

LOWER COLUMBIA FISH RECOVERY BOARD  
CLARK COUNTY CLEAN WATER RESTORATION FUND  
APPLICATION NARRATIVE AND SUPPLEMENTAL QUESTIONS

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**Project Name:** Clark County Stormwater Site Assessment and Design Project

**Primary Sponsor:** Lower Columbia Estuary Partnership

**Project type:**     Restoration                       Outreach & Education

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Please respond to each question individually. Do not summarize your answers collectively in essay format. Applications are limited to ten (10) pages (single sided) – *you may delete the italicized portion of the questions and the inapplicable supplemental questions to shorten the proposal.*

**1. Project Location.**

The Clark County Stormwater Site Assessment and Design Project will take place in important watersheds in Clark County and Water Resource Inventory Area (WRIA) 28 such as Burnt Bridge Creek, Campen Creek, Gee Creek, Gibbons Creek, Salmon Creek, and Woodin Creek. The project will prioritize stream reaches particularly impacted by stormwater runoff, listed at Category 5 on the Washington Department of Ecology’s 303d list, and/or are directly adjacent to large areas of impervious surface that contributes untreated and/or unmanaged stormwater runoff to the stream. Within those stream reaches, the project will target community sites (schools, churches, parks) with large areas of impervious surface and no stormwater management. Specific stream reaches and project sites will be determined through a desktop mapping analysis, conversations with community partners (such as the Stormwater Partners of SW Washington), reviews of relevant Clark County Stormwater Needs Assessment reports, and site owner outreach.

**2. Brief Project Summary.**

The Clark County Stormwater Site Assessment and Design Project will develop and conduct a desktop stormwater site assessment of approximately 50 community sites (schools, churches, parks, etc.); develop and conduct an on-the-ground stormwater site assessment and landowner discussion at approximately 20 sites; develop preliminary stormwater retrofit designs for three high priority sites with strong landowner support; and provide a post-project presentation to Stormwater Partners of SW Washington. The Estuary Partnership will use the preliminary designs to develop three grant applications to fund construction of on-the-ground stormwater retrofit projects at the three community sites with preliminary designs and strong landowner support.

**3. Problems Statement.**

Stormwater runoff is the nation’s, the region’s, and Clark County’s number one water quality problem. And given Clark County’s continued growth and development, stormwater impacts on the County’s water resources, habitats, and species will only increase. As population increases and urbanization continues, housing, office parks, roads, shopping areas, are other types of development are replacing the natural landscape at accelerated rates. Development has significant hydrologic impacts including: increased volume and flow of runoff, reduced ground water re-charge; decreased time for runoff to reach a natural receiving water, greater stream velocities, as well as other impacts.

Urbanization also increases the types and quantities of pollutants in surface and groundwater. Stormwater runoff carries a host of harmful pollutants – total suspended solids (TSS), oil and grease, nutrients, pesticides, other organics, pathogens, biochemical oxygen demand (BOD), heavy metals such

as zinc cadmium, and copper, and salts (chlorides). Urbanization can also raise the water temperature in streams. Heated stormwater from impervious surfaces and exposed stormwater ponds discharges to streams with less vegetation for shade – and because urbanization reduces ground water recharge, it also reduces sources of cool ground water input to streams.

All of these stormwater impacts are particularly harmful to aquatic life – altering habitats, changing habitat structure, and impacting the food web. For example, sediment can imbed stream gravels and cover salmon redds, hydrologic changes can cause dramatic shifts in vegetative and animal species composition (particularly macroinvertebrates); temperature increases can reduce dissolved oxygen levels and cause algae blooms.

All of Clark County’s major (and minor) streams have been and will continue to be heavily impacted by stormwater runoff – even though a lot of positive work is taking place. Fully addressing stormwater runoff impacts is going to take a multi-pronged approach – stormwater education to effect changes in individual behaviors, decreasing acreage devoted to car habitat (particularly parking) and other impervious surfaces, using LID techniques in new development project, planting more trees, and a host of other approaches – including integrating stormwater retrofit projects that can capture, infiltrate, and clean stormwater into existing development.

#### **4. Project Goals and Objectives.**

##### ***A. What are your project’s goals?***

##### **Project goals include:**

- Assessing stormwater retrofit opportunities at 50 community sites to develop an inventory and prioritized list of sites that could be retrofitted to improve stormwater management and lessen stormwater impacts on specific stream reaches.
- Providing stormwater retrofit outreach and education to landowners/managers of 20 community sites to help them understand stormwater retrofit opportunities, benefits, costs, and integration into the existing landscape.
- Creating a list of stormwater retrofit projects that the Estuary Partnership and other partners can use to develop on-the-ground projects to improve water quality through better stormwater management.
- Developing three preliminary designs that are of sufficient detail and quality that they can be used to apply for grants to implement design/construction to quickly improve water quality through better stormwater management.
- Building landowner and public support for stormwater retrofits at existing sites by building on-the-ground retrofit projects that infiltrate hundreds of thousands of gallons of stormwater per year and illustrate the feasibility and attractiveness of integrating stormwater retrofit projects into existing sites.

**B. What are your project's objectives?**

The Clark County Stormwater Site Assessment and Design Project's objectives directly align with the four objectives of the LCFRB-CCCWRF.

**Complete a desktop analysis that identifies the stormwater retrofit potential of 50 community sites.**

Approximately 50 community sites (schools, churches, community centers, parks, etc.) will be analyzed via aerial photos and other data for their proximity to water resources, their ownership, and their potential to integrate stormwater retrofits into the existing site. (LCFRB-CCCWRF Objective 1, 2, 3, 4).

**Conduct a field analysis and site owner meetings at 20 community sites.**

Set up site visit meetings with site owners/managers at 20 community sites to more fully assess stormwater retrofit opportunities and to discuss landowner interest and potential support. Assess each site using a predeveloped site assessment tool. In addition to gauging landowner support and discussing retrofit opportunities, the on-site, site owner meetings will function as stormwater education opportunities. Meetings will include an analysis of stormwater generated by the site, information about the water quality of the receiving water body, opportunities for stormwater retrofits, and additional stormwater education and outreach. (LCFRB-CCCWRF Objective 1, 2, 3, 4).

**Develop preliminary stormwater retrofit designs for 3 community sites.**

At three sites with high stormwater retrofit potential and willing and supportive landowners the project will develop preliminary stormwater retrofit designs. Preliminary designs will be developed by a Landscape Architect with stormwater retrofit expertise and experience. Preliminary designs will include cost estimates, generally layout of stormwater facility features, cross sections, preliminary size calculations, expected permitting needs, and be consistent with the 2019 Stormwater Management Manual for Western Washington (SMMWW). Preliminary designs will be of sufficient detail to use in future applications for on-the-ground project construction. (LCFRB-CCCWRF Objective 1, 2, 3, 4).

**Provide a post-project presentation to Stormwater Partners of SW Washington.**

Develop a presentation that highlights the project's assessment methodology, details stormwater retrofit opportunities at 20 sites, presents a summary of landowner reactions and input, describes the project's education and outreach successes, details the preliminary designs developed for three sites, and discusses opportunities for other organizations to engage in these types of projects. (LCFRB-CCCWRF Objective 2 and 3).

**Use preliminary designs to submit three grant applications for design/construction funding.**

Submit three grant applications to fund the further design and construction of the three stormwater retrofit projects. Use the preliminary designs as the basis of the grant applications. Potential funding sources include the Washington Department of Ecology, the LCFRB-CCCWRF, EPA, and others. (LCFRB-CCCWRF Objective 3 and 4).

**C. What are the uncertainties and constraints that could impact whether you achieve your objectives?**

There are few uncertainties and constraints that could impact the Clark County Stormwater Site Assessment and Design Project. There are undoubtedly plenty of sites where stormwater retrofit

opportunities could occur along impaired streams in Clark County. We don't anticipate any problem assessing 50 sites, finding 20 sites with good stormwater retrofit opportunities and landowners willing to discuss stormwater management on their site, or finding 3 sites with strongly supportive willing landowners that are great candidates for on-the-ground funding and that we can develop preliminary designs for. As part of setting up the 20 on-site meetings, we expect that not everyone initially contacted will be interested. In that case, we will simply move on to the next best site and continue that process until we have conducted 20 on-site stormwater retrofit education/outreach meetings.

One potential uncertainty is the accessibility of future funding to implement the on-the-ground projects. On-the-ground implementation that leads to direct water quality improvement will require additional funding. Though this is an uncertainty, the Estuary Partnership has been very successful at securing project construction funding and multiple funding sources exist that prioritize funding these types of stormwater retrofit projects – most specifically Ecology through their Stormwater Financial Assistance Program for Stormwater Facility projects.

## **5. Project Details.**

### ***A. Provide a narrative description of your proposed project.***

Clark County Stormwater Site Assessment and Design Project will result in a ranked list of approximately 20 community sites suitable for future stormwater retrofit projects; stormwater education and outreach for the site owners/managers of those 20 sites; detailed site assessments and inventory sheets for each site; preliminary implementation designs and costs estimates for three sites; a project presentation to interested partners; and future grant applications for three projects. The Lower Columbia Estuary Partnership will accomplish the project by:

- Using a desktop mapping analysis, conversations with community partners (such as the Stormwater Partners of SW Washington), reviews of relevant Clark County Stormwater Needs Assessment reports, and site owner outreach to identify 50 sites for initial analysis.
- Developing a desktop assessment protocol to narrow those 50 sites to 20 potential sites that are good candidates for field analysis and landowner outreach and education. High potential sites will be community sites that: have excessive impervious surface; have straightforward opportunities for stormwater retrofits (i.e. existing drainage patterns and infrastructure could be utilized; unused or under-used spaces exists within the site); lack existing stormwater BMPs; and that drain directly to important water resources. The Estuary Partnership will document the assessment protocol and how each of the 20 sites meets the assessment criteria in a spreadsheet.
- Developing an on-the-ground assessment and inventory protocol to be used at each of the 20 field assessment sites. The protocol will build on Estuary Partnership assessment protocols currently being developed for a similar project in Washington County (OR). The protocols will be based in part on similar protocols utilized by the City of Portland and Washington County's Clean Water Services (CWS) (such as the CWS "School Rain Garden Opportunities-Field Inventory Sheet"). The Clark County Stormwater Site Assessment and Design Project will incorporate lessons learned from these other stormwater site assessment projects, and tailor the project specifically to Clark County.
- Developing a stormwater education and outreach strategy for meeting with site owners. This will include gathering and adapting existing educational materials, developing an agenda for each site visit, preparing aerial photographs, examining the existing drainage patterns and stormwater

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conveyance facilities, and preparing information on the receiving water body to provide to the site owner. These approximately hour-long site visits and conversations will provide site owners with a unique, non-regulatory, stormwater opportunities analysis and teach them about stormwater impacts, stormwater generated on their site, and how their site fits into the bigger water quality picture.

- Conducting the in-the-field assessment, site inventory, and analysis and meeting site owners.
- Compiling the in-the-field assessment and survey information (photos, measurements, locations of stormwater conveyance facilities, and site owner notes, into a project database.
- Developing a scoring and ranking system that allows projects to be sorted and ranked by estimated cost, ease of implementation, and potential water quality benefit.
- Identifying three high ranking sites, with strong landowner support to take through a preliminary design phase. Complete preliminary designs for each site. Preliminary designs will include:
  - General plan view layout of facility including key elements such as collection area, inlets, overflows, and dimensions
  - Conceptual cross sections to convey overall volumes and depths of proposed facilities
  - Preliminary estimate of probable cost
  - Precedent project images
  - Preliminary stormwater facility calculations per the SMMWW.
- Develop a project presentation and give the presentation to the Stormwater Partners of SW Washington and any other interested parties. Share the site assessments, the database, and the preliminary designs with site owners and interested stakeholders.

**B. Provide a scope of work.**

Project Task	Responsibility	Schedule	Deliverable
Assess the stormwater retrofit potential of 50 community sites.	Estuary Partnership	Feb – April 2020	Assessment notes. Database of 50 sites assessed and initial criteria.
Identify potential construction grants and associated application timelines.	Estuary Partnership	Feb – Oct 2020	Notes describing potential funding sources and timelines.
Develop assessment protocol designed to narrow 50 sites to 20 sites.	Estuary Partnership	Feb – April 2020	Desktop analysis assessment protocol.
Conduct the assessment. Identify 20 high priority, high potential sites.	Estuary Partnership	April – May 2020	Assessment notes. Database detailing 20 sites.
Develop on-site assessment field inventory protocol and form.	Estuary Partnership	May – June 2020	On-the-ground assessment protocol and inventory forms.
Contact and schedule on-site meetings with 20 landowners/managers.	Estuary Partnership	June 2020	Notes, meeting schedule.
Develop site owner stormwater education/outreach and on-site meeting agenda.	Estuary Partnership	July 2020	Educational outreach materials.
Conduct site assessments and outreach visits. Compile site assessment data from 20 site visits into project database.	Estuary Partnership	Aug – Sept 2020	On-the-ground assessment notes. Project database with site inventory data from each site.
Develop ranking system. Score and rank the 20 sites for stormwater	Estuary Partnership	Sept 2020	Ranking system. Ranked list of 20 sites.

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Project Task	Responsibility	Schedule	Deliverable
retrofit potential and landowner support.			
Identify 3 high ranking sites at which to develop preliminary designs. Reaffirm landowner/manager commitment and support. Develop preliminary designs.	Estuary Partnership	Oct – Nov 2020	Preliminary designs and landowner support letters for 3 high priority sites.
Write and apply for three grants to fund on-the-ground project implementation.	Estuary Partnership	Oct 2020 – December 2021	Three grant applications to fund construction of on-the-ground retrofit projects.
Share preliminary stormwater retrofit designs with landowners/managers.	Estuary Partnership	Jan – Feb 2021	Follow up meeting with landowners/managers.
Develop and deliver project presentation to Stormwater Partners of SW Washington (and stakeholders if interested).	Estuary Partnership	Jan – March 2021	Presentation scheduled. Power point presentation.

**C. Is the project scalable?**

Yes. The project could be scaled back if full funding is not available. We could examine fewer than the 50 initial sites, conduct fewer than 20 site assessments and landowner meetings, and develop less than three preliminary concept designs.

**D. Explain how you determined your cost estimates.**

The Estuary Partnership determined cost estimates based on actual staff costs to deliver the project. Project costs mostly consist of Estuary Partnership staff time to implement the project. The Estuary Partnership has completed a similar type of project in Clackamas County (focused on businesses), and is currently implementing a similar project (focused on community sites) in Washington County. Estimated hours to necessary to implement the Clark County Stormwater Site Assessment and Design Project are informed by those projects.

**E. Describe your preferred approach for achieving your project’s objectives and the alternatives you considered.**

Over the last few years, as a result of an increased focus within our Six-Year (2017-2023) Implementation Plan, the Estuary Partnership has developed a successful stormwater program that includes multiple elements: stormwater education and stormwater related planting projects for students; small scale, on-the-ground school based projects focused on schoolyard depaving and construction of small stormwater infiltration gardens; a stormwater outreach program focused on developing concept and preliminary designs that can be used to implement on-the-ground projects; and finally on-the-ground project implementation of stormwater retrofit projects.

As we have developed our stormwater program, we have focused on identifying gaps and developing projects that can help fill those gaps. One of those gaps has been stormwater education for students. Another key gap has been the addressing the enormous stormwater impact of existing development. In Clark County, significant redevelopment or new development must meet significantly higher stormwater

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management standards than projects built in previous decades. But, community sites like schools, churches, community centers and parks built in earlier eras were often built with little or no thought to stormwater management. These sites were often designed to remove stormwater from the site as quickly as possible. They often also have more parking than necessary, larger parking spaces than necessary, poorly aligned parking, or un or under-utilized space or landscaping elements.

These sites can be huge generators of polluted stormwater. Yet they are generally not the target of any stormwater outreach or analysis with an eye for how stormwater retrofit projects could be integrated into the site to improve stormwater management and improve water quality.

Quite often, stormwater retrofit projects can be integrated into these types of sites in a way that is cost effective, does not prohibitively impact existing uses, and actually improves site aesthetics, traffic flow, and pedestrian safety. However, few (if any) agencies or organizations in Clark County (or elsewhere) are reaching out to these site owners and exploring potential retrofit projects to improve water quality.

After identifying this gap, and working with funders priorities, the Estuary Partnership has received from Clackamas County Water Environment Services (WES) and the Tualatin Soil and Water Conservation District (TSWCD) to fill elements of this gap in areas of Clackamas and Washington County. Through the development (of both) and implementation (of one) of these projects, the Estuary Partnership learned a great deal, further understood the value and gap-filling nature of the work, and realized a similar education/outreach and site analysis project would be beneficial in Clark County.

**F. How have lessons learned from completed projects or existing studies and monitoring data informed your project?**

Even though only one of our two similar projects have been completed, the smaller pilot project in Clackamas County, we have already learned a great deal from both the Clackamas County project and the Washington County project that we are applying to our Clark County Stormwater Site Assessment and Design Project. Examples include focusing on community sites instead of businesses – as they are easier to engage, often have larger areas of impervious surface, and are more likely to receive grant funding for on-the-ground project from public sources than private businesses. Another example is adding more detail to the preliminary designs – the more comprehensive and detailed the preliminary design the easier it will be to apply for final design/construction funding. Finally, in the Clackamas County project, the on-site meetings with landowners were less thought out – and thus ultimately not as useful or educational as we would have liked. For the Clark County Stormwater Site Assessment and Design Project, these 20, on-site meetings will have agendas, include educational materials, and as much as possible include specific information about the landowner/manager's site – approximately how much stormwater runoff the site generates per year, where the stormwater flows, likely pollutants in the stormwater, and the water quality of the receiving water body. Better preparing for these meetings, providing materials, and connecting site owners to their site will improve the educational quality of the meetings, better engage landowners/managers, and ultimately result in the construction of more on-the-ground stormwater retrofit projects.

**G. Describe the long-term stewardship and maintenance needed to sustain the project's benefits?**

The Clark County Stormwater Site Assessment and Design Project will conduct on-the-ground, stormwater retrofit site assessments at 20 community sites and develop detailed preliminary stormwater retrofit designs for three sites. These products (nor others associated with the project) will not require any maintenance once completed. The Estuary Partnership will share the project database and project products to interested partners and community members to ensure continual access to the project's results for multiple years. The project's results, the stormwater assessments and preliminary designs will be viable as long as sites remain in their current state of development.

One of the goals of the project is to develop a list of sites that community partners can use to implement future on-the-ground stormwater retrofit projects to benefit water quality and aquatic species. Assessing approximately 20 sites will ensure there is a long list of potential projects, that projects are geographically diverse, and that there are projects of different size and scale – so that multiple community partners could participate in an implementation project. Future on-the-ground projects will have long lasting results – managing stormwater in more sustainable ways for years.

**6. Context within local Stormwater and/or other Plans.**

**A. Discuss how this project fits within or works to implement the strategies of existing stormwater and/or other relevant plans for reducing or eliminating the negative effects of stormwater runoff.**

The Clark County Stormwater Site Assessment and Design Project is specifically designed to help the owners of community sites (schools, churches, community centers, parks, etc.) implement state, county, and local stormwater plans. All stormwater plans recognize the important of stormwater retrofit projects to address stormwater management and lessen stormwater impacts on water resources. The project will complete on-the-ground, site inventory and assessment of 20 sites for their opportunities to integrate stormwater retrofit projects and develop preliminary designs for three sites. Assessment sites will be chosen in part on their proximity to water resources as well as the quantify of stormwater they currently generate. The project's long-term goal is to create stormwater retrofit projects at multiple sites to reduce stormwater impacts and improve water quality.

Finally, basically all regional salmon recovery plans recognize the impacts of stormwater on water quality and aquatic species health – and call for on-the-ground and education projects to improve stormwater management.

**B. Explain why it is important to do this project now instead of later.**

The community sites likely to be assessed as part of the project (schools, churches, community centers, parks, etc.) are rarely redeveloped. Hundreds of these sites were constructed in Clark County before stronger and more sophisticated stormwater management regulations came into place – and these sites continue to deliver huge amounts of stormwater to the County's waterbodies.

**C. If your project is part of a larger overall project or strategy, describe the goal of the overall strategy, explain individual sequencing steps, and which of these steps are included in this application for funding.**

The Clark County Stormwater Site Assessment and Design Project is the first step of an overall strategy to help community sites design and build stormwater retrofit projects that will infiltrate and treat hundreds of thousands of gallons of stormwater each year to the benefit of Clark County's water resources and species.

Just like with a restoration project – a lot of up front work occurs before a project is ready to be proposed for on-the-ground construction funding. That includes working with landowners, collecting baseline data, analyzing current conditions, developing alternatives, developing preliminary designs, permitting, and the development of final designs.

Similarly, stormwater retrofit projects needs up front work. The Clark County Stormwater Site Assessment and Design Project completes a great deal of that up-front work and sets the stage for securing construction funding for three high priority sites. Upfront work includes a county wide analysis to find community sites with extensive impervious surfaces, little stormwater management, and close proximity to important water resources, working with landowners/managers and educating them about the issues and potential solutions for their sites, conducting on-the-ground assessments at 20 different sites and developing a ranking system to prioritize those sites, and then developing preliminary designs for three sites. It is a cohesive strategy designed to result in future on-the-ground stormwater retrofit projects.

**7. Project Proponents and Partners.**

**A. Describe your experience managing this type of project. Please describe other projects where you have successfully used a similar approach.**

The Estuary Partnership has implemented a wide range of stormwater projects over the years including education projects, assessment projects, and on-the-ground projects, and has written multiple grants to receive on-the-ground construction funding. The two most relevant projects are:

Clackamas County StormBOP (Business Opportunity Project): This WES RiverHealth project was developed and implemented within a very short time frame and with a limited budget. The project involved a simple site assessment; an associated database of nearly 70 sites owners with site photos and notes; and site meetings and concept designs at three sites. Businesses near water resources were the project's focus. The Estuary Partnership successfully utilized one of the concept designs to secure a \$30,000 Clackamas County RiverHealth grant to implement an on-the-ground project at a Clackamas area business.

Washington County Stormwater Assessment Project: The TSWCD project is the model for the Clark County Stormwater Site Assessment and Design Project. The Washington County project includes the development of similar protocols, similar site assessment and stormwater education and outreach, and development of similar concept designs and specific sites.

**B. List all landowner names.**

The project will conduct on-the-field, site assessments and inventories, and provide stormwater education and outreach to landowners/managers at 20 sites. Those sites will be identified as part of the project – and in conjunction with landowner interest (sites with landowners/managers who are unwilling to meet will not be assessed). At the three sites where the project will develop preliminary designs, the Estuary Partnership will secure signed Landowner Acknowledgement in advance of preliminary design work taking place.

**C. List project partners and their role and contribution to the project.**

Project partners will be the community site landowners/managers who participate in the project through the on-the-ground stormwater site assessment and education/outreach meeting. Specific sites and landowners visited will be detailed in the project database. Each of the landowners/managers who participate will spend approximately an hour of time discussing the project. Partner Contribution Forms are not attached because specific sites have not been identified yet.

**D. Stakeholder Outreach.**

The Clark County Stormwater Site Assessment and Design Project is specifically designed as a stakeholder outreach project. As part of the project, the Estuary Partnership will schedule on-site meetings with 20 different landowners/managers to engage them in stormwater education and outreach, a stormwater retrofit opportunities analysis, and stormwater specific information about their site (how much runoff is generated, where it goes, the likely pollutants within the runoff, and the water quality of the receiving water body).

In previous projects the Estuary Partnership has had no trouble scheduling project meetings with landowners to assess sites. The Estuary Partnership is a non-profit, non-regulatory organization, and the projects we are exploring with site owners are voluntary and designed to be grant funded (versus funded by the landowner). As such, landowners/managers are generally interested in hearing about stormwater retrofit opportunities. If a landowner identified as having a good site for an assessment is not interested, the Estuary Partnership will simply move onto a new site/landowner. Unfortunately, there are no shortage of community sites needing stormwater retrofit projects.

There are no public safety concerns associated with this assessment, education and outreach, and design project. Public safety will be addressed in three preliminary stormwater retrofit designs developed by the project – though these types of stormwater BMPs are much safer than detention ponds and if done correctly generally increase pedestrian safety.

## Supplemental Questions

### Restoration Project

Answer the following supplemental questions (these are not included in the ten-page limit):

**A. Will you complete, or have you already completed, a preliminary design, final design, and design report before construction?**

1. If no, please describe your design process and list all pre-construction deliverables you will submit to LCFRB for review. *Including riparian planting plans.*

The Clark County Stormwater Site Assessment and Design Project will develop preliminary stormwater retrofit designs at three community sites. Preliminary designs will be developed by a Landscape Architect with specific stormwater retrofit expertise. On previous projects, the Estuary Partnership has worked with Dave Elkin, owner of Juncus Design Studio. Elkin has previously worked for the City of Portland's Bureau of Environmental Services, Greenworks, and Metro designing stormwater retrofit projects for streets, parking area, parks, and other public sites.

Preliminary designs will include enough detail to effectively use the designs to apply for construction funding from Ecology, the LCFRB-CCWRF, EPA, or other sources. Details will include:

- General plan view layout of facility including key elements such as collection area, inlets, overflows, and dimensions
- Conceptual cross sections to convey overall volumes and depths of proposed facilities
- Preliminary estimate of probable cost
- Precedent project images
- Preliminary stormwater facility calculations per the SMMWW.

**B. Will your project be designed by a licensed professional engineer?**

1. If not, please describe the qualifications of your design team.

Preliminary designs will be developed by a professional, licensed, Landscape Architect with specific stormwater retrofit design expertise.

**C. If this project includes measures to stabilize an eroding stream bank, explain why this bank stabilization is necessary to accomplish improved water quality or watershed health, and how the proposed design incorporates beneficial stormwater reduction elements while avoiding adverse impacts to upstream, downstream or adjacent properties?**

The project does not include measures to stabilize streambanks.

Project designs will be specifically developed to improve on-site stormwater management – primarily by using BMPs that incorporate on-site infiltration and plantings that slow stormwater, and uptake pollutants. Because almost all of the stormwater retrofit BMPs that will be included in the preliminary designs are specifically designed to decrease the generation of stormwater and to infiltrate stormwater runoff on-site, the designs will specifically reduce adverse impacts from stormwater to downstream and/or adjacent properties.

- D. Describe the steps you will take to minimize the introduction and spread of invasive species during construction and restoration. Specifically consider how you will use un-infested materials and clean equipment entering and leaving the project area.**

This project only entails development of preliminary designs.

## Supplemental Questions

### Outreach/Education Project

Answer the following supplemental questions (these are not included in the ten-page limit):

- A. Who is your target audience?** Explain why this audience is appropriate for improving watershed health by reducing the impacts of stormwater runoff.

The target audience for the Clark County Stormwater Site Assessment and Design Project is landowner/managers of community sites like schools, churches, parks, and community centers. This is a critical target audience to reach for multiple reasons.

- These sites, particularly ones developed in earlier decades, are often huge generators of stormwater runoff and lack any current stormwater management BMPs that would lessen the stormwater impact of these sites on water resources.
- These sites are often heavily visited and used by the public. As such, visible stormwater retrofit projects at these sites (such as biofiltration swales, permeable pavers, infiltration basins, etc.) can educate the public about the enormous opportunity to integrate stormwater retrofit projects into existing sites. In addition, signage or other outreach approaches can be used to educate the public about the importance of stormwater management and how their practices and behaviors can impact water quality.
- Schools are generally owned by school districts, and parks by cities or counties. Engaging a school district representative about one school – will likely lead to conversations and discussion about other schools in the district. Focusing on these types of landowners will likely have a multiplier effect that leads to additional discussion, education, and potential projects.

- B. What are the target pollutants you expect to address?**

The Clark County Stormwater Site Assessment and Design Project's educational aspect – on-site meeting with landowners/managers to discuss stormwater retrofit opportunities at their sites – will address all the pollutants associated with stormwater. The meetings will engage landowners/managers in a wide-ranging conversation about stormwater while walking the site. Landowners/managers will learn about the stormwater generated from their sites, what pollutants it likely carries, where the stormwater runoff goes, and the health of the waterbody receiving the stormwater runoff.

- C. What is your strategy for changing behaviors related to watershed health?** Explain how this approach has been successful in the past by your organization or by other organizations with similar missions.

The Clark County Stormwater Site Assessment and Design Project is focused on assessing sites for their stormwater retrofit potential, meeting with landowners/managers discuss stormwater runoff generated by their site and opportunities within the site to construct stormwater retrofit projects, and developing a prioritized ranked list of sites with high stormwater retrofit potential, and developing preliminary designs at three sites that can be used to pursue construction funding. The Estuary Partnership has used – and is using – this exact approach in Clackamas County and Washington County on similar projects. Reducing the harmful impacts of stormwater on water resources is going to take a multi-pronged strategy. Stormwater education for student and adults is critical. As is better designing and building new

development. As is retrofitting stormwater management BMPs into existing development – the strategy of the Clark County Stormwater Site Assessment and Design Project.

Stormwater retrofit projects are a well-known strategy for improving watershed health. Few organizations though are specifically targeting existing community sites that lack effective and up to date stormwater management features. Targeting community sites that receive a lot of visitation is one way to more fully engage the public in the stormwater discussion. As designs are developed and projects built – the community (and the landowners/managers) will see and learn about stormwater, stormwater infiltration and management strategies, and how effective and attractive stormwater retrofit features can be.

**D. How would you define success in this outreach and/or education project?**

In the long term – we would define success as seeing multiple on-the-ground stormwater retrofit projects being built as a result of the Clark County Stormwater Site Assessment and Design Project. The project is specifically geared toward generating stormwater retrofit site ideas, cost estimates, site owner interest, and in three cases preliminary plans that can be used to raise funds and solidify landowner support. Construction of even one, on-the-ground stormwater retrofit project could capture and infiltrate hundreds of thousands of gallons of stormwater runoff per year – for decades, as well as demonstrate to the public and landowners/managers the feasibility and attractiveness of integrating stormwater retrofit projects into existing sites.

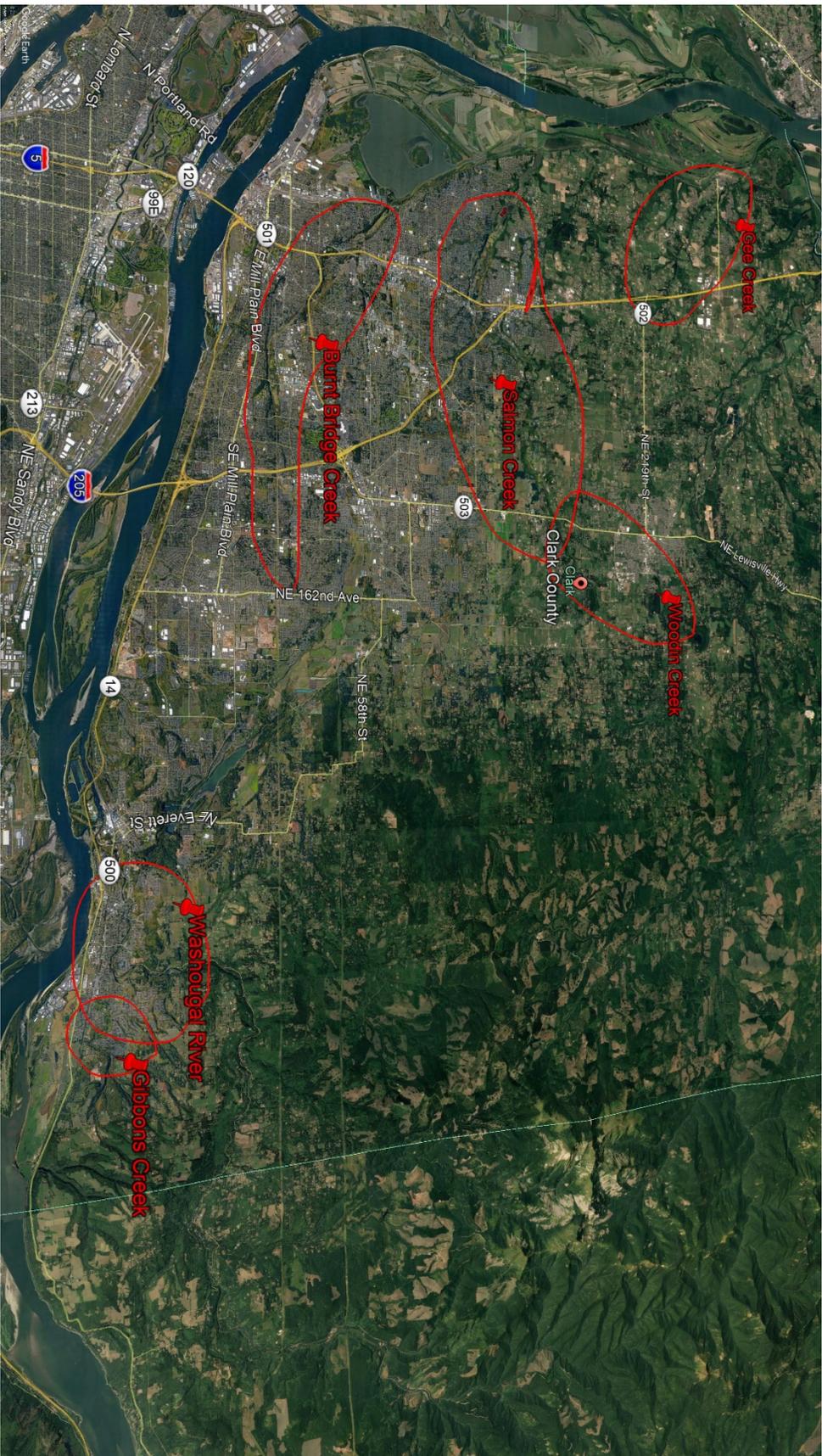
**Lower Columbia Fish Recovery Board – Clark County Clean Water Restoration Fund**

**Lower Columbia Estuary Partnership – Clark County Stormwater Site Assessment and Design Project**

**Project Area Map**

**Map Description:**

The Clark County Stormwater Site Assessment and Design Project will conduct a desktop stormwater site assessment of approximately 50 sites, conduct an on-the-ground site assessment and landowner outreach and education meetings at 20 sites, and develop preliminary site plans at three sites with high stormwater retrofit potential and strong landowner support. Specific sites for each phase of the assessment will be determined as a part of the project. The project will prioritize sites within important Clark County watersheds such as Gee Creek, Woodin Creek, Salmon Creek, Burnt Creek, Burnt Bridge Creek, the Washougal River, and Gibbons Creek. All project sites will be within Water Resource Inventory Area 28 within Clark County (and possibly the Gee Creek watershed). The map below highlights portions of those watersheds.



# CCCWRF Budget Spreadsheet

Stormwater Design & Assessment Project

#REF!	<i>Make sure to double check the total formula links if extra lines are added to the worksheet!</i>				OVERALL PROJECT	GRANT REQUEST	MATCH (optional)		
					<i>Budget must account for all costs to complete the project</i>	<i>Enter only the amount of the grant request</i>	<i>The Grant Request and Match should equal the total project cost and Budget Check cell should be 0. Sponsors must account for all sources and types of match need to complete the project.</i>	Source (Grant, Cash, Materials, Labor, Volunteers, etc)	Type (Federal, State or Local?)
Category	Qty	Unit	Rate	Amount	Amount	Match			
<b>Outreach and Education</b>									
<b>Services</b>									
Ground Transportation: Mileage	Estuary Partnership staff to and from sites	600.00	-	\$ 0.58	\$ 348	\$ 348	\$ -		
Landscape Architect	Develop site designs for 3 projects	3.00	-	7,000.00	\$ 21,000	\$ 21,000	\$ -		
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ 21,348</b>	<b>\$ 21,348</b>	<b>\$ -</b>		
<b>Labor</b>									
Community Programs Director	Salary and Fringe: oversee project	39.00	-	\$74.16	\$ 2,892	\$ 2,892	\$ -		
Environmental Educator	Salary and Fringe: implement project, conduct site assessments, identify sites, coordinate design	240.00	-	\$33.00	\$ 7,920	\$ 7,920	\$ -		
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ 10,812</b>	<b>\$ 10,812</b>	<b>\$ -</b>		
<b>Materials</b>									
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		
				<b>Outreach &amp; Education Subtotal</b>	<b>\$ 32,160</b>	<b>\$ 32,160</b>	<b>\$ -</b>		
<b>Restoration</b>									
<b>Services</b>									
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		
<b>Labor</b>									
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		
<b>Materials</b>									
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		
				<b>Restoration Subtotal</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>		
<b>Administrative Costs</b>									
Finance & Contract Manager	Salary & Fringe (Manage the contract, invoicing, payroll tracking, and all reporting requirements)	39.00	-	\$62.70	\$ 2,445	\$ 2,445	\$ -		
		-	-	\$ -	\$ -	\$ -	\$ -		
				<b>STotal</b>	<b>\$ 2,445</b>	<b>\$ 2,445</b>	<b>\$ -</b>		
				<b>GTOTAL</b>	<b>\$ 34,606</b>	<b>\$ 34,606</b>	<b>\$ -</b>		
<b>Indirect Costs</b>									
	Description		Approved Rate	Total Project Base					
	Indirect		30.610%	\$ -	\$ 4,058	\$ 4,058	\$ -		
				<b>STotal</b>	<b>\$ 4,058</b>	<b>\$ 4,058</b>	<b>\$ -</b>		
				<b>GTOTAL</b>	<b>\$ 38,664</b>	<b>\$ 38,664</b>	<b>\$ -</b>		