywide shoreline restoration efforts. It addresses degraded areas and impaired ecological functions identified in the inventory and analysis report, identifies and prioritizes restoration opportunities, and prescribes generalized treatment options for various restoration scenarios. The plan also identifies current and ongoing programs that can contribute to achieving these goals, as well as additional projects or programs necessary for success. Lastly, this plan seeks to develop a draft implementation strategy, including funding options, proposed timelines, adaptive management, and benchmarks. The plan is based on the inventory and characterization report and a review of other plans and assessments aimed at improving the ecological health of the Touchet River.

The term "restoration" has many definitions, both scientific and regulatory. For the purpose of this plan, restoration is defined as:

> *the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of*

> *toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.* (Washington Administrative Code [WAC] 173-26-020(27))

Under the SMP, Dayton's role in shoreline restoration includes collaborative planning, regulation, preservation of high quality shoreline areas, and support of community efforts to restore degraded portions of Dayton's shorelines.

A well-designed restoration plan can help local governments meet the "no net loss" standard in the SMP Guidelines. Restoration planning must therefore include monitoring to ensure that intended restoration actions are offsetting the expected loss of function that will occur from incremental shoreline impacts sustained over time (Ecology 2010).

1.2 Context for the City of Dayton

Per WAC 173-26-201(2)(f), the process to prepare a restoration plan may vary significantly among local jurisdictions depending on a variety of factors including size of the jurisdiction; extent and condition of shorelines; the availability of grants, volunteer programs, or other tools for restoration; and the nature of the ecological functions to be addressed.

Dayton contains a relatively small area of shoreline jurisdiction and, as a small town, has few resources available for implementing and monitoring a shoreline restoration program. It is expected that Dayton will approach the balance of degradation and restoration to achieve no net loss of ecological functions in three ways:

1. By requiring restorative mitigation for shoreline substantial developments.
2. By supporting local conservation organizations with watershed enhancement projects.
3. By coordinating with the U.S. Army Corps of Engineers (USACE) to stay informed about current levee maintenance criteria, with the goal of eventually increasing the area of allowable shade-producing vegetation along the base of the City's levees.

The City will likely support local conservation organizations by coordinating on grant applications and provide land use planning support for local watershed restoration efforts, both in and out of town.

1.3 Existing Shoreline Conditions

Dayton spans a 3.73-mile-long portion of the Touchet River. The SMP jurisdiction includes approximately 82 acres of lands along the river. Land use within the shoreline jurisdiction is a mixture of open space/recreational, urban residential, public space and parks, public roads and right-of-way (ROW), and some minor commercial and industrial uses. The geographic extent of the river and the adjacent shoreline conditions are largely defined by a system of flood control levees. The levees must currently be maintained free of woody vegetation to remain certified for

flood insurance purposes. As such, opportunities for expanded shade-producing native vegetation along the shoreline are currently limited to areas outside of the levees.

Despite being functionally separated from the active channel by the levees, the existing riparian corridor through the City provides high quality habitat for terrestrial species. It is especially productive habitat for a variety of native songbirds, which can be easily heard during any springtime walk along the City's Touchet River levee trails.

Water quality and habitat conditions in the Touchet are affected by upstream watershed conditions. As discussed during the project kick-off meeting with representatives from the USACE, Washington Department of Fish and Wildlife (WDFW), and Washington Department of Ecology (Ecology), the City's support for upstream watershed restoration efforts may be one of its best options for improving overall habitat conditions in the Touchet River through town. Upstream enhancements have the potential to improve habitat conditions and reproductive success for salmonids that migrate through town. Upstream habitat enhancements may also decrease water temperatures and stabilize soils that might otherwise erode upstream and deposit in town.

1.4 Summary of Limiting Factors

Limiting factors are environmental variables whose presence, absence, or abundance restricts the distribution, numbers, or condition of one or more organisms (Webster 2007). Salmonids are generally the focal species for watershed planning and restoration efforts. Limiting factors in the Touchet watershed impair ecosystem processes and limit the capacity of ecological functions for a variety of salmonids, as well as resident fish species. Restoration activities should be developed to address the cause of these limiting factors, where possible. Table 1 provides a summary of limiting factors for the Touchet River shoreline ecosystems in Dayton, based on shoreline observations, existing natural resource assessments, and salmon recovery plans.

Table 1. Summary of Factors Limiting the Proper Functioning Condition of the Touchet River in Dayton, WA

Limiting Factor	Assumed Cause(s)
High summer water temperature (303(d))	Lack of riparian cover, low/restricted flows
Lack of riparian cover	Adjacent land management (levee maintenance), developments, landscaping, and non-native species establishment
Fecal coliform (303(d))	Wastewater treatment plant effluent, upstream livestock, wildlife, and failing septic systems
Low pH and dissolved oxygen (303(d))	Upstream agriculture and livestock; low flow in slack water portions of river
Sedimentation and turbidity	Upstream vegetation removal for agriculture, logging, and tillage practices.
Lack of habitat complexity	Straightened and armored river banks have resulted in a wide and shallow channel. Sedimentation has covered spawning gravels.

Restoration activities to specifically address these limiting factors could include the following:

- enhancing and restoring riparian buffers
- managing livestock to minimize the amount of waste that reaches streams
- maintaining septic systems to avoid leakage (outside of town)
- restoring floodplain connectivity
- reducing excessive sedimentation through hydrologic improvements
- creating off-channel refuge for juvenile fish during high flows
- improving substrate conditions for spawning (e.g., placing gravel)
- installing large woody debris
- educating local residents about water quality issues and the activities that may improve water quality
- implementing agricultural best management practices (BMPs) to reduce erosion

1.5 Required Elements of Restoration Planning for SMP Updates

The state guidelines (WAC 173-26-201(2)(f)) provide six necessary elements for a complete shoreline restoration plan. These elements are summarized in Table 2 with reference to the section of this report in which that element is addressed.

Table 2. Required Elements of Restoration Planning for SMP Updates

Shoreline Restoration Plan Elements for SMP Updates	Section in this Report
Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration.	Section 3: Existing and Ongoing Projects and Programs Section 5: Restoration Opportunities
Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions.	Section 2: Restoration Goals and Supporting Policies Section 4: Prioritization Methodology
Identify existing and ongoing projects and programs currently being implemented that are designed to contribute to local restoration goals (such as capital improvement programs [CIPs] and watershed planning efforts).	Section 3: Existing and Ongoing Projects and Programs
Identify additional projects and programs needed to achieve local restoration goals and implementation strategies, including identifying prospective funding sources for those projects and programs.	Section 3: Existing and Ongoing Projects and Programs Section 6: Implementation Plan
Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals.	Section 6: Implementation Plan

Shoreline Restoration Plan Elements for SMP Updates	Section in this Report
Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals (e.g., monitoring of restoration project sites).	Section 7: Monitoring and Maintenance

2. Restoration Goals and Supporting Policies

The goal and policies of this plan direct the course of Dayton's shoreline restoration efforts and are intended to support SMP Goal No. 7 for Conservation: *Preserve for the future those natural resources, including the unique, fragile and scenic qualities of the shoreline, which cannot be replaced. Achieve no net loss of ecological functions of the shoreline.*

Restoration Goal 1: Restore native habitats or natural processes, where degraded, to improve shoreline ecological functions within Dayton.

Restoration Plan Policy 1: *Summarize degraded shoreline areas and functions documented by previous assessments.*

This plan documents areas identified as restoration opportunities. For each restoration opportunity, the plan documents the apparent cause of degradation to shoreline ecological functions and a conceptual restoration approach.

Restoration Plan Policy 2: *Prioritize restoration opportunities to identify projects with greatest benefit to shoreline areas.*

In order to most effectively proceed with restoration efforts, this plan prioritizes restoration opportunities in terms of overall benefit to the shoreline environment. Restoration priorities are based on an assessment of limiting factors (as summarized in Section 3.1), in combination with the ease of project implementation (e.g., on public land), and project size. Prioritization methods are described in Section 4.

Restoration Plan Policy 3: *Establish an implementation strategy.*

As directed by WAC 173-26-201(2)(f)(iii-iv), an adequate restoration plan must identify potential restoration partners, potential funding mechanisms, timelines, and benchmarks. Together, these elements comprise an implementation strategy. This plan includes these elements and organizes them to facilitate a workable implementation strategy.

Restoration Plan Policy 4: *Identify existing and prospective projects and programs that are contributing or likely to contribute towards local shoreline restoration efforts.*

This plan includes an assessment of the existing project and programs to determine where gaps exist with regard to achieving the goal of this plan. This plan then describes additional projects and/or programs that have the potential to fill those gaps.

Restoration Plan Policy 5: *Work with public and private partners to encourage restoration and enhancement of aquatic and shoreland habitats along the Touchet River and contributing tributaries within the Touchet Watershed.*

Dayton will work to establish partnerships with public and private groups on specific restoration projects and/or programs, as funding allows. As able, Dayton will support conservation efforts by co-signing restoration grant applications and/or providing shoreline planning support.

Restoration Plan Policy 6: *Monitor success of restoration activities and adapt strategies based on monitoring results.*

This plan establishes a monitoring protocol to evaluate Dayton's effectiveness to implement the restoration plan and meet the overall restoration goal. Monitoring data may be used to identify successful project designs or actions that serve as examples for future restoration projects; conversely, where monitoring data documents a failed design or effort, the data will be used to modify the strategy for subsequent restoration efforts.

3. Existing Restoration Projects and Programs, Gaps, and Additional Projects and Programs Needed

3.1 Existing and Ongoing Projects and Programs that Support Shoreline Restoration

This section identifies existing and ongoing projects and programs that are contributing or likely to contribute towards local shoreline restoration efforts. It also identifies additional projects and programs that, in combination with existing projects and programs, would meet the goals of this plan and address the limiting factors described in Section 1.4.

The following agencies provide funding, technical resources, or a regulatory framework that supports stream and terrestrial shoreline habitat restoration projects. They are described in order from federal, to state, to local organizations.

Natural Resources Conservation Service

The National Resource Conservation Service (NRCS) regularly works with private landowners to protect water quality by offering advice and incentives for habitat preservation and restoration. The NRCS Dayton Service Center can work with land owners along the Touchet River to support and advise on conservation efforts. In addition to offering technical support, the following programs offered by the NRCS may be used to help finance the conservation and restoration of shoreline ecological functions:

- Environmental Quality Incentives Program
- Conservation Stewardship Program
- Agricultural Management Assistance Program
- Agricultural Conservation Easement Program
- Healthy Forests Reserve Program

Washington State Department of Fish and Wildlife

The WDFW is an agency that works to monitor and maintain the health of the state's fish and wildlife populations. The agency has a regulatory role through its hunting and fishing licensing program and its Hydraulic Project Approval (HPA) permit program. The agency also maintains mapping data to document the location and extent of rare (priority) species and sensitive habitats. Money generated through its permit programs is used to fund the following programs, which may incentivize shoreline restoration activities:

- Hydraulic Mitigation Fund
- Aquatic Lands Enhancement Account
- Backyard Wildlife Sanctuary Program
- Landowner Incentive Program (LIP)
- Watershed Stewardship Program

Washington State Department of Natural Resources

The Washington State Department of Natural Resources (DNR) is the steward of Washington State's natural resources, including state-owned aquatic lands. As part of its stewardship, the agency has implemented an Aquatic Restoration Program that works to restore, enhance, create, and protect healthy ecological conditions in aquatic systems through partnerships with agencies and organizations. Conservation groups have funded several shoreline restoration projects with funding provided by the DNR.

Washington State Department of Ecology

The Eastern Region of Ecology is involved in maintaining water quality for the Touchet River Watershed (Water Resource Inventory Area No. 32). In 2008, Ecology prepared a Total Maximum Daily Load (TMDL) for temperature, fecal coliform, pH, and dissolved oxygen.

Ecology helps to address water quality issues within the watershed by setting limits and targets for water quality parameters. Ecology and members of the Walla Walla Watershed Planning Unit developed a Water Quality Implementation Plan to identify key projects that will improve water quality within the watershed, which should help improve water quality in Dayton.

Ecology has a regulatory role under Section 401 of the federal Clean Water Act (CWA). Under the CWA, Ecology reviews applications for soil disturbance or fill in Waters of the U.S., including wetlands, and issues permits only where it can be demonstrated that negative effects on aquatic habitats have been avoided, minimized, and mitigated to the extent practicable. Ecology also provides financial assistance for water quality improvement projects through its Centennial Grant Program, Clean Water Act Section 319 Grant Program, and the Clean Water State Revolving Fund Loan Program. These grant programs can be used to help fund stream and riparian restoration projects, as well as clean water infrastructure projects, such as wastewater treatment facilities.

Columbia County Conservation District (CCCD)

The CCCD has its office in Dayton. Similar to the NRCS, the district provides technical and financial resources to help landowners implement conservation projects. This is primarily done through the district's Conservation Reserve Enhancement Program (CREP), which is a joint federal and state funded program that restores riparian habitat for salmon and protects that habitat for 10-15 years. Funding through CREP covers planting costs as well as oversight and maintenance for about 5 years after planting to ensure success. In addition, landowners receive a monetary bonus for signing up and are paid rent for allowing their land to be used for fish and wildlife improvements.

Columbia County

The Columbia County SMP and similar development regulations are intended to protect shoreline and water resources throughout the county outside of incorporated areas like Dayton. The county is concurrently developing an update to its existing SMP.

Snake River Salmon Recovery Board (SRSRB)

Although the Touchet River is not physically located within the Snake River Watershed, it falls within the program area for the SRSRB, and the SRSRB office is located in Dayton. The board was convened in 2002 for the purpose of developing a locally supported, technically sound plan to recover salmon. The recovery plan has been approved and adopted, and now the SRSRB administers funding for habitat restoration projects, monitoring programs, and administrative functions necessary to implement the salmon recovery plan. The SRSRB has been developing a stream habitat enhancement and floodplain connectivity restoration project located just upstream of Dayton's city limits, which is an excellent example of a project outside of Dayton's municipal boundary that will improve aquatic habitat within the City.

Washington State University (WSU) Extension- Columbia County Office

The WSU Extension Office staff connects the people of Columbia County to the research and knowledge base of WSU, the state's land grant research university. Available resources include biological and ecological research that can benefit restoration efforts. The Columbia County extension office is located in Dayton.

3.2 Gaps

After reviewing the restoration goals outlined in the plan and the existing projects and programs that promote and support shoreline restoration efforts, the following gaps were identified:

- Although technical and financial resources, as well as general community support, for improving fish and wildlife habitat all exist in Dayton, there are gaps in the connections between resources and project implementation. Most riparian enhancement incentives programs are aimed at agricultural lands. Also, the presence of levees causes many to assume that habitat improvements behind the levees are of little value because they are physically disconnected from the river by the levee. However, the riparian communities are important habitat for migratory birds and terrestrial wildlife, and despite the levee, they benefit fish by providing shade, maintaining a microclimate, and contributing organic leaf litter and benthic invertebrates (fish food) to the river.
- Gaps exist between the capital improvement plans for parks and transportation projects and the goals of this plan; shoreline restoration costs and considerations are not currently noted in the park and transportation capital improvement plans.
- There are gaps between the vegetation maintenance criteria for federal levee inspection and the goals of this plan.
- Lastly there are gaps between the goals for wastewater effluent treatment thresholds proposed for the City's treatment plant and what the City feels is obtainable.

3.3 Additional Projects and Programs Needed to Achieve Shoreline Restoration Goals

In addition to the existing projects and programs listed above, the following projects or programs would help to reduce the gaps between restoration goals and objectives and existing resources. By implementing one or more of the following plans or programs, Dayton can increase the success of this restoration plan.

- Develop a program encouraging shoreline residential properties to enhance habitat through financial incentives (e.g., tax incentives) or prestige (e.g., backyard habitat plaques) together with access to technical expertise (e.g., recommended plants).
- Set aside portions of public land for conservation purposes.

- Use a conservation futures fund to purchase private land that is too constrained by protected natural resources (e.g., critical areas) to be optimal for shoreline development. This land can then be used for educational purposes and possible shoreline enhancements.
- Work with the USACE to revise vegetation management along levees in a manner that is protective of the City's flood controls while minimizing the amount of vegetation removed along the base of the levee, particularly the inside of the levee.
- Encourage landowners along the shoreline to work with the CCCD and the NRCS for advice on restoration or conservation incentives in shoreline areas.
- Provide public recognition for residents who make efforts to enhance shoreline habitats with noxious weed control and native landscaping. Recognition could take the form of a sign declaring the property a "City of Dayton Wildlife Habitat Sanctuary" (or something similar).
- Provide local tax incentives for residents who put portions of their shoreline lots under conservation easement and/or plant native vegetation that supports wildlife.
- Coordinate with WDFW to direct wildlife mitigation funds towards shoreline enhancement projects within or near Dayton. Note that several projects have been identified in the Snake River Salmon Recovery Plan (SRSRB 2012)
- Upgrade sewer treatments to reduce the gap between pending treatment standards and current effluent treatment efficiency. These upgrades may include source reductions, treatment plant upgrades, and policy changes that would allow some of the treated effluent to be used for non-agricultural lawn watering.
- Incorporate shoreline restoration into proposed capital improvement projects located in shoreline areas.

Capital improvement projects, such as future sewer treatment facilities and bridges, have the potential to be planned and funded so as to include an element of shoreline restoration. When discussing justification for the spending of tax dollars on shoreline restoration elements of future capital improvement projects, this plan may be referenced as it describes the role of shoreline restoration under the SMP.

4. Prioritization Methodology

Site-specific restoration opportunities described in this report were prioritized based on their possession of one or more of the following attributes:

- Shade producing (on south or southwest side of river within 100 feet of OHWL)
- Fills gap in riparian corridor
- Provides off-channel habitat refuge for salmonids

- Provides flood storage
- Meets established recommendations in an existing assessment or plan
- Area of site > 0.5 acre
- Ease of property use (public)

Geographical Information Systems (GIS) technology was used to measure and score sites. Each site was scored based on the number of beneficial attributes it has the potential to provide. The sum of the attribute scores provided an overall priority score for each site. This score highlights restoration opportunities that are both practical to develop and result in the greatest benefit to shoreline functions. If a restoration opportunity existed on both private and public land it received a half point. The priority scores are ranked from highest to lowest in Table 3 of this report.

5. Restoration Opportunities

5.1 Direct Opportunities

The site-specific opportunities presented in this section were developed where opportunities for restoration were noted during the shoreline inventory and characterization task. Generally, efforts were made to identify restoration opportunities that are consistent with the following shoreline assessments and plans that focus on ecological enhancements in areas around Dayton's shorelines:

- Touchet River Geomorphic Assessment (GeoEngineers 2011)
- Snake River Salmon Recovery region Provisional 3-Year Work Plan (SRSRB 2012)
- Salmonid Habitat Limiting Factors Water Resource Inventory Area 32 (Kuttel 2001)

These assessments identify opportunities for shoreline restoration where degraded conditions could be restored to a properly functioning condition.

As restoration opportunities identified in this plan are voluntary and subject to available funding, Dayton is not obligated to implement these opportunities directly. However, Dayton should reference these potential projects when reviewing shoreline development proposals that may require compensatory shoreline habitat enhancement, assessing flood hazard mitigation opportunities, or discussing shoreline restoration projects with interested natural resource conservation groups.

Table 3 summarizes site-specific restoration opportunities within Dayton that add to existing watershed restoration projects planned within the Touchet watershed. For each opportunity, the cause of degradation, conceptual restoration strategy, and restoration priority are provided. Restoration opportunities are arranged by their priority score and can be seen on Figures 1A and 1B at the end of this report.

Table 3. Shoreline Restoration Opportunities for the City of Dayton

Site Priority Score	Rest. Opp. ID[1]	Impairment	Conceptual Restoration Approach	Acres	Public
6	2	Lack of woody cover	Create side channel and plant woody vegetation to provide off channel fish habitat, sediment dispersal, cover, shade, storage	1.94	Yes
4.5	1	Lack of floodplain connectivity	Restore side channel through levee to create off-channel flood storage for flood hazard reduction, restore floodplain connectivity for flow dispersal, and create of off-channel habitat for salmonids	2.73	Yes/No
4	10	Gap in riparian corridor	Plant native riparian species to connect fragments of riparian forest into a larger cohesive habitat unit for terrestrial wildlife. Provide shade and cover for Patit Creek near confluence with Touchet	0.32	Varies
4	12	Gap in riparian corridor	Plant native riparian species to connect fragments of riparian forest into a larger cohesive habitat unit for terrestrial wildlife; provide shade	0.38	Yes
4	13	Gap in riparian corridor	Establish native shade producing trees behind levee on southwest side of river to cool water and provide riparian habitat functions	0.23	Yes
4	14	Gap in riparian corridor		0.07	Yes
4	16	Gap in riparian corridor		0.1	Yes
3	15	Gap in riparian corridor		0.2	No
3	3	Gap in riparian corridor	Plant native riparian species to connect fragments of riparian forest into a larger cohesive habitat unit for terrestrial wildlife	0.19	Yes
3	4	Gap in riparian corridor		0.45	Varies
3	5	Gap in riparian corridor		0.62	No
3	9	Gap in riparian corridor		0.13	Yes
3	11	Gap in riparian corridor	Plant native riparian species to connect fragments of riparian forest into a larger cohesive habitat unit for terrestrial wildlife; enhance floodplain roughness	0.20	No
3	17	Lack of in-stream habitat complexity	Add anchored large woody debris to the wetland terraces along river channel inside of levees (various sites through town – not depicted on figure)	Varies	Yes
2	6	Gap in riparian corridor	Plant native riparian trees and shrubs	0.09	No
2	7	Gap in riparian corridor	Plant native riparian trees and shrubs	0.34	No
2	8	Gap in riparian corridor	Plant native riparian trees and shrubs	0.14	No

[1]Refer to Figures 1A and 1B for a map of these restoration opportunities.

5.2 Indirect Shoreline Enhancement Opportunities

Indirect opportunities are those that can be incorporated into existing or proposed programs with the goal of restoring ecological functions to the waterways without focusing on specific sites. These opportunities include approaches like public education or regulatory policy changes. These changes do not address specific sites, but rather modify the way in which the public generally uses and views the shoreline areas in Dayton. Table 4 outlines several indirect opportunities and strategies for restoring ecological functions in Dayton.

Table 4. Indirect Shoreline Enhancement Opportunities

Opportunity	Strategy
Public Education	Examples include incorporation of stream restoration practices (planting) and stewardship opportunities (minimal water use, litter removal) into environmental education curriculum at Dayton Schools. Schools can be assigned to care for specific shoreline areas to foster a conservation relationship between students and the shoreline environment.
Shoreline Maintenance	The City can restore shoreline areas through their maintenance programs by incorporating low impact development strategies in parks and public right-of-ways located in shoreline areas. Maintenance strategies can include slope stabilization (seeding/planting of bare soil areas), noxious weed control, and protection of native vegetation.
Conservation Futures	The City may utilize conservation futures funding to purchase private properties with high restoration potential or developments within a flood zone to enhance shoreline areas.
Stormwater Plan/ Development Standards	The City's stormwater master planning may identify ways to reduce non-treated runoff entering aquatic habitats. Additionally, development standards may be reviewed to determine whether updated standards would provide opportunities for reducing pollution associated with stormwater.

5.3 Conceptual Restoration Approaches

Restoration opportunities listed in Table 3 of this plan include conceptual restoration approaches. These approaches address the specific impairments at each restoration opportunity site. Where possible, they attempt to address the cause of the impairment to achieve long-term gains in shoreline ecological functions. The majority of the recommended restoration approaches have to do with riparian forest or scrub-shrub plantings—these types of restoration projects tend to provide multiple ecological benefits that enhance various shoreline functions at a fraction of the cost of restoration projects that involve grading or work within waterways.

This section provides generalized restoration information associated with the conceptual approaches noted in Table 3 to aid in developing site-specific restoration plans.

Riparian Plantings

Native riparian plantings almost always enhance the ecological functions provided within riparian habitats. These enhancements promotesseveral beneficial functions to both the terrestrial and aquatic habitat components. These functions include pollutant filtering, wildlife habitat (cover, food, roosting), habitat connectivity, shading/temperature control of water, and input of organic matter (e.g., leaf litter) that provides food web support to aquatic species, including support for benthic invertebrates (Covich et. al. 1999). Benthic invertebrates, or insects that live in the river soils, are a primary food source for native fish.

Planning for riparian planting projects must address physical and ecological site conditions such as soil stability, moisture availability, and aspect (amount of sun). In areas where trees are dying due to lack of irrigation water that was historically available, such areas may be underplanted with other native species that are more adapted to the current groundwater conditions. The current, dying trees could provide some shade and microclimate as the new trees develop. When they die, they provide beneficial habitat as snags. Trees such as cottonwoods can be grown in deep-rooting containers to help jump start deep roots that can penetrate down to available groundwater.

Successful riparian plantings require appropriate species selection for a given set of local site conditions. Some species are found more commonly on the north, dry banks of local creeks, while others prefer the less exposed southern banks. Certain species grow near the river edge, while others prefer elevations slightly above the water but where roots can reach a seasonally low water table. For these reasons, a qualified ecologist with riparian planting experience should assist with developing planting plans for specific areas whenever possible. In general, the following woody riparian species represent a good starting point for a restoration project planting list in Columbia County:

Table 5. Native Species Suitable for Shoreline Restoration

Scientific Name	Common Name	Plant Form
Acer glabrum	Rocky Mountain maple	Tree
Alnus tenuifolia	Thinleaf alder	Tree/Shrub
Pinus ponderosa	Ponderosa pine	Tree
Populus balsamifera ssp. Trichocarpa	Black cottonwood	Tree
Populus tremuloides	Quaking aspen	Tree
Crataegus douglasii	Black hawthorne	Shrub
Physocarpus malvaceus	Mallow ninebark	Shrub
Ribes aureum	Golden currant	Shrub
Rosa woodsii	Woods rose	Shrub

Scientific Name	Common Name	Plant Form
Salix exigua	Coyote willow	Shrub
Salix lucida ssp. *lasiandra*	Pacific willow	Shrub
Salix rigida var. mackenzieana	Mackenzie willow	Shrub
Symphoricarpos albus	Snowberry	Shrub
Agropyron spicatum	Bluebunch wheatgrass	Grass
Festuca idahoensis	Idaho fescue	Grass
Koeleria cristata	Junegrass	Grass
Bromus carinatus	Mountain brome	Grass
Poa sandberii	Sandberg bluegrass	Grass
Sitanion hystrix	Squirrel-tail grass	Grass

Noxious Weed Control

Noxious weed control is an essential component of riparian vegetation maintenance and restoration. Native vegetation, in many areas throughout Dayton, has the potential to re-establish by itself, but competition from non-native and noxious vegetation in many areas is sufficient to prevent its successful growth.

Establishing native vegetation in areas where weeds are prevalent requires careful site preparation and noxious weed maintenance. Given realistic constraints on long-term site maintenance, the best opportunity to control weeds is to select plants to install that can compete against the weed(s), and in the best case scenario outcompete (i.e., shade out) weeds. The goal should be to establish a "weed-resistant" plant community to the extent possible. The use of herbicides may be warranted in areas dominated by high densities of noxious weeds. An Integrated Pest Management (IPM) approach to establishing favorable conditions for native plants and controlling invasive plants should be used. Several references are available on weed control, and specialists with the CCCD, WSU Extension Office, or NRCS can likely suggest acceptable control strategies.

Floodplain Connectivity Enhancements

Natural areas located behind the existing levee system and floodplain terraces that are infrequently flooded have become functionally isolated from the aquatic species within the Touchet River. Salmon recovery plans have identified off-channel habitat restoration as a high ranking option for meeting salmon recovery goals. The current salmon recovery work plan for the Touchet includes a large proposed side channel creation project just south of Dayton (SRSRB 2012). Floodplain enhancement projects provide increased flood storage and sediment dispersal, which reduces downstream flood hazards. These projects also improve habitat conditions for migrating salmonids, particularly during high-flow conditions when water velocities increase and juvenile salmonids seek off-channel, slower flowing habitat refuge. Floodplain connectivity can

involve constructed side channels through low terraces along the edge of the active channel, or it can involve the insertion of inlets or outlets within the existing levees to reconnect the river with historical side channels that are now behind the levees. Either type of floodplain enhancement requires engineering to ensure that projects are stable, functional, and do not result in increased flood risks to adjacent or downstream properties. Alterations to a federally authorized levee also require federal review and approval under 33 CFR 208.10 and 33 U.S.C. 408.

Stormwater Runoff Containment/Treatment

Stormwater runoff impairs local streams in several ways. In urban areas, stormwater transports nutrients from fertilized yards, pollutants from roads and parking lots, and bacteria from pet wastes. Urban runoff, which travels along sun-warmed asphalt roads and other impervious surfaces, also delivers warm water to streams. Rural stormwater transports nutrients from agricultural fertilizer, bacteria from livestock and wildlife, and sediments from plowed fields. Stormwater runoff also causes local creeks to become more "flashy." A storm event can cause a flashy creek to increase velocity, erode its banks, and overtop, which can result in flood conditions.

Stormwater runoff is a non-point source problem, and effective solutions involve regulatory updates, outreach and education to local landowners (both inside and outside shoreline areas), and capital improvements, where applicable. Incentives (e.g., reduced stormwater fees, labor, technical support) can also be offered to encourage land owners to contain and infiltrate their stormwater on site. Stormwater may be treated within the shoreline jurisdiction area, but would likely be more effectively treated at decentralized treatment swales/gardens upslope of the shoreline areas.

6. Implementation Plan

This section addresses an implementation framework for Dayton's shoreline restoration planning as per WAC 173-26-201 (2)(f)(vi). An implementation plan must include identified partners, potential funding sources, timelines, and benchmarks.

6.1 Potential Restoration Partners

The following organizations have an interest in shoreline protection or restoration in the vicinity of Dayton. These organizations may be contacted when seeking partners for restoration project funding, construction, and/or maintenance and monitoring.

Table 6. Existing Partnership Opportunities

Organization	Summary
Washington Conservation Corps (WCC)	The WCC is an affiliate of the AmeriCorps program administered by Ecology. The WCC provides members the opportunity to develop skills in environmental restoration, trail work, environmental education, and disaster response.
Dayton Public Works	Water and power public utilities are involved in planning within Dayton. They may be interested in partnering on projects that conserve water, energy (shade), or enhance habitat.
Dayton Planning Commission	The Dayton City Planning Commission provides guidance and direction for Dayton's future growth through continued review, improvements, and implementation of the City's Comprehensive Plan and related land use documents. The Commission's interest and support for shoreline restoration plans or programs can aid in on-the-ground project implementation.
Local Academia	Walla Walla University has a bachelor's degree program in Natural Resources Conservation and Management. Walla Walla Community College has a Water and Environmental Center that facilitates regional partnerships and coordinates a Watershed Ecology degree program. By coordinating with professors, Dayton may be able to create mutually beneficial relationships with students in these programs.
Snake River Salmon Recovery Board	The SRSRB was created through the Salmon Recovery Act of 1998 (RCW 77.85). The purpose of the board is to meet salmon recovery goals within the Snake River region by funding research, planning, and prioritizing regional salmon recovery efforts, and by administering state funding for on-the-ground restoration projects.
Veterans Conservation Corps	The mission of the Veterans Conservation Corps is to assist veterans by providing training and volunteer opportunities that help to restore and protect Washington's natural resources. The Columbia Basin Veteran's Coalition is located in Walla Walla, WA. Volunteer and internship opportunities include: • Stream restoration and monitoring • Revegetation of native plants • Restoration of watersheds, forests, prairies, or native grasslands • Environmental or community education • Other protection or restoration activities
WDFW's Habitat Program, Restoration Division	The Restoration Division leads WDFW's efforts to restore and protect aquatic ecosystems by providing scientific, engineering, and planning expertise through cooperative partnerships. The division's focus areas include: • Providing nearshore ecosystem assessment, strategic planning, and funding assistance to local communities. • Identifying and prioritizing needed projects to remove fish passage barriers. • Providing training and guidance to local restoration project proponents to help communities inventory fish passage barriers and successfully restore habitat. • Supporting aquatic habitat restoration by providing environmental engineering review, design, and technical guidance to public and private landowners and restoration entities.

In addition to the partnership opportunities listed above, others are likely. For example, local schools, Boy Scout troops, and other groups may be interested in supporting and volunteering for shoreline restoration projects.

6.2 Potential Sources of Funding

There are several sources of potential funding available to Dayton. This section summarizes the most likely and available funding sources.

Environmental Protection Agency:

- Five-Star Restoration Program – This grant funds community-based wetland restoration having a strong "on-the-ground" component, with long-term ecological, educational, and/or socio-economic benefits to the community. This grant is available to citizen volunteer organizations, corporations, landowners, federal, state, tribal agencies, local government, charitable foundations, and youth groups. The grant provides $5,000-$20,000 on average. A $10,000 grant requires in-kind or cash match at 1:1. Each project ideally involves five partners. Apply in March for awards in May. For further information, contact John Pai, US EPA, Wetlands Division, 202-260-8076, pai.john@epa.gov., http://www.epa.gov/owow/wetlands/restore/5star/

U.S. Fish and Wildlife Service (USFWS):

- Habitat Conservation - Partners for Fish and Wildlife Program – This program provides expert technical assistance and cost-share incentives to private landowners to restore fish and wildlife habitats. Any privately owned land is potentially eligible. After signing a cooperative agreement with a minimum duration of 10 years, the landowner works one-on-one with a local USFWS biologist to develop a project plan addressing the goals and objectives of the landowner and the USFWS to benefit fish and wildlife species on his/her land. The landowner is reimbursed after project completion, based on the cost-sharing formula in the agreement. For further information, contact Juliet Barenti, Eastern Washington Coordinator, 11103 East Montgomery #2, Spokane, WA 99206, 509-893-8005, Juliet_Barenti@fws.gov.
- Upper Columbia Fish and Wildlife Office Recovery Program – Recovery grants are available to fund restoration, recovery, assessment, or research projects with an emphasis on well-planned "on-the-ground" projects that restore or enhance fish and wildlife and/or their habitats, benefit federally listed/candidate species and their habitats, or improve listed species numbers. Non-profits and private landowners are eligible. There is no match requirement; however, projects with some cost share or in-kind support may be prioritized. Proposals are accepted near the beginning of each fiscal year for restoration or recovery projects to be funded during that fiscal year. For further information, contact Suzanne Audet at 509-893-8002, Juliet Barenti at 509-893-8005, or Greg Van Stralen at

509-665-3508 ext. 20, or by email at: suzanne_audet@fws.gov, juliet_barenti@fws.gov, or greg_vanstralen@fws.gov.

Washington State Department of Ecology:

- Centennial Clean Water Fund – Provides funding for activities to reduce nonpoint pollution, comprehensive planning (sewer, storm water, watershed), and/or construction point source facilities. The Fund is available to local governments, tribes, and special purpose districts such as sewer, health, and conservation districts. The funding is capped at $250,000 for up to 4 years and requires a 25 percent match; construction projects require a 50 percent match. Funding is awarded annually. Notice and workshops occurs in December and January. Applications are due late February. For further information, contact Tim Hilliard at Ecology, 360-407-6429, thil461@ecy.wa.gov, http://www.ecy.wa.gov/fap.html
- Flood Control Assistance Account Program – This statewide financial assistance program funds proposals that can demonstrate a propensity for preservation, restoration, or enhancement of Endangered Species Act-listed fishery resources through planning or flood damage reduction projects. Any public entity that belongs to the National Flood Insurance Program, including towns, cities, counties, and eligible Native American tribes throughout the state are eligible. Funding is capped at $500,000 per county per biennium and requires a 25 to 50 percent match, depending on the project. Applications are due in May, with funds available in September. For further information, contact Ted Olson at Ecology, 509-329-3413, tols461@ecy.wa.gov.
- Nonpoint Source Implementation Grant (319) Program – This fund provides grants to local governments, Native American tribes, state agencies, and nonprofit organizations to address identified non-point source pollution and to improve and protect water quality. Grant funds available for each state are determined by an Environmental Protection Agency-developed allocation formula. Grants are awarded annually. For further information, contact Helen Bresler at Ecology, 360-407-6180, hbre461@ecy.wa.gov.
- Watershed Planning Grant Program – This program provides funds for organizational, assessment, and planning phases of watershed-related projects. The program requires a 10 percent match for Phase 4 watershed planning implementation. Eligible candidates include government agencies or tribes who wish to apply for grant funds for watershed-related projects. To be eligible for Phase 4 funding, the Watershed Plan must have received approval from the planning unit and the county government(s). Grant amounts vary depending on which phase of planning is to be funded and whether projects involve one or more-than-one Water Resource Inventory Area (WRIA). Grants are funded on a fiscal year basis. Applications are due in June and awards are announced in July. For

further information, contact Cathy Hubbard, Grants Administrator, at Ecology, 360-407-6491, cahu461@ecy.wa.gov.

- Washington Coastal Protection Fund – Terry Husseman Water Quality Account – This account is used to fund environmental, recreational, and aesthetic restoration and enhancement projects. Funding is available to local governments, tribes, watershed planning units, nonprofits, and state agencies. Priority is given to projects that involve partnerships with local resources/volunteers. Total available funding is $200,000 for all projects. Match not required but is given points. Applications are accepted year-round. For further information, contact Melissa Gildersleeve, Watershed Coordinator, 360-407-6548, mgil461@ecy.wa.gov.

Washington State Recreation and Conservation Office:

- Aquatic Lands Enhancement Account (ALEA) – This grant supports the purchase, improvement, or protection of aquatic lands for public purposes, including improved accessibility. The grant is available to local governments, state agencies, and tribes. Applicants must provide at least 50 percent in matching resources. Projects must be consistent with the local shoreline master program and must be located on lands adjoining a water body that meets the definition of "navigable." For further information, contact Kim Sellers, Outdoor Grant Manager, 360-902-3082, kims@rco.wa.gov.

Washington State Salmon Recovery Funding Board

- Salmon Recover Grants – These grants provides funding to improve important habitat conditions or watershed processes to benefit salmon and bull trout. Projects must go through selection by the SRSRB and must address goals and actions defined in regional recovery plans or lead entity strategies. There are no grant dollar limits for these projects but they do require a 15 percent match. Applications are accepted annually and both public and private groups are eligible to apply.

6.3 Timeline and Benchmarks

Restoration plans involve long-term goals, and project implementation generally occurs as funding becomes available, or as required through a permit action. As per WAC 173-26-201(c), master programs must "include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area." To facilitate this policy, the following steps describe a process for implementing this plan.

The first step will be to task a member of Dayton's government with the role of being the City's shoreline restoration liaison. This person will create a central shoreline restoration file location and there place all documents associated with efforts to coordinate, implement, or otherwise support shoreline restoration activities.

Once familiar with the goals, policies, and opportunities contained in this plan, this person would begin outreach activities. Outreach is expected to be a minimal time commitment and is likely to include a few discussions with local landowners and local conservation agencies (e.g., NRCS, WDFW, and SRSRB). If landowners express an interest in shoreline conservation or restoration, the restoration liaison can help put them in touch with conservation agencies and associated restoration incentives.

Some grants benefit from having multiple applicants. By coordinating with conservation groups, Dayton can sign on to applications from restoration grants based on its interest in furthering its shoreline restoration objectives. Although a minor role, this participation may enhance the financial support gained for restoration activities that benefit the Touchet's shoreline ecological functions.

For the shoreline properties within Dayton that are private, the restoration liaison should determine whether landowners are open to allowing access for volunteer planting efforts. If access is an option, the liaison may contact conservation organizations, schools, and volunteer groups to see if there is interest and/or grant funding available for shoreline planting projects.

Benchmarks associated with this plan include the following:

- Assign the task of shoreline restoration liaison and create a central file to track restoration activities by 2016.
- Identify opportunities for shoreline restoration within planned capital improvement projects to be located within the shoreline environment.
- Contact local conservation agencies, local landowners, and volunteer organizations to determine interest and availability of resources for restoration opportunities by 2017.
- Track shoreline mitigation conducted in association with future Shoreline Substantial Development permits in the restoration folder.
- Document all restoration activities by December 31 each year.

7. Monitoring, Maintenance, and Adaptive Management

7.1 Monitoring Plan

It is important to monitor the success of individual restoration activities so that subsequent restoration projects can be modified based on the particular successes and failures of each completed project. When applying for restoration project funding, Dayton and partners should include funding for follow-up monitoring in the funding application. Monitoring data can be used to direct maintenance activities and demonstrate that Dayton is following through on the grant-funded projects. In addition, it can ensure grantors that future grant-funded restoration projects will have the benefit of lessons learned from past projects.

The U.S. Army Corps of Engineers Ecosystem Management and Restoration Research Program describes a basic five-step monitoring process for riparian restoration projects:

(1) setting goals and objectives
(2) developing a monitoring protocol
(3) designing and implementing data collection
(4) analyzing and interpreting monitoring data
(5) assessing restoration efforts

This process is helpful for monitoring all shoreline projects described by this plan. Additional detail for each of the five steps is provided in the literature (Guilfoyle and Fischer 2006). In general, a 5-year monitoring period is recommended when implementing a riparian enhancement project. Monitoring does not necessarily need to occur each year.

7.2 Maintenance

Maintenance responsibilities will depend on the specific project and the dynamics of the partnership between Dayton and its restoration partner(s). Maintenance is an important aspect of project completion. Specific maintenance activities will depend on site conditions and monitoring results. For example, restoration projects proposed at sites with identified noxious vegetation will need to control weed populations annually for several years.

Taking an adaptive management approach will be important for the successful maintenance of restoration projects. This approach involves a fluid management style that alters maintenance strategies based upon the results of monitoring data.

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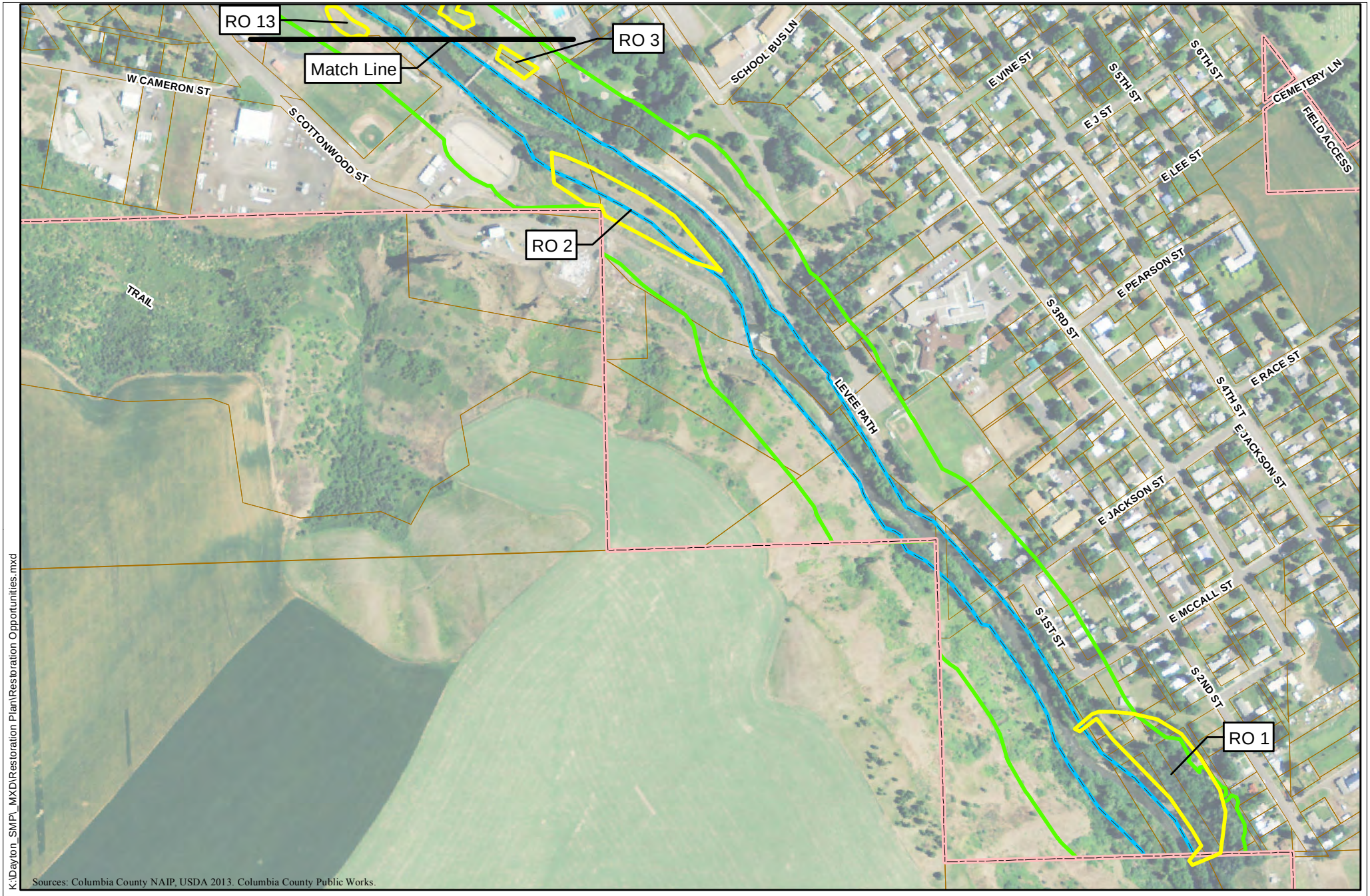
FIGURES



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- City Limits
- Approximate Restoration Opportunity Site
- Shoreline Master Program Jurisdiction
- Touchet River OHWL Estimate

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Figure 1A: Shoreline Restoration Opportunity Sites (Sourth Half of Dayton)

City of Dayton
Shoreline Master Program Update
Columbia County, Washington

June 15, 2015

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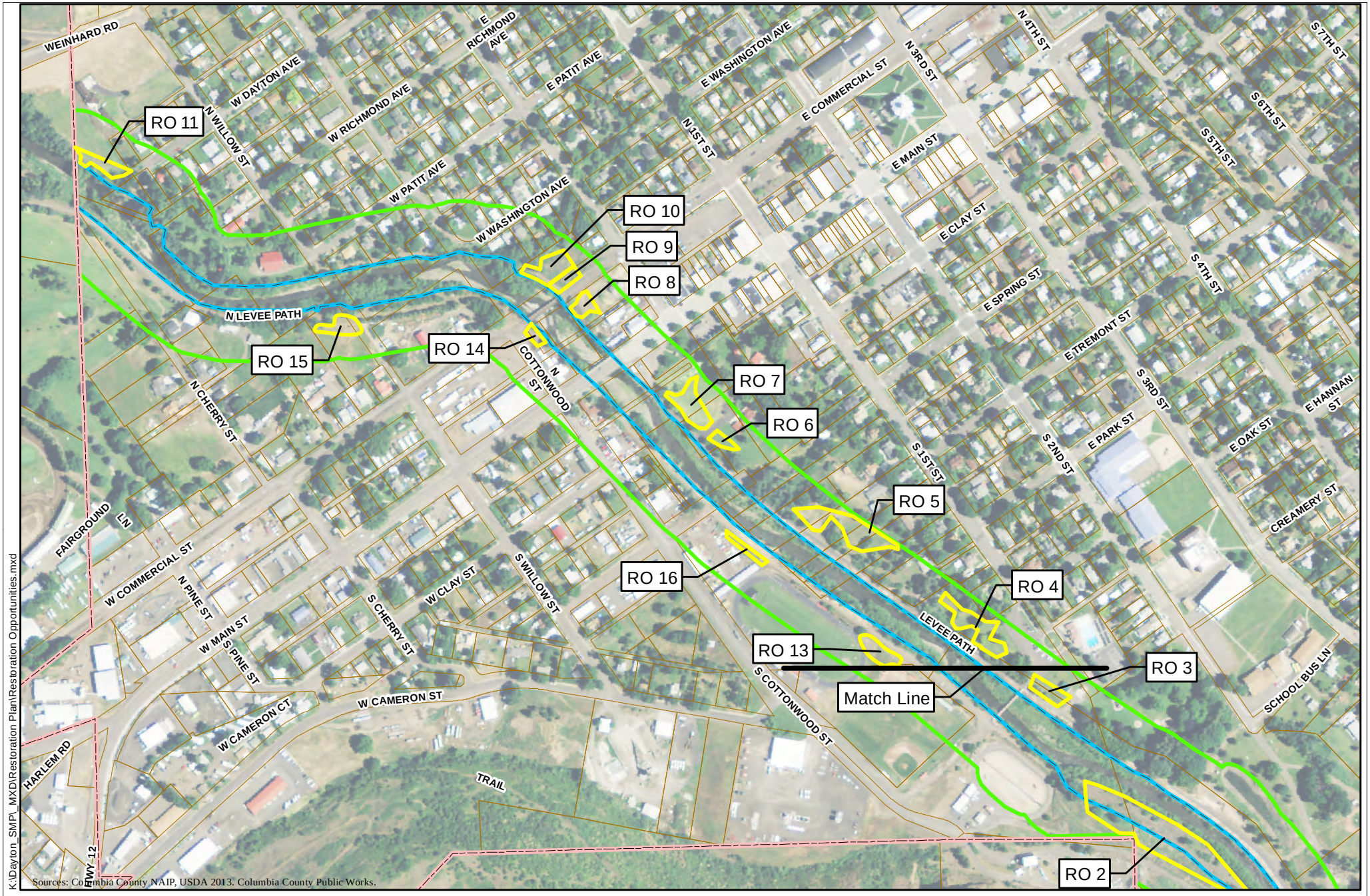

Sources: Columbia County NAIP, USDA 2013. Columbia County Public Works.

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Legend

- City Limits
- Approximate Restoration Opportunity Site
- Shoreline Master Program Jurisdiction
- Touchet River OHWL Estimate

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Figure 1B: Shoreline Restoration Opportunity Sites (North Half of Dayton)

City of Dayton
Shoreline Master Program Update
Columbia County, Washington

June 15, 2015

URS