

# **SITE VERIFICATION MANUAL**

**Oregon Department of Fish and Wildlife**

**Oregon Adult Salmonid Inventory and Sampling Project  
(OASIS)**



**2011**



# TABLE OF CONTENTS

| <u>Contents</u>                                    | <u>Page</u> |
|--|-------------|
| INTRODUCTION .....                                 | 1           |
| Background.....                                    | 1           |
| History .....                                      | 1           |
| Objectives .....                                   | 2           |
| Administration .....                               | 2           |
| Travel.....  | 2           |
| Cell Phones .....                                  | 2           |
| Safety .....                                       | 3           |
| Vehicles .....                                     | 3           |
| Pets and Volunteers .....                          | 5           |
| Site Verification Notebook and Equipment .....     | 5           |
| SITE VERIFICATION PROCEDURES – IN THE FIELD .....  | 5           |
| Review Site List Notebook.....                     | 5           |
| Find Site on the Map .....                         | 6           |
| Survey Length .....                                | 6           |
| Existing Surveys.....                              | 6           |
| Determine Landowners.....                          | 6           |
| Public Lands .....                                 | 7           |
| Corporate Landowners .....                         | 7           |
| Private Landowners .....                           | 7           |
| OK Dates and Data Requests .....                   | 9           |
| Drive to Site.....                                 | 9           |
| Enter Site .....                                   | 9           |
| Note access .....                                  | 9           |
| Determine start point .....                        | 9           |
| Location of start sign.....                        | 10          |
| Evaluate the Site .....                            | 10          |
| Conducting the Set-up Survey.....                  | 10          |
| End the Site.....                                  | 14          |
| Exit the Site .....                                | 14          |
| Invasive Species .....                             | 14          |
| SITE VERIFICATION PROCEDURES – IN THE OFFICE ..... | 15          |
| Survey Write-up.....                               | 15          |
| Error Checking.....                                | 17          |
| Office De-briefing .....                           | 17          |

|  |    |
|--|----|
| APPENDICES .....                                   | 18 |
| A. District Phone List .....                       | 18 |
| B. Equipment List.....                             | 19 |
| C. Juvenile Salmonid Identification .....          | 20 |
| D. Gear Sanitation Protocol.....                   | 21 |
| E. Entering Data in Your PDA (Pendragon) .....     | 23 |
| F. Using the PDA and GPS Unit .....                | 24 |
| G. Site Verification Form (Blank, next page) ..... | 30 |
| H. Site Verification Form (Example) .....          | 33 |
| I. Report of Operations Form (Blank) .....         | 35 |
| J. Survey Description Examples .....               | 36 |
| K. Culvert Evaluation Form .....                   | 37 |
| L. Culvert Illustration .....                      | 38 |
| M. Landowner Postcard Example.....                 | 39 |

# **Oregon Adult Salmonid Inventory and Sampling Project (OASIS) SITE VERIFICATION PROCEDURES MANUAL**

## **INTRODUCTION**

The Oregon Adult Salmonid Inventory and Sampling Project (OASIS) is one of four projects that compose the Western Oregon Research and Monitoring Program. The overall goal of these projects is to provide monitoring for the Oregon Plan for Salmon and Watersheds (OPSW), and other Oregon Department of Fish and Wildlife (ODFW) and State of Oregon activities. The remaining three projects are the Aquatic Inventories Project (Habitat), the Western Oregon Rearing Project (Juveniles), and the Life-Cycle Monitoring Project. The overall goal of the Western Oregon Research and Monitoring Program is to conduct monitoring and research to assess the status of wild stocks of Oregon's anadromous salmonid populations and their habitats, and to implement research to improve inventory methods. The OASIS project provides status and trend information on abundance, distribution and percent hatchery fish for Oregon Coast and Lower Columbia adult salmon and steelhead naturally spawning populations.

### **Background**

#### *History*

Since the 1950's naturally spawning populations of anadromous salmonids in Oregon have been monitored through hand selected "Standard" spawning ground surveys. This provided a relatively easy and inexpensive method to produce an index of abundance for these fish. Changing management and conservation programs for these species resulted in increased information needs. In the 1980's reviews of the standard survey system provided recommendations to improve the system to meet these needs.

In 1990, ODFW implemented a random sampling procedure for survey site selection to more accurately assess Oregon coastal natural (OCN) coho stocks. This approach consists of randomly selecting survey sites and estimating spawner abundance by visual counts in these sites. Beginning in 1998, ODFW enhanced the program by shifting from a simple random to a spatially balanced random site selection process, and by integrating site selection for juvenile and habitat surveys with the surveys for spawning salmon.

In order to conduct spawner surveys, randomly selected sites need to be verified to determine whether or not they are accessible and contain coho spawning habitat. Site verification entails locating the target stream segment, securing landowner permission, evaluating the potential of the segment as spawning habitat, and marking and documenting the survey. This will be your fun-filled job for the upcoming months.

### ***Objectives***

The overall objective for the OASIS project is to provide status and trend information on abundance, distribution and percent hatchery fish in Oregon adult salmon and steelhead spawning populations to state and federal management agencies. This information, in conjunction with information from other Western Oregon Research and Monitoring projects, is used extensively in reviews of these populations under both the Federal and State of Oregon Endangered Species Acts. This information is also used by ODFW staff in the monitoring and evaluation of management and conservation actions for salmon and steelhead population in Oregon Lower Columbia and Coastal Basins.

The objective of OASIS site verification efforts is to evaluate, and where appropriate, establish spawning surveys at the randomly selected sites for the upcoming spawning season. Random spawner surveys are set up from February through August; then surveyed according to project protocols in the following spawning season, September through May. Specific objectives for the OASIS site verification season are:

- Locate the segment of stream to be set up as a spawning survey.
- Contact all landowners for permission to access their property.
- Evaluate the potential of this site and adjacent tributaries as coho spawning habitat.
- Write a detailed description of the survey, including directions to the survey, start and end point locations, length of survey, and exit instructions.
- Obtain and record the required data as listed on the Site Verification Form and in Pendragon.

### **Administration**

#### ***Travel***

Each crewmember will have a state vehicle and surveys will be conducted individually. Before embarking into the field, leave a tentative work schedule with your supervisor or crew leader. This should include a list of streams and the order in which you plan to visit them, and any campsites you plan to stay in. At the end of your work day check in with your crew leader or supervisor either in person or by phone to let them know you are safely out of the field.

Surveys are often located many miles from home; thus, camping out in the field may be required. You will be using your own personal camping gear, and you should be prepared for bad weather and have enough food and water. If you are uncomfortable with camping out in the backcountry, you may wish to search out a developed campground. You will be compensated at the standard per diem rate for nights spent in the field.

#### ***Cell Phones***

Each crewmember will receive a state cell phone for contacting landowners, crew leaders, supervisors, project staff and others. Cell phones are equipped with voicemail so that landowners and the office staff can leave you messages (see example voicemail greeting). When first establishing your voicemail you will have to enter a password; the password that should be used on all phones is 2580 or the last four digits of the phone number. Phone numbers for

OASIS staff, other ODFW staff, Motor Pool and the OSP tip line are listed in Appendix A. Remember the state cell phone is for **official use only**.

*Sample voicemail greeting:* “Hi, this is  (your name)  with the Oregon Department of Fish and Wildlife, I’m currently in the field and so I’m not able to take you call at this time, but if you would please leave your name, number, and the name of the stream you live on and I will get back with you as soon as possible. Thank you.”

While driving, you must use your hands-free device or **pull off the road** and **park** before making or answering a call, it is the law!

### ***Safety***

- Check out/in system

You will need to establish a check out / check in system with your crew leader or supervisor. You will use this system on all days you go out in the field, and it should include; the date, the streams you plan to visit, the order you will be visiting them, and alternate sites you might go to if you can’t go to the planned sites. You will relay/record this information to your crew leader or supervisor before you leave in the morning, and then check in with them when you are back from the field at the end of the day. Your check in person is often your crew leader or supervisor, but it can be with a fellow surveyor or another individual as long as that person knows the proper protocol in the event that you have not checked in at the end of the day. Your check in person will need to know the check out information. Be sure your crew leader or supervisor knows who your check in person will be.

- Accidents

All employees are required to have an emergency medical notification form on file. Any on-the-job injuries must be reported to your supervisor within 24 hours. Your supervisor will help you complete a Preliminary Incident and Near Miss Analysis form within 24 hours of being informed of the accident. If medical attention is required, a SAIF Workers’ Compensation Claim Form 801 also needs to be completed and sent to your supervisor within 24 hours of the medical visit. If you are seen by a physician, you need to take a Physical Assessment Form to the physician’s office and make sure you receive a signed medical release form the doctor before leaving the doctor’s office.

Supervisors have copies of the necessary documents and will help guide you through the process if you become injured. If you become injured and your doctor places you on modified duties (you are unable to continue to work in the field), we will attempt to find other types of work for you. Often this means data entry or other office assignments.

### ***Vehicles***

When you are driving the state vehicle you are representing the state. The public is very much aware of “E Plates” and pay attention to how they are being driven and used. Simply put you should be safe and courteous, abide by all traffic laws, maintain safe speeds, and drive with your lights on (but don’t forget to turn them OFF when you park!). Logging roads are especially dangerous, drive according to road conditions. ALWAYS use your CB radio when on industrial forest roads. Tune to the designated channel (usually posted at the start of the logging road);

identify the type and color of the vehicle you are driving, state your direction and location every mile. Do not assume other vehicles are using their radios. Specific rules to keep in mind are:

- State vehicles are FOR OFFICIAL USE ONLY.
- Children, hitchhikers, stranded motorists, and pets are not allowed in state vehicles.
- Smoking in state vehicles is prohibited.
- Operate vehicles in a safe manner at all times.
- Do not exceed posted speed limit.
- Always be courteous to all drivers.

- Accidents

Vehicle accidents need to be reported to your supervisor, DAS and DMV as soon as possible. You will need to fill out an accident form, and provide a short narrative of what happened. Vehicle Accident Forms are located in the vehicle information packet assigned to each vehicle. Also, using your work cell phone, take photographs of the accident and the location for documentation.

- Fuel and Maintenance

- Fuel

- Use State of Oregon Voyager credit card.
    - Make sure the vendor will take the card prior to purchase.
    - Vendor needs to record odometer reading for each fuel purchase.
    - **Any purchases other than for fuel must be pre-approved by DAS fleet services** (1-800-378-0077 - 0700-1800 M-F) prior to use of the credit card. If DAS authorized purchase of an item, make sure to note the date purchased and item purchased on the back of the Mileage Log.

- Maintenance and Repairs

- Have vehicle maintained (oil changes and fluids checked) on schedule (multiples of 5,000 miles). The project can be fined if you exceed maintenance intervals.
    - Have tires rotated on schedule: multiples of 5,000 miles.
    - Have brakes checked on schedule: multiples of 10,000 miles.
    - Major service checks are required at 30,000 mile intervals.
    - **Pre-authorize all service or repair** by calling 1-800-378-0077 (0700-1800 M-F).
    - Voyager card may be accepted by some vendors; ask first.
    - **Keep vehicles clean!** They also represent ODFW and must be presentable. At the end of the season, vehicles must be returned with the interior and exterior fully cleaned. The project will be charged if vehicles are returned dirty.
    - Record each trip daily on your vehicle Mileage Log book from the first of the month to the last day of the month.
    - At the end of each month, turn in the white copy to your supervisor at the Corvallis Research Lab.

- **Fire Suppression Equipment**

During the summer months, fire suppression gear is required when working on corporate lands. Requirements may vary amongst individual companies, however, the main equipment requirements are a Pulaski, shovel, and a minimum of five gallons of water.

***Pets and Volunteers***

Pets are not allowed to accompany employees during fieldwork. Non-Department employees can accompany employees as volunteers for fieldwork. A completed and signed volunteer form must be on file prior to any work with volunteers.

***Site Verification Notebook and Equipment***

You will be assigned all paperwork, electronics and gear necessary to complete each survey, see the Equipment List shown in Appendix B. You will be given a notebook containing all the information necessary to conduct site visits and verification. We are using digital forms on your PDA to fill out all information about site set-ups. In addition, you will receive paper copies of all forms in case your PDA malfunctions in the field.

## **SITE VERIFICATION PROCEDURES – IN THE FIELD**

You will complete an evaluation and all needed paperwork (electronically and/or on paper) for all surveys assigned to you. Each survey is identified by three numbers. The first is the ID Number, which is the unique number assigned to the random sample point (Point) that selected this location as a potential spawning survey. These Points are shared across all the OPSW projects. Points exist at a density of about two per mile, and a spawning survey may contain more than one point. The last two numbers (Reach ID and Segment) describe the specific spawning ground survey. A Reach is a stream section that extends between the confluence of coho bearing streams or from the confluence of a coho-bearing stream to the headwaters. Some streams will have multiple reaches when divided into parts by the entrance of coho bearing tributaries. A Segment is the actual portion of the reach to be surveyed. See *Evaluate the Site* and Figure 1 for more details on reaches, segments and coho bearing tributaries.

### **Review Site List Notebook**

Each site packet contains a 24k map, tax lot map(s), and landowner sheets. Each map includes the Township, Range and Section as well as the UTM's of the Point, which will be helpful when locating them on the map and entering them on your PDA. Some packets contain descriptions from nearby reaches which can be useful in helping locate the site. They often will get you very close to the survey you are setting up. They may also include the UTM's of adjoining reaches and segments which will be very helpful in locating the start or end of your segment.

*Note:* Segments with decimal points (1.1, 2.1 etc) are atypical. They are generally on surveys that were previously set-up under different protocol methods and have been renumbered. They often cross reach breaks or do not meet other reach and segment

criteria. Such established surveys need NOT be considered as existing surveys, and their physical boundaries MAY be crossed by new surveys.

### **Find Site on the Map**

Using the Township, Range, and Section of each map and landmarks, locate and mark each Point on your ODF map. This will help you group your sites for each week. You should organize your survey schedule by geographic location and access efficiency. After reading previous descriptions, and viewing the appropriate maps, it may seem apparent that the survey to be established will not be accessible. You must still attempt to locate these surveys in order to verify whether they are or are not within spawning habitat, as well as verify past information and map accuracy. Things do change over time. You should prepare 5-8 alternate surveys each week to account for times when access to a selected segment is impossible or denied.

### ***Survey Length***

The target length for coho spawning surveys is approximately one mile (~1,600m). Though, circumstances in the field will dictate considerable variation around this goal. In general, survey segments should rarely exceed 1.2 miles (~1,900m) and be no less than 0.1 miles (~150m). However, due to reach break rules (i.e., entrance of coho bearing tributaries), presence of barriers, or end of habitat, lengths can vary. Surveys restricted by access conflicts (i.e., landowner denials) should be deemed “denied” if they do not exceed or equal 0.1 miles. If you have questions regarding a survey's length please contact one of the project assistants and they will help you determine the best way to handle specific situations.

### ***Existing Surveys***

It is likely that the new survey you will be setting up will be adjacent to an existing survey. This will be where your survey will either start or end, as long as it is not a survey with a decimal place segment (e.g. 2.1) as discussed in *Note* above. The boundaries of most existing surveys can be seen on the 24k maps provided, as well as within ArcPad on your PDA. The existing survey may no longer have a sign present, it will be important to use not only the maps to determine the start or endpoint, but the description for these surveys as well. For instance, does the segment end at a tributary or begin at a bedrock cascade or step?

### **Determine Landowners**

All pending surveys have already been researched to determine ownership boundaries and landowner names. When the segments were researched it was not known exactly where the segments would start and end, so there may be landowners listed that will not need to be contacted. There may also be landowners that are not on the list that will need to be contacted if the survey starts before or extends beyond the researched area. Use the landowner list as a good guide to get you started with the landowner contacts, but do not assume that it is completely accurate. Watershed groups and neighbors are often a good source of information when you begin your landowner contacts.

There are three basic categories of landownership for what you are doing; Public Lands, Corporate Lands, and Private Lands. Each landownership category requires a different method of contact, which will be discussed in detail below.

### ***Public Lands***

You do not need to contact anyone for access permissions on State and Federal lands, U.S. Forest Service, Bureau of Land Management, Oregon Department of Forestry, etc. These lands are open to the public. In these cases you do not need to record an OK date on your landowner sheet.

City and County lands are also usually open to the public and do not need access permission. However this is not always the case, for example a stream on the site of the county jail or other public works facilities. Contact your crew leader or supervisor about which county and city properties will need contacts for access permission.

### ***Corporate Landowners***

Your crew leader or OASIS staff in Corvallis will contact major corporate landowners for access permission. These companies get contacted by many different groups, and really appreciate coordination of contacts by groups, so they are not being contacted one site at a time. **Please DO NOT contact corporate landowners unless instructed by your crew leader to do so.** If you have any question whether or not a specific landowner is a major corporate contact or if you should be contacting them, ask your crew leader. If keys are needed to access corporate lands they should be available through your crew leader or duty station.

Your crew leader will inform you whether or not we receive access permission to corporate lands. If we are granted permission your crew leader will provide you with the OK date for that company so that you can enter it on your landowner sheet. Some corporate landowners require a permit when you are on their property, if a permit is required, be sure to abide by the landowner permit requirements.

### ***Private Landowners***

There are three ways to contact landowners; in person, by phone or by letter. The preferred method is in person. It is good to give them a friendly face to go along with the ODFW insignia. You will have an ODFW uniform and name tag, and should always wear both when contacting landowners. You should be courteous and professional when contacting them and of course your uniform should be clean! In rare occasions you may encounter a dangerous or hostile situation. Safety is always your first priority. Leave the area immediately if you feel threatened or in danger.

If a landowner does not live on site and a phone number is available then a phone call is an appropriate contact method. Keep in mind that you must speak clearly over the phone, many of our landowners are older and often don't hear well.

If they are out-of-state or have a P.O. Box then sending a letter may be the best way to reach them. When sending letters, ensure that you are using the correct format for Site Verifications. Write the date at the top of the letter, fill in the creek name, and sign at the bottom in the space

provided. Enclose a prepaid landowner reply card with the Reach ID, Segment, Landowner Name, IDNum, and the name of the stream. Also write your name or surveyor ID in the “Crew” area at the bottom of the postcard for easier identification when the postcards are returned to the ODFW Corvallis Lab. (see Appendix M for example). On the front of the envelopes be sure to write OASIS above the pre-printed return address.

In all cases where you attempted to contact a landowner but were unable to, write the date(s) contact was attempted and the method of contact in the space provided for comments on the landowner sheets.

When you do succeed in contacting a landowner, introduce yourself in a professional manner and identify yourself as an ODFW employee. Explain your reason for being there; be clear on your intent, methods, and the future involvement of ODFW surveyors. You will be essentially asking for permission for up to three activities: A one time visit to do the survey set-up; Weekly visits during salmon season (October through January); and if the site is also a steelhead survey (noted on the landowner sheet), every other week visits during steelhead season (February through May). Verify the contact information that we have for the landowner, making sure that the names, address, and phone number are all correct. If there is a problem with the TRS or Tax lot, please note this in the comments. If the address in the landowner form is not correct, please update it and then highlight it on the form so we can update the database. Tell them about the signs to be posted at both ends of the survey. Inform them other groups (habitat or rearing) may intend activities at this site in the future and let them know that they may be contacted again.

Cross out any landowners that are not on the survey and did not need to be contacted. If you need the landowner to access a survey, but they are not located directly on the survey, please leave them in but make a comment that they are only needed for access to the survey. Record any additional landowners you needed to contact to access the site on the Landowner Contacts form. Occasionally you will have a landowner that does not own property on the stream but requests data, leave them on the form and enter “requests data” in comments.

- Point owner

Time and effort can often be spared by attempting to first gain permission from the landowner’s property that encompasses the Point. If this property is denied, the survey is deemed “denied” and no survey can be established. Please do not contact landowners that have denied us within the past 3 years.

- Special instructions

Accommodate any special requests and document them on the Landowner Form under comments as well as in the description of the Site Verification Form (Example: landowner requests surveyors not park in driveway, or call before surveying). You can’t have too much information. It is **critical** that this information is included in the *Description* of the survey for the fall surveyors!

- Safety/Denials

Be aware of animals. Many of the landowners you will be contacting have dogs, goats, sheep, cattle, etc. When approaching the house, pay attention to signs that there may be animals: dog houses, toys, feed blocks. If unsure, leave the truck door open in case of an aggressive pet.

Occasionally landowners will not allow access through, or onto their lands. When this happens (and it will), do not become argumentative, listen patiently, and respond calmly. Simply state your reasons for being there, what you are trying to accomplish, and how you need to accomplish it. It is difficult to say no to a nice person trying to do good things, and you will often find that landowners will comply with your requests. If access is denied, record their reasons and concerns and report this information to your supervisor. **Do not conduct a survey if you have been denied permission.**

### *OK Dates and Data Requests*

Make sure to record the date (OK Date) you were granted permission or denied permission from the landowner(s) and the name of the person giving you this information (Contact) and enter a “yes” or “no” if they request data (Data). Be sure to enter a date even if it is a denial.

### **Drive to Site**

Start by locating the nearest significant landmark found on the map. It is always best to start from a well-known or easily found landmark; such as a town, freeway exit, or major highway intersection. Assume that the person reading the description has never been to the area before. Make use of your trip odometer, and keep detailed notes on the directions and mileage to the start point (the trip odometer on your vehicle will become your best friend).

You should try to find most efficient access to the site. It may be necessary to evaluate multiple access points to find the most efficient one for fall surveyors to use on a regular basis. Remember, they will be visiting 8-10 sites per day. They will also be able to be picked up at a different location than where they started, so evaluate roads near the end of the survey as well.

### **Enter Site**

#### *Note access*

Describe the best method you found for accessing the survey. Be sure to include detailed descriptions of site access, especially in areas where extensive hiking is required to reach the start of the survey. Flagging a trail can be an especially helpful tool, provided that there is landowner permission for such.

#### *Determine start point*

The start of a survey should be located at a permanent and identifiable location: the mouth of a stream, the entrance of a coho bearing tributary, the end of an existing survey, or at a permanent landmark like a highway bridge. After determining the start point, take some time to familiarize yourself with your present location, general surroundings, and potential end of survey location.

### ***Location of start sign***

- Sign information

Write survey information in the lower margin of the sign using a permanent ink pen. This information includes: whether it is the start or end of the survey, the stream's name, the seven-digit Reach ID, the Segment, your name and the date. Example: Start Bob's Creek 23456.00 Seg. 3 J. Doe 6/20/99. This means J. Doe established the start of reach 23456.00 segment 3 of Bob's Creek on 6/20/99. If you find a sign from an adjacent survey, verify that you are in the correct segment and write the information for your segment on the upper margin of the sign. If it will need a new Reach ID and Segment due to a reach break, leave those fields blank and make a note in the description for fall surveyors to enter the new information once obtained from the Corvallis office.

- Placement

Attach signs to a permanent object using aluminum nails. If a tree is used, drive nail no more than 2/3 into the trunk to allow for tree growth. Place signs where they are clearly visible, facing downstream and in as permanent a site as possible. Place two signs if necessary to ensure visibility from all angles and directions a surveyor may be approaching. Remember, these surveys will be conducted on a weekly basis in the winter when stream flows are much higher, and spawner surveyors may need to climb the banks to avoid hazardous obstacles or conditions, thus limiting line of sight. A clear and easily visible sign will be appreciated.

*Note:* Make sure you have landowner permission for posting a sign. If a landowner requests that no signs are to be posted be sure to include that information in the description so fall surveyors do not inadvertently post a sign.

## **Evaluate the Site**

### ***Conducting the Set-up Survey***

Following are key concepts, descriptions of the specific data (and data categories), and some special situations you will be collecting and evaluating as part of the survey set-up.

- Left vs. Right Bank

Surveys are usually conducted by walking upstream, but sometimes by walking downstream depending on access to the survey. When referring to the right bank vs. the left bank in your descriptions always describe it as looking upstream, even when describing the exit route.

- Fish Presence

Juvenile coho abundance is used to indicate the number of coho seen. Recording unknown is preferable to recording absent unless you are positive there are no coho juveniles present.

- Substrate Composition

Estimate the percentage of each substrate type (totaling 100%):

**Silt** - Cohesive fines, little or no grain structure, suspends in water column.

**Sand** - Non-cohesive grains, up to marble size, settles out of water column.

**Gravel** - Size ranges from marble to grapefruit (different from spawning gravel).

**Cobble** - Size ranges from grapefruit to basketball.

**Boulder** - Larger than a basketball.

**Bedrock** - Large, continuous, non-transported underlying rock.

- Stream Width

Measure the active channel width of the stream at the beginning, middle and end of the survey using your pre-marked staff to establish the mean width.

- Gravel Quantity

Estimate the quantity of **spawning gravel** to the nearest square meter throughout the survey. Ideal coho spawning gravel is categorized as having a mean diameter of 9 cm (about the size of a baseball). It should be mixed with less than 60% fines. Qualifying patches should equal an area of at least two square meters. Spawning gravel should be located in tail-outs or low gradient riffles in no more than 24 inches of water.

- Channel Features

Pay attention to all features within the channel; eroding banks, beaver activity, culverts, etc.

- Land Use

List the three most prominent land uses within the basin associated with the segment. (e.g. Agriculture, mature timber, urban, etc....)

- Gravel Comments

Should state the quality and location of gravel and its role in the overall quality of coho spawning habitat. Examples include describing the size of the gravel in relation to preferred coho gravel size, location of coho sized gravel (in tail-outs, in glides, or is it dry), and the amount of fines or larger substrates that are mixed in with the gravel.

- Fish Comments

This section is used for identifying the presence of juvenile coho and any trout species in the survey area (see Appendix C). This section should be used to describe in which areas of the survey juvenile coho were observed, juvenile coho abundance associated with habitat structures, or abundance of trout in the survey.

- Misc. Comments

This section should only be used for information that you feel office staff will need. This would be a good place to indicate that the survey Reach ID or Segment needs to be changed due to a reach break or denial. DO NOT put information here that the crews will need in the fall, such as "Call Joe Smith before every survey"!

- Culverts

From time to time you will encounter a culvert within your survey segment. All culverts should be noted in the *GPS Locations* section of your Site Verification Form. Any potential culvert barriers encountered should be considered temporary and the segment should be evaluated as if no barrier exists. This rule extends to culverts within a segment and those found on potential coho bearing tributaries. Descriptions for surveys including potential culvert barriers should include notes describing their location and condition.

When entering *Culverts*, you will be asked to enter culvert height, width, length, slope, pool drop, pool depth, substrate, and upper (fish) distribution. This process must be completed for all culverts that are located within the survey (A paper backup copy is found in **Appendix K**). The categories listed are required information; do not leave any entries blank. Refer to the illustrated description for where and which measurements need to be taken (**Appendix L**). It may be handy to have a copy of this schematic in the field with you. All units are to be measured in meters. Upper distribution is determined by visual observation of juvenile coho, a “yes” entry indicates the culvert is a passage barrier to anadromous fish. The **UTM** coordinates should be recorded at the downstream end of the culvert using the GPS unit.

- Tributaries

Describe all tributaries in terms of gradient, active channel width, and what side of the parent stream it enters from. Describe if tributaries are or are not viable for coho spawning.

Coho bearing up 150m = Reach break

Coho bearing <150m = Spur

Non-coho bearing = No habitat

Although our database is extensive, it does not include all potential coho bearing tributaries that occur in coastal basins. It is our intent to add these tributaries to the database as they are discovered. While conducting surveys, you need to examine incoming tributaries for potential coho spawning habitat. This is done by walking up at least 150 meters into these tributaries and evaluating them for the presence of spawning gravel, juvenile coho, migration barriers and gradient. If the tributary has habitat for 150m or more, it will be included into the database as coho bearing; please make appropriate comments upon completing the verification form. Also, if an incoming tributary is determined to be a potential coho spawning stream (coho bearing), the survey's start or endpoint will always be located at the tributaries mouth. This is done to maintain the structure of our reach cataloging system in our database.

If a tributary has habitat which is less than 150m, it may be included into the description of the parent survey as a **spur**. Include in the parent survey's description the directions for tributary location and distance to survey the spur. Include brief information on spur endpoint such as:

**Example:** Survey stream A upstream from mouth 1.0 mile to end point at bridge. Survey spur tributary, on right about 600m upstream from start of survey, survey upstream tributary 40m to 3m falls. Spur marked by flagging in 2003.

The dark blue lines in Figure 1 represent reach breaks. Reach breaks are classified as streams or tributaries that have at least 150 meters of salmon habitat. If they have less than that they are

considered “spurs” and are surveyed along with the segment they are within. The light blue line shown is a tributary that is not a reach break but indicates a good place to end a segment for easier identification.

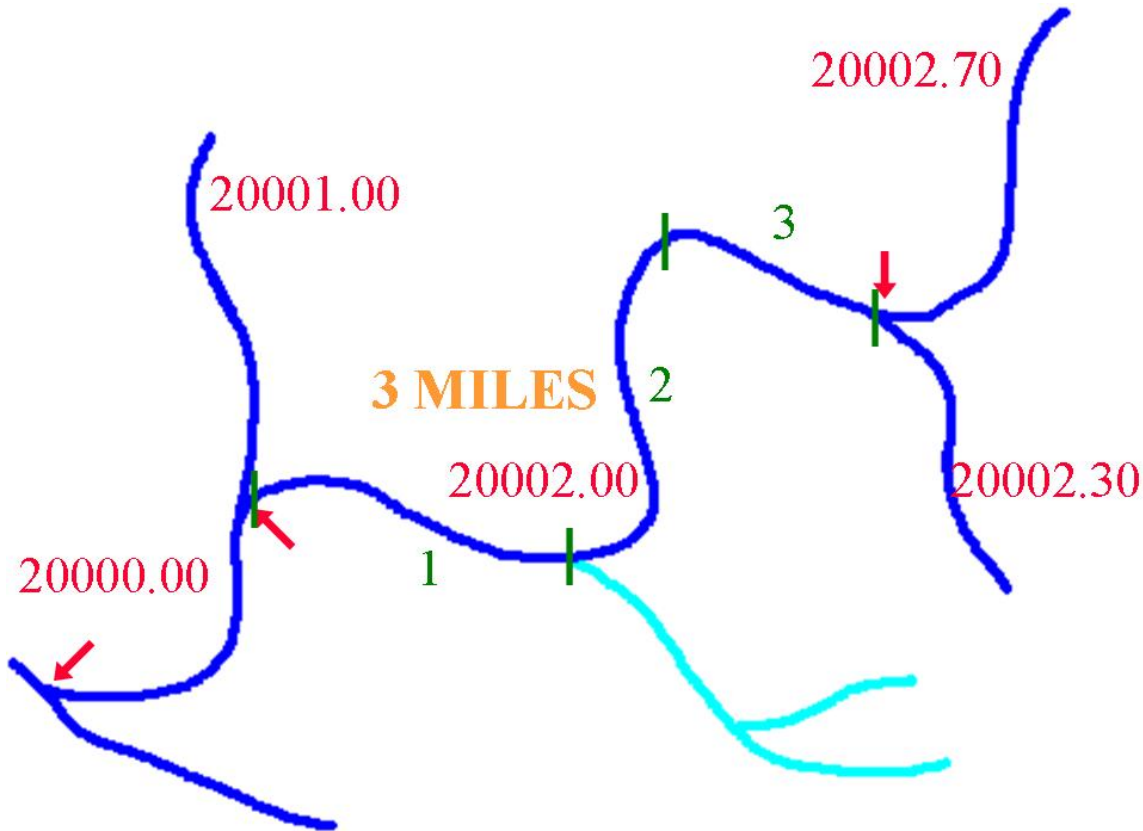


Figure 1. Example stream showing Reach ID (red numbers) and Segment (green numbers) determinations for describing salmonid spawning ground surveys. Dark blue streams are spawning habitat and light blue streams are not spawning habitat.

*Note:* If a reach break is discovered, do not assign your own Reach ID. Corvallis staff will assign the appropriate Reach ID.

- **Habitat Structures: Natural/Man made**

Make a mental note of habitat structures found within the survey, and whether they are “placed” or natural. Often they were placed many years prior to the set-up.

- **Landmarks**

Watch for landmarks throughout the system such as bridges, fence lines, houses, good location to split a survey or other significant features noteworthy.

## **End the Site**

Determining the end point can be one of the most difficult tasks of site verification. Typically, the endpoint will be established during the survey by walking upstream to the approximate distance designated for the segment. Consider landmarks, designated lengths, sign visibility, landowner privacy, and exit route when making your judgment to end the survey. If there is a road along the reach segment, identify a potential endpoint before beginning the survey. Take into consideration that stream miles are usually longer than road miles, the accessibility of the exit point, presence of a permanent landmark, and the availability of trees or structures to post signs. Try to keep your surveys about a mile long, unless restricted by barriers, habitat, access conflicts, or entrance of coho bearing tributaries (see *Survey Length* on page 6 for more guidelines on survey length). When a segment ends at the stream's headwaters, ensure that all coho habitat is encompassed within the survey.

The endpoint may be determined for you by way of a barrier, end of viable spawning habitat, abutting segment or presence of a previously unknown coho-bearing tributary. With this scenario your choices are limited, do your best to post visible signs, find the easiest exit, and accurately mark the point in your PDA. Tributaries, high gradient areas (possibly containing falls), or road crossings make excellent ending landmarks. If there are no obvious landmarks to end the survey, use your judgment as to your location by identifying topographic changes on the map while conducting the survey.

As with the start sign, write survey information on the sign's lower margin using a permanent ink pen. Remember, if it will need a new Reach ID and Segment due to a reach break, leave those fields blank and make a note in the description for fall surveyors to enter the new information once obtained from the Corvallis office. Place signs where they have optimum visibility and some degree of permanence.

## **Exit the Site**

Be aware as you are walking the survey of potential exit points. Game trails and old overgrown roads make ideal exit routes. Exit via survey is usually the least desired, though most often, and sometimes the only appropriate route. Keep in mind that fall surveyors work in teams and can be picked up at an entirely different location than where they were dropped off, so be sure to evaluate all adjacent roads near survey.

## **Invasive Species**

Be sure to clean boots and waders according to cleaning protocol at the end of each survey to prevent spread of exotic species such as NZ Mud Snails (Appendix D).

## SITE VERIFICATION PROCEDURES – IN THE OFFICE

### Survey Write-up

Survey write-ups are done almost entirely on the PDA in Pendragon. Detailed descriptions of how to use your PDA and GPS units are included in Appendices E and F. In the event that you are setting up a Supplemental survey (see below), you will need to fill out a paper Site Verification Form. Blank forms are available in your Site Verification Box and in Appendix G. Following are some key concepts and considerations in doing a survey write-up.

- Date completed - Typically the date completed coincides with the date the survey was actually visited not when the write-up was finished.
- Surveyor ID - Enter your surveyor ID.
- Time to survey - Calculate based on the time it takes to walk the survey to the nearest 0.25 hour, do not include the time it takes to evaluate habitat and other set-up activities.
- Map Length – Do not fill in this field, Corvallis staff will determine survey length.
- Survey status
  - New - A New survey is one that has viable habitat, whether or not coho fry were positively identified. This survey MUST encompass the Point!
  - Assumed Zero - A survey is considered an Assumed Zero when the point falls downstream of spawning habitat (tidal areas, low gradient marshland, etc) or upstream of spawning habitat (above permanent migration barrier or in high gradient headwater areas).
  - Inaccessible - The survey can be deemed Inaccessible if the point falls in a remote location making regular spawning surveys impractical. If the proposed survey will take fall surveyors more than three hours to complete or access is too dangerous, the survey is considered inaccessible.
  - Denied - If the Point falls on private property where access has been denied we do not survey the segment. Please do not contact landowners that have denied us within the past three years.
  - Other - There are other classifications available but seldom used, such as pending, discard, repeat, and duplicate. For more instruction on these consult the Corvallis office staff or your crew lead.
- Survey Classification
  - Random - Random surveys are chosen each year as part of the protocol to estimate OCN coho spawner escapement. Previous random surveys can be found in the summer verification binders at the Corvallis Lab by Reach ID.

- Standard - These surveys have been conducted consistently over a long period of time, and are used to index spawning abundance in the basin where they occur. These areas were selected as early as 1948 based on varied criteria, such as ease of access, and the assurance of observing some level of spawning activity. These data have been used in the past to determine OCN coho spawner population estimates. Directions can be found in the database or in the actual spawning survey record binders.
  - Supplemental - These are surveys typically selected to fill specific information needs, and may vary from year to year. They may also be used to assess the effectiveness of habitat structures. This is also the classification now used for surveys that are set-up that do not have an associated Point. Often they are adjoining surveys near a current set-up or if a survey does not encompass the Point. For example, if the survey you are setting up is in National Forestland and will be Segment 2 but you have to walk through Segment 1 for access, you would set-up Segment 1 as a Supplemental survey and write-up a paper Site Verification Form to turn in with your map for Segment 2.
  - Lake - These are essentially Standard Surveys located on tributaries of three major coastal lake systems: Siltcoos, Tahkenitch, and Tenmile. They are used to estimate spawning escapement of coho to these systems based on historic methods.
  - Other - There are other classifications that you may come across. They are historical survey types that are seldom used anymore. They are Volunteer, Oregon Wildlife Heritage Foundation (OWHF), BLM and Elliot State Forest Surveys. If you would like more information on these, speak with the staff at the Corvallis Lab.
- Description - The **description** will provide the directions to the start of the survey for future surveyors, the survey distance, location of the endpoint, the best way to exit the survey, and describe any special landowner instructions and specific warnings. Use proper grammar rules, and use complete, succinct sentences. Be sure to include any notes regarding keys needed, phone calls, **including phone numbers**, which need to be made prior to surveying, or potential hazards within the survey. This is the **only** information available to surveyors in the fall.
  - Map marking - Use the 24k maps provided to mark the start and end points of the survey. Also indicate whether the entering tributaries have habitat or not. It is also helpful to draw a trail indicating the entrance and exit routes as needed.

## Error Checking

Before returning to the office for de-briefing, go over the following checklist.

- Are all landowners contacted? Are extras marked and new ones added?
- Are there special conditions applied by landowners? If so, did you note this on the landowner form as well as within the *Survey Directions* in Pendragon?
- Did you mark yes or no for data requested on the Landowner Contact form?
- Did you go through ALL the landowners for each site and make sure you marked “not on survey” for any landowners you did not need for the finished survey.
- Are the directions to the survey detailed, easy to follow, and concise? Assume you are giving directions to someone who is not familiar with the site or area. If possible, use landmarks that are identifiable on maps.
- Does the survey include the Point (ID Number)?
- Are start and end point UTM's acquired and labeled in your PDA?
- If the survey ended at a tributary, is this a reach break? If so, did you note this?
- Is the endpoint the end of coho habitat? If so, did you note this?
- Did you write an assessment for every tributary that you crossed?
- Did you describe how to exit the survey?
- Did you mark YES under *Survey Complete* in Pendragon?
- Did you mark on the 24k map all pertinent information regarding the survey?

## Office De-briefing

Upon completing the weeks' surveys, return to the office for debriefing, or mail in all completed packets. Your supervisor will critique each survey. Completeness, clarity, and accuracy of your work will be evaluated. It is important that you return with enough detailed information about the survey to answer any questions that may come up. An accurate, well-documented survey will prevent a return trip by you! The goal is to give your supervisor enough information so that an accurate mental picture can be formed, and determine if appropriate judgment was used during the setup procedure.

## APPENDICES

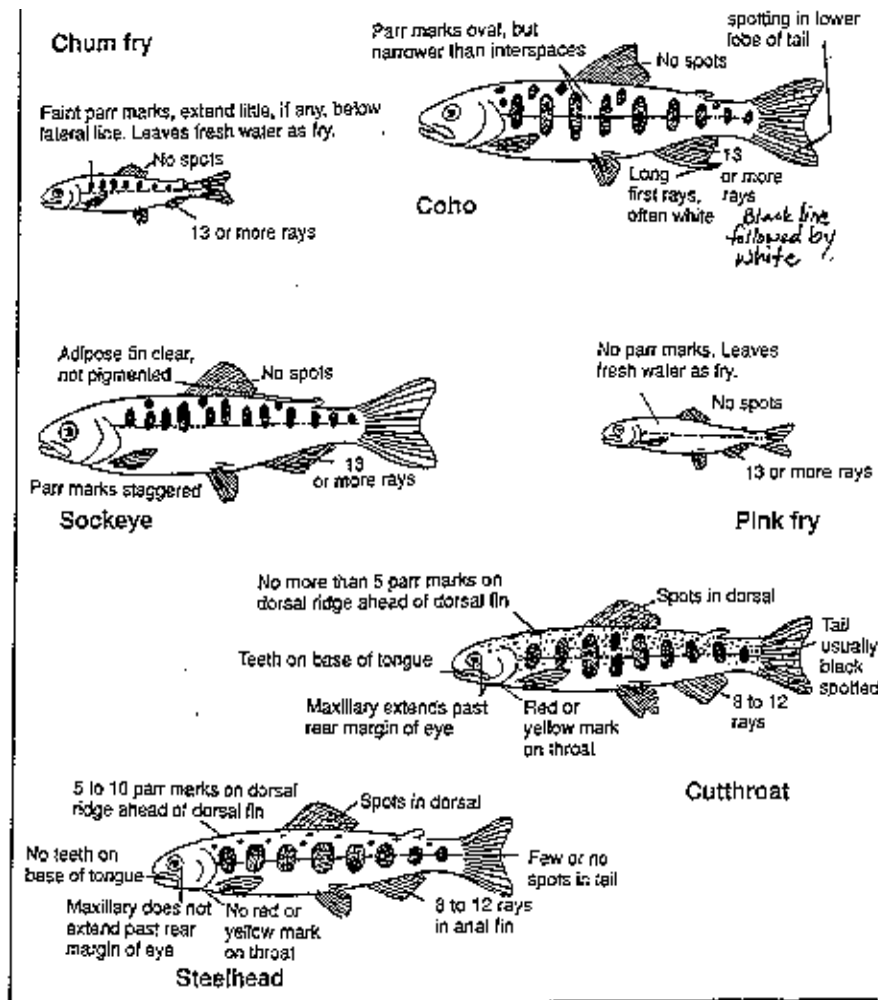
### A. District Phone List.

| NAME                | TITLE  | NUMBER                 |
|---------------------|--|------------------------|
| OSP Tip Line        | Oregon State Police anonymous tip line         | 1-800-452-7888         |
| Motorpool questions | Oregon motor pool accidents/maintenance        | 1-800-378-0077         |
|                     |  |                        |
| Tom Murtagh         | Mid-Columbia/Sauvie District Fish Bio.         | (971) 673-6044         |
| Todd Alsbury        | North Willamette District Fish Biologist       | (971) 673-6011         |
| Ben Walczak         | North Willamette Asst. Fish Biologist          | (503) 887-2154         |
|                     |  |                        |
| Rick Klumph         | North Coast District Manager                   | (503) 842-2741         |
| Chris Knutsen       | North Coast District Fish Biologist            | (503) 842-2741         |
| Robert Bradley      | North Coast Asst. Fish Biologist               | (503) 338-0106         |
|                     |  |                        |
| Bob Buckman         | Mid Coast District Fish Biologist              | (541) 867-4741         |
| Derek Wilson        | Mid Coast Asst. Fish Biologist Newport         | (541) 867-4741         |
| John Spangler       | Mid Coast Asst. Fish Biologist Mapleton        | (541) 902-1384         |
|                     |  |                        |
| Laura Jackson       | Umpqua District Fish Biologist                 | (541) 440-3353         |
| Holly Truemper      | Umpqua Asst. Fish Biologist                    | (541) 440-3353         |
|                     |  |                        |
| Mike Gray           | Coos-Coquille District Fish Biologist          | (541) 888-5515         |
| Gary Vonderohe      | Coos-Coquille Asst. Fish Biologist             | (541) 888-5515         |
|                     |  |                        |
| Todd Confer         | South Coast District Biologist                 | (541) 247 7605         |
| Steve Mazur         | South Coast Assistant Fish Biologist           | (541) 247 7605         |
| Dan VanDyke         | Upper Rogue District Biologist                 | (541) 826-8774         |
| Dave Haight         | Upper Rogue Asst. DB Central Point             | (541) 826-8774         |
|                     |  |                        |
| Kelly Moore         | NW Region Research Program Manager             | (541) 757-4263 ext 223 |
| Mark Lewis          | OASIS Project Leader                           | (541) 757-4263 ext 241 |
| Briana Sounhein     | OASIS Asst. Project Leader Coastal Coho        | (541) 757-4263 ext 227 |
| Matt Weeber         | OASIS Asst. Project Leader L. Columbia         | (541) 757-4263 ext 248 |
| Eric Brown          | OASIS Asst. Project Leader Steelhead           | (541) 757-4263 ext 281 |
| Michelle Best       | OASIS Project Assistant                        | (541) 757-4263 ext 226 |
|                     |  |                        |
| Shelly Miller       | Chinook Studies Project Leader                 | (541) 757-4263 ext 242 |
| Brian Riggers       | Chinook Studies Project Biologist              | (541) 757-4263 ext 265 |
| Lisa Borgerson      | Scale Reading Project Leader                   | (541) 757-4263 ext 232 |
|                     |  |                        |
| Alex Neerman        | Crew Leader for Lower Columbia                 | (541) 760-7723         |
| Scott Kirby         | Crew Leader for North Coast & Tillamook        | (541) 231-1958         |
| Jon Nott            | Crew Leader for Mid Coast                      | (541) 231-3412         |
| Joshua Edwards      | Crew Leader for Siuslaw and Umpqua             | (541) 760-7525         |
| Pat Burns           | Crew Leader, Umpqua, Coos-Coquille South Coast | (541) 760-7768         |

## **B. Equipment List**

- Waders
- Wading boots
- Machete with sheath
- Safety vest
- Camping supplies (Personal)
- Road, State Forestry, and Water Resources Department maps
- Polarized sunglasses
- Department hat and shirt
- GPS unit and PDA with chargers
- Survey signs and black sharpies
- Aluminum nails
- Calibrated wading staff
- File (for keeping your machete sharp)
- Extra key for vehicle (to be stored on the vehicle)
- Cell phone and charger
- Mud snail cleaning supplies (see Appendix D)

## C. Juvenile Salmonid Identification



## D. Gear Sanitation Protocol

### **Sanitizing Sampling Gear to Reduce Spread of Invasive Aquatic Biota** ODFW/Oregon Adult Salmonid Inventory and Sampling Project

Background: New Zealand Mud Snails (NZMS) and other invasive biota can spread rapidly among water bodies in the western United States. Dispersal of NZMS is restricted to transport in water or damp media (Hosea and Finlayson 2005), and it is thought that recreational anglers and other water enthusiasts are primary vectors for dispersal. Traits that promote rapid colonization of NZMS include small size (max length ~6 mm), resistance to desiccation (50% survival post 25 days on damp media; Winterbourn 1970), and the ability to reproduce through parthenogenesis (female production of offspring without fertilization). OASIS site selection is randomized across stream reaches in Western Oregon and the Lower Columbia, and because crews wade in multiple streams throughout the field season, it is important we reduce the dispersal threat of NZMS and other invasives by removing them from our gear.

Reducing Mudsnailed Transport Between Basins: Whenever possible, OASIS crews can minimize accidental mudsnail transport across river basins by not sampling in more than one major basin per day. Crews should sanitize field gear daily when they return to their duty station, or between sites if they must sample in major basins in one day. For purposes here we'll define major basins at the 4<sup>th</sup> Field HUC level (see maps in sample packets). The following chemical protocol to sanitize gear was developed for crews visiting more than one basin per day\*. The protocol is based on research that showed that 100% of snails were killed in 5 minutes with a 1000 ppm concentration of Copper Sulfate (Hosea and Finlayson 2005). The chemical procedure and materials can be adapted by other crews that have nets and other collection gear.

Equipment to be kept in vehicles for site to site sanitation within a day:

- one or two 5-gallon plastic water jugs, filled with fresh tap water
- Spray bottle w/ copper sulfate solution (might need 2-3, depending on number of crew)
- soft bristle brush
- spray-rinse apparatus: pressurized hand pump sprayer (1-3 liter)
- drip tote
- MSDS for Copper Sulfate

Equipment to be stored at duty station

- one 7-gallon plastic jug for Copper Sulfate stock solution (see stock dilution below)\*\*

1) Wash/remove mud and large debris from all gear exposed to stream water. (This can be done as a last step before leaving the creek). At vehicle, remove gear and remove insoles from wading boots

- 2) Put gear in drip totes and hand-spray with cleaning solution to point of saturation and runoff. Gently scrub boot grommets, felt soles and wader folds to remove hidden snails. Clamp top of waders closed to avoid getting copper sulfate on inside where it could come in contact with skin. Allow treated gear to sit for a minimum of 5 minutes
  - 3) Rinse gear with clean water provided in plastic water jugs. **DO NOT USE STREAM WATER.** Fill pump sprayer with tap water and use it to rinse gear sufficiently. For crews that can return to the duty station a good source of rinse water are outdoor hoses at ODFW offices.
- \* If temperature and desiccation treatments can be used between site visits (see protocol developed by Aquatic and Riparian Effectiveness Monitoring Program-AREMP, BLM Corvallis), care should be taken so that neck, wrist, and foot seals of Dry-suits are not damaged.
- \*\* Field crews will be given pre-weighed packets of 26.5 g Copper Sulfate to make a 7 gallon stock solution of sufficient strength of the active ingredient (252 mg/l Cu). Use latex gloves to handle copper sulfate and avoid contact with skin. Clearly mark the stock solution container and store in a safe place. Refer to the MSDS sheet for more information.

For photos and more information on mud snails, and maps of documented distributions, go to:  
<http://www.esg.montana.edu/aim/mollusca/nzms/>

#### Literature Cited:

- Hosea, R. C. and B. Finlayson. 2005. Controlling the spread of New Zealand Mudsnaails on wading gear. California Department of Fish and Game Administrative Report 2005-02.
- Winterbourn, M. 1970. The New Zealand species of *Potamopyrgus* (Gastropoda: Hydrobiidae). *Malacologia* 10:283-321.

## E. Entering Data in Your PDA (Pendragon)

- From the *Start* menu; click on Forms 5.1
- Select *Site Verification*
- Click on *Site List*
  - Make sure “Show completed surveys” has *No* selected.
- A list of all sites assigned to you will come up showing ID Number and Survey Name. Pay close attention to the ID Number since there may be multiple streams with the same name.
- Click on desired survey name.
- Be sure to enter the date and your Surveyor ID before entering any other information. **DO NOT** enter Setup Complete or Setup Status until **ALL** other information is entered.
- Use the information on the first page to verify the Reach and segment numbers, Site ID, and reach Name. Scroll between pages using the *Next* and *Previous* buttons or the *Go to* dropdown menu.
- To enter points, such as Survey start, Survey end, Cascade/Step, Culvert, etc. move to the next page, *Descriptions*, and click on GPS Locations. Click on *Add* then *Acquire* then *Fix* once the GPS finds satellites. You can either select a pre-named *Feature Name* from the dropdown menu or type your own name if the name of the feature is not listed. The *Descriptions/Comments* section is a good place to enter information, such as sign placement.

## F. Using the PDA and GPS Unit

### ➤ Coordinate systems

Our maps are set using UTM's with our map datum set for NAD 83 or WGS 84. This is an easy to use coordinate system, based on a projection of the earth as a flat surface. The earth is divided into 60 zones, each are 6 degrees wide as projected from the earth's center. Within each zone are two coordinates: a northing (x) and an easting (y). All of western Oregon falls within zone 10, so we only need to concern ourselves with the easting and northing values. These coordinates are the distances, in meters, inside the zone boundary. Most maps will have the UTM grid printed on them, some of the older maps may only have tick marks. In the margins of the map, next to the grid lines are the coordinates for the boundaries of the 1000-meter grid. The two larger digits are called the "principal digits" and are always in ten thousands and thousands of meters. To determine the UTM coordinates, plot the desired position on the appropriate USGS quadrangle map. Note the easting and northing grid borders that your position falls within. Measure perpendicularly the distance from the western boundary (easting) and the southern boundary (northing) to the point plotted. Scale this distance with that on the map (in meters).

Be sure the GPS map datum is set to NAD 83 or WGS 84 within Pocket Navigator. With Pocket Navigator open, click on *Menu* then *Settings* then select the tab *Units*, the *Units* should have **Statute** selected and the *Position* should have **UTM on WGS84** selected; if not use the drop down menu on the right of each to change.

### ➤ Obtaining satellites

Your GPS and PDA should already be linked (If not, see the instructions below on connecting them). Turn on your PDA and GPS units, wait a few minutes for the GPS unit to connect to satellites, and then open the navigating program you wish to use.

### ➤ Pocket Navigator

This program on your PDA will be helpful in locating Points and establishing driving directions. It can be used much like a personal navigation system. It has maps installed which are very similar to the 24k maps provided in your site packets; showing roads, streams, topographic features and county lines. It also can give you UTM coordinates, allow you to enter Points and track your movement.

#### ▪ Locating points

To locate points established on the map, click on *Menu* then *Overlay* then select *List* to bring up a list of all points entered on the PDA. They are listed in the order they were entered. Many Reaches and Segments are entered and listed in order to some degree, but if you enter a new point it will be at the very bottom of the list.

#### ▪ Entering points

There are two ways to enter points in Pocket Navigator; by entering coordinates or by using the GPS to mark your position. To enter a point using coordinates, such as entering a Site ID Point, the easiest way is from the map view click on the *flag* icon on the bottom right then tap anywhere on the screen creating a mark. Then to select the icon, hold

down the stylus on the mark to bring up the dropdown menu and select *Properties*. From this point you are able to enter a *Name* and a *Position* as well as enter notes and change the symbol. You can place a checkmark in the *Label* box which will show up on the map. Once you are finished, click OK in the upper right-hand corner. It is helpful to re-select the icon and click on *Locked* to prevent it from being moved when you scroll your view of the map.

You can also let Pocket Navigator mark your position; from the main screen, click on *Menu* then *GPS* then click on *Mark Position*. It will mark your location and lock the position. It uses the default icon and names the mark *Position* with the time and date. You can then go into *Properties* as described above and change the information such as *Name* or *Symbol*. Once a *Mark or Waypoint* is *Locked*, the *Position* cannot be changed unless you unlock it.

- **Exiting the program**

In order to prevent conflict between programs it is necessary to close each program completely after use. Click on *Menu* then *Exit*, do NOT simply click on the “x” at the upper right of the screen, this only minimizes the program and it will conflict when trying to use the GPS with another program.

- **Establishing a PDA-to-GPS Link**

The following five pages describe the process to establish a link between the PDA and GPS unit. The descriptions are paired with pictures of what the PDA screen will look like as you are completing this process.

### To Establish Partnership Between Dell PDA and GPS Unit:

#### A.

1. Turn on GPS unit; make sure others in vicinity are off.
2. Turn on PDA.
3. Go to Start>Settings>System (bottom row on screen)>GPS.
4. Choose COM6 for program port.
5. Go to Hardware (bottom row on screen).
6. Choose COM7 for hardware port; leave default setting - Baud rate 4800.
7. Go to Access (bottom row on screen).
8. Check "manage GPS automatically."
9. Click OK.

Tap Bluetooth icon (bottom right on screen).

#### B.

1. Check turn on; leave "make device discoverable" UNCHECKED.
2. Go to Devices (bottom row on screen)>tap New Partnership. PDA will scan to find GPS unit. Make sure all others are off.
3. Tap unit displayed, > next.
4. Enter passkey: 0000, > next.
5. Check "serial port">finish>OK
6. Tap Bluetooth icon again, go to COM ports (bottom tab row), tap New Outgoing
7. Select the highlighted device>next>select COM7
8. Leave "secure connection" UNCHECKED.
9. Finish>OK.

Start>Programs>Pocket Navigator>Menu>GPS>Setup: choose NMEA for manufacturer and Port Com 6 for port.

Then Menu>GPS>Satellites. If satellites show up, connection/partnership is established properly.

### To Establish Partnership Between HP iPAQ PDA and GPS Unit:

Follow A. 1 – 9 above.

Tap Bluetooth icon\* on screen (on iPAQ Wireless line, right) to turn on. Turn on GPS; make sure others in vicinity are off.

#### B.

1. Tap iPAQ Wireless>Bluetooth tab\*. Status should be ON.
2. Tap Bluetooth Settings>Accessibility (bottom tab row)>UNCHECK "allow other devices to connect" under Accessibility.
3. Tap Services (bottom tab row)>tap serial port; check "enable service." UNCHECK "authorization required," "authentication (passkey) required." Tap OK.

4. Tap Bluetooth Connections>New (very bottom of screen)>Explore a BT device – PDA will scan for GPS unit.
5. When it appears with a ? on it, tap it. Tap again in next screen – Service Selection box. UNCHECK “use secure, encrypted connection.” NEXT.
6. Window will show the GPS unit and “shortcut created.” FINISH.
7. GPS unit will show in My Shortcuts window. Double-tap on icon to connect to it. Double green arrows will appear on icon when connection is made. OK. DONE.

Start>Programs>Pocket Navigator>Menu>GPS>Setup: choose NMEA for manufacturer and Port Com 6 for port.

Then Menu>GPS>Satellites. If satellites show up, connection/partnership is established properly.

\*See Notes and Tips below.

### Notes and Tips

\*If BT icon does not work or there is no tab, go to

Start>Settings>Connections>Bluetooth>Bluetooth Manager

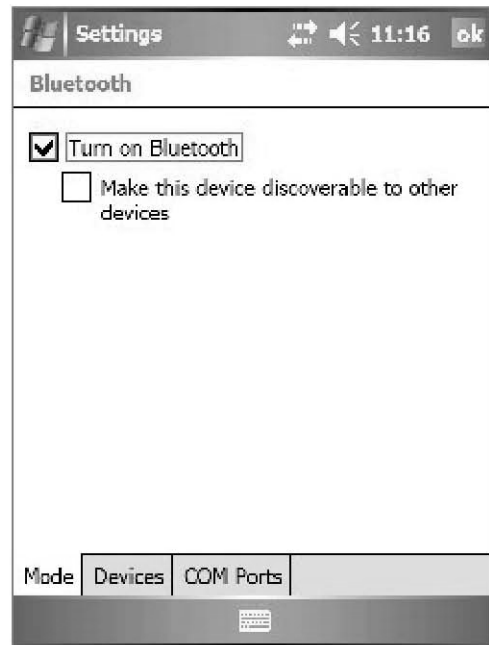
– OR –

Reset the PDA (indented button on right side panel). When the date/time display looks messed up, programs might also be messed up; you may need to reset the PDA.

1. If you reset, you may have to enter the ArcPad registration number again. It is **101520A21608**.
2. After running ArcPad, make sure it is closed (Start>Settings>System>Memory>Running Programs) before you run Pocket Navigator (PN) or you may not be able to open the PN maps. However, if PN is already open, you run ArcPad and then return to PN, this tends not to happen.
3. Open ArcPad files from File Explorer; do not open ArcPad and then look for the files. If you have ArcPad Untitled running, and you try to open an ArcPad file from File Explorer, the file will be blank. Close ArcPad (see #2), then try again through File Explorer.
4. In PN, click on the layers icon and check the county box under the “i” (identify) to turn on landowner information.



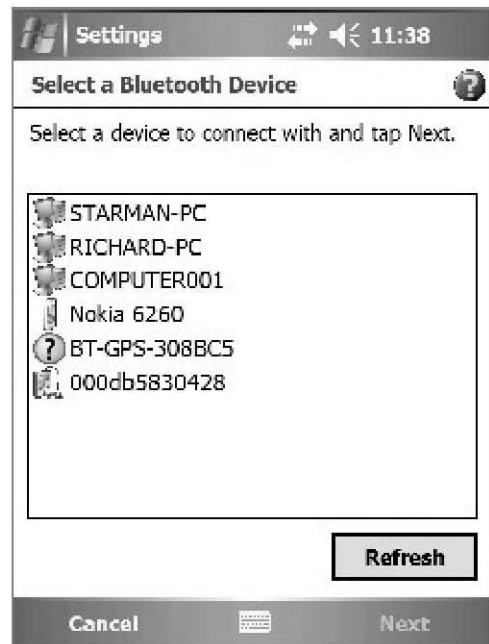
1. Tap on the bluetooth button on right lower corner.
2. Turn on your Bluetooth GPS receiver.



3. Check "Turn on Bluetooth".



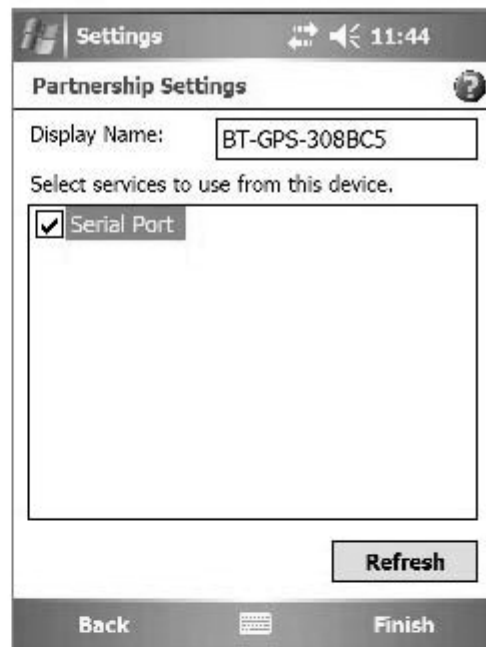
4. Tap the "Devices" tab, and tap "New Partnership...".



5. It will search for all the bluetooth devices.
6. Select a device (for example "BT-GPS-308BC5") and tap Next.



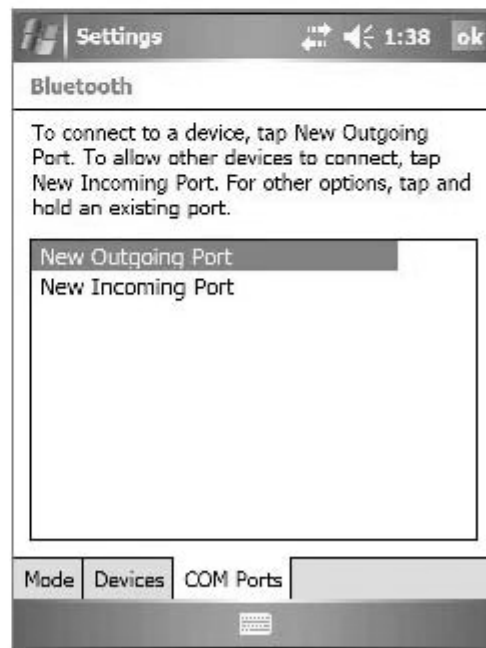
7. Enter Passkey "0000" and tap Next.



8. Check "Serial Port" and tap Finish.



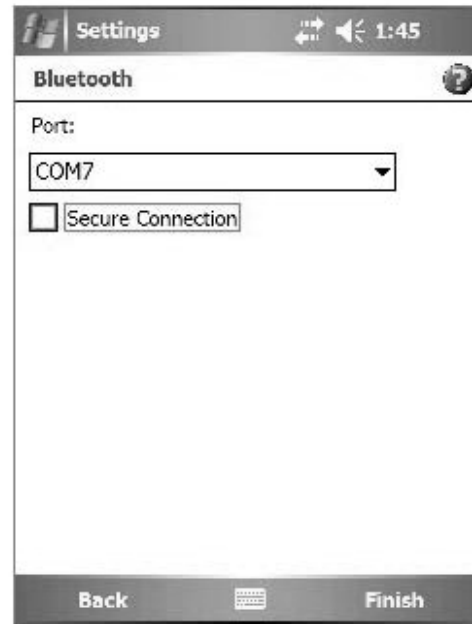
9. The device will be shown on the list.



10. Tap the "COM Ports" tab, and select "New Outgoing Port".



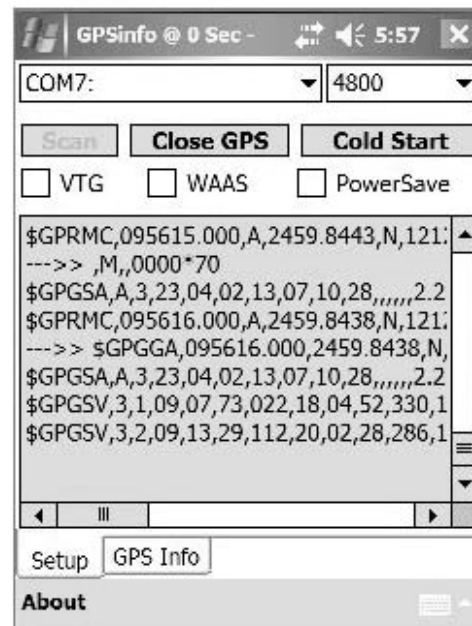
11. Select the device and tap Next.



12. Uncheck "Secure Connection" and from the drop down box select a COM port number (for example, COM7), and then tap Finish.



13. The device with its COM port number will be shown on the list.



14. Now you can go to GPSinfo program, set the correct COM port and test the GPS receiver.

## G. Site Verification Form (Blank, next page)

# ODFW RANDOM SPAWNING SURVEY SITE VERIFICATION FORM

FOR OFFICE USE ONLY: Reviewed By  Date Reviewed  Entered By  Date Entered

Assume Zero  Inaccessible  Denied

Survey status:

**REACH ID:**  
 District: \_\_\_\_\_  
 Basin: \_\_\_\_\_  
 Subbasin: \_\_\_\_\_  
 Reach Name: \_\_\_\_\_  
 START: \_\_\_\_\_  
 END: \_\_\_\_\_

**ID Num:** \_\_\_\_\_

TRIB OF: \_\_\_\_\_

COMMENTS:

QUAD: \_\_\_\_\_ Date Completed: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Segment Number:  \_\_\_\_\_  
 Time to survey: \_\_\_\_\_ Map Length (miles): \_\_\_\_\_ Gradient: \_\_\_\_\_ %

| Estimated Juvenile Coho Abundance |                               | Substrate Composition (%)        |                                 |                                  |                                  |
|-----------------------------------|-------------------------------|----------------------------------|---------------------------------|----------------------------------|----------------------------------|
| Absent <input type="checkbox"/>   | Low <input type="checkbox"/>  | Silt <input type="checkbox"/>    | Sand <input type="checkbox"/>   | Gravel <input type="checkbox"/>  | Bedrock <input type="checkbox"/> |
| Moderate <input type="checkbox"/> | High <input type="checkbox"/> | Unknown <input type="checkbox"/> | Cobble <input type="checkbox"/> | Boulder <input type="checkbox"/> | Bedrock <input type="checkbox"/> |

| GPS Coordinates | UTM easting | UTM northing | FOM |
|-----------------|-------------|--------------|-----|
| Downstream      | 10-         |              |     |
| Upstream        | 10-         |              |     |

**Channel Features:** (check any that apply to the area surveyed)

|                               |                          |
|-------------------------------|--------------------------|
| BA -- Beaver Activity         | <input type="checkbox"/> |
| CB -- Pos. Culvert Barrier    | <input type="checkbox"/> |
| GB -- Pos. Gradient Barrier   | <input type="checkbox"/> |
| SP -- Pos. Step Barrier       | <input type="checkbox"/> |
| DB -- Pos. Debris Jam Barrier | <input type="checkbox"/> |
| EB -- Actively Eroding Banks  | <input type="checkbox"/> |
| HS -- Habitat Structures      | <input type="checkbox"/> |
| PD -- Partial Dry Channel     | <input type="checkbox"/> |
| DC -- Dry Channel             | <input type="checkbox"/> |

Mean Width (ft): \_\_\_\_\_  
 Sp. Gravel (sq. m): \_\_\_\_\_  
 Surveyor: \_\_\_\_\_

**LAND USE:** (enter up to 3 codes in order of most to least importance)

|                         |                      |                      |
|-------------------------|----------------------|----------------------|
| AG -- Agriculture       | <input type="text"/> | <input type="text"/> |
| TH -- Timber Harvest    | <input type="text"/> | <input type="text"/> |
| YT -- Young Trees       | <input type="text"/> | <input type="text"/> |
| ST -- Second Growth     | <input type="text"/> | <input type="text"/> |
| MT -- Mature Timber     | <input type="text"/> | <input type="text"/> |
| LG -- Light Grazing     | <input type="text"/> | <input type="text"/> |
| HG -- Heavy Grazing     | <input type="text"/> | <input type="text"/> |
| UR -- Urban             | <input type="text"/> | <input type="text"/> |
| RR -- Rural Residential | <input type="text"/> | <input type="text"/> |
| IN -- Industrial        | <input type="text"/> | <input type="text"/> |
| MI -- Mining            | <input type="text"/> | <input type="text"/> |

NOTES:



H. Site Verification Form (Example)

ODFW RANDOM SPAWNING SURVEY SITE VERIFICATION FORM - 2005

FOR OFFICE USE ONLY: Reviewed By eb Date Reviewed 8-11-03 Entered By Y.F Date Entered 8/29/03

Assume Zero  Inaccessible  Denied

REACH ID: 25111.00 Survey status: New

District: 3 Lincoln  
Basin: 20 Siletz River  
Subbasin: 1 Mainstem

Reach Name: **Ojala Cr**

START: Mouth

END: Headwaters

TRIB OF: Siletz R

COHO SPAWNING MILES: 1.1 ESTIMATED WIDTH: 6.0

COHO REARING MILES: Total Reach Length: 1.3

COMMENTS:

may be in seg 1

ID Num: **3513**

QUAD: Mowrey Landing Date Completed: 7/28/05 Segment Number: 2

Time to survey: 0.5 Map Length (miles): .3 Gradient: 1 %

Estimated Juvenile Coho Abundance

Absent  Low

Moderate  High  Unknown

Substrate Composition (%)

Silt 40 Sand 40 Gravel 20

Cobble  Boulder  Bedrock

GPS Coordinates UTM easting UTM northing FOM

Downstream 10-04-25-716 49-56-197 7.1

Upstream 10-04-25-731 49-55-865 5.9

Township/Range/Section:

|   |   |   |   |
|---|---|---|---|
| T | 0 | 9 | S |
| R | 1 | 0 | W |
| S | 2 | 9 |   |

Mean Width (ft): 3.0

Sp. Gravel (sq. m): 6m<sup>2</sup>

Surveyor Bill Ratliff

CHANNEL FEATURES: (check any that apply to the area surveyed)

- BA - Beaver Activity
- CB - Pos. Culvert Barrier
- GB - Pos. Gradient Barrier
- SP - Pos. Step Barrier
- DB - Pos. Debris Jam Barrier
- EB - Actively Eroding Banks
- HS - Habitat Structures
- PD - Partial Dry Channel
- DC - Dry Channel

LAND USE: (enter up to 3 codes in order of most to least importance)

- 17 57
- AG -- Agriculture
- TH -- Timber Harvest
- YT -- Young Trees
- ST -- Second Growth
- MT -- Mature Timber
- LG -- Light Grazing
- HG -- Heavy Grazing
- UR -- Urban
- RR -- Rural Residential
- IN -- Industrial
- MI -- Mining

| Seg. Type | Species   | Year(s) Surv    | Miles | ID Num |
|-----------|-----------|-----------------|-------|--------|
| 1 Random  | Steelhead | 05              | 1.13  | 3514   |
| 1 Random  | Coho      | ,00,01,02,03,04 | 1.13  | 3514   |
| 2         |           |                 |       | 3513   |

NOTES:

1374 = .26

(Site verification form page 2)

Description (Example of format): 1) Directions from district office or some other major landmark to the start of survey, location of start sign; 2) "Survey from \_\_\_\_\_ miles to \_\_\_\_\_ (location of endpoint sign)"; 3) Describe best way to exit; 4) "\*\*\*NOTE: (include special landowner instructions and/or specific warnings, etc.)"

From the town of Siletz drive north on Hwy 229 2.9 miles to Ojalla Road. Turn left onto Ojalla Rd and drive 0.9 miles to the \_\_\_\_\_ driveway \_\_\_\_\_ Ojalla Rd. Turn left onto the \_\_\_\_\_ driveway and drive ~300m to the \_\_\_\_\_ house. Park near the house and access Ojalla Cr. via gate at back of \_\_\_\_\_ yard. Hike up creek ~400m to END Seg 1/START Seg 2. SS signs posted on left bank (elder), Survey upstream .24 mi to SS sign posted on right bank (junior). Exit via Survey. Bring sharp wachete. (NOTE: Talk to \_\_\_\_\_ parking, gates, and stream access. This short segment is natural addition to Seg 1 (NOTE: Survey SPUR on right ~20m up to noisy culvert, SPUR is ~200m above START)

Comments:

Spawning Gravel:

Gravel is limited because stream is extremely narrow. Most gravel is in lower portion of segment in pool tailouts, embedded in silt.

Fish Presence:

Coho were seen rearing in low abundance in lower portion of segment.

| UTMe      | UTMin     | FOM  | Dist. (ft) | Landmark                        | UTMe | UTMin | FOM | Dist. (ft) | Landmark |
|-----------|-----------|------|------------|---------------------------------|------|-------|-----|------------|----------|
| 04-25-692 | 49-56-036 | 14.7 |            | SPUR rt (~20m to noisy culvert) |      |       |     |            |          |
| 04-25-728 | 49-55-592 | 5.7  |            | as far up as I got              |      |       |     |            |          |
|           |           |      |            |                                 |      |       |     |            |          |
|           |           |      |            |                                 |      |       |     |            |          |
|           |           |      |            |                                 |      |       |     |            |          |
|           |           |      |            |                                 |      |       |     |            |          |

Misc. Comments: GIS pt 3513 is definitely in Seg 2. I went above END of Seg 2 ~300m but stream here breaks down into many small silty channels as it flows through; in stream beaver meadow/marsh. I believe END Seg 2 is the end of viable coho spawning habitat.

**I. Report of Operations Form (Blank)**

**OREGON DEPARTMENT OF  
FISH AND WILDLIFE**

**REPORT OF OPERATIONS**



Prepared by \_\_\_\_\_

Location \_\_\_\_\_

For the Week Ending \_\_\_\_\_

Date

Activities

|           |  |
|-----------|--|
| SUNDAY    |  |
| Month:    |  |
| Date:     |  |
|           |  |
| MONDAY    |  |
| Month:    |  |
| Date:     |  |
|           |  |
| TUESDAY   |  |
| Month:    |  |
| Date:     |  |
|           |  |
| WEDNESDAY |  |
| Month:    |  |
| Date:     |  |
|           |  |
| THURSDAY  |  |
| Month:    |  |
| Date:     |  |
|           |  |
| FRIDAY    |  |
| Month:    |  |
| Date:     |  |
|           |  |
| SATURDAY  |  |
| Month:    |  |
| Date:     |  |

TOTAL HOURS THIS WEEK: \_\_\_\_\_

## J. Survey Description Examples

# SURVEY DESCRIPTION LIST (Examples)

| REACH ID | SEG-MENT | BASIN       | SUBBASIN  | SURVEY      | LOCATION ( T,R,S;<br>DOWNSTREAM UTM's;<br>UPSTREAM UTM's)        | DESCRIPTION   |
|----------|----------|-------------|-----------|-------------|--|---|
| 25787.00 | 1        | MIAMI RIVER | MAIN STEM | MOSS CREEK  | T01N R10W 14<br><br>5046529      0431915<br>5046261      0432811 | FROM HWY 101, PROCEED APPROX. 1.0 MILES DOWN MIAMI RIVER RD AND PARK ON THE RIVER SIDE OF THE HIGHWAY ACROSS FROM THE BROWN HOUSE (16030). CROSS THE MIAMI RIVER TO THE MOUTH OF MOSS CR AND SURVEY FROM THE MOUTH UPSTREAM 0.5 MILES TO THE THIRD BRIDGE (SIGN ON BRIDGE). IF THE MIAMI IS TOO HIGH TO CROSS, CONTINUE ON MIAMI R RD APPROX. 0.2 MILES TO MOSS CR RD. TAKE THIS OVER THE MIAMI TO A BRIDGE OVER MOSS CR. FROM THE BRIDGE, WALK DOWNSTREAM TO THE MOUTH OF MOSS CREEK. SURVEY UPSTREAM 0.5 MILES TO THE THIRD BRIDGE. CHECK IN WITH THE MOSS CR VALLEY DIARY AT START OF THE SEASON FOR ACCESS THROUGH HIS PASTURE TO THE MOUTH OF MOSS CR. |
| 25790.00 | 1        | MIAMI RIVER | MAIN STEM | MIAMI RIVER | T1N R10W 11<br><br>5048376      0432072<br>5049436      0432418  | TURN ONTO MIAMI R ROAD AND GO 2.6 MILES TO DAIRY FARM (AND MINICH CR). SURVEY FROM THE MOUTH OF MINICH CREEK UPSTREAM 0.46 MILES TO THE OLD BRIDGE SITE 500 YARDS ABOVE THE MOUTH OF WALDRON CREEK. THE END IS AT M.P. 3.0<br>****CONTACT, OWNER OF DAIRY, AT THE BEGINNING OF SEASON FOR PERMISSION TO ACCESS RIVER  |
| 25794.30 | 1        | MIAMI RIVER | MAIN STEM | MARGARY CR  | 02N10W35<br><br>5050858      0432005<br>5051779      0431652     | FROM SOUTH ENTRANCE ONTO MIAMI-FOLLEY RD., DRIVE 4.3 MILES NORTH TOMARGARY CR. WALK DOWN TO MOUTH. SURVEY FROM MOUTH. NO SIGN POSTED. UPSTREAM 0.7 TO 25' (BEAUTIFUL) WATERFALL. EXIT VIA SURVEY.   |
| 25795.00 | 1        | MIAMI RIVER | MAIN STEM | STUART CR   | T01N R10W 36<br><br>5051200      0433273<br>5050167      0433230 | FROM HWY. 101 DRIVE NORTH ON MIAMI-FOLEY RD. 4.9 MILES GRAVEL ROAD ON RIGHT. TURN RIGHT AND DRIVE 0.1 MILES TO A BRIDGE ACROSS THE MIAMI R. PARK OF THE OLD DIRT ROAD ON THE LEFT JUST PAST THE BRIDGE. WALK NORTH ON THE OLD ROAD ABOUT 250M TO A SIDE CHANNEL OF THE MIAMI R. WALK UP SIDE CHANNEL 50M TO CONFLUENCE WITH STUART CR. ON RIGHT. SIGN ON ALDER ON LEFT. SURVEY STUART CR. FROM THE MOUTH UPSTREAM 1.2 MILES TO END SIGNS ON BOTH BANKS. EXIT VIA SURVEY TO BRIDGE. 3/14/00 -----><br>NEW HOUSE JUST BUILT WILL BE A NEW LANDOWNER CONTACT BEGINNING SEASON '00-'01. HOUSE IS AT ENTRANCE TO SURVEY.   |



## L. Culvert Illustration

A = CULVERT LENGTH

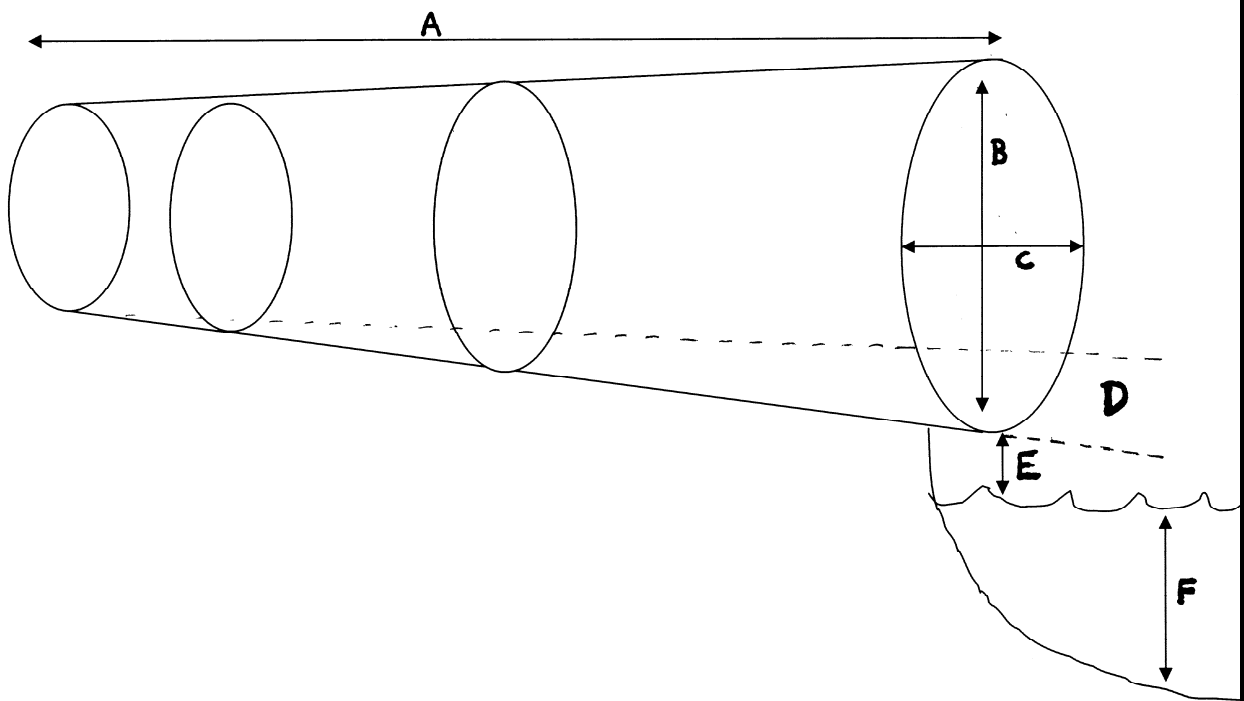
B = MAXIMUM VERTICAL HEIGHT

C = MAXIMUM HORIZONTAL WIDTH

D = CULVERT SLOPE (Rise over run)

E = DISTANCE OF DROP TO POOL

F = MAXIMUM DEPTH OF POOL



M. Landowner Postcard Example

32  
Reach ID 22222 Seg. 1 Landowner Name JOHN DOE  
Site ID: 456 Tax Lot(s): 12-11-10-100&101  
ODFW surveyors may walk in A CREEK where it flows  
through or is adjacent to my property.

Yes, for one time visit to evaluate stream for spawning habitat  
 Yes, for Coho spawning season which runs from Oct 1<sup>st</sup> thru Jan 31<sup>st</sup>

Special instructions (if any) : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

No, do not conduct salmon surveys on my property.  
Comments: \_\_\_\_\_  
\_\_\_\_\_

Crew: J SURVEYOR





Corvallis Research Lab  
28655 Hwy. 34  
Corvallis, OR 97333  
541-757-4263

<http://oregonstate.edu/dept/ODFW/spawn/index.htm>