FISH PASSAGE PROGRAMMATIC AGREEMENT

The parties to this Agreement are the State of Oregon, by and through the Oregon Department of Fish and Wildlife (ODFW), and Washington County (County), a political subdivision of the State of Oregon.

I. PURPOSE

1. It is the policy of the State of Oregon to provide for upstream and downstream passage for native migratory fish in all waters of this state in which they are currently or have historically been present, as expressed in Oregon Revised Statute (ORS) 509.585, Oregon Administrative Rule (OAR) 635-412-0020, and envisioned by the Oregon Plan for Salmon and Healthy Watersheds.

2. Pursuant to ORS 509.585 and OAR 635-412-0020, approval from ODFW or the Oregon Fish and Wildlife Commission (OFWC) regarding fish passage at "artificial obstructions"[1] where native migratory fish (as defined in OAR 635-412-0005(32)) are currently or were historically present is required prior to certain actions "trigger events"[2]. OAR 635-412-0020(3)(b) allows ODFW to grant "programmatic approval" of a fish passage plan for multiple artificial obstructions of the same type.

3. County owns and operates a number of similar culvert and bridge structures as part of its transportation system that will be required to provide fish passage as part of construction, replacement, abandonment, and other activities defined by OAR 635-412-0005(9) that constitute fish passage trigger events.

4. This Agreement is intended to serve as:
   a) The ODFW fish passage program approval for County design, construction, and maintenance projects at road-stream crossings meeting the requirements of this Agreement (including Appendices A and B) and listed in the required Annual Reports,
   b) ODFW fish passage programmatic approval for those road-stream crossings, and
   c) A mechanism for cooperation between ODFW and the County on related fish passage matters.

II. APPLICABILITY

1. This Agreement applies to ODFW and the activities of the Operations and Maintenance Division ("Division") of the Department of Land Use and Transportation of Washington County, including its independent contractors. It does not apply to other County divisions or departments or to third parties or private persons.

2. This Agreement applies when Division action relating to roads constitutes a "trigger event", and determines how it will provide fish passage as per the criteria of this Agreement. County remains responsible to address and comply with fish passage laws for activities and situations not covered by this Agreement.

---

[1] *"Artificial obstruction"* means any dam, diversion, dike, berm, levee, tide or flood gate, road, culvert or other human-made device placed in the waters of this state that precludes or prevents the migration of native migratory fish.

[2] *"Trigger events"* for the purposes of this Agreement shall mean, with respect to an "artificial obstruction" (defined in OAR 635-412-0005(3)) located where native migratory fish are currently or were historically present: "construction" activities (defined in OAR 635-412-0005(9)), "fundamental changes in permit status" (defined in OAR 635-412-0005(25)), or "abandonment".

3. Under this Agreement only ODFW may determine that native migratory fish are not currently and were not historically present at a site; however the Division may assume presence of native migratory fish.

III. PROVISIONS OF THE AGREEMENT

1. Fish Passage Design and Construction Standards.

Road-stream crossings designed, constructed, and maintained by County that meet the criteria below do not require site-specific pre-approval by ODFW:

a. Design Criteria:
   i. **ODFW Stream Simulation Criteria** (OAR 635-412-0035(1) and (3)(a)); or
   ii. **ODFW Clarification of Fish Passage Triggers and Guidelines for Bridges** (Attachment A); Stream Simulation Design Option and Alternative 1: Large-Scale Crossing Design

b. "Roughened Channels" are constructed stream beds adjacent to a road-stream crossing that are steeper than the longitudinal stream profile and are considered by ODFW as separate from, but associated with, the road-stream crossing. Roughened channels may be established provided:
   i. they are designed, installed, and maintained to meet **ODFW Stream Simulation Criteria** for beds as set forth in OAR 635-412-0035(3)(a)(A)(i), (3)(a)(A)(iv), and (3)(a)(A)(v),
   ii. they are placed at a grade of 4% or less, and
   iii. ODFW's North Willamette-Coast Range District Fish Biologist, or a designated staff member, shall be notified of installations and be given the opportunity to be present during construction.

c. An accurate determination of "active channel width"[3] is required for full compliance with the criteria or guidelines contained in the methodologies named in Paragraph 1.a.i and ii. County may ask ODFW for a determination of the active channel width for a site without seeking site specific approval. If an ODFW determination is provided, this shall be noted in the Annual Report described in Section IV.

d. For structures that rank as "high" priority for removal within the County's Fish Passage Assessment and Prioritization Program (http://www.co.washington.or.us/LUT/Divisions/Operations/upload/fishpr07.pdf) or for projects on designated Essential Salmonid Habitat waterways, the Division shall consider sizing the bed within or under a crossing larger than the active channel width to better accommodate stream function, wildlife crossing, and consistency with goals of the Oregon Conservation Strategy (2006);

e. Road-stream crossings shall be installed as designed. Road-stream crossings and roughened channels shall be installed prior to completion of the same in-water work period as the "trigger event" (OAR 635-412-0020(4)). Construction and temporary

[3] "A*ctive channel width*" means the stream width between the ordinary high water (OHW) lines, or at the channel bankfull elevation if the ordinary high water lines are indeterminate (OAR 635-412-0005(2)). Note that in bays and estuaries, the *active channel width* is calculated as the summation of the *active channel widths* of all freshwater streams entering the bay or estuary upstream of the site (per OAR 635-412-0035(4)(b)). Also note that, for fish passage requirement compliance, *active channel width* should be determined outside the influence of artificial structures or impacts and confluent tributaries.

water management criteria, including in-water work timing, as set forth in OAR 635-412-0035(10) shall be used.

f. Temporary work bridges that are in place longer than an approved in-water work window, shall:
   i. Have at least one unobstructed clear span greater than or equal to the active channel width or 35-feet whichever is greater,
   ii. Not cause channel aggradation or degradation,
   iii. Have a minimum bridge deck vertical height equivalent to or greater than the vertical elevation of the 10-year flood at the site,
   iv. Be removed within 2-years of installation or as approved by ODFW, and
   v. Be recorded in the Annual Report described in Section IV of this Agreement as a separate structure.

g. Division will utilize practices found in: Best Management Practices for Routine Road Maintenance (Washington County Department of Land Use and Transportation, Operations Division, September 2004) for Road-Stream Crossing Construction. http://www.co.washington.or.us/LUT/Divisions/Operations/upload/BMPs.pdf

2. Fish Passage Plan Approval. Pursuant to OAR 635-412-0020(3)(b), fish passage plans for road-stream crossings and roughened channels which are designed, installed, and maintained according to the criteria in Paragraph 1 by Division are approved programmatically by ODFW through this Agreement as long as it is in force and other Provisions of the Agreement are being met. Therefore, for road-stream crossings or roughened channels that meet the requirements of this Agreement, site-specific pre-project approval by ODFW for Division fish passage plans is not required. Division has adequately demonstrated either prior to or within this Agreement that the requirements of OAR 635-412-0020(3)(b)(A) – (E) have been or will be met.

3. Programmatic Agreement Exclusions.

a. This Agreement does not authorize the use of [programmatic approval excludes] Design Option Alternative 2 (*Hydraulic Design*) or Alternative 3 (*Future Replacement or Removal*) from the **ODFW Clarification of Fish Passage Triggers and Guidelines for Bridges** (Attachment A).

b. This Agreement does not apply to fish passage waivers or exemptions.

b. Fish passage techniques and structures not authorized in this Agreement require specific approval by ODFW. This Agreement does not preclude Division from pursuing other legal options to address or comply with fish passage laws at artificial obstructions owned or operated by County where native migratory fish are currently or were historically present and at which trigger events will occur.

4. Exceptions and Deferrals.

a. The Division may request exceptions to the fish passage criteria of OAR 635-412-0035(1)(d) through ODFW's North Willamette-West District Fish Biologist on a site-specific basis (Note: design exceptions to OAR 635-412-0035(3)(a) must receive approval from the ODFW Fish Passage Coordinator and construction exceptions to OAR 635-412-0035(10) must receive approval from the ODFW North Willamette-West District Fish Biologist). ODFW, as approved by the ODFW Fish Passage Coordinator, may provide an exception to any

specific fish passage design criterion under the circumstances described in subparagraph b.

b. Urgency/Emergency Deferral – in locations where the Division's licensed professional engineer indicates that a road-stream crossing is failing or has failed and there is no time for compliance with the provisions of this Agreement because of an emergency road-stream crossing situation, the Division shall remedy the failure and immediately request approval from an ODFW biologist regarding a time period within which the provisions of this Agreement shall be implemented after-the-fact.

5. Other Permits. County shall be responsible for obtaining all other state and federal permits and permissions necessary for completion of construction or maintenance activities approved by the Agreement.

IV. POST-PROJECT OBLIGATIONS

1. Maintenance. Division is responsible for all maintenance required such that all road-stream crossings and roughened channels approved and installed under this Agreement continue to provide adequate fish passage for native migratory fish (ORS 509.610 and OAR 635-412-0035(1)(h)).

2. Inspection and Record-Keeping. ODFW may inspect any road-stream crossing for which Division is responsible (ORS 509.625 and OAR 635-412-0020(3)(b)(D)). If inspection of a site installed with fish passage under Paragraph 1 indicates that fish passage is not being provided and/or approved design criteria are not being met, ODFW shall notify Division and Division shall work with ODFW, determine the cause and, during a work period approved by ODFW, expeditiously rectify problems as necessary (OAR 635-412-0020(3)(b)(E)). The Division shall also keep all information related to specific road-stream crossings' or roughened channels' design, installation, and maintenance on record and available for ODFW inspection until post project obligations have concluded.

3. Monitoring. Division shall monitor all road-stream crossings and roughened channels implemented pursuant to this Agreement to verify that fish passage continues to be provided. Monitoring shall occur in years 1, 2, and 4 after project completion and will consist of a simplified physical assessment of horizontal channel adjustments (including headcuts), determination of water depths, notation of any jumps, and any other relevant data to ensure the project is functioning as designed for fish passage. Photographs of the site shall be included in the monitoring reports. If monitoring indicates that fish passage is not being provided and/or approved design criteria are not being met, Division shall consult with ODFW, determine the cause and, during a work period approved by ODFW, expeditiously rectify problems as necessary (OAR 635-412-0020(3)(b)(E)). If year 4 post-project assessment reveals a stable channel form and no indication that fish passage is precluded by the project, then the project will be removed from the post-project monitoring obligations.

4. Annual Report. By January 31st of each year of the Agreement, Division shall submit an electronic report on all road-stream crossings and roughened channels covered by this Agreement. The report shall contain the information as stated in Attachment B and be submitted to ODFW's North Willamette-Coast Range District Fish Biologist and ODFW's Fish Passage Coordinator. The report shall provide project-specific details and should evaluate the effectiveness of Division activities under this Agreement and describe any problems or adaptive management suggestions. The Annual report shall consist of:

a. Brief narrative discussion of program activities,
b. Data on road stream crossings and roughened channels installed under this agreement during the reporting period,
c. Monitoring results, description of any remedial actions, and site closeout determinations for year 4 projects, and
d. Data for projects installed during the reporting period shall be consistent with the State of Oregon Fish Passage Barrier Data Standard (reference: http://www.oregon.gov/DAS/EISPD/GEO/standards/standards.html), which should be referenced for clarification of specific report details and as shown in Attachment B.

5 Coordination Meetings. Staff from County and ODFW affected by this agreement may, upon request, meet annually, or as otherwise deemed appropriate, to collaboratively review projects approved under this Agreement.

6. Conflict Resolution. County and ODFW shall seek to resolve conflicts of any determination at the level at which they arise. If efforts at resolution are not able to be mutually agreed upon, the ODFW Fish Passage Coordinator shall make a final determination.

V. GENERAL PROVISIONS

1. Notice. The parties' contact persons for all notices provided for under this Agreement, except as specifically provided otherwise, are as follows:

Agency	ODFW	ODFW Technical	County	County Technical
Name	Greg Apke	Tom Murtagh	Dave Schamp	Janet Oatney
Title	Fish Passage Coordinator	District Fish Biologist	Operations Manager	Sr. Env. Resource Specialist
Address	3406 Cherry Avenue NE Salem, OR 97303	17330 SE Evelyn ST. Clackamas, OR 97015	1400 SW Walnut Hillsboro, OR 97123	1400 SW Walnut Hillsboro, OR 97123
Phone	503-947-6228	971-673-6044	503-846-7623	503-846-7652
E-Mail	Greg.D.Apke@state.or.us	Tom.Murtagh@state.or.us	Dave_schamp@ co.washington.or.us	Janet_oatney@ co.washington.or.us

Either party may change a designated contact person at any time by providing written notice to the other party.

2. Amendments. Amendments to this Agreement may be made within applicable laws at the mutual agreement and signature of the ODFW Fish Passage Program Coordinator and the County Administrator.

3. Term. This Agreement is entered into on the date of last signature by and between the State of Oregon, through ODFW, and County. This Agreement remains in effect until March 1, 2015, at which time it may be renewed, amended, or terminated.

4. Termination. This Agreement may be terminated at any time through mutual agreement by the parties or by either party after a 30-day written notice. If terminated, all fish passage approvals shall be made according to current law, without consideration of this Fish Passage Programmatic Approval under OAR 635-412-0020(3)(b).

Bob Davis, County Administrator — Date
Washington County, Oregon

Fish Division Administrator — 4/5/10 — Date
Oregon Department of Fish and Wildlife

Department of Justice — 3/30/10 — Date
Oregon Department of Fish and Wildlife

Passage Program Manager — 4/8/10 — Date
Oregon Department of Fish and Wildlife

Attachment A

ODFW Clarification of Fish Passage Triggers and Guidelines for Bridges

MEMORANDUM

Oregon Department of Fish and Wildlife

Fish Division

Date: **March 28, 2008**

To: **Art Martin, Statewide Transportation Coordinator**

From: **Tom Stahl, Fish Passage Coordinator**

Subject: **Clarification of Fish Passage Triggers and Guidelines for Bridges**

This memo is intended to clarify when bridges trigger fish passage laws (ORS 509-580 through 910; OAR Chapter 635, Division 412). Additionally, new fish passage guidelines for bridges are detailed, which can be used for fish passage approval under the "Alternative Option" for road-stream crossings in ODFW's fish passage criteria (OAR 635-412-0035(3)(b)). This document shall remain in effect until ODFW revises it, passes new administrative rules, or updates fish passage criteria or guidelines and posts these on the ODFW website.

DEFINITIONS

The following definitions apply for the purposes of this memo (note: defined words or phrases are in italics throughout):

- "*active channel width*" means the stream width between the ordinary high water (OHW) lines[i], or at the channel bankfull elevation[ii] if the ordinary high water lines are indeterminate (OAR 635-412-0005(2)). Note that in bays and estuaries, the *active channel width* is calculated as the summation of the *active channel widths* of all freshwater streams entering the bay or estuary upstream of the site (per OAR 635-412-0035(4)(b)). Also note that, for fish passage requirement compliance, *active channel width* should be determined outside the influence of artificial structures or impacts and confluent tributaries[iii]. See Figure 1.

- "*bed*" or "*bed and banks*" means the physical container of the waters of this state, bounded on freshwater bodies by the ordinary high water line or bankfull stage, and on bays and estuaries by the limits of the highest measured tide (OAR 635-412-0005(6)). Note that the *bed and banks* of a stream determine its *channel*[iv]. See Figure 2.

- "*bridge*" means a set of structural *elements* allowing a road and waters-of-the-state to cross which a) is open-bottomed and has a *clear span* greater than 20 feet or b) is open-bottomed, does not have earthen fill on top of it, and has a *clear span* less than or equal to 20 feet[v].

- "*channel*" means a waterway that periodically or continuously contains moving waters of this state and has a definite *bed and banks* that serve to confine the water (OAR 635-412-

0005(7)). Note that, for fish passage trigger determination, the *channel* should be determined outside the influence of artificial structures or impacts and confluent tributaries (see Endnote #3). See Figure 2.

- "*clear span*" means the open distance between *bridge elements* within the horizontal plane of the channel passing below the *bridge*. See Figure 3 for a depiction of the horizontal plane of the channel and Figure 4 for measurement examples.

- "*element*" or "*bridge element*" means any part of a *bridge* that supports or provides a roadway (i.e., is structural) or provides structural protection[vi].

BRIDGE TRIGGERS

This section only defines when fish passage must be addressed at *bridges*[vii], not whether a new, replacement, or existing *bridge* meets fish passage requirements or is a barrier. If fish passage must be addressed, some form of ODFW fish passage approval will be needed (see next section for more information on passage approval options).

A *bridge* must address fish passage only if all three of the following apply:

1. native migratory fish are currently or were historically present at the location[viii],

2. one of the following will occur (note: these are the potential trigger actions):

    a. a new *bridge* will be constructed at a location where there is no existing crossing (OAR 635-412-0005(9)(a)),

    b. a replacement *bridge* will be constructed at a location where there is an existing crossing (OAR 635-412-0005(9)(a)), **or**

    c. over 50% of an existing *bridge's elements* within, below, <u>or above</u> the *channel* are cumulatively removed, replaced, filled, or added to through time (OAR 635-412-0005(9)(b)(D); see endnotes for more regarding the 50% calculation[ix]), **and**

3. any *element* of a new, replacement, or existing *bridge*, or any part of an existing crossing being replaced by a *bridge*, is within or below the *channel* (see Figure 5).

FISH PASSAGE REQUIREMENTS FOR BRIDGES

Existing criteria in rule for road-stream crossings only describe a Stream Simulation option and an Alternative option (OAR 635-412-0035(3)). *Bridges* and other crossings do not qualify under the Stream Simulation option if a) there is any *bridge element* within the *channel* (including on, or replacing, the *bed and banks*) and b) they do not have a *clear span* greater than or equal to the *active channel width*[x] (see Figure 6). In these cases it is also difficult or time-consuming to show that an Alternative design will meet certain hydraulic conditions in the *channel* that allow for fish passage, based on known or assumed fish swimming abilities (i.e., the "Hydraulic Design" method). Therefore, other Alternative options for fish passage approval of *bridges* are presented here. So, if a) native migratory fish are or were present in a location, b) a new, replacement, or existing *bridge* has any element within or below the *channel*, c) there will be a trigger event, and d) fish passage will be provided, the following design options may be used to obtain fish passage approval for *bridges* from ODFW.

Eligible for Programmatic Approval	Passage Design/ Review Basis

	Eligible for Programmatic Approval	Passage Design/ Review Basis
Stream Simulation Design[xi] • *beds* or *clear spans* under should be equal to or greater than the *active channel width*, with no *element* within the active *channel* • *beds* under should be equal to the slope of, and at elevations continuous with, the surrounding long-channel streambed profile • *beds* under should maintain average water depth and velocities that simulate those in the surrounding stream *channel*	YES	Structure and Channel Measures
Stream Simulation Design (continued) • *beds* under should be maintained through time • *beds* under should be composed of material that is similar in size and composition as the surrounding stream, but may be naturally supplemented to address site specific needs including, but not limited to, *bed* retention and hydraulic shadow[xii] • *beds* under, if being placed or replaced, should be mechanically placed during installation • trash racks shall not extend below the top of the *channel* (i.e., OHW or bankfull elevation) and shall have a minimum of 9 inches clear spacing between vertical members		
Alternative 1: Larger-Scale Crossing Design[xiii] • only applies to channels greater than 35 feet wide[xiv] • there should be at least one *clear span* of 35 feet within the *channel* • no more than 25% of the *active channel width* should be filled (see Figure 7) • no more than 25% of the *bed and banks* should be filled (see Figure 7) • *bridge elements* should only fill one channel margin (i.e., one bank at the OHW or bankfull lines)[xv], and, where a margin is filled, the fill should not exceed a 1:1 slope or have a Manning's coefficient less than 0.3 • *beds* under should meet Stream Simulation requirements described above, excluding the requirement for being *active channel width*	YES	Structure and Channel Measures
Alternative 2: Hydraulic Design[xvi] • water velocity at the high fish passage design flow should be no greater than 2 feet per second • water depth at the low fish passage design flow should be at least the lower of: the surrounding stream, 6 inches if only juveniles require passage at a given time, or 12 inches if adults require passage at a given time • if there is a stream discontinuity (i.e., hydraulic or grade drop), jump height, jump pool depth, and energy dissipation requirements should also be addressed	NO	Hydrologic/ Hydraulic Calculations
Alternative 3: Future Replacement or Removal[xvii] • only applies to **existing** *bridges* • only applies to *channels* greater than 20 feet wide • *clear span* should be greater than or equal to ½ of the *active channel width* or 20 feet, whichever is greater • *beds* under should meet Stream Simulation requirements described above, excluding the requirement for being *active channel width* • *bridge* shall be placed on a list for future replacement with a *bridge* which meets either the Stream Simulation or Larger-Scale Crossing Design option or for future removal[xviii]	?	Structure and Channel Measures

If none of these options can be met for a new, replacement, or existing *bridge*, the owner/operator of a crossing should have more detailed discussions with ODFW about how best to meet legal fish passage requirements. Other possible approval options include providing passage under some other Alternative design (which may entail exceptions to criteria or guidelines, some combination of the options noted above, or the use of another entity's criteria or guidelines[xix]), waivers, exemptions, or deferrals for structural emergencies that may affect human safety.

As with all temporary construction activities, passage requirements for temporary *bridges* or construction isolation measures shall be approved by ODFW staff on a site-specific basis and do not necessarily have to meet ODFW's full passage criteria or guidelines. Temporary construction activities are those which take place only within an approved in-water work window. An approved in-water work window may include extensions to published dates that are approved by ODFW. Any structure in place outside of an approved in-water work window will require more formal fish passage approval from ODFW. Work *bridges* that are not permanent, but do not meet ODFW's criteria for being temporary, may qualify for approval under "Alternative 3: Future Replacement or Removal" and be covered generally in a programmatic agreement.

---

[i] Defined in OAR 635-412-0005(34).

[ii] Defined in OAR 635-412-0005(5).

[iii] For locations with an existing artificial structure, the *channel's* delineation and *active channel width* should not be determined at the site. Consult ODFW for appropriate methods to determine these.

[iv] Consistent with ODFW's definition of *active channel width* (OAR 635-412-0005(2)), the ordinary high water lines are the primary determinant of a *channel*, and only if they are indeterminate should the secondary determinant, bankfull stage, be used.

[v] Open-bottomed culverts, whether arched, rectilinear, or some other form, are not addressed in this memo and their triggers differ.

[vi] This includes both superstructure *elements* (including, but not limited to: decks, girders/beams/stringers, wearing surfaces, diaphragms, trusses, and bearings) and substructure *elements* (including, but not limited to: bents/piers, abutments, footings, caps, piles, drilled shafts, columns, retaining walls, wing walls, approach fills, roadway embankments, impact panels, riprap, and other means of scour protection). This excludes ancillary *bridge* parts, such as signs, lighting, *bridge* rails, guardrails, or other items for vehicular or pedestrian safety.

[vii] As currently written, triggers under OAR 635-412-0005(9)(d) for culverts, and roads above them, do not apply to *bridges*.

[viii] Unless native migratory fish presence is assumed, ODFW determines current and historic use by native migratory fish (i.e., an owner/operator of an artificial obstruction can assume native migratory fish are or were present, but can't assume they aren't or weren't present without contacting ODFW).

[ix] 50% of the structure should be calculated by volume. For irregular or complicated forms (e.g., I-beams, hollow tubes, or other odd shaped *bridge* elements), either a rough outer volume or an actual volume may be calculated, as long as the same type of calculation is used for both the work in question for the trigger and the entire structure to which it will be compared to determine the percentage. Rather than complicated calculations for *bridge element* volumes, ODFW is open to suggestions regarding other means to determine if *bridge* repair/maintenance/modification actions will affect 50% of a *bridge* and constitute a trigger.

[x] If an *element* is within the *channel*, but the *clear span* is greater than the *active channel width*, then the structure would still be considered to meet Stream Simulation requirements. This allows for *channel* migration and assumes at least one naturally-functioning bank is present. See Figure 6.

[xi] Criteria for vertical clearance and over-sized rock that are included in OAR 635-412-0035(3)(a) for Stream Simulation designs are not included here; ODFW is establishing a general exception by this memo, per OAR 635-412-0035(1)(d), for *bridges* for these two criteria.

[xii] If this condition is met, it is assumed that the *bed* under the *bridge* is stable and there is no hydraulic drop, grade drop, *channel* degradation, or *channel* aggradation being caused by the *bridge*. Rip rap or other *bridge* protection may be placed below the *channel's bed and banks* (i.e., sub-grade). Above this, a top dressing of native material, which may also include over-sized rock, should comprise the *bed and banks*. This *bed and banks* must persist through time. The depth of native top dressing should be determined on a site-specific basis, addressing the risk of losing the native material and exposing the sub-grade, engineered protection (e.g., greater risk of native material degradation would require greater depth of native material).

[xiii] Guidelines apply to any given stream cross-section through the affected stream length.

[xiv] 35 feet is an approximate opening through which large wood is expected to pass, allows support for a standard temporary *bridge* span of 40 feet, and is the scale at which ODFW is comfortable that hydraulic constrictions of 25% will not have a significant impact on water velocity and fish passage without further documentation.

[xv] ODFW strongly recommends the avoidance of channel margin reduction, as certain native migratory fish species and life history stages may migrate in this area and it provides habitat which is not available in other channel locations. If the guidelines for margin reduction are followed, this should reduce the impact to fish passage, although new information may prove these guidelines inadequate for passage of all native migratory fish and habitat impacts (which may need further habitat mitigation) will still occur.

[xvi] Hydraulic Design guidelines are contained in other ODFW documentation. The major items are only briefly addressed in this document. For *bridges*, open channel flow models or FishXing can be used to demonstrate hydraulic conditions will be met. In addition, ODFW will consider other information or models that show certain structure and channel conditions will meet hydraulic conditions.

[xvii] The legal basis for this type of approval is ODFW's authority under OAR 635-412-0020(4)(c) to approve "incremental passage plans", which provide that some level of fish passage is installed or exists at the time of the trigger event and full fish passage is provided at some point in the future.

[xviii] Timing of replacement will be determined by ODFW with the owner/operator on a site-specific basis, and will likely be based upon when the entity will have funding available and ODFW prioritization for fish passage needs across sites.

[xix] NMFS or WDFW Stream Simulation criteria/guidelines are examples.

Figure 1. Delineation of the *active channel width*.

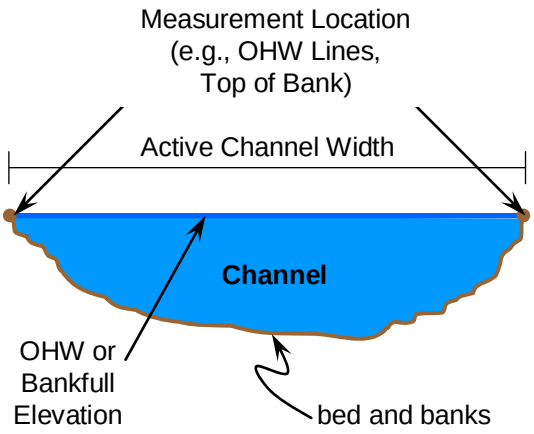


Figure 2. Delineation of a channel.

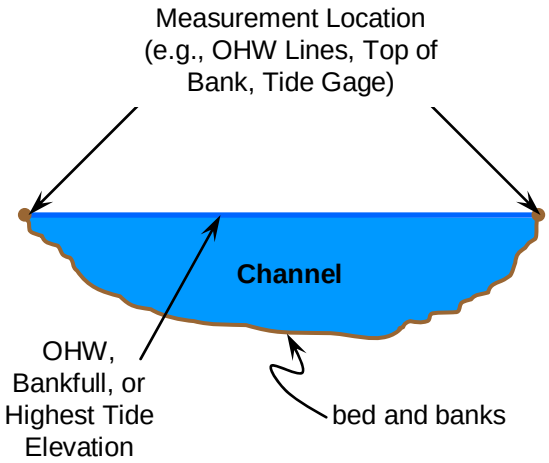


Figure 3. The horizontal plane of the channel (shaded).

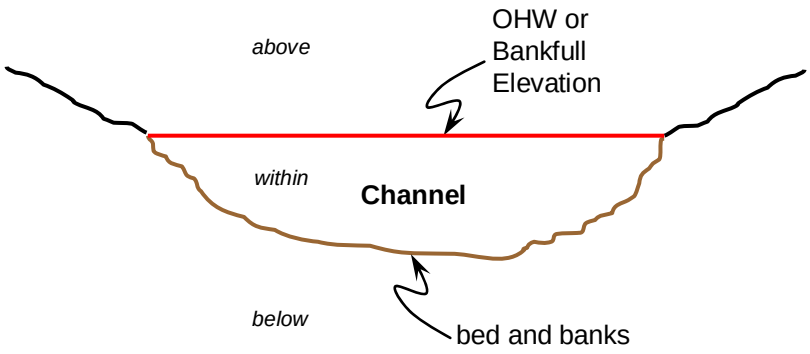
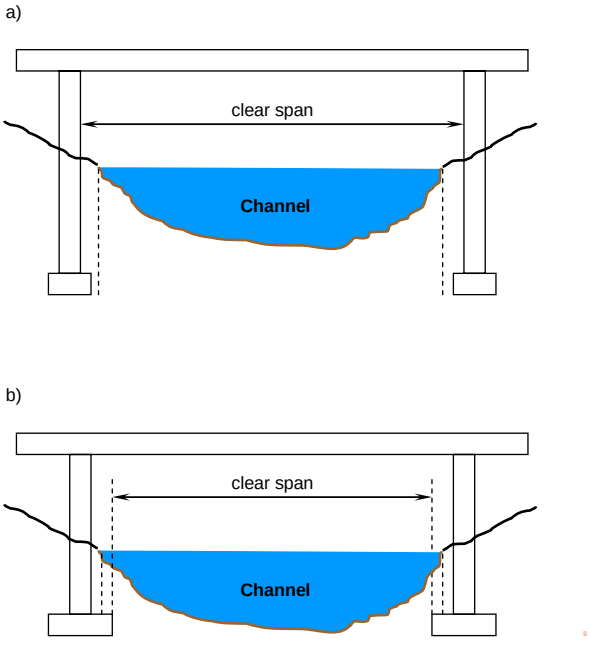


Figure 4. Examples of *clear span* measurements. Note that all situations except Figure 4-a could trigger fish passage laws due the presence of *elements* within or below the *channel* (see Figure 5). Note that new bridges are designed so that footings will not be exposed due to scour. Also note that of the remaining situations only Figure 4-b would meet the *active channel width* criterium for Stream Simulation design (even though in this case the *clear span* is less than the *active channel width*; see Figure 6). Also relative to Figure 4-b, if footings are above the deepest part of a channel that would naturally occur at the site, the clear span is the distance between the footings, assuming there are no other closer elements such as rip-rap within the horizontal plane of the channel.



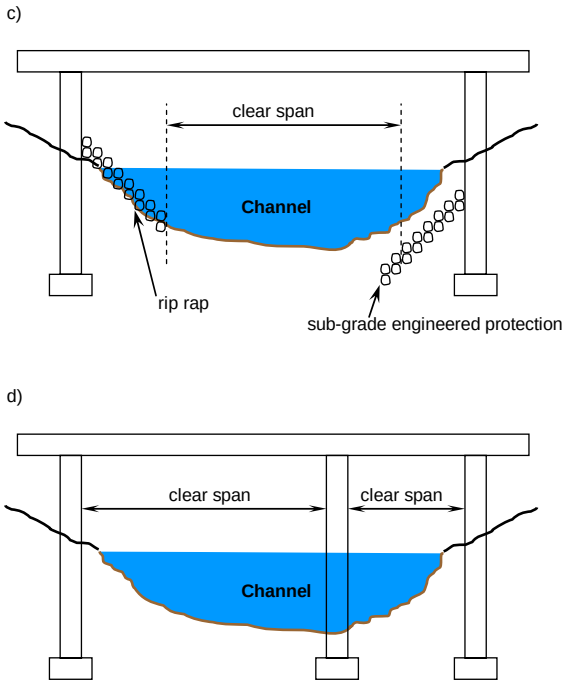


Figure 5. Zones relevant to bridge triggers. Presence of *bridge elements* in the "shaded zone" (i.e., within or below the *channel*) determines whether a trigger is possible. All (and only) *bridge elements* in the vertical plane of the *channel* (i.e., within, below, and above) should be considered for the 50% measure of whether repair/maintenance/modification of an existing *bridge* is a trigger.

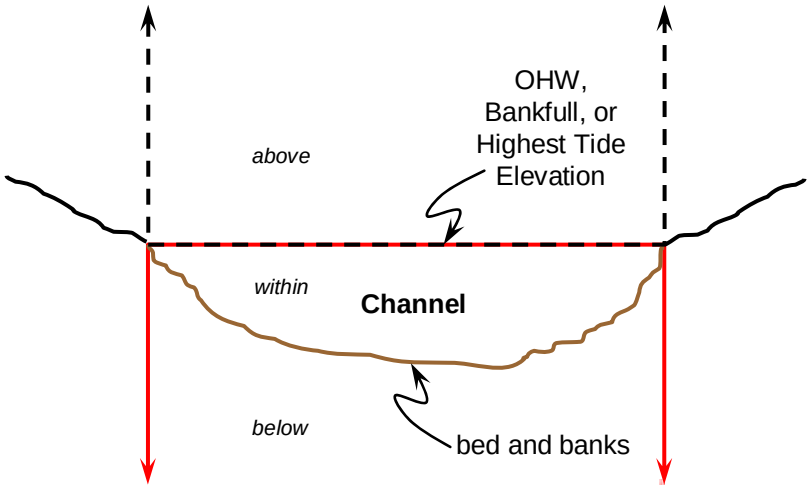


Figure 6. Channel conditions and/or clear span determine whether the Stream Simulation *active channel width* (ACW) criterium is met. The bridge in this diagram meets the Stream Simulation ACW criterium for both channel cases.

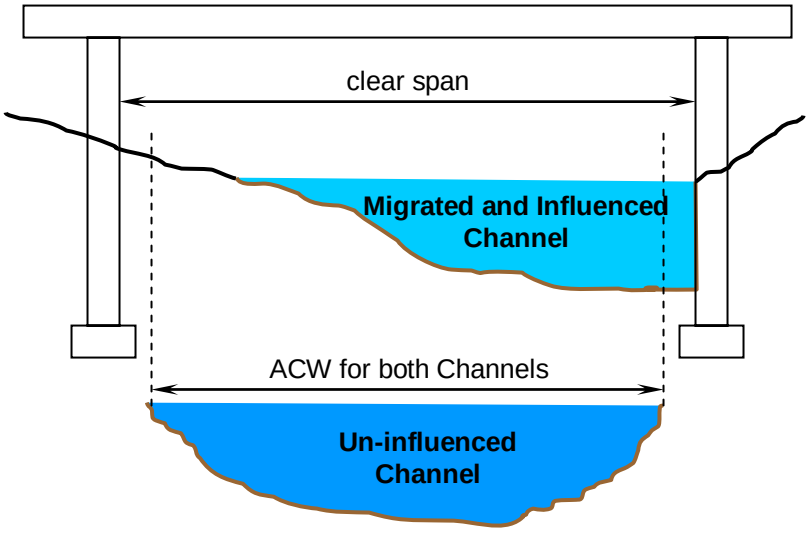
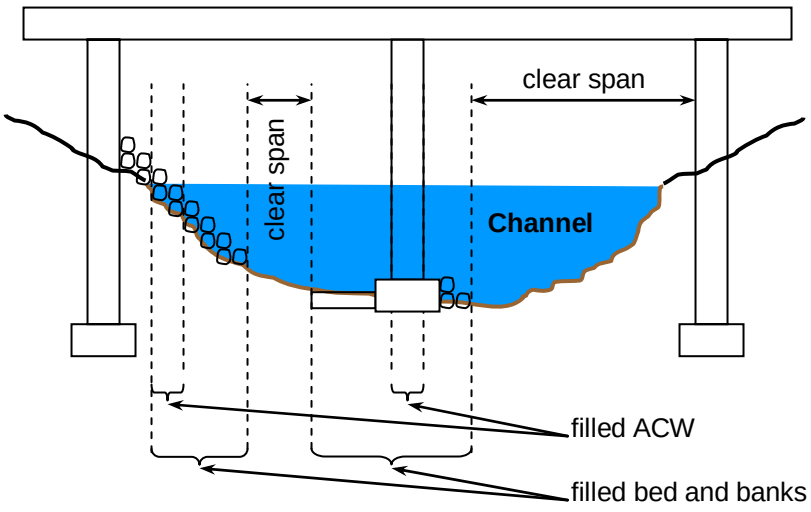


Figure 7. Examples of measurements for Larger-Scale Crossing Guidelines. Note that *active channel width* (ACW) fill is measured at the OHW or bankfull elevation. Anything that replaces or is placed on the *bed and banks* counts toward filled *bed and banks* (e.g., rip rap, exposed footers, poured concrete scour protection).



Attachment B

Fish Passage Programmatic – Annual Report Form

(paper copy for Agreement only;
electronic file for use shall be provided by ODFW)

OWNERSHIP / CONTACT INFORMATION			
Unit Responsible		Ph Number	
Contact Name		Email Address	
Title			

PROJECT INFORMATION					
Basin		Waterway (Stream Name)		Tributary of	
Road Name		Mile Point		Urban / Rural	
HUC 5		Latitude (dec)		Longitude (long)	
New or Replacement		GPS Coord.			

EXISTING CONDITIONS		CONDITIONS With New Hydraulic Facility	
Type		Type	
Shape		Shape	
Dimensions (L x W)		Dimensions	
Ave. ACW		Ave. ACW	
Bed Width		Bed Width	
Stream Slope		Stream Slope	
Bedload Present		Bedload Placed	
Bed Slope		Bed Slope	
% embedded		% embedded	
Grade Control Features		Grade Control Features	
Oversized Rock Present		Oversized Rock Placed	

Installation Date	
Temporary Water Management BMP's Implemented	
ODFW In-Water Work Window	
ODFW District Staff Contacted	
ODFW Staff participate During Construction	
Fish Salvage	
Maintenance History	
Comments:	