# TRANSPORTATION POOLED FUND PROGRAM
# QUARTERLY PROGRESS REPORT

Lead Agency: Washington State Department of Transportation (WSDOT)

| **Transportation Pooled Fund Program Project #** | **Transportation Pooled Fund Program - Report Period:** |
|---|---|
| TPF-5(386) | ☐Quarter 1 (January 1 – March 31) 2025<br>☒Quarter 2 (April 1 – June 30) 2025<br>☒Quarter 3 (July 1 – September 30) 2025<br>☒Quarter 4 (October 1 – December 31) 2025 |

**TPF Study Number and Title:**

TPF-5(386), Gravel-Bed River Assessment Tool for Improved Resiliency of Engineering Design

| **Lead Agency Contact:** | **Lead Agency Phone Numbe** | **Lead Agency E-Mail:** |
|---|---|---|
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| **Lead Agency Project ID:** | **Other Project ID (i.e., contra** | **Project Start Date:**<br>September 2018 |
| **Original Project Start Date:**<br>September 2018 | **Original Project End Date:**<br>September 20, 2024 | **If Extension has been requested, updated project End Date:**<br>December 31,2026 |

Project schedule status:

☒ On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

| Total Project Budget | Total Funds Expended Quarters 2 to 4, 2025 | Percentage of Work Completed to Date |
|---|---|---|
| $365,000 | $24,539 | 94% |

**Project Description**:

**Background:**
The world's rivers and streams are adjusting to changes in climate. In Washington State, stream channels are becoming more dynamic – especially in the vicinity of gravel-bed rivers. Federal, state, tribal and private roads are increasingly compromised or destroyed due to progressively more dynamic channel processes. A river's bedload (sediment transported along the channel bed) drives how rivers move into – or away from – road infrastructure. In order to design durable roads and bridges, we need high quality information on how the natural material in the river system will move and deposit in the vicinity of road infrastructure.
Widely available methods for assessing channel dynamics and hazards are based on sand-bed rivers, like the Mississippi River, that do not apply to gravel-bed rivers found throughout the United States. We need a gravel-bed river assessment tool that accounts for changes in gravel-bed rivers from glacial melt and extreme flooding associated with projected future climate change.
In this pilot, WSDOT proposes to develop practical guidance and methods for assessing bedload transport in gravel-bed rivers for more resilient road infrastructure. This guide will inform engineering design, hazard assessment, and

maintenance strategies of roads along or near gravel-bed rivers. Other federal and state agencies support the pilot, and are willing to assist in the development and review process. WSDOT anticipates that US Forest Service, US Fish and Wildlife Service, Oregon DOT, Caltrans and other public works agencies will use the gravel-bed assessment tool developed by this pilot project.

**Objectives:**
This pilot will consist of three parts:
1. A technical workshop to define the framework, goals, and criteria for developing the guidance and case studies.
2. Data collection and case study development.
3. The guidance write-up and finalization

**Progress these Quarters (includes meetings, work plan status, contract status, significant progress, etc.):**

**Progress for Q2 and Q3**:
No significant progress is reported due to the federal government shutdown and the domino effect it had on several aspects of the study.

**Progress for Q4:**
FHWA agreed to postpone the project completion deadline to December 31, 2026, and the relevant contracts were amended accordingly. The USGS contract (Scott Anderson) has a deadline of February 28, 2026, for completion of all work products, excluding peer-review publication and the internal USGS review process. The contract with Natural Systems Design (Tim Abbe) has a deadline of December 31, 2026.

The U.S. Army Corps of Engineers (USACE) (Joanna Curran and staff) completed preliminary sediment transport modeling runs for the Methow River case study. USACE developed a draft document combining a discussion of modeling techniques with the results and interpretation of the sediment transport modeling. The working group (WSDOT, Yakama Nation, and USACE) met to review the results and discuss next steps for additional analysis and development of the sediment transport chapter in the guidance document. Cygnia worked with Tim Abbe to refine the chapter describing techniques for sediment budget development. This chapter remains in progress but is nearing completion.

To complete this research effort, Cygnia amended the scope of work and postponed development of a case study for the Upper Skagit River as a separate effort. The Glacier Creek case study was eliminated. The Upper Skagit River site is included on the list of Chronic Environmental Deficiencies. Although the Site and Reach Assessment is complete, it must still go through the Concurrence process, the outcome of which could result in a preferred alternative different from extending the dolotimber project (which was originally to be evaluated under this research effort). It is therefore prudent to wait for the Concurrence process to conclude before developing a sediment transport model focused on extending the dolotimber project.

For Glacier Creek, the proposed floodplain-spanning bridge is currently in the design and construction phase. Results from a case study would not be incorporated into the structure's vertical clearance or width, and the site is not well suited as a case study for the purposes of the guidance document.

**Anticipated work next quarter**:

Cygnia, Tim Abbe, and Joanna Curran will meet to revise the guidance document outline to better streamline how chapters build on one another and to provide clearer focus on the style of geomorphic assessment that supports sediment budget and sediment transport modeling. Once a finalized outline is established, the Methow River case study can be completed with an appropriate level of geomorphic assessment and sediment budget development, which will inform refinement of the sediment transport model. The finalized outline will also guide where chapters require further development for content, flow, and clarity. The geomorphic chapter has not yet been started.

**Significant Results:**

**Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).**

**Potential Implementation:**

The final product of the pilot study will be the publication of WSDOT's guidance and methods. These will be applicable to state DOTs and other highway asset managers across the nation wherever gravel-bed rivers are found.