NORTH COAST RESOURCE PARTNERSHIP

NORTH COAST RESOURCE PARTNERSHIP
2018/19 IRWM Project Application

The North Coast Resource Partnership (NCRP) 2018/19 Project Application Instructions and additional information can be found at the NCRP 2018/19 Project Solicitation webpage (https://northcoastresourcepartnership.org/proposition-1-irwm-round-1-implementation-funding-solicitation/). Please fill out grey text boxes and select all the check boxes that apply to the project. Application responses should be clear, brief and succinct.

Project Applications will be accepted until 5:00 pm, ~~March 8, 2019~~ March 15, 2019. It is important to save the application file with a distinct file name that references the project name. When the application is complete, please email to kgledhill@westcoastwatershed.com

If you have questions, need additional information or proposal development assistance please contact:

- Katherine Gledhill at kgledhill@westcoastwatershed.com or 707.795.1235
- Tribal Projects: Sherri Norris, NCRP Tribal Coordinator at sherri@cieaweb.org or 510.848.2043

Project Name: Fire Risk Reduction Decision Support for the Russian River Watershed

A. ORGANIZATION INFORMATION

1. Organization Name:
Conservation Biology Institute (applicant), Sonoma Water, and USGS CA Water Science Center

2. Contact Name/Title
Name: Deanne DiPietro
Title: Senior Science Coordinator
Email: deanne.dipietro@consbio.org
Phone Number (include area code): 707-477-6516

3. Organization Address (City, County, State, Zip Code):
136 SW Washington Ave, Suite 202
Corvallis, OR 97333

4. Organization Type

☐ Public agency

X Non-profit organization

☐ Public utility

☐ Federally recognized Indian Tribe

☐ California State Indian Tribe listed on the Native American Heritage Commission's California Tribal Consultation List

☐ Mutual water company

☐ Other:

5. Authorized Representative (if different from the contact name)

Name: Pamela Frost
Title: Vice President & Chief Operations Officer
Email: pfrost@consbio.org
Phone Number (include area code): 541-368-5802

6. **Has the organization implemented similar projects in the past? X** yes ☐ no

Briefly describe these previous projects.

CBI has experience modeling large and severe fire probability, with recent projects in several regions of Oregon and California. CBI recently completed a study (Syphard et al. 2019) evaluating the influence of climate and development patterns on current and projected future fire distributions in three regions of California, which included Lake, Sonoma, and Napa counties. In Syphard et al. (2018), CBI evaluated the sensitivity of future fire projections to vegetation predictor variables in Butte and Plumas counties.

CBI has participated in and led many prioritization modeling efforts throughout California and in other regions of the US. Our approach to prioritization modeling engages stakeholders to ensure the outputs and analysis reflect the needs of the region and prove useful for decision making. Examples of these projects: prioritization of high value agricultural land in the San Joaquin Valley (Thompson and Pearce 2018), high biological value land in the Mojave, Modoc, and San Joaquin Valley regions, and identification of lands appropriate for renewable energy development in many of those same areas. These prioritization analyses were part of larger conservation planning efforts, planning documents, and regional planning decision support tools.

CBI has developed numerous custom web mapping applications and decision support systems for the purpose of guiding and informing conservation efforts in California and in other regions. These tools range from simple map viewers to complex modeling systems. Examples include Data Basin (http://databasin.org), the Climate Console (http://climateconsole.org/ca), the Nature's Stage Climate Mapper (http://climatemapper.org), the Landscape Climate Dashboard (http://climatedashboard.org), The Regional Conservation and Development Planning Tool (draft tool available at: http://wcb-1390470646.us-west-2.elb.amazonaws.com),

and EEMS Online (http://eemsonline.org). These tools are designed to help users answer complex management questions and to provide critical insight into local and global environmental challenges. Deanne DiPietro is the lead developer of the Climate Commons (http://climate.calcommons.org), a widely-used online digital library of science and information about climate change pertaining to natural resource management in California. Visit the CBI tools page (https://consbio.org/products/tools) for a full list of decision support and data exploration tools created in collaboration with our partners and stakeholders.

Selected References:

Syphard, A.D., T. Sheehan, H. Rustigian-Romsos, and K. Ferschweiler. 2018. Mapping future fire probability
under climate change: Does vegetation matter? PloS one 13: e0201680.

Syphard, A.D., H. Rustigian-Romsos, M. Mann, E. Conlisk, M. Moriz, V. Butsic, S. Di Tommaso, L. Flint, A.
Flint, and D. Ackerly. 2019. Which matters most and where? The relative influence of climate and housing pattern on current and projected fire distribution and structure loss across three California landscapes. In revision, Global Environmental Change.

Pearce, D., Strittholt, J., Watt, T., Elkind, E. 2016. A Path Forward: Identifying Least-Conflict Solar PV Development in California's San Joaquin Valley. https://db-static-content.s3.amazonaws.com/versions/543/img/gateways/sjvp/report.pdf

7. List all projects the organization is submitting to the North Coast Resource Partnership for the 2018/19 Project Solicitation in order of priority.

Fire Risk Reduction Decision Support for the Russian River Watershed

8. Organization Information Notes:

B. ELIGIBILITY

1. North Coast Resource Partnership and North Coast IRWM Objectives

GOAL 1: INTRAREGIONAL COOPERATION & ADAPTIVE MANAGEMENT
X Objective 1 - Respect local autonomy and local knowledge in Plan and project development and implementation
X Objective 2 - Provide an ongoing framework for inclusive, efficient intraregional cooperation and effective, accountable NCIRWMP project implementation
☐ Objective 3 - Integrate Traditional Ecological Knowledge in collaboration with Tribes to incorporate these practices into North Coast Projects and Plans

GOAL 2: ECONOMIC VITALITY
X Objective 4 - Ensure that economically disadvantaged communities are supported and that project implementation enhances the economic vitality of disadvantaged communities by improving built and natural infrastructure systems and promoting adequate housing
X Objective 5 - Conserve and improve the economic benefits of North Coast Region working landscapes and natural areas

GOAL 3: ECOSYSTEM CONSERVATION AND ENHANCEMENT
X Objective 6 – Conserve, enhance, and restore watersheds and aquatic ecosystems, including functions, habitats, and elements that support biological diversity
X Objective 7 - Enhance salmonid populations by conserving, enhancing, and restoring required habitats and watershed processes

GOAL 4: BENEFICIAL USES OF WATER
X Objective 8 - Ensure water supply reliability and quality for municipal, domestic, agricultural, Tribal, and recreational uses while minimizing impacts to sensitive resources
X Objective 9 - Improve drinking water quality and water related infrastructure to protect public health, with a focus on economically disadvantaged communities
☐ Objective 10 - Protect groundwater resources from over-drafting and contamination

GOAL 5: CLIMATE ADAPTATION & ENERGY INDEPENDENCE
X Objective 11 - Address climate change effects, impacts, vulnerabilities, and strategies for local and regional sectors to improve air and water quality and promote public health
☐ Objective 12 - Promote local energy independence, water/ energy use efficiency, GHG emission reduction, and jobs creation

GOAL 6: PUBLIC SAFETY
X Objective 13 - Improve flood protection and reduce flood risk in support of public safety

2. Does the project have a minimum 15-year useful life?
X yes ☐ no
If no, explain how it is consistent with Government Code 16727.

This project will result in strategic prioritization of multiple implementation projects in the Russian River region that will have a minimum 15-year useful life.

3. Other Eligibility Requirements and Documentation

CALIFORNIA GROUNDWATER MANAGEMENT SUSTAINABILITY COMPLIANCE
a) Does the project that directly affect groundwater levels or quality?
☐ yes **X** no
b) If Yes, will the organization be able to provide compliance documentation outlined in the instructions, to include in the NCRP Regional Project Application should the project be selected as a Priority Project?
☐ yes ☐ no

CASGEM COMPLIANCE
a) Does the project overlie a medium or high groundwater basin as prioritized by DWR?

X yes ☐ no If Yes, list the groundwater basin and CASGEM priority: Santa Rosa Plain and Ukiah Valley

b) If Yes, please specify the name of the organization that is the designated monitoring entity: County of Sonoma Permit and Resource Management Department for Santa Rosa Plain and Mendocino County Water Agency for Ukiah Valley

c) If there is no monitoring entity, please indicate whether the project is wholly located in an economically disadvantaged community.

☐ yes ☐ no

URBAN WATER MANAGEMENT PLAN

a) Is the organization required to file an Urban Water Management Plan (UWMP)?

☐ yes **X** no

b) If Yes, list the date the UWMP was approved by DWR:

c) Is the UWMP in compliance with AB 1420 requirements?

☐ yes ☐ no

d) Does the urban water supplier meet the water meter requirements of CWC 525?

☐ yes ☐ no

c) If Yes, will the organization be able to provide compliance documentation outlined in the instructions, to include in the NCRP Regional Project Application should the project be selected as a Priority Project?

☐ yes ☐ no

AGRICULTURAL WATER MANAGEMENT PLAN

a) Is the organization – or any organization that will receive funding from the project – required to file an Agricultural Water Management Plan (AWMP)?

☐ yes **X** no

b) If Yes, list date the AWMP was approved by DWR:

c) Does the agricultural water supplier(s) meet the requirements in CWC Part 2.55 Division 6?

☐ yes ☐ no

SURFACE WATER DIVERSION REPORTS

a) Is the organization required to file surface water diversion reports per the requirements in CWC Part 5.1 Division 2?

☐ yes **X** no

d) If Yes, will the organization be able to provide SWRCB verification documentation outlined in the instructions, to include in the NCRP Regional Project Application should the project be selected as a Priority Project?

☐ yes ☐ no

STORM WATER MANAGEMENT PLAN

a) Is the project a stormwater and/or dry weather runoff capture project?

☐ yes **X** no

b) If yes, does the project benefit a Disadvantaged Community with a population of 20,000 or less?

☐ yes ☐ no

e) If No, will the organization be able to provide documentation that the project is included in a Stormwater Resource Plan that has been incorporated into the North Coast IRWM Plan, should the project be selected as a Priority Project?

☐ yes ☐ no

C. GENERAL PROJECT INFORMATION

- **Project Name:** **Fire Risk Reduction Decision Support for the Russian River Watershed**

- **Eligible Project Type under 2018/19 IRWM Grant Solicitation**

☐ Water reuse and recycling for non-potable reuse and direct and indirect potable reuse
☐ Water-use efficiency and water conservation
X Local and regional surface and underground water storage, including groundwater aquifer cleanup or recharge projects
☐ Regional water conveyance facilities that improve integration of separate water systems
X (*Planning for*) Watershed protection, restoration, and management projects, including projects that reduce the risk of wildfire or improve water supply reliability
☐ Stormwater resource management projects to reduce, manage, treat, or capture rainwater or stormwater
☐ Stormwater resource management projects that provide multiple benefits such as water quality, water supply, flood control, or open space
☐ Decision support tools that evaluate the benefits and costs of multi-benefit stormwater projects
☐ Stormwater resource management projects to implement a stormwater resource plan
☐ Conjunctive use of surface and groundwater storage facilities
X Decision support tools to model regional water management strategies to account for climate change and other changes in regional demand and supply projections
☐ Improvement of water quality, including drinking water treatment and distribution, groundwater and aquifer remediation, matching water quality to water use, wastewater treatment, water pollution prevention, and management of urban and agricultural runoff
☐ Regional projects or programs as defined by the IRWM Planning Act (Water Code §10537)
☐ Other:

- **Project Abstract**

This project will provide decision support for prioritizing locations and types of on-the-ground action to protect important water resources from the impacts of fire. This project focuses on the Russian River Watershed (Mendocino and Sonoma Counties) and the water supplies of Lake Sonoma, Lake Mendocino, and the Russian River, which provide water for over 600,000 people. Prioritization will be based on modeled risk of large and severe fire and impacts to hydrology and biodiversity.

- **Project Description**

Need/Background:
Significant wildfires within the Russian River Watershed could severely impact water quality within Lakes Sonoma and Mendocino, as well as Dry Creek and the Russian River. These water bodies are key water supply sources and are important for biodiversity and recreation. A strategic approach to planning fire risk reduction projects in these watersheds is needed as an important part of ensuring climate resilience and water security in the region.

Project Outcome and Approach:
This project will produce a web-based decision support tool for identifying and prioritizing locations for actions to reduce fire risk and severity in the Russian River Watershed. Information from the tool will inform decisions about appropriate types of actions, such as vegetation thinning, prescribed burning, grazing, and restoration. The resulting models and decision support tool can be expanded to apply to the larger NCRP region.

Key components of the project:

Stakeholder Engagement and Support
Two workshops to engage stakeholders in the development of the models and DSS; training in the use of the DSS; and follow-up technical support for use of the DSS to plan restoration and risk reduction projects.

Fire Risk and Impact Modeling
Geospatial models of key prioritization criteria will be developed, including: Risk of ignition and large/severe fires; hydrologic impacts of severe fire; impacts to habitat; risk of erosion and debris flows; and other criteria as identified by stakeholders.

Decision Support System Development
A decision support system (DSS) will be constructed to provide access to the geodata described above in an interactive site prioritization model. A map interface will allow the user to zoom into areas of interest and examine prioritization criteria and results together with spatial data about site conditions needed to determine appropriate actions.

- **Specific Project Goals/Objectives**

Goal 1: Reduce fire risk and protect water resources

Goal 1 Objective: Use the best available science to model fire risks and impacts
Goal 1 Objective: Create a decision support system to prioritize actions
Goal 1 Objective: Train and support Sonoma Water and other users

Goal 2: Provide a prototype for other regions of the NCRP and California

Goal 2 Objective: Create a model that can be replicated in other regions
Goal 2 Objective: Demonstrate its usefulness in strategic planning

Additional Goals & Objectives (List)

- **Describe how the project addresses the North Coast Resource Partnership and North Coast IRWM Plan Goals and Objectives selected**.

The proposed project directly addresses the Goals #3 and #4 to restore ecosystem function, protect a critical public drinking water source watershed through development of decision support tool to prioritize actions to reduce the risk of wildfire and avoid impacts to water quality and quantity.

- **Describe the need for the project**.

Lake Sonoma, formed by Warm Springs Dam, is owned by the U.S. Army Corps of Engineers (USACE) with the Sonoma County Water Agency (Sonoma Water) as the local sponsor. The authorized purposes of the Warm Springs Dam project are flood management, water supply, and recreation. The USACE operates Warm Springs Dam for flood management and Sonoma Water operates the facility for water supply. Lake Sonoma is the major water supply in the region and supports in-stream flows in Dry Creek and the Russian River for a variety of users including support of sensitive habitat.

The benefits of developing a decision support system for fire risk reduction in the Russian River / Lake Sonoma Watershed include protecting water supply, promoting public safety, preserving ecosystem conditions, promoting recreation, and protecting against economic impacts. Strategic use of limited resources for fire risk reduction will ensure that the most benefit will be realized for each dollar spent.

- **List the impaired water bodies (303d listing) that the project benefits:**

The Russian River and its major tributaries, Laguna de Santa Rosa and its major tributaries, and Lake Mendocino and Lake Sonoma are listed due to: Pathogens/Fecal Indicator Bacteria, Sediment, Temperature, and Mercury, Indicator Bacteria, Sedimentation/Siltation, and Temperature, Phosphorus and Dissolved Oxygen.

- **Will this project mitigate an existing or potential Cease and Desist Order or other regulatory compliance enforcement action?** ☐ yes **X** no

If so, please describe?

Not applicable.

- **Describe the population served by this project.**

The project will serve all residents in the Lake Sonoma watershed. Lake Sonoma provides drinking water for over 600,000 residents of Sonoma and northern Marin counties.

- **Does the project provide direct water-related benefits to a project area comprised of Disadvantaged Communities or Economically Distressed Communities?**
- ☐ Entirely
- **X** Partially

- ☐ No

List the Disadvantaged Community(s) (DAC)

The project will serve the following disadvantaged communities: rural portions of Windsor and Geyserville, the Roseland, Bellvue, and Fulton areas of Santa Rosa, Rohnert Park, and the Russian River communities of Guerneville, Rio Nido, Guerneville Park, Villa Grande, Rio Dell and Monte Rio.

- **Does the project provide direct water-related benefits to a project area comprised of Severely Disadvantaged Communities (SDAC)?**
- ☐ Entirely
- ☐ Partially
- **X** No

List the Severely Disadvantaged Community(s)

- **Does the project provide direct water-related benefits to a Tribe or Tribes**?
- ☐ Entirely
- ☐ Partially
- **X** No

List the Tribal Community(s)

If yes, please provide evidence of support from each Tribe listed as receiving these benefits.

- **If the project provides benefits to a DAC, EDA or Tribe, explain the water-related need of the DAC, EDA or Tribe and how the project will address the described need.**

The proposed project protects drinking water for all communities in Sonoma and northern Marin counties, including DACs. The project supports efforts to secure a source watershed that provide drinking water for all residents.

- **Does the project address and/or adapt to the effects of climate change? Does the project address the climate change vulnerabilities in the North Coast region?** **X** yes ☐ no

If yes, please explain.

This project will prioritize actions to reduce risk of large and severe fires and increase resilience of these watersheds under climate change. Modeling of fire risk and impacts will include selected climate change and urban growth scenarios, providing an understanding of potential fire risk and fire impacts in the future.

- **Describe how the project contributes to regional water self-reliance.**

The proposed project will develop a decision system (DSS) that identifies and prioritizes the location and type of fire risk reduction projects needed to focus limited resources in the most effective manner to reduce overall fire risk in the Lake Sonoma Watershed. When implemented, priority fire risk

reduction actions will lead to improved water quality, better flood management, restored and enhanced ecosystems, and more reliable surface and groundwater supplies. These collective actions will contribute to regional water self-reliance.

- **Describe how the project benefits salmonids, other endangered/threatened species and sensitive habitats.**

A severe wildfire could result in catastrophic sedimentation and/or landslides into Lake Sonoma that would degrade water quality for coho and Chinook salmon and steelhead, and impair ecosystem health in the Russian River watershed. The project benefits salmonids and other endangered/threatened species and sensitive habitats by prioritizing fire risk reduction actions that will conserve, enhance, and restore required habitats and watershed processes.

- **Describe local and/or political support for this project.**

Sonoma Water's Board of Directors support this project to prioritize risk reduction actions. The DSS will present strategically prioritized risk reduction actions for wildfire that will result in a better protected watershed that is more resilient to the threat of catastrophic wildfire. This type of decision support system is greatly needed by Sonoma Water and our partners.

- **List all collaborating partners and agencies and nature of collaboration.**

Conservation Biology Institute-- Project lead, stakeholder coordination, modeling, and software development.
Sonoma Water-- Primary end-users, lead stakeholders who will identify other stakeholders to engage in the project.
USGS California Water Science Center-- project collaborators, providing Basin Characterization Model data and technical support.

- **Is this project part or a phase of a larger project?** ☐ yes **X** no

Are there similar efforts being made by other groups? ☐ yes **X** no
If so, please describe?

- **Describe the kind of notification, outreach and collaboration that has been done with the County(ies) and/or Tribes within the proposed project impact area, including the source and receiving watersheds, if applicable.**

An outreach program called FireSmart Lake Sonoma, has recently conducted a series of interviews and 4 public workshops to establish common goals, garner input on short and long term actions for fire preparedness and build resiliency. Sonoma County's Office of Recovery & Resiliency has been reaching out to watershed stakeholders to respond to risk of wildfire.

- **Describe how the project provides a benefit that meets at least one of the Statewide Priorities as defined in the 2018 IRWM Grant Program Guidelines and Tribal priorities as defined by the NCRP?**

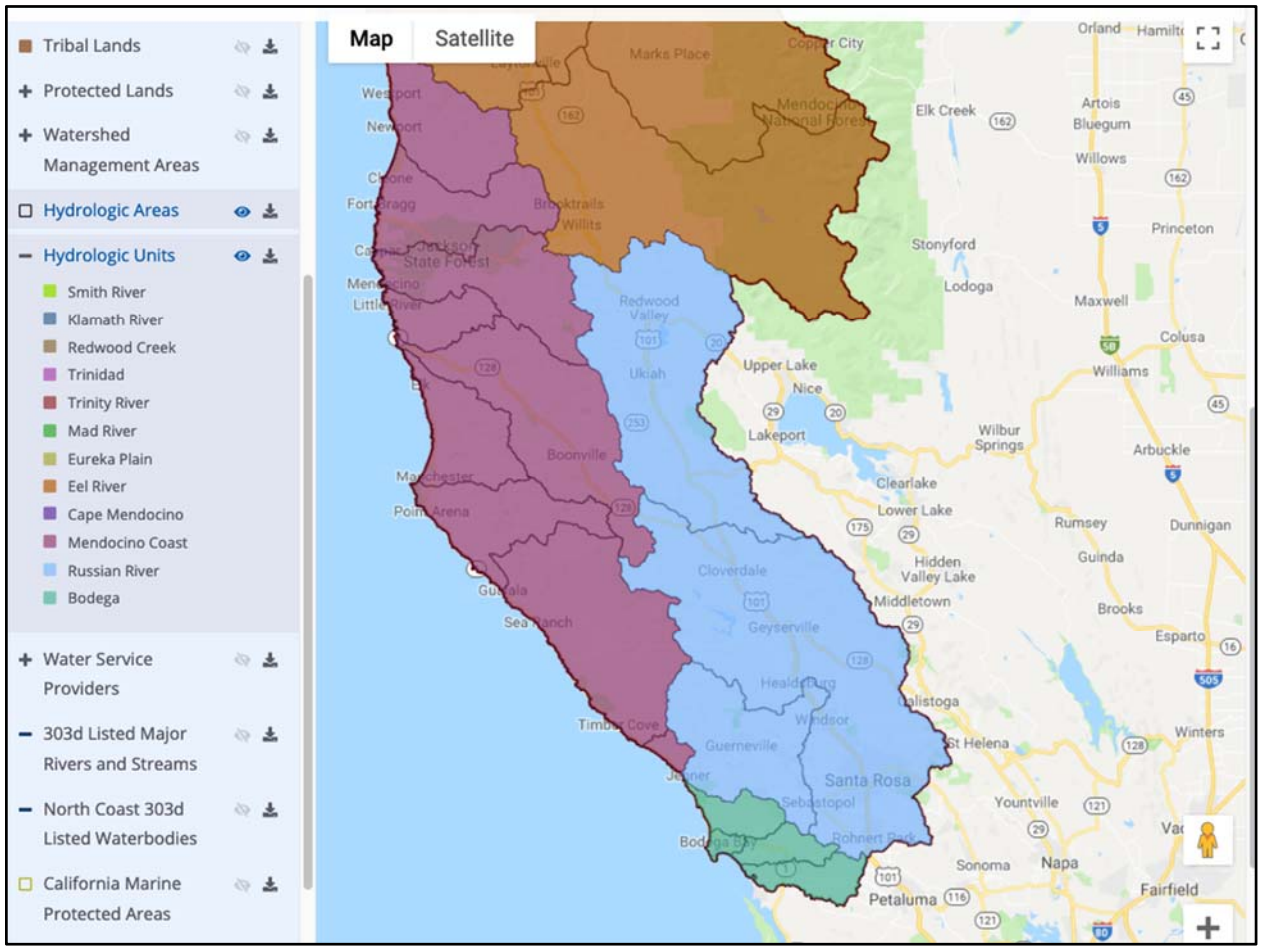
The project provides several benefits that meet three Statewide Priorities (#4, #5, and #7). The DSS enables water, land, and natural resource managers to prioritize actions to reduce risk of wildfire, such as restoring natural system ecosystem functions, manage and prepare for increased droughts and flooding (climate adaptation) and protect safe drinking water sources.

- **Project Information Notes:**

D. PROJECT LOCATION

1. Describe the location of the project

The project will cover the Russian River Watershed in northern Sonoma County and southern Mendocino County-- see map below. The Lake Sonoma Recreation Area is fourteen miles northwest of Healdsburg, California (38.784444, -123.101373).



2. Site Address (if relevant):

N/A

3. Does the applicant have legal access rights, easements, or other access capabilities to the property to implement the project?

☐ Yes If yes, please describe

☐ No If No, please provide a clear and concise narrative with a schedule, to obtain necessary access.

X NA If NA, please describe why physical access to a property is not needed.

This project is conducting mapping and modeling using geospatial data only and will not include field visits.

4. Project Location Notes:

E. PROJECT TASKS, BUDGET AND SCHEDULE

1. Projected Project Start Date:

Anticipated Project End Date:

2. Will CEQA be completed within 6 months of Final Award?

☐ Yes State Clearinghouse Number:

☐ NA, Project is exempt from CEQA

X NA, Not a Project under CEQA

☐ NA, Project benefits entirely to DAC, EDA or Tribe, or is a Tribal local sponsor. [Projects providing a water-related benefit entirely to DACs, EDAs, or Tribes, or projects implemented by Tribes are exempt from this requirement].

☐ No

3. Please complete the CEQA Information Table below

Indicate which CEQA steps are currently complete and for those that are not complete, provide the estimated date for completion.

CEQA STEP	COMPLETE? (y/n)	ESTIMATED DATE TO COMPLETE
Initial Study		
Notice & invitation to consult sent to Tribes per AB52		
Notice of Preparation		
Draft EIR/MND/ND		
Public Review		
Final EIR/MND/ND		
Adoption of Final EIR/MND/ND		
Notice of Determination		

N/A - not a CEQA Project		

If additional explanation or justification of the timeline is needed or why the project does not require CEQA, please describe.

4. Will all permits necessary to begin construction be acquired within 6 months of Final Award?

☐ Yes

☐ NA, Project benefits entirely to DAC, EDA, Tribe, or is a Tribal local sponsor

X No

5. PERMIT ACQUISITION PLAN

Type of Permit	Permitting Agency	Date Acquired or Anticipated

For permits not acquired: describe actions taken to date and issues that may delay acquisition of permit.

6. Describe the financial need for the project.

The financial need for the project includes the amount requested combined with significant cost-share investments by the project partners.

Requested Amount:	$250,452	CBI staff time
Cost-share, Sonoma Water:	$25,000	Sonoma Water staff time
Cost-share, USGS:	$100,000	Basin Characterization Model and customized outputs, technical support
Cost-share, CBI:	$66,000	Data Basin and EEMS Online software
Total Project Cost:	$441,452	
Cost-share %	76.26%	

7. Is the project budget scalable? yes **X** no

Describe how a scaled budget would impact the overall project.

A partial prioritization model would not likely be useful, so we would need to find funding to make up a shortfall below the project budget. The project is scalable to the degree that other funding can be identified.

8. Describe the basis for the costs used to derive the project budget according to each budget category.

Category (a): Direct Project Administration
Costs are based on CBI staff labor calculated using an hourly rate that is based on current rates, and extensive relevant experience.

Category (c): Planning/Design/Engineering/Environmental Documentation
Costs are based on CBI staff labor, travel, and financial support for local stakeholders.

Category (d): Construction/Implementation
Costs are based on CBI staff labor and fees for system hosting for 3 years.

9. Provide a narrative on cost considerations including alternative project costs.
Alternative projects have not been considered to date.

10. List the sources of non-state matching funds, amounts and indicate their status.

Local: Sonoma Water: $25,000 for staff involvement in the project. This cost-share has been approved.

Federal: USGS CA Water Science Center: $50,000 for donated labor and customized data products from the Basin Characterization Model. This cost-share has been approved.

Local: Conservation Biology Institute: $66,000 for use of Data Basin and EEMS Online software. This cost-share has been approved.

11. List the sources and amount of state matching funds.

None

12. Cost Share Waiver Requested (DAC or EDA)? ☐ yes **X** no

Cost Share Waiver Justification: Describe what percentage of the proposed project area encompasses a DAC/EDA, how the community meets the definition of a DAC/EDA, and the water-related need of the DAC/EDA that the project addresses. In order to receive a cost share waiver, the applicant must demonstrate that the project will provide benefits that address a water-related need of a DAC/EDA.

13. Major Tasks, Schedule and Budget for NCRP 2018 IRWM Project Solicitation
Please complete MS Excel table available at https://northcoastresourcepartnership.org/proposition-1-irwm-round-1-implementation-funding-solicitation/; see instructions for submitting the required excel document with the application materials.

14. Project Tasks, Budget and Schedule Notes:

F. PROJECT BENEFITS & JUSTIFICATION

1. Does the proposed project provide physical benefits to multiple IRWM regions or funding area(s)?

☐ yes **X** no

If Yes, provide a description of the impacts to the various regions.

2. Provide a narrative for project justification. Include any other information that supports the justification for this project, including how the project can achieve the claimed level of benefits. List any studies, plans, designs or engineering reports completed for the project. *Please see the instructions for more information about submitting these documents with the final application.*

The proposed project will help protect a critical water supply and its watershed by strategically prioritizing actions that reduce the threat of catastrophic wildfire.

The need for this work is both acute and time-sensitive. Sonoma County has experienced great loss as a result of catastrophic wildlife. Recent events that influenced the region of this project include the devastating 2017 Sonoma Complex Fires and the 2018 Camp Fire. In October 2017, the Sonoma Complex Fires tore through the County, burning over 112,000 acres of land, destroying over 5,300 homes, and claiming 25 lives. More than $3 billion in covered losses were reported in 2018.

The impacts of wildfire have grown to extreme proportions. Drought has produced significant fuel loads and rising temperatures and a longer summer dry season have increased both fire risk and severity. These conditions combined with a growing population in the region create more extreme losses in terms of human life and health, property and infrastructure, and damage to the ecosystems that residents rely upon for water and livelihood. A changing climate is expected to further increase the risk of wildfires throughout Sonoma County through increased drought and higher temperatures over a longer fire season. The Lake Sonoma Watershed is located in a Wildland/Urban Interface (WUI) area, where wildland fuels intermix with homes and structures.

Lake Sonoma holds 381,000 acre feet of water, providing a majority of the Sonoma Water's service area with water for residential use, agricultural irrigation, recreation, and habitat for listed fish species that reaches both Sonoma and Marin counties. Warm Springs Dam, which forms Lake Sonoma, provides flood control, water supply, and electricity from a hydroelectric facility. The 17,000 acre Lake Sonoma Recreation Area (LSRA) and the 8,000-acre Lake Sonoma Wildlife Management Area that encircles Lake Sonoma provide habitat, ecosystem services, and recreation.

The area exhibits a high vegetation fuel load and high potential for landslides. A stand-replacing wildfire could result in catastrophic post-fire sedimentation and landslides into Lake Sonoma that would threaten the water supply function, infrastructure, water quality, and forest health of this critical watershed. Wildfires degrade water quality due to increased sedimentation, dissolved organic carbon, metals, and nutrients. These impacts could significantly impair Lake Sonoma's water quality for drinking water and the endangered and threatened fish species in Dry Creek, which flows downstream of Lake Sonoma.

The following plans developed by Sonoma County following the 2017 Tubbs Fire support the need for strategic fire risk reduction actions to support a more resilient community:
Living in a Fire-Adapted Landscape, Priorities for Resilience, Sonoma County Natural and Working Lands. Sonoma County, 2018.
Recovery and Resilience Framework. Sonoma County, Office of Recovery and Resiliency, 2018.

3. Does the project address a contaminant listed in AB 1249 (nitrate, arsenic, perchlorate, or hexavalent chromium)? ☐ yes **X** no
If yes, provide a description of how the project helps address the contamination.

4. Does the project provide safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes consistent with AB 685? X yes ☐ no
If Yes, please describe.

The project helps to protect the Lake Sonoma source watershed that supplies drinking water to over 600,000 residents. The project supports safe, clean, affordable, and accessible water adequate for human consumption.

5. Does the project employ new or innovative technologies or practices, including decision support tools that support the integration of multiple jurisdictions, including, but not limited to, water supply, flood control, land use, and sanitation? X yes ☐ no

The project utilizes the latest science, data, and technologies to project potential threats and impacts on the landscape and inform decisions about action to take to reduce these threats. Models will include criteria from across jurisdictions, including water resource management, biodiversity conservation, and human health and safety. An innovative system for co-producing and accessing the models will be employed for maximum benefit to the community.

6. For each of the Potential Benefits that the project claims complete the following table to describe an estimate of the benefits expected to result from the proposed project. [*See the NCRP Project Application Instructions, Potential Project Benefits Worksheet and background information to help complete the table. The NCRP Project Application, Attachment B includes additional guidance, source materials and examples from North Coast projects*.]

PROJECT BENEFITS TABLE

Potential Benefits Description	Physical Amt of Benefit	Physical Units	Est. Economic Value per year	Economic Units

Water Supply				
Water Quality				
Other Ecosystem Service Benefits				
Other Benefits				
Avoided impacts to critical water supply				
Avoided impacts to human safety and health				
Avoided impacts to energy infrastructure				Project specific/Not monetized
Avoided impacts to housing and commercial infrastructure				Project specific/Not monetized
Avoided impacts to critical habitat				Project specific/Not monetized
Avoided impacts to recreational facilities				Project specific/Not monetized
Avoided loss of sequestered carbon				Project specific/Not monetized

7. Project Justification & Technical Basis Notes:

Project Justification

The project as implemented is inherently designed to provide multiple benefits to restore ecosystems, protect critical water supplies and water quality via its utility to decision makers and land managers watershed-wide. These multiple benefits are not readily quantifiable nor monetized. Avoided impacts

(various) through prioritization of risk reduction is a principal strategy of achieving goals and objectives.

The project serves to implement a decision support tool which is created based on watershed wide data and input and as a new and innovative tool is developed, has the capacity to provide similar benefits in other watersheds, including the North Coast region.

Technical Basis

Online Tool Development:

The decision support system (DSS) will be constructed using software called EEMS (Environmental Evaluation Modeling System) Online (eemsonline.org), a web-based mapping and modeling system developed by Conservation Biology Institute to allow users to explore, modify, and run models within a web browser, and to display the input and output geospatial data. The EEMS Online user interface is intuitive and easy to use. Because we will use the system throughout the stakeholder engagement process, the end-users will be familiar with it by the time the model is completed, making training easier and acceptance more likely.

Fire Risk and Impact Modeling:

We will develop statistical models of relative suitability for fire ignition occurrence and the development of large and severe fires within Russian River watershed with MaxEnt (distribution model for presence-only data; Version 3.3.3k, Phillips et al. 2006). For the ignition model, we will use the National Interagency Fire Program Analysis, Fire-Occurrence Database. For large and severe fire modeling, we will derive the response variable from Monitoring Trends in Burn Severity fire perimeter and severity data. We will develop a set of candidate environmental predictor variables considered important to fire ignition and severity including climatic, topographic, land use, and vegetation variables.

Using stakeholder input and existing data resources, we will identify key species and habitats of ecological importance in the Russian River Watershed and produce a model to identify areas at highest risk for soil erosion and debris flows across the Russian River Watershed. In our communications with stakeholders there will likely be additional criteria identified for prioritizing locations for fire risk reduction actions.

The Basin Characterization Model:
Several of the model analyses will use data products from the Basin Characterization Model (BCM) (http://climate.calcommons.org/bcm), which provides historical and projected climate and hydrology data at a 270 meter resolution, relevant for watershed-scale evaluation and planning. These data have formed the basis for multiple research projects and vulnerability assessments applying climate change projections to conservation decision-making, including analyses for the Russian River area, Climate Ready North Bay, and the 4th California Climate Change Assessment, providing a common base-layer and set of assumptions across these projects.

The BCM has recently been revised to include vegetation specific evapotranspiration, a key component for evaluating water availability and landscape stress conditions. The model revision includes options

to impose disturbances such as wildfire, or resource management actions such as forest thinning. Hydrologic impact scenarios will be evaluated for this project to assist in prioritization to allow users to identify where on the landscape water supply and landscape conditions will benefit the most from fire risk reduction. The fire risk modeling will directly apply BCM hydroclimatic layers.

About the Partnership:

The project partnership of CBI, Sonoma Water, and USGS CA Water Science Center is key to the success of this project. Together these partners provide the necessary technical, scientific, and local knowledge as well as the ability to put the resulting DSS to use for siting and supporting on-the-ground projects in an effective and strategic manner.

Coordination with Other Regional Efforts:

Sonoma County and Russian River region is an area especially rich in data resources, with recent efforts by Sonoma Ag & Open Space, Pepperwood Preserve, Tukman Geospatial, and others producing important, high-resolution, and highly relevant datasets and studies. This project includes time and financial support for coordinating with these local efforts with the intention of combining our knowledge for the highest quality and most useful results. All data will be shared and made available for download within the data delivery systems being used by these programs.

Major Tasks, Schedule and Budget for North Coast Resource Partnership 2018/19 IRWM Project Solicitation

Project Name: Fire Risk Reduction Decision Support for the Russian River Watershed
Organization Name: Conservation Biology Institute

Task #	Major Tasks	Task Description	Major Deliverables	Current Stage of Completion (%)	IRWM Task Budget	Non-State Match	Total Task Budget	Start Date	Completion Date
A	**Category (a): Direct Project Administration**								
1	Administration	In cooperation with the County of Humboldt sign a sub-grantee agreement for work to be completed on this project. Develop invoices with support documentation. Provide audited financial statements and other deliverables as required	Invoices, audited financial statements and other deliverables as required	0%	$9,216.00	$0.00	$9,216.00	4/1/2020	3/31/2021
2	Monitoring Plan	Develop Monitoring Plan to include goals and measurable objectives	Final Monitoring Plan	0%	$6,144.00	$0.00	$6,144.00	4/1/2020	3/31/2021
3	Labor Compliance Program	Execute service agreement with Labor Compliance Program company	Submission of Labor Compliance Program	0%	$2,048.00	$0.00	$2,048.00	4/1/2020	3/31/2021
4	Reporting	Develop monthly reports describing work completed, challenges, and strategies for reaching remaining project objectives. Develop Final Report	Quarterly and Final Reports	0%	$6,144.00	$0.00	$6,144.00	4/1/2020	3/31/2021
B	**Category (b): Land Purchase/Easement**								
1		N/A		0%	$0.00	$0.00	$0.00		
C	**Category (c): Planning/Design/Engineering/Environmental Documentation**								
1	Final Design /Plans	N/A							
2	Environmental Documentation: CEQA *	N/A		0%	$0.00	$0.00	$0.00		
3	Permit Development *: [PLEASE COMPLETE]	N/A		0%	$0.00	$0.00	$0.00		
4	Stakeholder Engagement and Support	General communications, 2 stakeholder engagement workshops, training webinar, and follow-up support for use of the DSS.	Workshop notes, training webinar recording	0%	$84,874.00	$56,000.00	$140,874.00	4/1/2020	3/31/2021
D	**Category (d): Construction/Implementation**								
1	Construction/Implementation Contracting	N/A		0%	$0.00	$0.00	$0.00		
2	Mobilization and Site Preparation	N/A		0%	$0.00	$0.00	$0.00		
3	Fire Risk and Impact Modeling	Data preparation, fire risk modeling, impact modeling, data management and documentation	Fire risk model output data, prioritization critieria data	0%	$54,580.00	$100,000.00	$154,580.00	4/1/2020	11/1/2020
4	Decision Support Tool Development	Develop online prioritization model, convert data from Task C5, create online portal with user interface, system hosting	Online prioritization model, decision support tool	0%	$78,230.00	$30,000.00	$108,230.00	4/1/2020	3/31/2021
6	Project Signage	N/A		0%	$0.00	$0.00	$0.00		
7	Project Close Out, Inspection & Demobilization	N/A		0%	$0.00	$0.00	$0.00		
8	Project Performance Monitoring	The performance of the project will be monitored in accordance to the Monitoring Plan using the following measurement tools and methods: Sonoma Water and any other major end-users/stakeholders will be interviewed after one year of using the decision support tool. We will report on usage of the tool to plan implementation projects, and any other metrics included in the Monitoring Plan up to that date.	Performance report	0%	$9,216.00	$5,000.00	$0.00	4/1/2022	6/1/2022
9	Construction Administration	N/A		0%	$0.00	$0.00	$0.00		
	Total North Coast Resource Partnership 2018/19 IRWM Grant Request				**$250,452.00**	**$191,000.00**	**$427,236.00**		
	Is Requested Budget scalable by 25%? If yes, indicate scaled totals; if no delete budget amount provided.								
	Is Requested Budget scalable by 50%? If yes, indicate scaled totals; if no delete budget amount provided.								

** CEQA and permitting costs for projects are not an eligible cost for grant reimbursement, unless a project is providing a water-related benefit entirely to DACs, EDAs, or Tribes, or projects implemented by Tribes.*

Detail Budget for North Coast Resource Partnership 2018/19 IRWM Project Solicitation

Project Name: Fire Risk Reduction Decision Support for the Russian River Watershed
Organization Name: Conservation Biology Institute

Budget Detail

Row (a) Direct Project Administration Costs					
Project Management Type	**Personnel by Discipline**	**Number of Hours**	**Hourly Wage**	**% of Cost (if applicable) ***	**Total Admin Cost**
Labor	Project Manager	92	$128		$11,776
Labor	Project Administrator	92	$128		$11,776
Materials					$0
Equipment					$0
Total					**$23,552**
*** What is the percentage based on (including total amounts)?**		**n/a**			
*** How was the percentage of cost determined?**		**n/a**			

Row (b) Land Purchase/Easement

Row (c) Planning/Design/Engineering & Environmental Documentation				
Personnel (Discipline)	**Major Task Name**	**Number of Hours**	**Hourly Wage**	**Total Cost**
Senior Science Coordinator	Stakeholder Engagement & Support	178	$128	$22,784
Data and Systems Administrator	Stakeholder Engagement & Support	54	$121	$6,534
Conservation Scientist/Facilitator	Stakeholder Engagement & Support	210	$101	$21,210
Prioritization Modeler	Stakeholder Engagement & Support	126	$126	$15,876
Fire Risk Modeler	Stakeholder Engagement & Support	40	$121	$4,840
GIS Analyst	Stakeholder Engagement & Support	30	$81	$2,430
Total				**$73,674**

Row (d) Construction/Implementation				
Personnel (Discipline)	**Work Task and Sub-Task (from Work Task Table)**	**Number of Hours**	**Hourly Wage**	**Total Cost**
Senior Science Coordinator	Fire Risk and Impact Modeling	40	$128	$5,120
Data and Systems Administrator	Fire Risk and Impact Modeling	110	$121	$13,310
Conservation Scientist/Facilitator	Fire Risk and Impact Modeling	50	$101	$5,050
Fire Risk Modeler	Fire Risk and Impact Modeling	170	$121	$20,570
GIS Analyst	Fire Risk and Impact Modeling	130	$81	$10,530
Data and Systems Administrator	Decision Support Tool Development	140	$121	$16,940
Prioritization Modeler	Decision Support Tool Development	210	$126	$26,460

Detail Budget for North Coast Resource Partnership 2018/19 IRWM Project Solicitation

Project Name: Fire Risk Reduction Decision Support for the Russian River Watershed
Organization Name: Conservation Biology Institute

Software Engineer	Decision Support Tool Development	30	$121	$3,630
GIS Analyst	Decision Support Tool Development	200	$81	$16,200
Project Administrator	Project Performance Monitoring	36	$128	$4,608
Project Manager	Project Performance Monitoring	36	$128	$4,608
			Subtotal	**$127,026**
Materials and Equipment	**Work Task and Sub-Task (from Work Task Table)**	**Number of Units**	**Unit Cost**	
Financial support for local stakeholders	Stakeholder Engagement & Support	5	$2,000	$10,000
Travel	Stakeholder Engagement & Support	2	$600	$1,200
Hosting Fees	Decision Support Tool Development	3 years	$5,000	$15,000
			Subtotal	**$26,200**
Total				**$153,226**

Grant total **$250,452**

OFFICE OF THE COUNTY ADMINISTRATOR

COUNTY OF SONOMA

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SHERYL BRATTON
COUNTY ADMINISTRATOR

CHRISTINA RIVERA
ASSISTANT COUNTY ADMINISTRATOR

NIKI BERROCAL
DEPUTY COUNTY ADMINISTRATOR

MICHAEL GOSSMAN
DEPUTY COUNTY ADMINISTRATOR

March 15, 2019

Katherine Gledhill
North Coast Resource Partnership
2018/19 IRWM Funding Program

RE: Russian River Watershed Fire Risk Reduction Decision Support Tool Proposal

Dear Ms. Gledhill:

Please accept this letter in support of the Russian River Watershed Fire Risk Reduction Decision Support Tool grant application, submitted to the North Coast Resource Partnership IRWM/Prop 1 program by Conservation Biology Institute in partnership with Sonoma Water and USGS CA Water Science Center.

As the Sonoma County Administrator, I have observed the impact that recent wildfires and subsequent floods have had on our community and precious watersheds. In addition to threatening the human population of the area, a significant wildfire within the Russian River Watershed would severely impact water quality within Lakes Sonoma and Mendocino with downstream impacts to Dry Creek and the Russian River. Collectively, these water bodies are key water supply sources for over 600,000 people in the North Bay, and they provide critical habitat for anadromous fish and other species.

The development of a decision support tool would help to reduce fire risk in the Russian River Watershed by informing the strategic use of limited resources, ensuring that invested dollars are spent in an informed and strategic manner. Investments in wildfire risk reduction increase protection of our valuable water supply, while promoting public safety, preserving ecosystem conditions, promoting recreation, and protecting against economic impacts.

This project aligns with the goals of the County's "Recovery and Resiliency Framework" and would directly benefit climate-smart water resilience and biodiversity conservation in Sonoma County. I request you give this application full and fair consideration.

Sincerely,

(Assistant CAO)
for Sheryl Bratton

SHERYL BRATTON
County Administrator