

Opportunity Title: USFS Postdoctoral Research Fellowship: Modeling Hydrological Outcomes of Stream and Valley-floor Restoration
Opportunity Reference Code: USDA-USFS-PNWRS-2023-0399

Organization U.S. Department of Agriculture (USDA)

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A complete application package consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Selected candidate must provide proof of completion of the degree before the appointment can start. Click [Here](#) for detailed information about acceptable transcripts.
- A current resume/CV
- Two educational or professional recommendations. At least one recommendation must be submitted in order for the mentor to view your application.

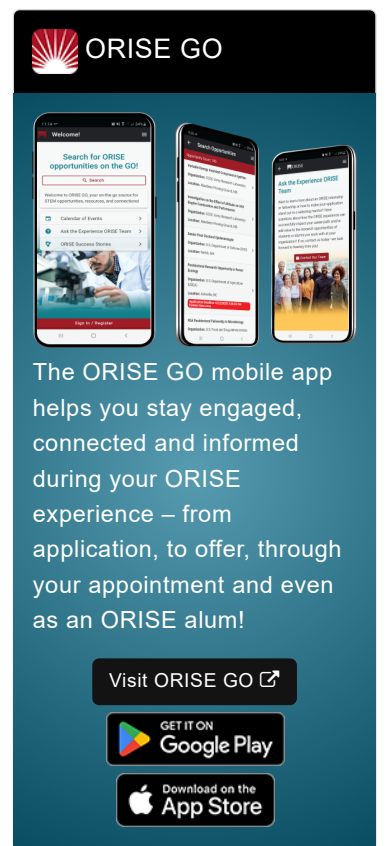
All documents must be in English or include an official English translation.

Description ***Applications will be reviewed on a rolling-basis, and this opportunity will remain open until filled.**

USFS Office/Lab and Location: A research opportunity is available with the U.S. Department of Agriculture (USDA) Forest Service (USFS), Pacific Northwest Research Station (PNW) located in Corvallis, Oregon. This appointment will be based out of the PNW Research Station's office located in Corvallis, Oregon (but a request to be located in La Grande, Oregon would be considered). Up to 8 weeks per year may be spent in the field, at the Starkey Experimental Forest and Range near La Grande, Oregon where the PNW Research Station maintains a small field station. The USFS has flexible schedules and may allow opportunities to participate remotely. There will be opportunities to attend regional and national meetings, conferences and workshops.

Research Project: The USFS PNWRS is seeking a Postdoctoral Fellow (Post-Doc) with quantitative experience in hydrology – especially development of reach- to watershed-scale water budgets and groundwater flow modeling. The Post-Doc will be engaged in a highly collaborative multi-agency monitoring and analysis effort to determine the effects of watershed-scale restoration project in Meadow Creek, a tributary of the Grande Ronde River in NE Oregon. A critical focal question for this project is: Does restoration measurably augment late-summer stream flow? Answering this question will require use of groundwater flow models to simulate pre- and post-restoration flows and storage of shallow groundwater in the floodplains of the restored stream and development of a reach-scale water budget that accounts for all fluxes into, and out of, the reach.

The opportunity described here is part of a larger project designed to evaluate multiple facets of a multi-million-dollar valley-floor restoration



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project located in the upper Grande Ronde River. Specific topics being addressed include hydrology, stream temperature, and aquatic ecology, along with studies of upland thinning patterns on snow deposition and melt. Data collected over the last several decades in the Meadow Creek watershed provide a foundation to characterize pre-restoration conditions and will provide a framework from which to conceptualize outcomes of future floodplain and process-based restoration actions. The project will include both analysis of existing datasets as well as new field monitoring, data collection, modeling, and synthesis. The overall goal of the project is to evaluate whole system response to previous restoration and management actions as well as providing a platform to understand the effects of ongoing and novel floodplain restoration. Improved understanding of stream and groundwater hydrology are a critical foundation for the overall project.

The incumbent will be mentored by a Research Ecologist within the PNW Research Station located in Corvallis OR and collaborate closely with a Research Hydrologist with the PNWRS located in La Grande, OR.

Research Activities:

- Help develop, design, and implement a monitoring plan to quantify hydrologic fluxes for a reach scale water budget, including stream gaging, monitoring ground water levels from wells, and estimating evapotranspiration;
- Help conduct field research along with USDA Forest Service staff and/or other collaborators as identified in the monitoring plan. Field research will most likely include the following: (1) stream gaging; (2) monitoring well installation; (3) programming, installing, downloading, and providing field validation checks for water level and water temperature sensors; (4) water quality sampling; (5) assisting partners and collaborators with related field research; (6) helping lead field tours. Field research will be focused during the summer months;
- Develop a groundwater flow model of the reach and simulate both pre- and post-restoration scenarios;
- Synthesize and archive datasets for the Meadow Creek watershed;
- Perform data analysis using appropriate time series, spatial, and statistical models and techniques to assess current status, trends, and effects of past restoration on selected physical parameters;
- Assist in production of peer-reviewed publications of key scientific results;
- Participate in inter-agency workgroups;
- Participate in meetings with research collaborators, managers, and stakeholder to present details of the restoration effects on the floodplain hydrology of Meadow Creek project.

Learning Objectives: This project offers the participant the opportunity to learn and be involved in a broad range of experiences with our agency and with a diverse team of interdisciplinary collaborators and stakeholders who are working in a co-production model to provide research, monitoring, and evaluation of major stream and valley-floor restoration projects being

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implemented on the Wallowa-Whitman National Forest. The participant will have the opportunity to be involved in cutting edge research examining novel stream and valley floor restoration. The participant will collaborate with a multidisciplinary team of hydrologists, ecologists, and land managers and will have the opportunity to present findings at professional meetings and participate in manuscript preparation. The participant selected will be a member of a team addressing complementary landscape problems and interacting with other federal and university scientists.

Mentor: The mentor for this opportunity is Steven Wondzell (steven.wondzell@usda.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: **October 2023.** Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but could be extended for an additional year upon recommendation of USFS and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a yearly stipend of \$65,000 plus coverage for 75% of the health insurance costs.

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR).

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and USFS. Participants do not become employees of USDA, USFS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process please email ORISE.USFS.PNWRS@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields (e.g. Hydrology), or currently be pursuing the degree to be received before January 1, 2024.

Preferred Qualifications:

- Experience in numerical modeling (groundwater models preferred);
- Record of publishing research in peer-reviewed journals;
- Record of effective written and oral communication skills;
- Interpersonal skills, including the ability to work within inter-disciplinary teams;

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- Experience collecting field data in stream and floodplain systems;
- Competent in statistical analyses with application to analysis of environmental/ecological data;
- Competent in conducting spatial analyses and visualizing data using a geographic information system (GIS);
- Interest in stream restoration, especially as it applies to conservation issues related to water, stream and riparian habitats, and conservation of aquatic species of concern in the western United States is preferred.

**Eligibility
Requirements**

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.
- **Academic Level(s):** Graduate Students or Postdoctoral.
- **Discipline(s):**
 - **Earth and Geosciences** ([3](#))
 - **Engineering** ([6](#))
 - **Environmental and Marine Sciences** ([9](#))
 - **Life Health and Medical Sciences** ([10](#))
 - **Mathematics and Statistics** ([1](#))
 - **Social and Behavioral Sciences** ([1](#))
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).