

West Fork Environmental, Inc. Field Methodology and Report Format for Conducting Stream Surveys 2015

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Project Objectives

1. Describe fish distribution including the location of the last fish.
2. Identify the F/N regulatory type break.
3. Locate and describe the limitations on fish use of surveyed reaches.
4. Submit associated water type documents and report for review.

Stream Methods

Our past experience has shown that the state protocol and physical criteria for determining fish presence is a useful guide but is not directly applicable in determining the limitations on fish distribution or use of habitat within small watersheds. There is no single combination of width and slope criteria or methodological rules that will ensure satisfactory assessment of potential fish habitat in all situations.

Field sampling is driven by a clear objective, which is to determine the uppermost distribution of fish (“last fish”) and the uppermost available habitat that fish are expected to occupy and conduct a thorough watershed search for fish upstream of permanent natural barriers. The exact approach (e.g., distance of survey, distribution of effort and survey timing) should be tempered by local conditions and recent local experience of surveyors. The search should be conducted using sound field methods and an understanding of the regional landscape and the contextual use of the area by the species present. In some cases this may mean surveying to slopes of 30% while in other cases 20% may be a satisfactory cutoff. In other cases it may mean a modification of the survey timing, distance or effort.

In cases where an extremely long reach is anticipated to contain habitat that may support fish, we will do shorter but more longitudinally distributed surveys, each segment at least 400 feet long. No single rule for the proportion of longitudinal stream to be sampled or the number of shorter segments can be developed to meet all circumstances. The amount of effort shall be guided by the character of the barrier, the quality of the habitat and the likelihood of detecting fish. In cases where the distributed sampling effort is implemented, West Fork Environmental will review the surveys with local TFW stakeholders prior to submission of water type modification documents. The general intent is to sample habitats most likely to support fish, and in all cases the sum of the sampled area will be at least 1,320 feet but not more than 2,640 feet.

No protocol has been agreed to for streams in excess of 20 feet bankfull width and West Fork Environmental surveyors will consult with WDFW and affected Indian tribes prior to initiating work on this class of streams. For streams greater than 5 feet wide and less than 20 feet wide, all available habitat within the surveyed reach will be sampled (i.e., we will sample all types of habitat units within the surveyed reach, not just pools).

Regulatory type break determinations in systems that are upstream of a culvert that potentially limits fish access (e.g. culverts that can be categorized as level A or B barriers *in accordance with WDFW Criteria*), will be based on electrofisher sampling and an assessment of “observed in-channel features”. In each case, we will also explicitly consider whether species that may have been “precluded” by the culvert could potentially move beyond the limitations identified for the proposed regulatory type break. We will derive our assumptions about “precluded species” based on our understanding of historical species distribution and our interpretation of whether stream habitat is suitable for occupancy by a given species. In identifying “precluded species” we will not assume that simple access equates to likely habitat use for a given species. Rather we will make a reasoned professional judgment of whether a species would be present based on actual habitat conditions, species habitat preferences and species habitat use patterns observed in nearby streams. For areas where anadromous species may be encountered, we will consider factors such as recent run strength that may affect their presence in a particular stream segment.

The following data will be recorded and included in tabular form or in the survey report.

Physical measurements:

- Hip chain measurements for stationing all surveys.
- The following measurements will be taken at 100 foot stations along the survey: wetted and bankfull channel widths, valley width, channel slope, tally of pools (protocol qualifying and total) and an estimate of wood loading.
- Discharge will be estimated and a brief description of water clarity will be provided.

Regulatory type break:

- Describe its character and type (bedrock, large boulders, cascade, connectivity issues, etc.).
- Vertical height, slope, and longitudinal extent in feet of the limitation to fish distribution.

Culverts:

- Culverts immediately downstream of survey or within the survey will be described in the survey data table (i.e., drop at outlet, pool depth or substrate type at outlet, diameter and construction type).
- Culverts will be photographed at the outlet.

Species:

- Note the presence of all fish and amphibian species and describe the last fish detected.

- Fish captured during the survey will be characterized by size class.

GPS:

- We will document the start and end points of all surveys and other important features in the survey such as the regulatory type break and tributary confluences by recording a GPS waypoint. A dense trace of GPS waypoints will be collected to define the surveyed segments.

Pond Methods

No protocol has been agreed to for ponds that have potential access to anadromous fish and no work will be initiated on these types of ponds without prior concurrence from WDFW and affected Indian tribes. Higher elevation ponds that have natural barriers downstream that preclude native fish occupancy will be surveyed as follows.

Upon arrival at the pond we will do the following:

- Observe for fish feeding at the surface.
- Actively sample with hook and line for a minimum of 1 hour.
- Collect basic descriptive data (area, approximate depths, temperature, specific conductivity).
- Shock all the pond’s inlets and outlets if they are flowing.
- Note any wildlife observations with special emphasis on amphibians (i.e., larval or paedomorphic amphibians free floating in the water column) and piscivorous birds.

Reports

Reports in 2015 will have similar content as the 2014 reports with full reporting of the data in tabular form. Each report will consist of six sections: Vicinity map, GIS map(s) (DNR standard specifications), the Water Type Modification form(s), an index map to the location of the surveyed segments (when multiple surveys are contained within a single report), survey data table(s) with any additional block text needed for the forms and survey photo points.

1. Vicinity map: Small scale map that may be helpful for orienting reviewers to the location of the surveys.

2. Water Type Modification Map(s): All segments on the main stream needing retyping will be joined and given a single alpha character designation for typing purposes (DNR Water Reference ID). Any tributaries that need to be retyped or verified based on the main stream survey or their own survey will be documented on separate Water Type Modification Forms but may be included in the same report. The main map comports with all DNR scale and symbology requirements published in instructions for submitting water type modifications. If the changes to the DNR hydro layer are not clear on a 1:12,000 scale map we will provide larger scale “zoomed extent” maps for clarity.

3. Water type modification form(s): The forms will be filled out in their entirety according to DNR instructions.

- 4. Index map:** Surveyed segments will be identified for easy reference to the data table(s).
- 5. Survey data table(s):** All data collected will be provided in concise tabular form and include any additional block text needed for the forms.
- 6. Survey photos:** Photos will be taken of the survey start and end points, culverts within the survey and the regulatory type break.