

WASHINGTON STATE  
DEPARTMENT OF  
E C O L O G Y

## Application for a 2015-2017 Floodplains by Design Project Grant

Submitted applications will be rated to create a ranked list in support of Ecology's FY 2015-2017 Floodplains by Design budget request.

Applications must be submitted electronically via email to Ecology by 5:00 pm, **September 8, 2014**. Send applications to:

**Adam Sant** at [Adam.Sant@ecy.wa.gov](mailto:Adam.Sant@ecy.wa.gov)

**With the Subject line: 2015-2017 Floodplains by Design Project Grant Application**

You will receive confirmation that your application has been received by close of business on September 15.

*Applicants must use this form as provided. No alterations will be accepted.*

---

Project Title Little Klickitat River Floodplain Assessment and Conceptual Design

Organization/Jurisdiction Name: Central Klickitat Conservation District

Contact Name: Jim E. Hill

Address: 1107 South Columbus Avenue

City, State, Zip Code: Goldendale, WA 986920

Phone(509) 773-5823 Ext 5

Email: [klickcon@gorge.net](mailto:klickcon@gorge.net)

Legislative District(s) 14

County Klickitat

WRIA(s) 30

Congressional District(s) 3

Specific Project Location

This proposal addresses an 18 mile long reach of the Little Klickitat River. The study reach is river mile 6.2 to river mile 24. Please see the attached maps for more information.

---

***Full project (or phase proposed herein) should be completed in 3-4 years.***

***Project Narrative and Budget are limited to 20 pages.***

***Scope of Work, Schedule, Maps and Photos can be in addition to those 20 pages.***

**1. Short Description of Project (500 words or less)**

Please describe the overall goals for this floodplain area that is the focus of your proposal. Include in the description all major components of the project or activity such as breaching a levee, constructing a new levee, restoring a specific number of acres of floodplain, wetland creation or fill, restoration planting, project design planning, public process, or any other appropriate major component. Please indicate if funding is being requested for a phase of a larger multi-year project.

**Central Klickitat Conservation District (CKCD) proposes to conduct data collection, data analysis, education and outreach, project/area prioritization, conceptual project design, and stakeholder coordination to identify and scope floodplain enhancement projects that will reduce flood hazard and improve floodplain habitat and water quality in the Little Klickitat River basin. This effort is the first attempt at floodplain enhancement efforts in the region. The goal is to acquire the information needed to facilitate identification and implementation of floodplain enhancement projects in the Lower Little Klickitat River watershed.**

**2. Flood hazard / risk reduction (60 points)**

Describe your project and how it will reduce the magnitude or frequency of flood damages to people, structures or infrastructure. Projects will be evaluated on the significance of the flood hazard and the ability of the solution to address the hazard. Evidence of flood hazard reduction can be demonstrated via flood storage added (acre-feet), flood stage reduction [reduced BFE (base flood elevation)], conveyance increased (cubic ft/sec), sediment storage added or inputs reduced, number or value of structures and/or development rights removed from hazard area (# or areal extent), critical facilities removed from high hazard area, transportation and infrastructure facilities removed from high hazard areas, and other project-specific goals. Describe both upstream and downstream effects of your project.

**Answer question 2 here:**

**This project will provide essential data for flood hazard mitigation and risk reduction to all stakeholders. The grantee will analyze the data for opportunities to provide additional flood storage. We will be looking for changes in topography that facilitate increased area and/or depth of inundation. CKCD expects to identify at least 3 potential projects that would add flood storage to the Little Klickitat watershed, reducing flood hazard to downstream areas including: Goldendale, Klickitat, and rural residences along the stream corridor. This effort has generated considerable interest from Klickitat County Public Works, Emergency Management, Assessor, and Planning departments. Acquiring the elevation data and providing it to these agencies will empower them to advance floodplain management efforts and enable them to assist CKCD with moving identified projects forward. CKCD's initial discussions with Klickitat County staff initiated coordination between CKCD and County to evaluate floodplain conditions and risk reduction opportunities and will contribute to future efforts to cover and expand the area of interest.**

**3. Floodplain ecosystem protection or restoration element (60 points)**

Describe the ecological benefit of the project, its significance, and the ability of the solution to address the overall need in the project area or watershed. Examples include, but are not limited to, reconnecting floodplains, salmon recovery actions, habitat restoration, Channel Migration Zone protections, etc. Evidence of ecosystem benefits include floodplain (including estuary) habitat type (e.g., wetland, side channel, forest) and area restored (# acres), floodplain area protected from bank armoring (# of acres), floodplain area protected from development or other land use change (# acres), hardened bank removal or levee/riprap removal (linear feet), levee setbacks constructed (linear feet, # acres), new side channels or reconnection of old side channels (linear feet or storage volume), salmon species benefitted (# of listed, non-listed species). Secondary evidence includes culvert replaced to restore fish passage or increase conveyance, logjam and or wood structures installed, riparian area planted, and other project-specific goals.

**Answer question 3 here:**

**The primary emphasis of this initial effort is water quality improvement, habitat restoration, and restoration of hydrologic function. CKCD will lead the data collection and analysis efforts to develop project opportunities during this first phase of work. Subsequent work in coordination with Klickitat County will focus on floodplain management for larger scale implementation and hazard reduction.**

**CKCD has extensive experience working with landowners in Klickitat County to develop and implement in stream restoration and conservation projects. During the course of implementing other projects CKCD staff has noted 8 potential project sites along the Little Klickitat River that could offer opportunity for floodplain enhancement. There are undoubtedly additional potential projects in the reach being proposed for study. This project would provide CKCD the resources to leverage its local experience and reputation to develop those opportunities into floodplain enhancement projects. The identification and ranking of potential projects and landowner outreach proposed for this grant will yield a number of good projects with supportive landowners.**

**This is the first step toward implementing floodplain restoration in Klickitat County. The reach of the Little Klickitat River presents restoration projects that could improve water quality, enhance instream and wildlife habitat, and help restore the hydrologic cycle by reconnecting floodplains, removing bank armor, reconnecting side channels, constructing inset floodplains and removing levees. Each of these project types represents a potential project identified in the area of interest. Other opportunities will be identified from analysis of the ortho-imagery, digital elevation models, and hydraulic models for the study area. The proposed study area is about 18 miles long with a total area of 1,700 acres.**

**Habitat improvement is extremely valuable in the study reach because it has undergone agricultural, rural, and urban development. The stream corridor is significantly modified. The current configuration is very confined with limited floodplain area that is subject to frequent flooding. The implementation of a single floodplain project would introduce habitat diversity and off-channel high flow habitat**

that is presently in limited supply on the Little Klickitat River. Increased floodplain connection and backwater habitat would also improve forage availability by increasing the detritus input and storage in the stream system.

Modification of the stream corridor has impacts to the hydrology of the study area as well as downstream reaches. The proposed study area is located at a point in the watershed where the Little Klickitat valley floor widens considerably and includes that part of the watershed that historically had the most floodplain accessibility. It is also the reach of the Little Klickitat River with the most development. Restoring floodplain storage will reduce peak flood flows, attenuate flood waves, increase long term water storage in floodplain soils, increase shallow water aquifer recharge, and increase hyporheic flow. These hydrologic improvements will facilitate improved instream habitat in the project reach as well as the stream corridor downstream.

The Klickitat Salmon Recovery Funding Board Lead Entity Strategy lists the following species in the Lower Little Klickitat:

- Summer Steelhead (listed species)
- Winter Steelhead (listed species)
- Fall Chinook (listed species)
- Summer Chinook (listed species)
- Cutthroat Trout
- Brook Trout
- Rainbow Trout

Of the species listed above, the following are found within the proposed study reach:

- Summer Steelhead (listed species)
- Winter Steelhead (listed species)
- Cutthroat Trout
- Brook Trout
- Rainbow Trout

The aquatic life in the study reach would benefit from improvements to water quality, hydrologic function, and habitat. Those in the lower reach of the Little Klickitat would benefit from improvements to water quality, hydrologic function, and increase forage availability. The species present, abundance of project opportunity, degraded floodplain condition, and likelihood for success make this request for funding to initiate restoration efforts a highly valuable project. This work will launch several restoration projects and provide CKCD with the information needed to leverage funding for implementation of projects through numerous funding sources interested in habitat restoration and protection.

4. Is your project in a Puget Sound Partnership Priority Floodplain? (5 points)

Answer question 4 here: NO

## 5. Other benefits (40 points)

Describe how your project maintains or improves agricultural viability, water quality, public open space/recreation access, economic development, or other important local benefits or values, and does not conflict with other objectives of this program. Projects receive points based on the importance of the result produced, the ability of the solution to address the overall stakeholder need and the long-term improvement.

- a. Agricultural viability (evidence of agricultural benefits include reductions in flooding (acres), protection from development (acres), improvement of drainage infrastructure (acres), or other capital or non-capital benefits to agricultural productivity).
- b. Water quality improvement [e.g., through stormwater infrastructure upgrades, treatment of a TMDL or 303(d) issue, reduction in sediment, restoration of wetlands or riparian areas, implementation of related best management practices, etc.].
- c. Public access and recreation (e.g., through land acquisition, the development of trails or other recreational infrastructure, etc.)
- d. Other floodplain values or services of local importance.

**Answer question 5 here:**

**CKCD's success stems from an innate ability to work with agricultural producers to develop conservation projects that work with or improve existing agricultural practices while also improving or protecting natural resources. For example, there is a site where CKCD could develop a grazing management plan to protect floodplain vegetation. This would be coupled with a project to increase flood frequency. The result would be improved soil moisture through more frequent flooding and a higher elevation capillary zone. The flooding would result in increased nutrient loading of the floodplain during flood events. This would increase forage for grazing and improve floodplain function for benefit to both the agricultural producer and natural resources.**

**CKCD's conservation efforts along the stream corridor have historically been focused on improved water quality. The Little Klickitat River is a 303(d) listed stream with a TMDL for temperature. CKCD has assisted with developing management plans and has implemented numerous water quality improvement projects to address temperature in the Little Klickitat River. CKCD will develop floodplain restoration projects in conjunction with current water quality improvement efforts. These projects will provide more returns on the whole than they would accomplish individually. By coupling the floodplain restoration component with expertise and funding to restore riparian corridors, fencing off exclusion areas, and assisting landowners with implementing best management practices, both efforts would be leveraged for better, more effective projects. In light of the possible repercussions of climate change and the possible negative effects on water quality, this leveraging of funding efforts becomes even more important.**

**6. Cost-effectiveness (20 points)**

- a. Project will be judged on whether the budget is appropriate to the project scope, and designed for project success.
- b. Describe how the project will be continued or maintained after the grant has been completed.
- c. If project cannot be fully funded, explain how the project could be scaled downward.

**Answer question 6 here:**

**The project budget was developed based on past projects and specific inquiries for acquisition of remote sensing data along this corridor, as well as consultation from a hydraulic modeling professional familiar with this type of work. The elevation data collection and elevation modeling, geomorphology, hydrology, and hydraulic modeling are the major cost drivers in the budget. Each of these project activities are important elements in evaluating and ranking potential projects. A thorough reach scale investigation that evaluates geomorphic change drivers, frequency of flooding under existing and proposed conditions, and volume of increased storage will provide us with the information to produce a ranked project list. A ranked project list will facilitate the implementation of projects that provide the best benefit-to-cost ratio.**

**CKCD recognizes that this is a substantial funding request for data collection, assessment, project identification, landowner outreach, agency coordination, and conceptual design. We believe this is an excellent investment of resources slated for floodplain restoration because of the number of potential projects, need for habitat improvement, species that will benefit, state identified water quality concerns, and our ability to leverage other funding sources once individual projects are identified and conceptual designs are developed.**

**This project will be complemented by other funding resources that emphasize water quality and salmon recovery. CKCD has experience implementing similar projects with funds from private funders and agencies including the Washington Department of Ecology, Natural Resource Conservation Service, and Washington Resource Conservation Office. The study results from this grant will further work already funded through 2017, as well as pending and future grant funded projects.**

**If this project cannot be fully funded, CKCD could develop a scaled project to acquire the aerial imagery and elevation data, conduct GIS data analysis for project identification, and conduct landowner outreach to identify projects to pursue funding for in the future. This scaled back effort would not provide information on the frequency or magnitude of flooding, and some potential projects may go unidentified. Without this component a regional ranked project list could not be developed to prioritize floodplain restoration efforts. Nonetheless, a scaled version of the project would provide valuable data for further analysis and a critical first step for advancing floodplain restoration efforts.**

**7. Long-term cost avoidance: (30 points)**

- a. Describe how your project minimizes or eliminates future costs for maintenance, operation, or emergency response. **(15 points)**

**Answer 7.a. here:**

**This project eliminates the future cost of data acquisition for floodplain management efforts in the Goldendale, WA area. Klickitat County is interested in furthering floodplain management efforts on the Little Klickitat River, but does not have a good elevation data set to work with. This project would assist them by providing the necessary data to increase the knowledge base on floodplain function and opportunities in the region. In addition, the City of Goldendale has future plans to do some floodplain work in conjunction with their sewer management plans. The information obtained by this project will also provide them with the data they may need to implement those projects.**

- b. Describe how your project accounts for expected future changes to hydrology, sediment regimes, or water supply resulting from other floodplain management efforts, land use changes, extreme weather events, or other causes. **(15 points)**

**Answer 7.b. here:**

**CKCD's floodplain restoration projects will be designed to restore historic floodplain and hydrologic function. Floodplain restoration could help to mitigate future climate changes by improving basin hydrology, sediment transport, and water supply. Hydrologic events tend to become increasingly flashy with development and predicted climatic changes. Predicted climate change will increase flood magnitude and decrease snowpack in the Little Klickitat watershed.**

**Increasing flood magnitude will increase fine sediment transport. The source of increased sediment transport in the Little Klickitat study reach will be from increase size and frequency of mass wasting of stream banks during flood events. The proposed study will identify and conceptually design projects to increase flood storage and reduce the magnitude of storm events. Fine sediment transport will be decreased through both reduced flood peaks and the settling of fine sediments on inundated floodplains where floodwaters have lower velocities and stored water drains slowly.**

**Predicted climate change will result in increased regional temperatures and reduced water supply due to lower snowpack amounts. These conditions will exacerbate existing temperature concerns on the 303(d) listed Little Klickitat River. The water supply is expected to be improved through increased flood storage which drains out more slowly and increases shallow aquifer recharge. Floodplain projects will also mitigate the effects of warmer water by increasing**

**hyporheic flow to cool instream flow.**

**These improvements mitigate changes due to climate and development that are currently occurring and are expected to continue in the future.**

**CKCD will look at projected regional climate impacts as part of the literature review. It is expected that minimal data exists for climate impacts on a scale as small as the Little Klickitat watershed. CKCD recently learned that the University of Washington Climate Impacts Group is pursuing opportunities to conduct a climate study that will help inform floodplain design and management decisions. CKCD is very interested in collaborating with NOAA, the UW Climate Impacts Group and other partners to evaluate and quantify climate change impacts that could affect project design and implementation.**

**8. Demonstration of need and support (30 points)**

- a. Describe how your project is consistent with the intent of existing floodplain management or habitat recovery plans or is specifically identified through existing plans or work programs. (Elements of the project may have been developed through more than one planning process. Please identify the planning process used for each major element if they are not from a common plan.) **(15 points)**

**Answer question 8.a. here:**

**The habitat component of this proposal is consistent with the Klickitat Lead Entity Region Salmon Recovery Strategy which identifies restoration priorities to benefit salmonids. Listed actions which would be part of floodplain restoration projects include increased shading and sediment input reduction. The data collection, data analysis, and flood storage components of the project are beneficial to the County's efforts to improve floodplain management through better-informed decisions which will be a result of having access to the data and study results.**

- b. Describe which flood control authorities, Tribal Nations, local governments, lead entities, key stakeholders or decision-makers representing floodplain interests located within the river reach or affected by the project have provided letters of support explicitly endorsing the project and its outcomes for their interests. **(15 points)**

**Answer question 8.b. here:**

**Klickitat County provided the attached letter of support. The county is interested in floodplain management of natural resources and flood hazard reduction. Department of Ecology provided support because of the interaction this project will have with the on-going water quality funding we have in place.**

**9. Readiness to proceed and complete the proposed phase of the project (25 points)**

Describe how your project is ready to proceed with the scope of work, and your capacity to complete the project successfully and maintain it over time, including your project schedule and deliverables. Describe your experience with similar projects. If your project is acquisition only, describe how you will complete floodplain restoration subsequent to the acquisition.

**Answer question 9 here:**

**CKCD staff has with experience in managing remote data acquisition, conducting GIS mapping, performing hydraulic modeling, facilitating stakeholder coordination, and coordinating landowner outreach. As soon as funds are available, CKCD will update our existing Request for Qualifications (RFQ) for LiDAR and aerial imagery data collection and solicit remote sensing consultants. The data collection will occur the following autumn or winter, after the leaves are off the trees but early enough that flows are still at the lowest level of the year. CKCD maintains a short list of qualified survey consultants for projects in Klickitat and Skamania Counties. The consultant list and past experience managing survey projects will allow CKCD to quickly source a survey provider, provide a detailed scope of work, and acquire survey deliverables for input into the digital elevation and hydraulic models.**

**CKCD and project partners are currently working on a geomorphic assessment in a neighboring watershed. The CKCD regional engineer is currently working on an RFQ to acquire hydrology and geomorphology professional services for several projects in the region. It is expected that the responses from this RFQ will provide several qualified providers to assist with the hydrology and geomorphic assessment of the Little Klickitat study reach.**

**These project deliverables will be used by CKCD to produce a hydraulic model of the Little Klickitat River. CKCD staffs two professional engineers and has extensive experience with hydraulic modeling of river systems. The hydraulic model results will be used in combination with the GIS data to identify and evaluate floodplain restoration projects. The number, location, and scale of identified projects will be used to develop the landowner outreach activity.**

**CKCD also has extensive experience developing resource conservation projects from inception to completion. We will use this experience to develop floodplain restoration projects with landowners and seek funding from multiple sources to manage the project through implementation.**

| <b>Deliverables</b>                       |
|---|
| LiDAR and Aerial Photos for Study Area    |
| Digital Elevation Model for Study Area    |
| Topographic and Bathymetric Surveys       |
| Hydrology Report                          |
| Hydraulic Model and Report                |
| Fluvial Geomorphic Report                 |
| Ranked List of Potential Projects         |
| List of potential easement acquisitions   |
| Documentation of Landowner Outreach       |
| Documentation of Stakeholder Coordination |
| Conceptual Designs for 3 project sites    |

| <b>Projected Project Milestones</b>     | <b>Completed By</b> |
|---|---------------------|
| Project Initiated                       | July 2015           |
| Remote Sensing Provider Sourced         | August 2015         |
| Remote Sensing Data Collection          | Oct-Dec 2015        |
| Hydrology Report                        | January 2016        |
| QA/QC of Remote Sensing Data            | March 2016          |
| Survey of Bridges, bathymetric features | December 2016       |
| Geomorphology Report                    | December 2016       |
| Hydraulic Model and Report              | June 2017           |
| Ranked List of Potential Projects       | September 2017      |
| Landowner Outreach and Coordination     | On-going            |
| Landowner Agreements for 3 Projects     | December 2017       |
| Conceptual Designs Complete             | August 2018         |
| Final Report                            | December 2018       |

**10. Pilot project and leverage opportunities (25 points)**

- a. If applicable, describe how your project could serve as a pilot effort or result in changes or results with broader impacts to the state. **(10 points)**

**Answer question 10.a. here:**

**This project is a pilot project for Klickitat County. This will be the first project in Klickitat County to evaluate opportunities for large scale floodplain project identification and implementation. Klickitat County is not only supportive of this project, but they are already projecting expansion of this type of effort to other areas of the county.**

- b. If applicable, describe how your project leverages existing investments, such as SRFB, FCZDs, Dike Districts, TMDLs, WWRP, ESRP, NEP, and other funding sources. Evidence of this will be based on the amount and diversity of the leveraged funding sources. **(10 points)**

**Answer question 10.b. here:**

The Little Klickitat River is a 303(d) listed stream with listed salmonid species. CKCD currently has three Department of Ecology Centennial Clean Water grants (totaling \$696,666) to fund projects to assist mitigation of the 303(d) listing, including one that specifically includes realignment of a section of historic channel of the Little Klickitat River (G1400497 - \$30,000). Floodplain projects identified by this project may be partially funded by other resources for addressing temperature issues. In addition, the work to identify floodplain restoration projects will provide data and project opportunities that will further our efforts to reduce instream temperatures.

- c. If applicable, describe how your project addresses inequity or social justice issue by benefitting underserved communities. (5 points)

**Answer question 10.c. here: Not Applicable.**

**11. Budget** (add more tasks as needed).

| Task   | Amount Requested from Ecology* | Other Funding for Project** (20% of Total Cost Minimum) | Total Cost       |
|--|--------------------------------|---|------------------|
| <b>Task 1—Administration, mileage &amp; overhead</b>   | <b>\$25,000</b>                |   | <b>\$25,000</b>  |
| <b>Task 2</b><br>LiDAR and Aerial Photos for Study Area<br>Digital Elevation Model for Study Area<br>Topographic and Bathymetric Surveys<br>Project Management | <b>\$78,200</b>                | <b>\$25,800</b>   | <b>\$104,000</b> |
| <b>Task 3</b><br>Geomorphology Report<br>Hydraulic Model and Report  | <b>\$44,000</b>                | <b>\$11,000</b>   | <b>\$55,000</b>  |
| <b>Task 4</b><br>Landowner Outreach and Coordination<br>Landowner Agreements for 3 Projects  | <b>\$20,000</b>                | <b>\$5,000</b>  | <b>\$25,000</b>  |
| <b>Task 5</b><br>Conceptual Designs Complete   | <b>\$12,800</b>                | <b>\$3,200</b>  | <b>\$16,000</b>  |
| <b>Total</b>   | <b>\$180,000</b>               | <b>\$45,000</b>   | <b>\$225,000</b> |

\*Amount requested from Ecology under this grant program

\*\*Other sources of funding dedicated to this project. Insert narrative below that details what the source of funding is and whether or not it has been received or applied for but not yet received.

Match must be at least 20% of Total Project cost.

Discussions with Klickitat County Natural Resources, Planning, Assessor's Office and Engineering have resulted in the County being extremely interested in this project. Natural Resources can see the benefit for the Lead Entity process, watershed planning, implementation plan, etc. that can have a huge benefit for salmon recovery. County Planning is interested because they will have a resource for Critical Areas Ordinance and Shoreline Management other than the 1985 FEMA Floodplain maps. County Assessor is interested because it will assist them in assessing values for areas within and adjacent to the floodplains, which will be much better defined after the project is complete. County Engineering has FEMA funding for floodplain study, and will likely provide the match requirement for this grant since they will be getting access to the data generated by this proposal.

CKCD has other grants that cannot be used as match, but are available to act as leverage for this grant. All are Dept of Ecology Centennial Clean Water (319) water quality grants, used to implement practices called for in the Little Klickitat River TMDL. These best management practices can complement the Floodplains by Design funding and may enhance the opportunities identified in the project. These grants include #G1400424 an implementation, monitoring grant for the Little Klickitat River, #G1400497 a floodplain, historic channel realignment assessment grant for the Little Klickitat River within the project reach.

If it's not possible to fully fund this proposal, please describe a *phased* approach that would still significantly advance the effort:

If this project cannot be fully funded, CKCD could develop a scaled project to acquire the aerial imagery and elevation data, conduct GIS data analysis for project identification, and conduct landowner outreach to identify projects to pursue funding for in the future. This scaled back effort would not provide information on the frequency or magnitude of flooding, and some potential projects may go unidentified. Without this component a regional ranked project list could not be developed to prioritize floodplain restoration efforts. Nonetheless, a scaled version of the project would provide valuable data for further analysis and a critical first step for advancing floodplain restoration efforts.

12. **SCOPE OF WORK:** Please attach a Scope of Work and schedule. If your proposal is a phase of a larger multi-year project, please place this proposal in the context of the overall project and provide preliminary cost projects to complete the project.

**Please see attached document.**

13. **Maps:** Please attach at least two (2) maps to your application. The first map should be a vicinity map and the second should be a map of your project.

**Please see attached maps.**

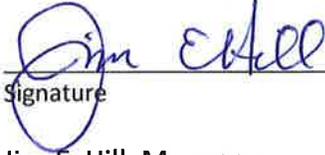
- 14. Planting Maintenance/Survival:** If your project includes plantings, please provide a description of how you will ensure plant survival and maintenance.  
**Not Applicable.**
- 15. Photos:** Photos are not required, but if you think they enhance our understanding of your application, please include them. We are particularly interested in “before” photos that can be matched with “after” photos.
- 16. Executive order 05-05, Archaeological and Cultural Resources** (online at [http://www.governor.wa.gov/office/execorders/eoarchive/eo\\_05-05.pdf](http://www.governor.wa.gov/office/execorders/eoarchive/eo_05-05.pdf)) directs state agencies to review all capital construction projects for potential impacts to cultural resources to make sure that reasonable action is taken to avoid adverse impacts to these resources. If this grant program is funded by the 2015 Legislature, successful grant applicants will be required to submit additional information to Ecology to comply with this Executive Order.

**Additional factors in ranking and award:** This is a very new funding source. To ensure that projects meet the objectives of the program, these additional factors will be considered in creating the proposed funding list:

- **Balance of project types:** Balance funding ready-to-proceed construction projects with funding pre-construction activities. This balance in project types is vital to ensuring success over time.
- **Geography:** There is strong interest in ensuring that projects in all areas of the state receive funding.
- **Advancing multi-benefit floodplain management:** It is important that the project list advance the principles and practical application of multi-benefit floodplain management.

**Certification**

I certify to the best of my knowledge that the information provided above is true and correct and that I am legally authorized to sign and submit this information on behalf of the organization applying for this grant.

  
Signature

9/8/2014  
Date

Jim E. Hill, Manager

Printed name and Title

Central Klickitat Conservation District

Name of Organization Applying for Grant

**Application for a 2015-2017 Floodplains by Design Project Grant**

**Attachments**



---

## Central Klickitat Conservation District

1107 S. Columbus Ave. – Goldendale, WA 98620 - Phone (509) 773-5823 ext. 5 – Fax (509) 773-6046

September 8, 2014

### Floodplains by Design Grant Proposal

#### Scope of Work

#### 1.0 Project Description

CKCD proposes to assess, identify, and prioritize potential floodplain enhancement projects and develop those opportunities through coordination with stakeholders and interested landowners. The proposed project area is an 18 mile reach of the Little Klickitat River that runs through Goldendale, Washington. LiDAR, high resolution ortho-imagery, and ground based surveys will be collected to provide data for the study to identify opportunities to increase the frequency, area, and depth of floodplain inundation. Potential projects will be initially identified through hydraulic modeling of flood events of different magnitudes to identify opportunities to alter topography and/or bathymetry to increase floodplain inundation. The primary means of increasing floodplain inundation would be levee setback, increased channel roughness, in-stream grade changes in incised reaches, and lowering of abandoned terraces.

Potential projects will be identified and evaluated for the lowest cost-to-benefit ratio. This will be accomplished by ranking the projects on a variety of factors that include benefits such as: flood storage and increased conveyance, floodplain reconnection, habitat quantity and quality improvements, water quality improvements, and agricultural benefits. Other factors may be incorporated depending on the types of projects identified and stakeholder input on floodplain function and value. CKCD anticipates that all of the projects within or upstream of the Goldendale reach would have a flood hazard risk reduction benefit, given the noted projects would all increase flood storage and thus attenuate flood waves and reduce peak flooding. The scale of reduction would be dependent upon the number and magnitude of projects implemented.

The ranked potential project list will be used to focus landowner outreach to identify landowners interested and willing to investigate floodplain enhancement opportunities on their property. CKCD will work with interested landowners to educate them on the value of floodplain enhancement, and determine their level of interest and the range of opportunities they are willing to consider. CKCD expects that the education and outreach effort will yield 6-12 interested landowners with floodplain enhancement opportunities. The top three ranked projects with supportive landowners will be advanced through an alternatives analysis. The number of projects advanced may be dependent upon the magnitude and complexity of the individual projects. Each of the projects will be evaluated (fluvial geomorphic, habitat, hydrologic, and hydraulic assessment and analysis) to document the floodplain enhancement alternatives at each site. These alternatives will be presented to the landowner to facilitate a selection of the floodplain enhancement opportunity to be advanced to the conceptual design level.

The conceptual design will provide estimates of the change in flooded area, increased frequency of flooding, and flood storage added in the project reach. A site survey and conceptual drawings will be produced to show the project area, approximate grading changes, potential in-stream structure placements, and any channel changes that are proposed. These documents will be utilized to pursue additional funding for final design and project implementation.

## 2.0 Project Objectives

As part of the project CKCD will:

- Acquire and disseminate a digital elevation model of floodplain topography and bathymetry for 18 miles of the Little Klickitat River.
- Conduct hydrology, hydraulics, and fluvial geomorphic studies and provide a report for the study reach.
- Develop a ranked list of potential floodplain projects.
- Coordinate with stakeholders and private landholders to secure agreements for the design and construction of three floodplain restoration projects. All landowners in the study reach will be contacted by CKCD.
- Meet onsite with each interested landowner to develop project opportunities.
- Produce an alternatives analysis for the top 3 projects with landowner agreements.
- Produce three conceptual designs for floodplain restoration projects.

## 3.0 Project Tasks

### **Task 1: Administration:**

Administration of the project will include record keeping, billing, mileage, and training. The District staff will administer the project. Responsibilities will include, but not be limited to: maintenance of project records; submittal of payment vouchers, fiscal forms, and progress reports; compliance with applicable procurement, contracting, and interlocal agreement requirements; application for, receipt of, and compliance with all required permits, licenses, easements, or property rights necessary for the project; and submittal of required performance items.

**Total Task Cost: \$25,000**

### **Task 2, Data Collection, Data QC/QA, and Project Management:**

CKCD will solicit for professional services and manage contracts with consultants to perform the LiDAR and Ortho- Imagery acquisition, and ground surveys. CKCD will conduct QA/QC of deliverables from consultants. CKCD will manage all projects components during the life cycle of this effort.

**Total Task Cost: \$104,000**

### **Task 3 Evaluation of existing conditions:**

CKCD will conduct a literature review of existing documents, studies and assessments on the Little Klickitat River that pertain to the stream reach of the study. Perform an extensive hydrologic and hydraulic analysis of the stream reaches, especially those found most likely to support floodplain projects. A hydraulic model will be produced to determine frequency, area, and depth of flooding under existing and proposed conditions. Perform or hire to perform, a geomorphic assessment of the floodplain to inform the development of the conceptual designs.

**Total Task Cost: \$55,000**

### **Task 4 Outreach and Education:**

Outreach to perspective landowners that live within the reaches identified as having the best potential for project development. This will include stakeholder meetings to explain proposed projects and coordinate with landowners to gain landowner support. CKCD will investigate easement acquisition options to assist landowners with project implementation costs. District staff will report the results to Ecology, and provide information on the results of the outreach to all interested landowners in the affected reach.

**Total Task Cost: \$25,000**

### **Task 5 Conceptual Design:**

Conceptual designs for at least three sites will be completed. Conceptual designs will include plan view drawings an alternatives analysis and conceptual design document for each project site.

**Total Task Cost: \$16,000**

**TOTAL PROJECT COST: \$225,000**

## **4.0 Project Deliverables**

- LiDAR and Aerial Photos for Study Area
- Digital Elevation Model for Study Area
- Topographic and Bathymetric Surveys
- Hydrology Report
- Hydraulic Model and Report
- Fluvial Geomorphic Report
- Ranked List of Potential Projects
- List and description of potential easement acquisitions
- Documentation of Landowner Outreach
- Documentation of Stakeholder Coordination
- Alternatives Analysis and Conceptual Designs for three project sites

## **5.0 Project Schedule**

|                                      |                |
|--------------------------------------|----------------|
| Project Initiated                    | July 2015      |
| Remote Sensing Provider Sourced      | August 2015    |
| Remote Sensing Data Collection       | Oct-Dec 2015   |
| Hydrology Report                     | January 2016   |
| QA/QC of Remote Sensing Data         | March 2016     |
| Ground based survey                  | December 2016  |
| Geomorphology Report                 | December 2016  |
| Hydraulic Model and Report           | June 2017      |
| Ranked List of Potential Projects    | September 2017 |
| Landowner Outreach and Coordination  | On-going       |
| Alternatives Analysis for 3 projects | January 2018   |
| Landowner Agreements for 3 Projects  | February 2018  |
| Conceptual Designs Complete          | August 2018    |
| Final Report                         | December 2018  |

# Proposed Floodplain Study Area



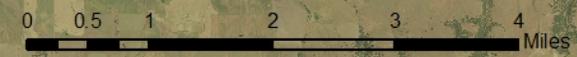
Total study area = 1654 acres  
Total river length = 18.4 miles approx.

Reach 1

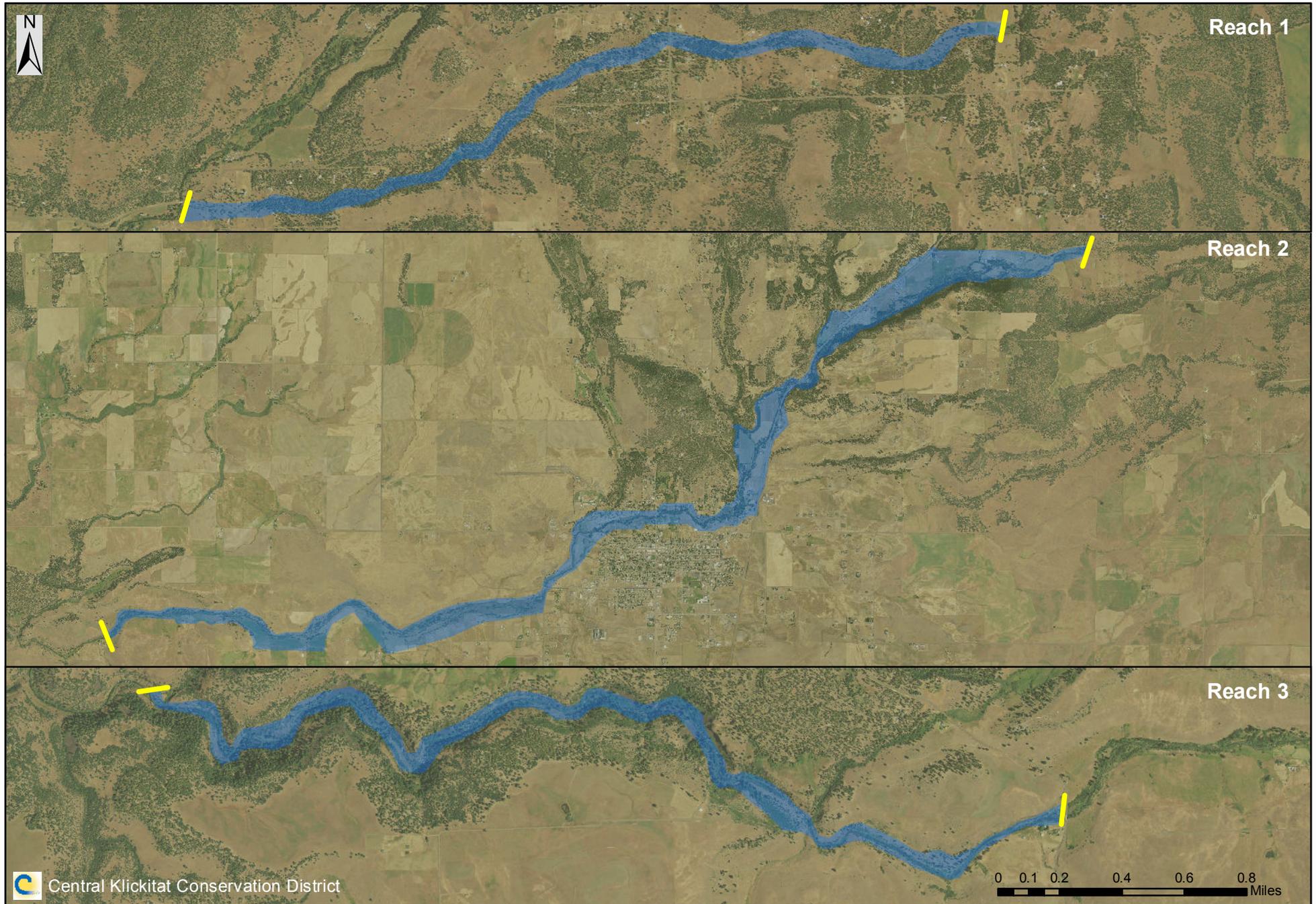
Reach 2

Reach 3

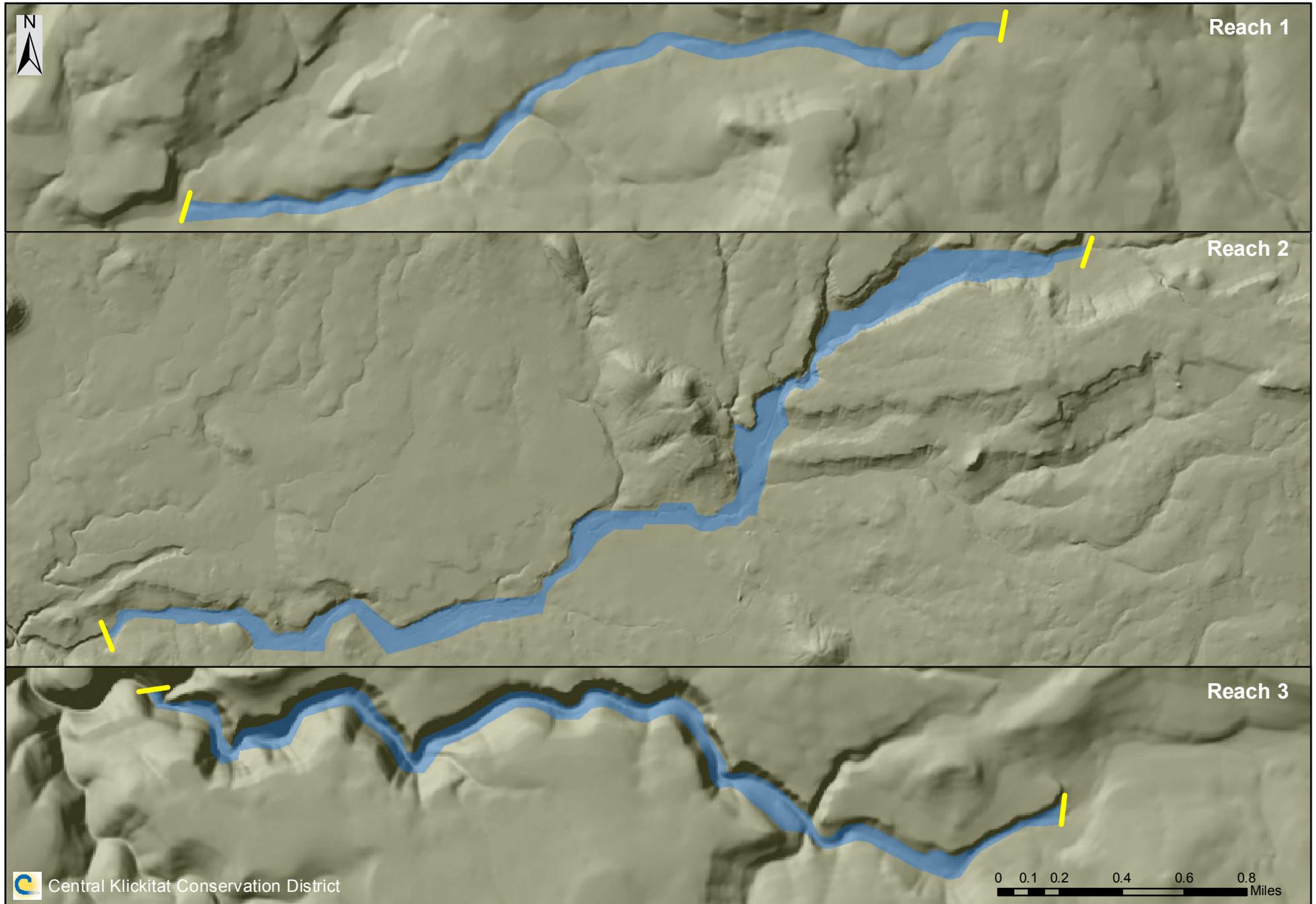
Goldendale



# Proposed Floodplain Study Area



# Proposed Floodplain Study Area





## KLICKITAT COUNTY

### NATURAL RESOURCES DEPARTMENT

127 W. Court Street MS-CH 26, Goldendale WA 98620

Office: 509-773-2410

Fax: 509-773-4521

May 23, 2014

Jim Hill (Manager)  
Central Klickitat Conservation District  
1107 S. Columbus AVE.  
Goldendale, WA 98620

RE: CKCD Grant Application for Floodplain Assessment funding.

Dear Jim:

In regard to your grant application for State funding to support "Central Klickitat Conservation District (CKCD) conducting data collection, data analysis, education and outreach, project/area prioritization and conceptual design, and stakeholder coordination to identify and scope floodplain enhancement projects that will reduce flood hazard and improve floodplain habitat and water quality in the Little Klickitat River basin", Klickitat County Department of Natural Resources supports the application and proposed work. The outcomes of this study will help inform implementation activities contained in the WRIA 30 Klickitat River Watershed Management Plan (April 2005). The outcomes will also help inform other floodplain management and habitat related activities in the watershed. Please keep our program informed during the grant application process and during field activities if the grant is awarded.

Sincerely,

A handwritten signature in cursive script that reads "Greg Schuler".

Greg Schuler  
Project Coordinator