

The AMPC Research Questions Package

Finalized Research questions

These finalized research questions were approved by the AMPC at the June 24th, 2024 AMPC 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?
2. Trend monitoring
 - a. 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
 - a. Within 25 years, to what extent are road rules associated with hydrologic disconnection effective at achieving biological goals and objectives?

Preliminary Research Questions Package: Contextual Information

The remainder of this document provides contextual information that details the context for the preliminary research questions, as required by rule¹. The following are organized per the elements in this rule.

B.1 The type of research²

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 studied³

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 in bold italic:

“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.

- ***Objective 1.1 - Forest practices near streams minimize sediment delivery.***
- ***Objective 1.2 – Slope Retention Areas reduce episodic sediment delivery to fish-bearing streams.***

¹ OAR 629-603-0200 (3)(a)

² OAR 629-603-0200(3)(a)(A)

³ OAR 629-603-0200(3)(a)(B)

- *Objective 1.3 – Road runoff directly to streams is minimized.*
- *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.*

- *Objective 2.1 – Forest practices maintain stream shade sufficient to support desired cool water temperatures on fish-bearing streams.*
- *Objective 2.2 – No-harvest RMAs maintain stream shade sufficient to support desired cool water temperatures for covered amphibians.*
- *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.*

- *Objective 3.1 – Road crossings on fish-bearing streams are passable by the covered fish species.*
- *Objective 3.2 – Forest practices maintain the hydrologic continuity of stream-associated wetlands and stream-adjacent seeps and springs to stream habitats.*
- *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.*

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

B.3 The objective of the research⁴

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 question⁵

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

⁴ OAR 629-603-0200(3)(a)(C)

⁵ OAR 629-603-0200(3)(a)(D)

“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 work⁶

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.

⁶ OAR 629-603-0200(3)(a)(E)

- 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.