

Finalized Research Questions for the research topic: Requirements of baseline and trend monitoring of road rules

Purpose of this document

This document provides the following Adaptive Management Program elements from the Adaptive Management Program Committee (AMPC) regarding forest roads research:

- A. The preliminary research questions they developed; and,
- B. Contextual information for these questions, as required in rule¹. This information clarifies the basis for the preliminary research questions, and what additional information the AMPC would like to see from the Independent Research and Science Team (IRST).

These elements will guide the IRST in developing scoping proposal(s) to answer these preliminary research questions.

Dear Members of the IRST,

We are pleased that you have agreed to participate on the IRST.

The AMPC appreciates your using this document to guide your work in the next step of the Adaptive Management Program, which includes your completing the following items per rules:

1. In consultation with the AMPC, refine these preliminary research questions into finalized research questions². The intent is for these finalized research questions to be able to be addressed via studies. Additionally, the AMPC requests feedback from the IRST on the level of detail in this entire document so that subsequent preliminary research question packages are more helpful for the IRST.
2. Develop scoping proposal(s) for how to address the finalized research questions. The proposal(s) need(s) to include³:
 - a. A literature review that specifies the need for or the type of monitoring, research, commissioned studies, or other means of scientific inquiry necessary to answer the finalized research question mentioned in #1;
 - b. A preliminary estimate of the budget for each year of the research, and a timeline to complete the research project with specific deliverables; and,
 - c. A preliminary description of research project requirements, scope of work including an estimate of the timeline and key milestones, and an estimate of the degree to which knowledge may be improved if the research proposal is implemented.

Additionally, please use the associated contextual information (detailed in section B, below) to guide your efforts.

3. Within 45 days of receiving this document, please provide an estimate of the time you will need to complete #1 and 2⁴.

Next steps after IRST scoping proposals: Research agenda, implementation, recommendations

In summary, the next steps in the Adaptive Management Program process are:

¹ Oregon Administrative Rule (OAR) 629-603-0200(3)(a)

² Per OAR 629-603-0200(4)(b)

³ Per OAR 629-603-0200(4)(c and d)

⁴ Per OAR 629-603-0200(4)(a)

Final

- I. The AMPC completes preliminary research questions for the other two AMPC priority research topics (amphibians and eastern Oregon steep slopes), likely in early 2024.
- II. The IRST will complete similar scoping proposals (outlined above) for these questions.
- III. The AMPC will consider all of these scoping proposals in developing a complete research agenda⁵.
- IV. The IRST will implement the research agenda⁶, then report to this work to Oregon Board of Forestry (Board) and the AMPC⁷. The AMPC will make recommendations to the Board for their decisions⁸.

Closing

Since this is the first time the AMPC has completed this stage of the AMP process, we welcome your feedback on how to improve the framing of the information and associated communications.

The AMPC looks forward to working with you, both in the long term, and on this particular scoping proposal. If you have any questions, please reach out to Oregon Department of Forestry's Adaptive Management Program Coordinator, W. Terry Frueh at Terry.Frueh@ODF.Oregon.gov or 503.871.2699.

Sincerely,
Members of the AMPC

⁵ OAR 629-603-0200(5)

⁶ OAR 629-603-0200(6)

⁷ OAR 629-603-0200(7)

⁸ OAR 629-603-0200(8)

A. Research questions

These research questions were approved by the AMPC as a substantial decision at their June 24, 2024 meeting.

1. Baseline Report.
 - a. What is the baseline status of hydrologic connectivity of roads prior to the implementation of the OFPA road rules effective Jan 1, 2024?
 - b. How does the status of hydrologic connectivity differ based on landowner type and East/West region?
 - c. How do particular elements of the regulatory framework (e.g. road location) or site characteristics (e.g. geology) contribute to hydrologic connectivity? Note: The AMPC would like the IRST to identify the elements and characteristics to be included in the final research questions.
2. Trend Monitoring. What are the trends in the status of hydrologic connectivity of roads over 5-year intervals? These trends should be assessed for the same variables in question 1.
3. Determination of rule effectiveness. Within 25 years, to what extent are road rules associated with hydrologic disconnection effective at achieving biological goals and objectives?

B. Preliminary Research Question Package: Contextual information

The remainder of this document provides contextual information that details the context for the preliminary research questions, as required by rule⁹. The following are organized per the elements in this rule.

B.1 The type of research¹⁰

AMPC response: This research is of type OAR 629-603-0100(1)(a): “Conduct effectiveness monitoring by assessing the degree to which the rules facilitating particular forest conditions and ecological processes achieve the biological goals and objectives. This assessment may include evaluation of cumulative effects.”

B.2 The rule, biological goals and objectives (BGOs), or other issue being studied¹¹

AMPC response:

Note that the most recent version of the BGOs is in the Dec. 2022 draft HCP. The BGOs will be finalized within the HCP due Dec. 31, 2027. The BGOs are listed below with those applicable to these questions highlighted:

“Overarching Goal: Forest practices that support the survival and recovery of the covered species by providing clean, cool, connected, and complex habitats.

Goal 1: Provide clean water and substrate for the covered species.

o **Objective 1.1** - Forest practices near streams minimize sediment delivery.

o **Objective 1.2** – Slope Retention Areas reduce episodic sediment delivery to fish-bearing streams.

⁹ OAR 629-603-0200 (3)(a)

¹⁰ OAR 629-603-0200(3)(a)(A)

¹¹ OAR 629-603-0200(3)(a)(B)

- o **Objective 1.3** – Road runoff directly to streams is minimized.
- o **Objective 1.4** – Roads are not a significant source of episodic sediment delivery to streams.

Goal 2: Shade and watershed processes controlling stream temperature provide cool water compatible with the needs of the covered species.

- o **Objective 2.1** – Forest practices maintain stream shade sufficient to support desired cool water temperatures on fish-bearing streams.
- o **Objective 2.2** – No-harvest RMAs maintain stream shade sufficient to support desired cool water temperatures for covered amphibians.
- o **Objective 2.3** – Forest practices near non-fish-bearing perennial streams do not notably increase water temperatures in fish-bearing streams.

Goal 3: Stream network connectivity satisfies freshwater habitat needs for covered species.

- o **Objective 3.1** – Road crossings on fish-bearing streams are passable by the covered fish species.
- o **Objective 3.2** – Forest practices maintain the hydrologic continuity of stream-associated wetlands and stream-adjacent seeps and springs to stream habitats.
- o **Objective 3.3** – Timber harvest maintains stream-associated connectivity in riparian areas along non-fish streams sufficient to support covered amphibians.

Goal 4: Riparian areas function to support complex habitats for the covered species.

- o **Objective 4.1** – Mature, complex riparian forests are fostered in no-harvest zones of RMAs.
- o **Objective 4.2** – Forest practices within tree retention areas of RMAs promote delivery of large wood.
- o **Objective 4.3** – Designated Debris Flow Traversal Areas function to deliver large wood to fish-bearing streams.
- o **Objective 4.4** – Forest practices maintain stream-associated wetlands and stream-adjacent seep and spring habitat for amphibians.”

B.3 The objective of the research¹²

AMPC response:

1. To assess the current (baseline) status and trend of roads that are hydrologically connected to streams, and how those vary with practice, region, landowner type, and other relevant strata.
2. Determine the effectiveness of road rules associated with hydrologic disconnection at achieving biological goals and objectives.

B.4 A brief description of the context of the research question¹³

¹² OAR 629-603-0200(3)(a)(C)

¹³ OAR 629-603-0200(3)(a)(D)

AMPC response: The following direction was provided in the PFA Report and provides the foundation for these research questions:

“4.3.5 Hydrologic Connectivity in Forest Practice Rules (FPR) Revisions and Proposed Inventory Processes

Hydrologic connectivity occurs where road and ditch runoff is delivered to the natural stream channel system. Roads can generate overland flow due to the relatively impermeable surface of the road prism and can also intercept interflow at cutslopes, effectively converting subsurface flows to surface flows. When these surface flows have a continuous flow path between the road prism and a natural stream channel, hydrologic connectivity occurs (Furniss et al., 2000, pp. 5-6). As Furniss et al. describe, “a hydrologically connected road becomes part of the stream network” (pp. 5-6).

Hydrologically connected roads can deliver increased runoff, sediment, and chemicals associated with roads, such as spills or oils generated on the road surface or cutslope. At the watershed scale, connections between roads and streams can also alter the drainage density of the watershed and change runoff frequency and magnitude (See Furniss et al., 2000; Weaver et al., 2015).

The Authors agree that the goal of disconnecting roads and streams is to minimize sediment delivery, hydrologic change, and risk of road pollutants entering waters of the state.

4.3.10 Development of Monitoring Requirements

The Independent Research Science Team (IRST) created under the PFA shall design and oversee baseline and trend monitoring for hydrologic disconnection. Compliance monitoring will be conducted through the Department’s process.

1. Baseline and Trend Monitoring for Hydrologic Disconnection: *The methodology for the monitoring shall be based off of Dube et al. (2010) and Martin (2009). The purpose of the monitoring for hydrologic disconnection is to establish a baseline and to monitor and report the change in hydrologic connectivity over time as the FRIA is implemented. The overarching goal is to ensure that all forest roads and landings shall be hydrologically disconnected to the maximum extent feasible from waters of the state. The Adaptive Management Program Committee shall use the results of the baseline and trend monitoring to develop regional goals consistent with that monitoring. All hydrologic connectivity data should be public and shared as it becomes available to help focus goals, identify accomplishments, and inform statewide learning.”*

B.5 Other information the AMPC deems necessary for the IRST’s work¹⁴

¹⁴ OAR 629-603-0200(3)(a)(E)

AMPC Response:

1. It is essential to maintain the role of the regulatory framework (the OFPA) throughout the design and implementation of studies, including the following considerations:
 - a. There are two stratum classifications:
 - A. FPA regions, of which there are two - East and West of the Cascade Mountains.
 - B. Landowner classifications in the FPA (of which there are two, each with a different regulatory framework for roads) – 1) small forestland owners (RCA); 2) large forestland owners (FRIA).
 - b. Assessments should differentiate Type F, SSBT, and N streams, but the design need not be stratified by stream type. Additional attributes listed in Dube et al. (2010) should also be considered.
2. The AMPC wants to know how metrics of interest (e.g., sediment delivery from roads) compares with background levels.
3. Ideally, the baseline would be for the effective date for the road rules (Jan. 1, 2024); however, the AMPC recognizes that it will take time to refine and scope the research questions, decide on the research agenda, develop and then award the RFP.
4. Research should include field data.
5. When assessing effectiveness of rules, it would be helpful to understand results both individually and cumulatively.
6. This entire research question package would be very complex, long, and expensive to implement as a single research project. Thus, the AMPC would appreciate the IRST dividing up this research question package into discrete projects and developing scoping proposals (per OAR 629-603-0200(4)) for each one.