



featherriver.org

UPPER FEATHER RIVER IRWM PROJECT INFORMATION FORM

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Please submit by 5:00 p.m. on August 3, 2015, to UFR.contact@gmail.com

Please provide information in the tables below:

I. PROJECT PROPONENT INFORMATION

Agency / Organization	University of California Cooperative Extension
Name of Primary Contact	Holly George
Name of Secondary Contact	
Mailing Address	208 Fairgrounds Road, Quincy, CA 95971
E-mail	hageorge@ucanr.edu
Phone	530-283-6262
Other Cooperating Agencies / Organizations / Stakeholders	USDA Natural Resource Conservation Service, Sierra Valley Resource Conservation District (RCD), Feather River RCD
Is your agency/organization committed to the project through completion? If not, please explain	UCCE is committed to working with NRCS, SVRCD, FRRCD and other interested parties.

II. GENERAL PROJECT INFORMATION

Project Title	ALS-9: Soil Health Assessment
Project Category	<input checked="" type="checkbox"/> Agricultural Land Stewardship <input type="checkbox"/> Floodplains/Meadows/Waterbodies <input type="checkbox"/> Municipal Services <input type="checkbox"/> Tribal Advisory Committee <input type="checkbox"/> Uplands/Forest
Project Description (Briefly describe the project, in 300 words or less)	<p>Soils in montane meadows contribute greatly to ecosystem function by regulating essential ecosystem services including water regulation, sequestration of greenhouse gasses, vegetation productivity, and other biogeochemical processes. A lack of understanding of the effects of human management practices on essential biogeochemical processes can lead to degradation and loss of ecosystem services. Plant-soil interactions are at the core of global biogeochemical cycles and a key determinant of terrestrial feedbacks to both drought and climate change. As California enters its fourth year of drought, it is imperative to understand how weather extremes, and/or different land, agriculture & livestock management practices affect soil ecosystem processes.</p> <p>This project proposes to further the understanding of the</p>

	<p>impacts of management practices on soil health through a combination of research and community outreach. NRCS defines soil health as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. Improving soil health and resiliency has the potential to increase agricultural productivity, restore natural hydrologic functions, and mediate local responses to climate change.</p> <p>This project will consist of three phases; Phase 1 will include the establishment of a baseline for soil health of agricultural lands in the Upper Feather River Watershed and link with the statewide Soil Health Network. Phase 2 will involve research on the effects of different land management practices on targeted soil biogeochemical processes. Phase 3 will consist of region-wide outreach and education.</p> <p>A collaborative team of local producers, resource managers and regional scientists will determine the final list of measurements to be assessed as well as the sampling locations, methods, and frequency.</p> <p>Project collaborators will work with local stakeholders to identify ecosystem processes that need to be targeted for improvement. Please read Step 1 form on this topic for full details.</p>
<p>Project Location Description (e.g., along the south bank of stream/river between river miles or miles from Towns/intersection and/or address):</p>	<p>Various locations across the Upper Feather River Watershed initially focused on private agricultural lands</p>
<p>Latitude:</p>	<p>TBD</p>
<p>Longitude:</p>	<p>TBD</p>

III. APPLICABLE IRWM PLAN OBJECTIVES ADDRESSED

For each of the objectives addressed by the project, provide a one to two sentence description of how the project contributes to attaining the objective and how the project outcomes will be quantified. If the project does not address *any* of the IRWM plan objectives, provide a one to two sentence description of how the project relates to a challenge or opportunity of the Region.

<p>Upper Feather River IRWM Objectives:</p>	<p>Will the project address the objective?</p>	<p>Brief explanation of project linkage to selected Objective</p>	<p>Quantification (e.g. acres of streams/wetlands restored or enhanced)</p>
<p>Restore natural hydrologic functions.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A</p>	<p>Healthy soils increase effective precipitation so if management improves, so does effective</p>	<p>TBD</p>

Upper Feather River IRWM Objectives:	Will the project address the objective?	Brief explanation of project linkage to selected Objective	Quantification (e.g. acres of streams/wetlands restored or enhanced)
		precip...water holding capacity	
Reduce potential for catastrophic wildland fires in the Region.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Build communication and collaboration among water resources stakeholders in the Region.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Increased soil health and associated benefits can be impetus for communication & collaboration across the Region	TBD
Work with DWR to develop strategies and actions for the management, operation, and control of SWP facilities in the Upper Feather River Watershed in order to increase water supply, recreational, and environmental benefits to the Region.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Encourage municipal service providers to participate in regional water management actions that improve water supply and water quality.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Continue to actively engage in FERC relicensing of hydroelectric facilities in the Region.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Address economic challenges of municipal service providers to serve customers.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Protect, restore, and enhance the quality of surface and groundwater resources for all beneficial uses, consistent with the RWQC Basin Plan.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Soil Health is integral part of watershed function and needs to be better understood by all users in the watershed	TBD
Address water resources and wastewater needs of DACs and Native Americans.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Soil health and associated benefits is a need of ALL in UFR	TBD
Coordinate management of recharge areas and protect groundwater resources.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Better understanding of soil function may impact location & management of recharge areas	TBD
Improve coordination of land use and water resources planning.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Improved understanding of management on ecosystem services should impact planning	TBD

Upper Feather River IRWM Objectives:	Will the project address the objective?	Brief explanation of project linkage to selected Objective	Quantification (e.g. acres of streams/wetlands restored or enhanced)
Maximize agricultural, environmental and municipal water use efficiency.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Better understanding of impacts of management practices on ecosystem and hydrologic function should lead to increased efficiencies	TBD
Effectively address climate change adaptation and/or mitigation in water resources management.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Healthy functioning soils are more capable of sequestering GHG	TBD
Improve efficiency and reliability of water supply and other water-related infrastructure.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Enhance public awareness and understanding of water management issues & needs.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Community ed & outreach are crucial components to support on-the-ground solutions	TBD
Address economic challenges of agricultural producers.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Economically viable ag practices that can improve ecosystem functions is part of Phase 3	TBD
Work with counties/communities/groups to make sure staff capacity exists for actual administration and implementation of grant funding.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Part of this project is to build skillset of diverse stakeholders to incorporate soil health assessment into planning, implementation & monitoring. Actual grant requests will include capacity for staff admin	TBD

If no objectives are addressed, describe how the project relates to a challenge or opportunity for the Region:

This project addresses numerous objectives as well as Issues and Potential Projects identified by the UFR Ag Workgroup at their March 11, 2015 meeting.

IV. PROJECT IMPACTS AND BENEFITS

Please provide a summary of the expected project benefits and impacts in the table below or check N/A if not applicable; **do not leave a blank cell**. Note that DWR encourages multi-benefit projects.

If applicable, describe benefits or impacts of the project with respect to:		
a. Native American Tribal Communities	<input type="checkbox"/> N/A	Goal is to protect and enhance healthy & economic viability of working landscapes which would include Native Americans.
b. Disadvantaged Communities¹	<input type="checkbox"/> N/A	Most of UFR is DAC so this project should have positive impacts on communities.
c. Environmental Justice²	<input type="checkbox"/> N/A	Building communication/collaboration among water resource stakeholders across the UFR Region is critical component of this project.
d. Drought Preparedness	<input type="checkbox"/> N/A	Develop a comprehensive measure of the health of agricultural soils throughout the Region that can be used to assess the effects of agricultural management practices on watershed resiliency including drought.
e. Assist the region in adapting to effects of climate change³	<input type="checkbox"/> N/A	We will coordinate with 2015 California Healthy Soils Initiative to provide guidance on soil management based on the <i>Climate Change Handbook for Agricultural Water Management</i> .
f. Generation or reduction of greenhouse gas emissions (e.g. green technology)	<input type="checkbox"/> N/A	Improved soil health over time increases the ability to sequester GHG especially carbon
g. Other expected impacts or benefits that are not already mentioned elsewhere	<input type="checkbox"/> N/A	
<p>¹ A Disadvantaged Community is defined as a community with an annual median household (MHI) income that is less than 80 percent of the Statewide annual MHI. DWR’s DAC mapping is available on the UFR website (http://featherriver.org/maps/) .</p> <p>² Environmental Justice is defined as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations and policies. An example of environmental justice benefit would be to improve conditions (e.g. water supply, flooding, sanitation) in an area of racial minorities.</p> <p>³ Climate change effects are likely to include increased flooding, extended drought, and associated secondary effects such as increased wildfire risk, erosion, and sedimentation.</p>		

DWR encourages multiple benefit projects which address one or more of the following elements (PRC §75026(a)). Indicate which elements are addressed by your project.

a. Water supply reliability, water conservation, water use efficiency	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	g. Drinking water treatment and distribution	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
b. Stormwater capture, storage, clean-up, treatment, management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	h. Watershed protection and management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A
c. Removal of invasive non-native species, creation/enhancement of wetlands, acquisition/protection/restoration of open space and watershed lands	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	i. Contaminant and salt removal through reclamation/desalting, other treatment technologies and conveyance of recycled water for distribution to users	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
d. Non-point source pollution reduction, management and monitoring	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	j. Planning and implementation of multipurpose flood management programs	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A
e. Groundwater recharge and management projects	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	k. Ecosystem and fisheries restoration and protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A
f. Water banking, exchange, reclamation, and improvement of water quality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		

V. RESOURCE MANAGEMENT STRATEGIES

For each resource management strategy (RMS) employed by the project, provide a one to two sentence description in the table below of how the project incorporates the strategy. A description of the RMS can be found in Volume 2 of the 2013 California Water Plan (<http://featherriver.org/2013-california-water-plan-update/>).

Resource Management Strategy	Will the Project incorporate RMS?	Description of how RMS to be employed, if applicable
Reduce Water Demand		
Agricultural Water Use Efficiency	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Assessing soil health and impacts of management should lead to improved ag water use efficiency. Improved soil health should increase water holding capacity & effective precipitation
Urban water use efficiency	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Improve Flood Management		
Flood management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The condition of the soil surface determines whether rainfall infiltrates or runs off. If it enters the soil it may be stored and later taken up by plants, it may move into groundwater or move laterally through the earth, appearing later in springs. This partitioning of rainfall determines whether a rainstorm results in a replenishing rain or a damaging flood.
Improve Operational Efficiency and Transfers		
Conveyance – regional/local	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Resource Management Strategy	Will the Project incorporate RMS?	Description of how RMS to be employed, if applicable
System reoperation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Water transfers	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Increase Water Supply		
Conjunctive management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Improved understanding of management impacts on soil health should lead to implementation of practices that improve conjunctive management across UFR
Precipitation Enhancement	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Municipal recycled water	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	This project should aid in management of lands receiving municipal recycled water
Surface storage – regional/local	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Understanding soil health functions should impact surface storage site & management
Improve Water Quality		
Drinking water treatment and distribution	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Groundwater remediation/aquifer remediation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Matching water quality to water use	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Soils have important direct and indirect impacts on agricultural productivity, water quality, and the global climate. We need to know more so we can do better job of matching water quality to water use
Pollution prevention	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Improved soil health means less erosion, sedimentation and runoff
Salt and salinity management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Knowing soil health characteristics should help inform management re: salt/salinity
Urban storm water runoff management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Practice Resource Stewardship		
Agricultural land stewardship	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Soils are the storehouses for water and nutrients. Plants draw on these stores as needed to produce roots, stems, leaves, and, eventually, food and fiber for human consumption. Soils—and the biological, chemical, and physical processes they make possible—are a fundamental resource on which the productivities of agricultural and natural ecosystems depend.
Ecosystem restoration	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depending on how they are managed, soils can be important sources or sinks of carbon dioxide and other gases, also known as greenhouse gases, that contribute to the so-called greenhouse effect. Soils store, degrade, or immobilize nitrates, phosphorus, pesticides, and other substances that can become air or water pollutants.

Resource Management Strategy	Will the Project incorporate RMS?	Description of how RMS to be employed, if applicable
Forest management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Soil health assessment & management are equally important to forest management
Land use planning and management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Better understanding of soil health/function and management impacts should lead to better land use decisions
Recharge area protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Understanding soil health/function has direct impact on recharge area management
Sediment management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Preventing soil loss by improved management is key to improving soil health
Watershed management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Soil is the basis of the watershed, thus soil health/function & watershed management are intimately linked.
People and Water		
Economic incentives	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	This project seeks funding to assist with cost of implementing management changes
Outreach and engagement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Education, outreach and engagement are critical components of this project for management & policy changes to be made
Water and culture	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Improved communication, collaboration of all stakeholders in the UFR are related to soil health
Water-dependent recreation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Wastewater/NPDES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Other RMS addressed and explanation:

VI. PROJECT COST AND FINANCING

Please provide any estimates of project cost, sources of funding, and operation and maintenance costs, as well as the source of the project cost in the table below.

PROJECT BUDGET					
Project serves a need of a DAC?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Not that I'm currently aware of; but should benefit them. Funding Match Waiver request?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Category		Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source*	Total Cost
a.	Direct Project Administration	\$580,000 – 800,000	TBD	TBD	\$580,000 – 800,000
b.	Land Purchase/Easement	N/A	N/A	N/A	N/A
c.	Planning/Design/Engineering / Environmental	N/A	N/A	N/A	N/A
d.	Construction/Implementation	N/A	N/A	N/A	N/A
e.	Environmental Compliance/ Mitigation/Enhancement	N/A	N/A	N/A	N/A
f.	Construction Administration	N/A	N/A	N/A	N/A
g.	Other Costs	TBD	TBD	TBD	TBD
h.	Construction/Implementation Contingency	N/A	N/A	N/A	N/A
i.	Grand Total (Sum rows (a) through (h) for each column)	\$580,000 – 800,000	TBD	TBD	\$580,000 – 800,000
j.	Can the Project be phased? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide cost breakdown by phases				
		Project Cost	O&M Cost	Description of Phase	
	Phase 1	\$100,000 – 200,000		Baseline Assessment	
	Phase 2	\$400,000 – 500,000		New Research	
	Phase 3	\$80,000 – 100,000		Outreach and Education	
	Phase 4				
k.	Explain how operation and maintenance costs will be financed for the 20-year planning period for project implementation (not grant funded).		Local RCDs in conjunction with UCCE could seek grant funding to support on-the-ground projects and with landowners across the UFRW		
l.	Has a Cost/Benefit analysis been completed?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
m.	Describe what impact there may be if the project is not funded (300 words or less)		We won't know real impacts of management on soil health/function without baseline data and land/water managers, policy makers and the public won't understand the relationship of soil health and watershed management without education, outreach and engagement.		

*List all sources of funding.

Note: See Project Development Manual, Exhibit B, for assistance in completing this table
[\(http://featherriver.org/documents/\)](http://featherriver.org/documents/).

VIII. PROJECT STATUS AND SCHEDULE

Please provide a status of the project, level of completion as well as a description of the activities planned for each project stage. If unknown, enter **TBD**.

Project Stage	Check the Current Project Stage	Completed?	Description of Activities in Each Project Stage	Planned/ Actual Start Date (mm/yr)	Planned/ Actual Completion Date (mm/yr)
a. Assessment and Evaluation	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Baseline Assessment New Research Outreach and Education	TBD	TBD once funding is identified
b. Final Design	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
c. Environmental Documentation (CEQA / NEPA)	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Research should be CEQA exempt		TBD
d. Permitting	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
e. Construction Contracting	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
f. Construction Implementation	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
Provide explanation if more than one project stage is checked as current status					

IX. PROJECT TECHNICAL FEASIBILITY

Please provide any related documents (date, title, author, and page numbers) that describe and confirm the technical feasibility of the project. See www.featherriver.org/catalog/index.php for documents gathered on the UFR Region.

<p>a. List the adopted planning documents the proposed project is consistent with or supported by (e.g. General Plans, UWMPs, GWMPs, Water Master Plan, Habitat Conservation Plans, TMDLs, Basin Plans, etc.).</p>	<p>We will coordinate with the <i>2015 California Healthy Soils Initiative</i> to provide guidance on soil management based on the <i>Climate Change Handbook for Agricultural Water Management</i>. Others TBD</p>
<p>b. List technical reports and studies supporting the feasibility of this project.</p>	<p>Please refer to studies listed in Step 1 Project Summary Form for this project as some work has been done in other areas and need for us to do in the UFR</p>
<p>c. Concisely describe the scientific basis (e.g. how much research has been conducted) of the proposed project in 300 words or less.</p>	<p>This is an assessment, monitoring and outreach effort of soil health across agricultural areas of the UFRW: Phase 1 is establishment of a comprehensive set of baseline data for soil health at representative agricultural sites across the watershed. A collaborative team of local producers, resource managers and regional scientists will determine the final list to be assessed as well as the sampling locations, methods, and frequency. Results will be combined with existing data to create a comprehensive overview of current soil conditions. Project collaborators will work with local stakeholders to identify ecosystem processes that need to be targeted for improvement.</p> <p>Once the soil health baseline has been established and the targeted ecosystem processes identified, Phase 2 will involve working with researchers to design studies that measure the impacts of different agricultural management practices and/or restoration on the targeted ecosystem processes.</p> <p>Phase 3 includes community outreach and education about the impact of land management practices on ecosystem services including results of the baseline</p>

	<p>study and practical tool kits for soil health assessment. The objective is to build the skillset of resource professionals & land owners/managers to incorporate soil health assessment into their planning process, educate them on practical steps that can be taken to improve ecosystem services, and provide them with easy-to-use monitoring tools. Outreach efforts will be designed to support on-the-ground solutions through the use of case studies, producer-to-producer education, and practical implementation strategies.</p>
<p>d. Does the project implement green technology (e.g. alternate forms of energy, recycled materials, LID techniques, etc.).</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A If yes, please describe.</p>
<p>e. Are you an Urban Water Supplier¹?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p>
<p>f. Are you are an Agricultural Water Supplier²?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p>
<p>g. Is the project related to groundwater?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A If yes, please indicate which groundwater basin.</p>
<p>¹ Urban Water Supplier is defined as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. ² Agricultural Water Supplier is defined as a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding the acreage that receives recycled water.</p>	

Climate Change – Project Assessment Checklist

This climate change project assessment tool allows project applicants and the planning team to assess project consistency with Proposition 84 plan standards and RWMG plan assessment standards. The tool is a written checklist that asks GHG emissions and adaptation/resiliency questions.

Name of project: ALS-9: Soil Health Assessment

Project applicant: University of California Cooperative Extension

GHG Emissions Assessment

Project Construction Emissions

(If you check any of the boxes, please see the attached worksheet)

- The project requires nonroad or off-road engines, equipment, or vehicles to complete.
- The project requires materials to be transported to the project site.
- The project requires workers to commute to the project site.
- The project is expected to generate GHG emissions for other reasons.
- The project **does not have a construction phase** and/or is not expected to generate GHG emissions during the construction phase.

Operating Emissions

(If you check any of the boxes, please see the attached worksheet)

- The project requires energy to operate.
- The project will generate electricity.
- The project will proactively manage forests to reduce wildfire risk.
- The project will affect wetland acreage.
- The project will include new trees.
- Project operations are expected to generate or **reduce GHG emissions for other reasons.**

Adaptation & Resiliency Assessment

Water Supply

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority water supply vulnerability issues:

- Not applicable
- Reduced snowmelt
- Unmet local water needs (drought)
- Increased invasive species

Over time, improved Soil Health via changes in management should improve water holding capacity of many local soils increasing effective precipitation and aiding in resiliency.

Water Demand

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority water demand vulnerability issues:

- Not applicable
- Increasing seasonal water use variability
- Unmet in-stream flow requirements
- Climate-sensitive crops
- Groundwater drought resiliency
- Water curtailment effectiveness

Increase water-holding capacity by increasing organic matter, cover and possibly the types of crops.

Water Quality

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority water quality vulnerability issues:

- Not applicable
- Increasing catastrophic wildfires
- Eutrophication (excessive nutrient pollution in a waterbody, often followed by algae blooms and other related water quality issues)
- Seasonal low flows and limited abilities for waterbodies to assimilate pollution
- Water treatment facility operations
- Unmet beneficial uses (municipal and domestic water supply, water contact recreation, cold freshwater habitat, spawning habitat, wildlife habitat, etc.)

Healthier soils with better plant growth are going to do a better job of holding/removing sediments, filtering, etc. With improved Soil Health there could be less sedimentation which is a benefit to multiple uses.

Flooding

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority flooding vulnerability issues:

- Not applicable
- Aging critical flood protection
- Wildfires
- Critical infrastructure in a floodplain
- Insufficient flood control facilities

Ecosystem and Habitat

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority ecosystem and habitat vulnerability issues:

- Not applicable
- Climate-sensitive fauna or flora
- Recreation and economic activity
- Quantified environmental flow requirements
- Erosion and sedimentation
- Endangered or threatened species
- Fragmented habitat

It is hoped/anticipated that over time there will be some changes in management we will see some improvement in Soil Health (increased sequestration of GHG, water holding capacity and reduced erosion/sedimentation) resulting in more resiliency. These anticipated changes will take some time.

Hydropower

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority hydropower vulnerability issues:

- Not applicable
- Reduced hydropower output

ALS-9: Soil Health Assessment

GHG Emissions Analysis

Project Construction Emissions

The project requires non-road or off-road engines, equipment, or vehicles to complete. If yes:

Type of Equipment	Maximum Number Per Day	Total 8-Hour Days in Operation	Total MTCO ₂ e
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
Total Emissions			0

The project requires materials to be transported to the project site. If yes:

Total Number of Round Trips	Average Trip Distance (Miles)	Total MTCO ₂ e
		0

The project requires workers to commute to the project site. If yes:

Average Number of Workers	Total Number of Workdays	Average Round Trip Distance Traveled (Miles)	Total MTCO ₂ e
			0

The project is expected to generate GHG emissions for other reasons. If yes, explain:

The project does not have a construction phase and/or is not expected to generate GHG emissions during the construction phase.

ALS-9: Soil Health Assessment

Project Operating Emissions

The project requires energy to operate. If yes:

Annual Energy Needed	Unit	Total MTCO ₂ e
	kWh (Electricity)	0
	Therm (Natural Gas)	0

The project will generate electricity. If yes:

Annual kWh Generated	Total MTCO ₂ e
	0

*A negative value indicates GHG reductions

The project will proactively manage forests to reduce wildfire risk. If yes:

Acres Protected from Wildfire	Total MTCO ₂ e
	0

*A negative value indicates GHG reductions

The project will affect wetland acreage. If yes:

Acres of Protected Wetlands	Total MTCO ₂ e
	0

*A negative value indicates GHG reductions

The project will include new trees. If yes:

Acres of Trees Planted	Total MTCO ₂ e
0	0

*A negative value indicates GHG reductions

Project operations are expected to generate or reduce GHG emissions for other reasons. If yes, explain:

Improved Soil Health should result in an increase in sequestration of GHG, more organic matter with better water holding capacity; more cover which will reduce erosion and sedimentation.

GHG Emissions Summary

Construction and development will generate approximately:	0 MTCO ₂ e
In a given year, operation of the project will result in:	0 MTCO ₂ e