

## **ORISE Post-Doctoral Fellow: Modeling hydrological outcomes of stream and valley floor Restoration.**

The U.S. Forest Service's Pacific Northwest Research Station 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. This post-doctoral fellowship will offer tremendous opportunities for collaborative engagement with a diverse group of researchers, managers, and stakeholders addressing critical land management issues in the inter-mountain western USA.

This is a full-time, one-year appointment, but could be extended for an additional year upon recommendation of USFS and is contingent on the availability of funds.

### **Application details are available at:**

<https://www.zintellect.com/Opportunity/Details/USDA-USFS-PNWRS-2023-0399>

OR Contact Steve Wondzell for more information at: [steven.wondzell@usda.gov](mailto:steven.wondzell@usda.gov)

### **Further Details:**

This opportunity is part of a larger project designed to evaluate multiple facets of a multi-million-dollar valley-floor restoration project located in the upper Grande Rhonde 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 project will require a variety of tools and approaches. 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 supervised by a Research Ecologist with the PNW Research Station located in Corvallis OR and work closely with a Research Hydrologist with the PNW Research Station located in La Grande, OR. This position 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 work hour schedules and may allow telework opportunities. There will be opportunities to attend regional and national meetings, conferences, and workshops.

**Responsibilities:**

- 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 work along with USDA Forest Service staff and/or other collaborators as identified in the monitoring plan. Field work will most likely include the following: (1) stream gaging; (2) monitoring well installation; (3) programing, 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 work; (6) helping lead field tours. Field work will be focused during the summer months;
- Develop a groundwater flow model of the reach and simulate both pre- and post-restoration scenarios;

**Preferred Qualifications:**

- Ph.D. in hydrology or a related discipline by time of appointment;
- 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;
- 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.