

STREAMKEEPERS OF CLALLAM COUNTY

Streamwalk

What is a Streamwalk?

A Streamwalk is a standardized, easy-to-use screening tool for monitoring stream corridor health, designed for people interested in learning more about their local streams.

This Streamwalk is an optional part of Streamkeepers of Clallam County's volunteer stream monitoring program. On a day of their choosing, volunteer monitoring teams visit selected accessible locations along the streams they monitor and conduct a quick measure of stream health using the data sheets that follow. The Streamwalk differs from regular Streamkeepers quarterly monitoring in that we visit more sites and the data is less technical.

The Streamwalk:

- provides a quick measure of stream health at various accessible points along the stream
- gives Streamkeepers volunteers an opportunity to get to know more of their stream
- identifies problems that might be missed at our regular quarterly monitoring sites
- helps build a more complete picture of stream health as well as changes over time

Streamkeepers staff may offer training in this Streamwalk protocol, but you do not need the training to participate so long as you have read this manual. You can perform a Streamwalk at any time, but late spring to early summer are often good times. If possible, it would be good to partner up with someone who has had the training.

Following your Streamwalk, you will use your data sheets and maps to write a report on your walk and your findings, following an organizational template which is provided in this manual. These reports, as well as all other Streamwalk materials, should be turned in within a month of your Streamwalk.

Our Streamwalk protocol is adapted from:

- U.S. Environmental Protection Agency, Region 10. Streamwalk Manual. Rev. ed. Seattle, July 1994. (EPA 910-B-94-002)
- U.S. Department of Agriculture, Natural Resources Conservation Service. Stream Visual Assessment Protocol. 5th draft. March 1998.
- U.S. Environmental Protection Agency. Volunteer Stream Monitoring: A Methods Manual. November 1997. (EPA 841-B-97-003)

For comments or questions, contact Streamkeepers of Clallam County:

Clallam County Department of Public Works - Roads, 223 East 4th Street, Suite 6
Port Angeles, Washington 98362 - (360) 417-2281 - <streamkeepers@co.clallam.wa.us>

(Last revised July 2018)

Planning Your Streamwalk

1. Know Your Goal

Your goal is to get as complete a picture of the whole stream as you can, by conducting a general assessment of stream health at selected sites along the stream's length. Each site will be a length of stream that you can access by walking or viewing, where the land use, in-stream characteristics and channel and bank characteristics are fairly consistent.

2. Assign A Team Leader

Select a leader. The leader ensures that you have selected, mapped and lettered each site you will visit, and that you have the maps and data sheets with you before you head out into the field. After your Streamwalk, the leader returns the cameras, checks that all of the forms have been completed, coordinates writing of the report, and then turns in the report, data sheets, and maps to Streamkeepers staff.

3. Select Your Sites

Before your Streamwalk, you will identify specific, accessible sites to visit that together will provide a picture of the stream's health at different locations. You as a team are in charge of which sites you select to visit. You can visit as many or as few sites as you like. We encourage you to visit as many sites as you can both legally access and survey in a day.

- Review the materials we give you, including maps and past data sheets. Discuss (and mark on the map) what you know about the stream: Which sites (if any) were visited in prior years? Which are most accessible? Which will give the most complete picture of the stream?
- Make a list of potential sites. You may want to conduct a few driving tours to look for accessible spots or for big changes in the stream. You may want to check publicly accessible sites to see how easy they are to access and how much they differ from each other in terms of providing a picture of the stream as a whole. If you find an area where the stream characteristics change, consider demarcating two adjacent sites. If a site you really want to visit is on private property, you will have to contact and secure permission from the owner before going on their land. Record owner contacts on your data sheet.
- Select your survey sites, mark them on the map, and assign a letter code beginning with "a" at the highest point. Be sure you know exactly where each site is and how to get to it. If you have the same map that was used in prior years, you may either go to all the same sites and use the same letters, or else re-letter with a different color of ink or style. Be sure to create a key on the map indicating which style/color is which year.

4. Plan Your Day

- Assemble all of the equipment you will need (see "Items to Bring Along").
- Work out logistics with your teammates, including where to meet, who will drive, and your schedule for the day. We recommend starting your Streamwalk early.
- Consider getting together with your team sometime after the Streamwalk day to compare notes and write the Streamwalk report.

STREAMWALK INSTRUCTIONS

1. Complete a Cover Sheet

Complete one cover sheet for the entire Streamwalk. At the end of the day you'll attach this to the site survey data sheets.

2. Start with the Furthest Upstream Site

Begin with the highest upstream point and work downstream. Your sites must be clearly identified with GPS points or marked on maps for the information to be useful. At each site, you'll generally walk upstream or downstream until you reach private land or the stream changes markedly, then turn around and go the other way. While continuous, long reaches of stream will provide the most accurate picture of the stream as a whole, even a few short reaches along the stream's length will provide good information about the stream. If all you can do is glance up and downstream at a few culvert crossings, that's still good information.

2. Follow the Anti-Contamination Protocol described in the Streamkeepers Handbook, to prevent spreading invasive organisms from one site to another.

3. Take Photos

- Take two pictures at each site you visit, one looking upstream and one downstream.
- If you see problem areas, fish-passage barriers (human-caused or natural) or logjams consisting of 5 or more touching pieces of large woody debris, photograph them.
- In addition, take a picture of anything else about your site that strikes you as particularly good or bad.
- Try to have a person or familiar object in each picture for a size reference.
- Log your photos as you take them, following the "Photos" protocol in the Streamkeepers Handbook. This information is critical to understanding your photos later on.

4. Complete One Survey Data Sheet at Each Site

Follow the instructions in the next section.

5. Submit Equipment and Photos

Submit any equipment you borrowed to Streamkeepers staff, have staff download the photos into a temporary directory prior for eventual upload to the Clallam County Water Resources database, and submit the photo logs along with the photos.

6. Collect the Surveys and Write the Report

After completing your Streamwalk, compile your sheets. Check them to make sure all of the information is complete, especially the date, stream name, site letters, and names of Streamkeepers participating in the Streamwalk. Clip them together with the cover sheet on the front and the sites in alphabetical order, beginning with "a". Use them to help you write the narrative report on your Streamwalk, following the report template included later in this manual. You will basically write about where you went and what you saw—the good, the bad, and the ugly.

7. Turn in Streamwalk Report, Data Sheets, and Maps

Streamkeepers staff will review your data sheets and reports and may suggest some revisions. Final Streamwalk reports will be stored in the stream binders in the Streamkeepers office, and will be posted to the Streamkeepers website. Sites, photos and selected observations will be entered into the Clallam County Water Resources database.

USING THE SITE SURVEY DATA SHEETS: INSTRUCTIONS

Site Survey Data Sheet

You must give the stream name, site location letter, and date. You can fill out most of section A before starting the Streamwalk. Assess one site at a time, using one data sheet per site. Record only what you see, not what you have previously seen. We suggest you look over all of the survey questions, then walk the length of your site thinking about the questions you'll be answering. When you have walked your survey reach, stop and fill out the survey, trying to characterize the whole reach. Discuss observations with your team.

A. Descriptive Information about Site—some items explained below:

4. Investigator(s) - All initials plus last names of each member of the team helping to conduct the survey at this site.

5. Site Ownership - Check the box that describes who owns the site you are visiting. You need this information before you start your Streamwalk. For private landowners, complete the separate Landowner Contact Worksheet.

6. Directions to Site - Give clear directions on how to reach the site. You are guiding a newcomer to the site - so tell them everything from which road to take and where to park to how to get to the starting point of your survey reach.

7. Length of Reach - From the starting point of your reach, measure or estimate the length of stream you are going to survey. This is most easily done after you have walked the full length of it. Your survey reach needs to be a homogeneous stretch of stream. It may be 50', 500', or shorter or longer. The important thing is that the reach you survey allows you to pick one answer for each question on the survey sheet. Your reach length will therefore be determined by two things: similarity of the stream, and what you can access. If your access point is on a bridge from which you can see about 100' upstream and 25' downstream, and you don't see any major changes in land use or stream characteristics, your reach would be 125'. If you can walk along 200' of stream but at 100' from the start of your reach the landscape changes from intact forest to landscaped meadow, you would have two reaches of 100' each.

11. Recent Weather Trends - Write in what the weather has been like for the past 3-7 days or longer (e.g., "rain for 17 consecutive days", or "clear and dry for the past two weeks"). Weather/rainfall reports are available in the daily newspaper or on the Web.

B. Stream Description

1. Active Channel Width & Depth

Measure or estimate the stream width at the bankfull height, the height at which flood water would begin to move onto the stream's floodplain (see "Bankfull" protocol in this manual). Look at your stream and do your best to determine the width and depth of your stream when it is full of water. This is most easily done standing in or next to the channel,

looking at the banks. If one bank is higher than the other, estimate to the lowest bank. A visual estimate is adequate, especially if taking measurements would disturb habitat or stream banks, or take you into deep water.

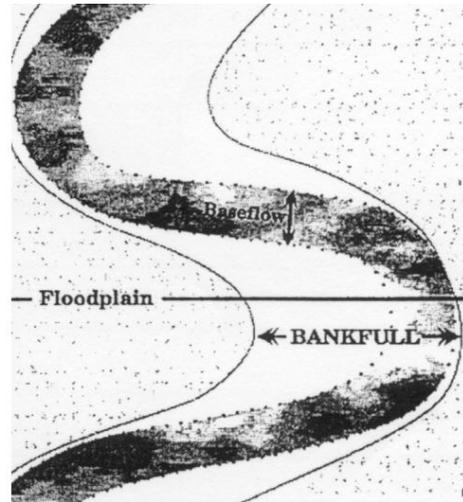
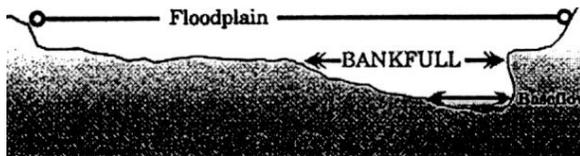


Illustration of baseflow, bankfull and floodplain locations (from Rosgen, D. 1996. *Applied River Morphology*. Wildland Hydrology: Pagosa Springs, CO)

2. Water Clarity

Observe the clearness of the water to determine if sediment pollution is entering the stream. Cloudy or different colored water can be a result of natural processes or of land use in the surrounding watershed. Sediments can adversely affect habitat conditions such as food, health of fish, and breeding environment for bottom-dwelling critters.

3. Water Flow: Pools & Riffles

The variety of flow in relation to depth creates habitat to support fish and invertebrate life. This variety can be seen by looking for pools and riffles. **Pools** are deeper and slower than adjacent areas. They provide feeding, resting and spawning areas for fish. **Riffles** are shallower and swifter than surrounding areas, with turbulence evident on the surface. Look your reach up and down for the presence of pools and riffles.

4. Stream Channel Cross-Section Shape

Check the box most closely matching the shape of the stream channel. If you are unable to see the shape of the bottom and banks, please estimate. The first illustration shows bedrock; the second shows a U-shaped channel with a non-bedrock bottom; the third shows a small, shallow channel; and the fourth shows a channel with undercut banks.

5. Stream Bottom ("Substrate")

Check whatever size dominates the stream bottom. You may check more than one box.

6. Width of Natural Streamside Corridor in Feet (average)

The streamside corridor is the natural vegetated area on either side of the stream. It, along with the stream, forms the habitat of the river. It includes vegetation that shades the water, holds the soil in place, adds nutrients to the stream, slows flood water, and provides

wildlife habitat. Estimate the width of natural vegetation on each side of the stream. If you are looking at a slope, estimate the horizontal distance to get width (don't measure the slope—imagine a horizontal line from stream edge to end of the natural vegetation). If the vegetation is pasture, lawn-barked or landscaped, this is not a natural state.

7. Streamside Vegetation

The type of streamside vegetation can be as important as the quantity or size. Generally, our streams once had dense stands of large conifers alongside most of their banks, prior to human disturbances. On the data sheet, mark all the categories and their densities.

- Conifer: A cone bearing, evergreen tree.
- Deciduous: A tree which sheds its foliage at the end of the growing season.
- Small trees or Shrubs: Either conifers or deciduous bushes less than 20 feet high.
- Herbs: Non-woody, low-growing plants which generally die back during the winter.
- Grasses: Bladelike leaves, jointed stems, and spikes or clusters of inconspicuous flowers.

8. Extent of Overhead Canopy (stream cover)

This is the amount of vegetation overhanging the stream, which offers protection and refuge areas for fish and other organisms, shades the stream and keeps the water cool, and provides a "launching" area for insects that might fall into the river. Estimate as best you can how much of the reach is overhung by vegetation, whether grasses, shrubs or trees. Check the category that is appropriate for the current condition of your site.

9. Extent of Artificial Bank Protection

This category includes such streamside modification intended to protect stream banks, such as riprap (a retraining wall built of rocks), wooden or concrete bulkheads, or more exotic materials such as tires or old car bodies. People in the past thought that such modifications helped stabilize stream banks. Unfortunately, not only do they drastically degrade habitat for streamside and in-stream dwellers, they can cause bank erosion in flood conditions. Mark the category(ies) which best describe the condition of the stream bank within your reach.

10. Presence of Logs or Large Woody Debris in Stream

Logs and large woody debris (not twigs and leaves) can slow or divert water to provide important fish habitat such as pools and hiding places. Mark the general amount of logs and woody debris in the stream.

11. Organic Debris in the Stream

The presence of other organic matter in the stream can be both good and bad. If there are dumped grass clippings, it is not good for stream health. On the other hand, naturally falling leaves and twigs can be beneficial. Check whether or not organic debris is present and note the type (naturally falling leaves, dumped grass clippings, manure, etc.).

C. Adjacent Land Uses

This section is designed to get information about potential problem conditions at your Streamwalk site. Adjacent land use has a great impact on the quality and state of the stream and riparian areas. Enter a "0" if the land use is absent, "1" if the land use is present, and "2" if you can see direct impacts on the stream. For each category, check the box that

best describes adjacent land use. If you cannot determine the type of housing, development or industry, please make your best estimate.

D. Conditions

This section is designed to get information about potential problem conditions at your Streamwalk site. Enter a "0" if the situation is absent, "1" if the situation is present, and "2" if you can see direct impacts on the stream.

1. Stream banks

- Natural plant cover degraded: Indicate if streamside vegetation is trampled, missing, or replaced by landscaping or cultivation.
- Banks collapsed/eroded: Note if banks or parts of banks have been washed away or worn down.
- Banks artificially modified: Indicate if banks have been artificially modified by construction or placement of rocks, wood or cement supports or lining.
- Garbage or junk on stream banks: Indicate if human made materials are present.

2. Stream Channel

- Mud/silt/sand on bottom or entering the stream: Excessive mud or silt clouding the water can interfere with fishes' ability to sight potential prey or clog fish gills and smother fish eggs in spawning areas on the stream bottom. Mud/silt/sand can be an indication of poor construction practices in the watershed; where runoff coming off the site is not adequately contained. It can also be a perfectly normal occurrence, especially if, for example, a muddy bottom is found along a very slow-moving segment or a wetland. Use your best judgment in noting human-caused inputs.
- Artificial stream modifications: Please note if the stream water has been dammed, dredged, filled, or channelized through culverts or if other large scale activities such as log removal are apparent.
- Algae/scum floating/covering rocks: Evidence of algae (very tiny plants that can color the water green or can resemble seaweed) or scum in the water can point to a problem such as an upstream source adding too much nutrient (fertilizer) to the water.
- Foam or sheen: This is a bit of a tricky category because foam can be naturally occurring or a problem. For example, an iridescent sheen on the water might be from rotting leaves or it might be from some upstream pollutant. Foams that disappear in your hands are probably natural. If you think the foam or sheen is not natural, mark it on the checklist.
- Garbage or junk in stream: This is your chance to point out very straightforward problems such as litter, tires, car bodies, and garbage dumps.

3. Inputs to Stream

- Organic debris: The purpose is to determine if the stream is being used as a dump site for landscaping materials which would not be present naturally. Debris can be anything from grass clippings to vegetation brought from somewhere other than the stream corridor.

- Livestock in or with unrestricted access to stream: Are livestock present or is there an obvious path that livestock use to get to the water from adjacent fields? Is there streamside degradation caused by access?
- Actively discharging pipes: Are there pipes with visible openings dumping fluids or water into the stream? Please note, even though you may not be able to tell where they come from or what they are discharging.
- Other Pipes: Are there pipes entering the stream? Please mark even if you cannot find an opening or see matter being discharged.
- Ditches: Are there ditches which lead into the stream?

E. Biological Surveys

1. Fish in stream

Can you see any fish? Mark yes or no. If yes, fill out the table as completely as you can. If you think there are fish but cannot see them, mark no. A redd is an elliptical or round area of clean gravel a foot or more in length. If you are not sure whether you see a redd, leave the box blank.

2. Wildlife

Are wildlife using this site? Watch for any signs of animals (including bird-songs, tracks, scat). If you see an animal and can identify it by species, write that down. The more specific the information, the better. But even if you can't be specific, record any evidence of birds or wildlife at the site, using the table on the data sheet.

3. Noxious Weeds

Noxious weeds are introduced plant species that are aggressive, invasive, and once established, difficult to control. Control of some species is mandated by state law. Noxious weeds tend to crowd out native plants, destroying habitat and causing other kinds of damage.

- Please complete all sections of the attached noxious weed survey, even though some information is repetitive, because this sheet will be routed directly to the Noxious Weed Board Coordinator on its own, without the other data pages.
- Check the box indicating whether **noxious weeds** were detected.
 - If the answer is no, skip down to comment section as desired.
 - If the answer is yes, check the appropriate density level and estimate (in feet) the size of the patch for each noxious weed.
- For unknown plants that you would like identified, use the **OTHER** line, and write "sample". Place a **complete** sample of unknown plant (leaves, flowers, roots) in plastic ziplock bag and seal. Label bag with date and location. Store with other materials until survey is over. Refrigerate as soon as possible. Turn in to Streamkeepers staff with your data. **Write name and phone number if you would like to be contacted with the results.**

NARRATIVE REPORT FOR STREAMWALK: TEMPLATE

Please include this information in your Streamwalk report

STREAM NAME and DATES of WALK

Team Leader: Name and Phone number.

Other Team Members:

Hours, Sites, and Distance: total person-hours spent, # of sites surveyed, and number of miles surveyed:

INTRODUCTION: Briefly describe the general strategy for the Streamwalk. Were long stretches of the creek walked, or did the group survey segments?

FINDINGS: *Your primary aim is to relay meaningful information about how the stream ecosystem functions along its entire extent. Generalize from the information on your Site Survey Data Sheets to make general but relevant observations on these topics.*

- **Historical Information** on the stream corridor: any that seems relevant.
- **Land Uses**, generalizing from source to mouth. These might include a progression from undisturbed forest to commercial forest, rural/agricultural, suburban, urban, and commercial/industrial.
- **Riparian Vegetation and Canopy:**
 - How wide is the vegetated corridor?
 - Conifer/deciduous distribution and density: how much has been cleared or disturbed?
 - Understory composition, distribution, and density. Are noxious weeds or shrubs excluding conifer establishment?
- **Stream Bank Erosion and Artificial Bank Protection:**
- **Stream Channel Habitat:**
 - Pools and riffles: frequency and apparent habitat value.
 - Large woody debris: Distribution, size, stability, and role in providing channel complexity.
 - Stream bottom: rock size, extent and distribution of spawning-sized gravel (from pea-sized to softball-sized). Extent and distribution of fine sediment (sand, silt, clay).
 - Barriers to fish passage (culverts, falls, and debris).
 - Water quality and inputs to stream (non-point pollution and dumping).
- **Red Flags:** Particular problems that you would like to bring attention to.

OVERALL ASSESSMENT

What is the group's sense of the stream's overall health? (Abstract from the above findings.)

SUGGESTIONS FOR FUTURE STUDY/PROJECTS

What might other Streamwalkers, the Streamkeepers Program, or natural resource professionals consider for the future? (Example: recommendations for additional monitoring reaches or potential restoration projects.)

SAMPLE PEABODY CREEK NARRATIVE REPORT

JULY 20 & AUGUST 17, 1999

Team Leader: John Hammond, 360-417-9530

Members: Jim Podlesny, Dave Swan

Hours, Sites, and Distance: 40 person-hours at 4 sites on approx. 2.5 miles of Peabody Creek

INTRODUCTION:

Our strategy was to access the Peabody Creek Trail at a pullout 1.4 miles up Hurricane Ridge Road in Olympic National Park. From there, we worked Peabody Creek downstream to Park Avenue on July 20; this relatively uniform reach constituted Site A. On August 17 we walked downstream to sites B, C, and D on Peabody Creek from Park Avenue to Second Street through residential Port Angeles. See map for sites.

FINDINGS

Historical Information and Land Uses:

We know the headwaters of Peabody Creek in the Foothills have been logged. The Hurricane Ridge Road corridor of Olympic National Park protects the forested section of the creek to Park Avenue. Other than homestead clearing, no major clearcuts or structures were visible from the creek bottom during our walk there. However, north of Park Avenue (downstream), the creek changes to an urban character.

Canopy and Vegetation:

The upper part of Peabody Creek flows through a vegetated gully that generally seems to be about 500 feet from crest to crest down to Park Avenue. The riparian vegetation seemed natural, providing a closed canopy and shaded bottom, with probably more deciduous species than firs or hemlocks, probably due to past logging. Small trees and shrubs were common. Noxious weeds are present, esp. herb Robert along the trail, occasional evidence of reed canary grass, and an unknown clinging vine. They are not taking over as yet. Below Park Avenue, the trees are mostly deciduous, with the vegetation the same as in the upper part.

Bank Erosion:

There was a landslide we photographed at the beginning of our Site A, and erosion occurring at several places along the creek, especially below Park Avenue where the creek flows through neighborhoods. The Olympic National Park's Peabody Creek Trail has been washed out in places closer to Park Avenue.

Channel Habitat:

There are numerous pools, riffles, and glides in the section above Park Avenue, with plenty of large woody debris and gravel areas suitable for spawning. Small fish, probably trout, were noted at various places all along the creek. However, there are three culverts in this section, each about 8 feet high and 150 feet long. These culverts might be an obstacle to fish passage because each downstream end has a two- or three-foot drop to a plunge pool. Similar culverts run beneath Park, 8th, 5th, and Peabody Streets with drops of several feet. Large woody debris becomes sparse below Park Avenue. The banks are armored at the Peabody Creek RV Park, and a long culvert runs under Lincoln Street to a degraded estuary.

Red Flags:

In the area below 9th Street, an area of about 100 x 100 yards adjacent to the creek has been dug up by children for a bicycle playground. This activity has removed vegetation and introduced trash, silt, and other pollutants into the creek. Neighbors have complained, and the City should look into this matter.

OVERALL ASSESSMENT

The mile-long section of Peabody Creek above Park Avenue is relatively intact due to protection by Olympic National Park, but below Park Avenue, Peabody Creek seems more of a storm water conduit than a stream.

SUGGESTIONS FOR FUTURE STUDY/PROJECTS

Degraded though it is, Peabody Creek still supports some anadromous and freshwater fish. Pollution inputs should be controlled, stormwater runoff and blocking culverts should be improved as possible, and the City should consider buying the trailer court and restoring it to a more natural riparian park in the middle of town.

Glossary

- **Algae:** A chlorophyll containing plant ranging from one to many cells in size, that lives in fresh or salt water.
- **Anadromous:** Fish that return from salt water to fresh water to spawn (e.g. salmon, steelhead)
- **Aquatic Insect:** Insect species whose larval and/or juvenile forms live in the water.
- **Aquifer:** Any underground geological formation containing water.
- **Bedrock:** Unbroken solid rock, overlain in most places by soil or rock fragments.
- **Benthic:** Bottom dwelling. The plant and animal life whose habitat is the bottom of a sea, lake, or river.
- **Channelized:** The straightening and deepening of streams. Reduces the ability of the stream to assimilate waste and disturbs fish breeding areas.
- **Clarity:** The clearness of the water in the stream.
- **Conifers:** A cone-bearing Evergreen tree or shrub.
- **Current:** The velocity (speed) of the flow of water.
- **Ecosystem:** The interaction of plants and animals with their non-living environment.
- **Effluent:** The wastewater from a municipal or industrial source that is discharged into the water.
- **Erosion:** The wearing away of the land surface by wind or water.
- **Exotic:** From another part of the world, non-native.
- **G.I.S.:** Geographic Information System. A computer program which provides a map and information (such as point source polluters, and endangered species) of the area specified by the known latitude and longitude.
- **G.P.S.:** Geographic Positioning System. A means to identify the geographic coordinates of a site using electronic devices.
- **Habitat:** The specific environment in which an organism lives and depends on for food and shelter.
- **Monitor:** To measure a characteristic such as lake water clarity, dissolved oxygen, or fish population over a period of time, using uniform methods to evaluate change.
- **Native:** Being an original inhabitant of a place.
- **Nutrient:** A substance, such as phosphorus and nitrogen, which enhances the growth of plants and animals. In small quantities nutrients enhance growth and are beneficial, but too many nutrients can cause an over production of organisms which produces problems for the entire ecosystem.

- **Organism:** Any living individual.
- **Oxygen Content:** Amount of oxygen in the water influencing fish and other aquatic animals.
- **Pollution:** The addition of something unnatural or the addition of too much of something that is natural.
- **Photosynthesis:** A chemical process, done by plants, converting sunlight into a usable form of energy (e.g. food).
- **Run-off:** The portion of rainfall, melted snow, or irrigation water that flows across the ground surface, possibly carrying pollutants, into streams and lakes.
- **Scat:** The excrement of an animal.
- **Sediment:** Fine soil or mineral particles that settle to the bottom of the lake or stay suspended in the water.
- **Species:** The individual organisms that make up a population and are reproductive compatible. All the differing species make up the communities and all the communities make up the entire ecosystem.
- **Substrate:** The material that makes up the bottom layer of the lake, such as gravel, sand, and boulders.
- **Toxicity:** Describes the amount of poison present and its level of danger.
- **Vegetation:** The plants in an area.
- **Watershed:** The land from which rain collects and runs to a single point.
- **Wetland:** Wetlands are areas with soils that are saturated for some part of the year. They can be identified by unique plants that have adapted to oxygen-deficient soils. Wetlands influence stream flows and water quality and may be an integral part of the lake ecosystem.

Items to pick up from Streamkeepers staff:

- One Volunteer Agreement/time sheet per team per day
- Maps or GPS of your watershed, on which you'll label and identify sites
- One Streamwalk cover sheet and one Site Planning Sheet per stream
- One survey data sheet per potential Streamwalk site
- Camera, photo log
- Clipboard, pencils
- Ziplock bags and a waterproof marker for weed samples
- Streamkeepers business cards
- One Streamkeepers folding card for each vehicle
- 100 foot tape (optional)

Items to bring along:

- Snag- and thorn-proof clothing that is appropriate for the weather
- Rain gear
- Comfortable rubber boots or waders
- Leather gloves (for bushwhacking)
- Bushwhacking tools (e.g., pruners or loppers for blackberry vines)
- First aid kit, flashlight, extra batteries, whistle
- Food and drinks

Watershed Safety & Monitoring Etiquette

Please observe the following Streamwalk-related precautionary tips:

- Get permission of landowners to cross any private land, posted or not. Do not enter areas without permission. It is recommended that you use public access points, such as road crossings, parks, trails, campgrounds, and other government land.
- Always work with someone else.
- Do not put yourself in danger to gather survey information.
- Be careful of ticks, devil's club, nettles, insects, and irate dogs. Bring repellent. Wear long pants and boots or waders.
- Don't drink the water. Carry your own drinking water and snacks.
- Don't walk on unstable banks; you could fall, or your footsteps could speed erosion.
- Stay out of the streams as much as possible. If you do walk in the stream, follow the Anti-Contamination protocol—see Streamkeepers Handbook. Be particularly alert for spawning areas (redds) in the stream—do not walk on them.
- Be aware that the streambed can be very slippery and uneven, sometimes at unpredictable times and places. Do not attempt to walk across streams that are swift and above the knee in depth. These can be dangerous. A walking stick can help a lot!
- Be careful of streamside vegetation - disturb it as little as possible.
- If for any reason you feel uncomfortable about the stream conditions or surroundings, please stop your Streamwalk. You and your safety are our most important concern!

STREAMKEEPERS OF CLALLAM COUNTY—Annual Streamwalk Cover Sheet

Date(s): _____

Stream Name: _____

County: Clallam State: Washington Country: U.S.A

Streamwalk Leader:

Name (including middle initials) _____

Phone _____

Address _____

Are you a stream resource professional? Yes No

Have you completed a Streamwalk training class? Yes No

Investigators (Names, including middle initials, and phone numbers):

Reminder:

Select one member of your group to be the Streamwalk Leader. The leader is responsible for collecting and compiling all of the survey sheets, checking that all forms have been completed, and turning in the equipment, cameras, maps, forms, and completed narrative report to the Streamkeepers staff.

Return to:

Streamkeepers of Clallam County
Clallam County Department of Public Works - Roads
223 East 4th Street, Suite 6
Port Angeles, Washington 98362
(360) 417-2281

STREAMKEEPERS OF CLALLAM COUNTY—ANNUAL STREAMWALK

Site Survey Data Sheet (Complete One Sheet Per Site - Characterize the Entire Site)

A. Descriptive Information about Site

1. Stream name: _____ 2. Site letter: _____ 3. Date: ___/___/___

4. Investigator(s): _____

5. Site Ownership: Private (give owner name, phone #, and comments) _____

Clallam County PUD City of Sequim City of Port Angeles City of Forks
 DNR DOT Olympic Natl. Forest Olympic Natl. Park Other _____

6. Directions to site:

7. Length of the reach surveyed: _____ feet measured estimated

8. Was this site surveyed previously? Yes No If "Yes," note any major changes:

9. If this site includes a Streamkeepers monitoring reach, specify which one: _____

10. Weather last 24 hr: >1" rain 1/3"-1" rain 1/3" or less Overcast Clear

11. Recent weather trends (3-7 days):

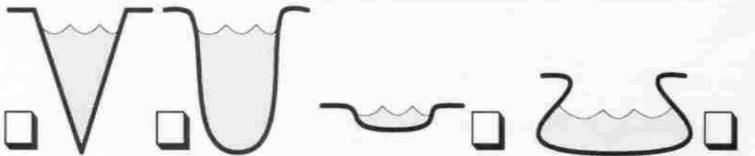
B. Stream Description (generalize about the entire reach)

1. Active channel *width*: _____ ft; *depth*: _____ ft Measured Estimated

2. Water Clarity: Clear Cloudy

3. Check if present: Pools Riffles

4. Stream channel cross-section shape (check one):



TAKE PHOTOS AT EACH SITE!

- One upstream & one downstream
- Logjams (5+ touching logs)
- Problems or noteworthy areas

NOTE ALL PHOTOS ON PHOTO LOG

5. Dominant substrate(s): Mud/Sand/Fines Pea to 1" Gravel (1" to softball size)

Cobbles (softball to soccerball size) Boulders (over 10") Bedrock (solid)

6. Avg width of natural streamside corridor looking downstream: **Left:** ___ft **Right:** ___ft

7. Streamside vegetation (appears to be natural cultivated/disturbed)

<i>Check a density category for each:</i>	Common	Occasional	Sparse	None
Conifer trees				
Deciduous trees				
Shrubs /small trees				
Herbs				
Grasses				

8. Extent of overhead canopy 0-25% 25-50% 50-75% 75-100%

9. Extent of artificial bank protection 0-25% 25-50% 50-75% 75-100%

10. Large woody debris Common Occasional Sparse None

11. Other organic debris Common Occasional Sparse None Type: _____

C. Adjacent Land Uses (Check "0" if absent, "1" if present, and "2" if you can see direct impacts to stream)

0	1	2	<u>1. BUILDINGS</u>	0	1	2	<u>3. ACTIVE CONSTRUCTION</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Single family housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Single family housing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Multi-family housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Multi-family housing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commercial development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commercial development
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Light industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Light industry
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heavy industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heavy industry
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Roads/bridges
			<u>2. ROADS, ETC.</u>				<u>4. AGRICULTURAL</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Paved roads or bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grazing land
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unpaved roads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Feedlots or holding areas
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cropland
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>5. OTHER</u>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mining or gravel pits
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recreation

D. Conditions (Check "0" if absent, "1" if present, and "2" if directly impacting stream)

0	1	2	<u>1. STREAM BANKS</u>	0	1	2	<u>3. INPUTS TO STREAM</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Natural plant cover degraded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Organic debris
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Banks collapsed/eroded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Livestock with access to stream
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Banks artificially modified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actively discharging pipe(s)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Garbage/junk on banks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other pipe(s) entering
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ditches entering
0	1	2	<u>2. STREAM CHANNEL</u>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mud/silt/sand in or entering stream	<input type="checkbox"/> natural		<input type="checkbox"/> human-caused	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Artificial stream modifications	Type: _____			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Algae or scum floating or coating rocks				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Foam or sheen				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Garbage/junk in stream	Type: _____			

E. Biological Surveys

1. **FISH**

Fish Present? Yes No If yes, fill in the following table:

Species (if known)	# Adults	# Juveniles	# Dead	# Redds or nests	Description or comments

2. **WILDLIFE**

List any animal you see, hear, or see a sign of. If you don't know species, identify the type of animal. Be sure to note whether you saw, heard or saw sign of an animal.

Species Name	Source (heard, saw)	Location (i.e. in stream reach, on bank downstream of reach, etc.)	How many did you see?

3. **NOXIOUS WEEDS**: Please complete a Noxious Weed data sheet (protocol and data sheet elsewhere in this handbook) at every site, *even if no noxious weeds were detected*.