DRAFT 2

Research question(s) for the research topic: Requirements of baseline and trend monitoring of road rules

This document synthesizes input from the AMPC on the first draft of these questions. All of that input is compiled in a separate document.

Research questions

Reminder: These questions are developed to obtain monitoring and research results that will inform the AMPC for policy recommendations per OAR 629-603-0200(8).

1. What are the current baseline levels of hydrologic connectivity of roads per the relevant Forest Practices Act (FPA) rules[1]? How do these levels vary based on stratifications relevant within the regulatory framework of the FPA (e.g., landowner type, region, stream type, etc.)
2. What are the trends in these levels of hydrologic connectivity of roads over the subsequent 20 years of FRIA implementation? These levels should be assessed for the same stratifications in question 1.
3. When hydrologic disconnection practices are implemented per associated rules, to what extent are they effective at removing hydrologic connectivity? How do different practices

Research Question Package *(OAR 629-603-0200 (3)(a) requirements)*

OAR 629-603-0200(3)(a) The AMPC shall succinctly specify preliminary research questions that include the following:

OAR 629-603-0200(3)(a)(A) The **type** of research and monitoring per OAR 629-603-0100(1)(a) or (b)

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.

OAR 629-603-0100(1)(b) Conduct research inquiry and validation monitoring to:

(A) Determine if additional scientific inquiry is needed to fill knowledge gaps related to biological goals and objectives; and

(B) Test and improve existing and new models and methodologies used to design and implement forest practice rules intended to meet the biological goals and objectives.

The type of research [per OAR 629-603-0200(3)(a)(A)];

This research is of type OAR 629-603-0100(1)(a)

The rule, biological goals and objectives, or other issue being studied [per OAR 629-603-0200(3)(a)(B)];

The rules being studied are:

OAR 629-625-0300 Road design

[1] For the FPA rules effective starting Jan. 1, 2024.

Commented [FT*O1]: Although this term is not defined in rule, it's better than "disconnection" which focuses on the ACT of removing connectivity, when we really want to know the status of connectivity

Commented [FT*O2]: Note: many of these types of elements are further clarified in the elements of the research question package (OAR 629-603-0200(3)(a)) below.

Commented [FT*O3]: Although this term is not defined in rule, it's better than "disconnection" which focuses on the ACT of removing connectivity, when we really want to know the status of connectivity

Commented [FT*O4]: From the PFA Report: "T*he AMPC will set the scientific agenda, but will play no part in designing actual research projects, carrying out the inquiry, or the IRST's report of findings to the Board and AMPC*."

Some of draft 1 that ODF developed, and AMPC input on that draft, focused on methodological aspects of studies. However, that is the IRST decision space. I tried to translate those methods perspectives into important considerations to communicate to the IRST so they understood WHAT the AMPC wants to know, and WHY. Those are included here.

Commented [FT*O5]: BGOs aren't finalized, so can't really link back to them. However, these are likely to be finalized within the next few years, i.e., before the studies on trends are very far along.

Are there other issues to be addressed, other than the rules listed?

(3) The department shall publish Forest Practices Technical Guidance that explains how to avoid and prevent potential impacts to fish, wildlife, habitat resources, and waters of the state, in support of the following rules:

(g) OAR 629-625-0330(1) to explain how to implement rules to hydrologically disconnect forest roads and landings from waters of the state.

OAR 629-625-0320 Water Crossing Structures;

(10) Construction of Water Crossings. In the construction of water crossings, operators shall do the following:

(b) Runoff, Erosion and Sediment. Operators shall control runoff, erosion, and sediment through the following actions:

(A) Include a site-specific erosion and sediment control plan as part of a written plan prior to beginning work. This plan must include, but is not limited to:

(i) A site plan with a description of the methods of erosion or sediment control;

(ii) Methods for confining, removing, and disposing of excess construction materials; and

(iii) Measures to disconnect road surface and ditch water from all typed waters and lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, wetlands, inlets, and canals.

OAR 629-625-0330 Drainage

(1) All active, inactive, and vacated forest roads and landings shall be hydrologically disconnected to the maximum extent practicable from waters of the state to minimize sediment delivery from road runoff and reduce the potential for hydrological changes that alter the magnitude and frequency of runoff. Operators shall locate drainage structures based on the priority listed below. When there is a conflict between the requirements of sections (2) through (7) of this rule, the lowest numbered section takes precedence and the operator shall not implement the later numbered and conflicting section.

(2) Operator shall not install cross-drains and ditch-relief culverts in a way that causes stream diversion.

(3) Operators shall not concentrate road drainage water into headwalls, slide areas, high landslide hazard locations, or steep erodible fillslopes.

(4) Operators shall not divert water from stream channels into roadside ditches.

(5) Operators shall install drainage structures at approaches to stream crossings to divert road runoff from entering the stream. If placement of a single drainage structure cannot be placed in a location where it can effectively limit sediment from entering the stream, then additional drainage structures, road surfacing, controlling haul, or other site-specific measures shall be employed so that the drainage structure immediately prior to the crossing will effectively limit sediment from entering the stream. Operators may also use best management practices to manage sediment at the outflow of the drainage structure nearest to the crossing.

(6) Operators shall provide drainage when roads cross or expose springs, seeps, or wet areas.

(7) Operators shall provide a drainage system that minimizes the development of gully erosion of the road prism or slopes below the road using grade reversals, surface sloping, ditches, culverts, waterbars, or any combination thereof. For new road construction, operators shall use outsloping to the maximum extent practicable when site-specific conditions allow for its safe and effective use.

OAR 629-625-0600 Road Maintenance

(1) The purpose of this rule is to protect water quality and ensure hydrologic disconnection of roads from waters of the state to the maximum extent practicable by timely maintenance of all active and inactive roads. Road surface must be maintained as necessary to:

(a) Minimize erosion of the surface and the subgrade;
(b) Minimize direct delivery of surface water to waters of the state;
(c) Minimize sediment entry to waters of the state;
(d) Direct any groundwater that is captured by the road surface onto stable portions of the forest floor;
(e) Ensure properly functioning and durable drainage features; and
(f) For existing roads with inboard ditch, avoid overcleaning of ditchlines.

Note: OAR 629-600-0100(71) "Hydrologic disconnection" means the removal of direct routes of drainage or overland flow of road runoff to waters of the state.

The objective of the research [per OAR 629-603-0200(3)(a)(C)];

1. *To assess the current (baseline) status and trend of roads being hydrologically connected to streams, and how those vary with practice, region, landowner type, and other relevant strata.*
2. *Determine the effectiveness of the relevant rules at minimizing hydrologic connectivity.*

A brief description of the context of the research question [per OAR 629-603-0200(3)(a)(D)];

The following direction was provided in the PFA Report (p. 67) and provides the foundation for these research questions:

"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."

Other information the AMPC deems necessary for the IRST's work per section (4) of this rule [per OAR 629-603-0200(3)(a)(E)].

1. *It is essential to maintain the role of the regulatory framework (the FPA) throughout the design and implementation of studies, including the following considerations:*
   a. *Stratification needs to be relevant to the FPA:*
      A. *There are two FPA regions. There is value to studying "regional" differences in the answers to research questions, BUT too many subcategories would be impractical from a regulatory approach. We acknowledge there may be value to studying "regions" more finely than regulatorily practical to help assess what might be the best framework, knowing that regulation might aggregate later.*
      B. *There are two landowner classifications in the FPA (each with a different regulatory framework for roads) – 1) small forestland owners; 2) everyone else.*
   b. *Research should consider the following aspects of practices for disconnecting roads from streams:*
      A. *The relative frequency of use of the practices;*
      B. *The relative efficacy and risks of the practices.*
2. *The intention of this monitoring is NOT to compare conditions or rules with previous rules.*
3. *The AMPC wants to know how metrics of interest (e.g., sediment delivery from roads) compares with those of background, and when thresholds of negative impacts to covered species have been crossed.*
4. *Ideally, the baseline would be for the effective date for the road rules (Jan. 1, 2024); however, it will take time to refine and scope the research questions, decide on the research agenda, develop then award the RFP.*

Commented [FT*O6]: The intent here with a statewide study is to not divide the state into too many subregions - imagine if you had 5 precipitation zones with lots of different geologies, slopes, road surfaces, etc. You could easily end up with 150 "regions", which would be impractical regulatorily

Commented [FT*O7]: The PFA Report direction for this research topic focuses on large landowners, double checking that the AMPC wants to add small forest landowners at this stage