



Statement of Work Report

Project Title: Monitor/Eval Okanogan Basin Pr
Project #: 2003-022-00
Contract Title: 2003-022-00 EXP MONITOR/EVALUATE OKANOGAN BASIN PRODUCTION
Contract #: 31582 [ISSUED]
Province: Columbia Cascade **Subbasin:** Okanogan
Workorder ID: 188017 **Task ID:** 1
Contract Type: Contract (IGC) **Pricing Type:** Cost Reimbursement (CNF)
Contractor(s): Colville Confederated Tribes (Prime - COLVILLE00)
BPA Internal Ref: 31582
SOW Validation: Last validated 02/01/2007 with 0 problems, and 11 reviewable items
Contract Documents: [Property Inventory \(09/11/2007\)](#) Property Inventory through 2-07

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Work Element Table of Contents:

<u>Work Element - Work Element Title</u>	<u>EC Needed*</u>	<u>Estimate</u>	<u>(%)</u>
A : 185. Produce Pisces Status Report - Periodic Status Reports for BPA		\$1,581	(0 %)



<u>Work Element - Work Element Title</u>	<u>EC Needed*</u>	<u>Estimate</u>	<u>(%)</u>
B : 132. Produce (Annual) Progress Report - Produce annual report based on tasks identified within this scope of work		\$14,915	(3 %)
C : 165. Produce Environmental Compliance Documentation - Environmental Compliance		\$4,063	(1 %)
D : 157. Collect/Generate/Validate Field and Lab Data - Juvenile summer steelhead snorkel surveys on US and Canada tributary EMAP sites	*	\$24,530	(5 %)
E : 157. Collect/Generate/Validate Field and Lab Data - Smolt trapping anadromous fish produced from the Okanogan River subbasin	*	\$53,200	(10 %)
F : 157. Collect/Generate/Validate Field and Lab Data - Enumerate adult salmonid using underwater video at Zosel Dam	*	\$70,991	(14 %)
G : 157. Collect/Generate/Validate Field and Lab Data - Conduct census redd counts for summer steelhead throughout the Okanogan River subbasin	*	\$34,498	(7 %)
H : 157. Collect/Generate/Validate Field and Lab Data - Collect physical habitat data at up to 50 EMAP sampling sites	*	\$97,683	(19 %)
I : 157. Collect/Generate/Validate Field and Lab Data - Operate & maintain 7 real-time discharge, water temperature gauging stations in Okanogan subbasin	*	\$68,222	(13 %)
J : 157. Collect/Generate/Validate Field and Lab Data - Collect continuous water temperature data from 31 tributary EMAP sites	*	\$25,148	(5 %)
K : 119. Manage and Administer Projects - Manage Projects: produce invoices, accrual estimates, develop contracts, etc.		\$45,081	(9 %)
L : 189. Regional Coordination - Project coordination/public outreach		\$31,453	(6 %)
M : 161. Disseminate Raw/Summary Data and Results - Workshop/conference attendance and publication		\$10,505	(2 %)
N : 160. Create/Manage/Maintain Database - Complete, manage, and maintain database		\$23,940	(5 %)
O : 162. Analyze/Interpret Data - Analyze collected and historical data on habitat, biological, and water quality parameters		\$10,523	(2 %)
Total:		\$516,333	

* Environmental Compliance (EC) needed before work begins.

Contract Description:

2006 Statement of Work
 Performance and Budget Period: March 1, 2007 - February 28, 2008

Project title: Design and Conduct Monitoring and Evaluation Associated with Re-establishment of Okanogan Basin Natural Production.



Project number: 200302200

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Project goal:

Monitoring and Evaluation of anadromous fish at a sub-basin scale requires a long-term commitment as most outcomes will not be realized for 7 to 20+ years. This project is designed to ultimately achieve these goals:

1. Determine if there is a meaningful biological change at the population scale for summer/fall, spring Chinook, sockeye, and steelhead in the Okanogan basin (7-20+ year time frame).
2. Determine if there is a meaningful change in selected physical habitat parameters at specific location throughout the Okanogan basin resulting from the cumulative benefits of habitat restoration actions (7-20+ year time frame).
3. Determine if selected water quality parameters are changing over time in the Okanogan basin (7-20+ year time frame).
4. Administer contracts and ensure that this effort continues in the long-term in a scientifically sound manner that ensures a closely coordinated effort across the Okanogan River Basin, Geo-political boundaries, Upper Columbia ESU, Columbia River basin, and Pacific Northwest region (1-20+ year time frame).

This program is designed to address a multitude of questions and at the same time eliminate duplication of work, reduce costs, and increase monitoring efficiency. The implementation of valid statistical designs, probabilistic sampling, standardized data collection protocols, consistent data reporting methods, and selection of sensitive indicators will increase monitoring efficiency. For this program to be successful, all organizations involved must be willing to cooperate and freely share information. Cooperation includes sharing monitoring responsibilities, adjusting or changing sampling methods to comport with standardized protocols, and adhering to statistical design criteria. In those cases where the standardized method for measuring an indicator is different from what was used in the past, it may be necessary to measure the indicator with both methods for a few years so that a relationship can be developed between the two methods.

Primary Goal for 2007:

Implement a basin wide monitoring and evaluation program to the best extent possible given limited funding. Collect data using standardized OBMEP protocols and construct or maintain needed infrastructure. Our efforts in 2007 will contribute to a long-term data set that will provide status and trend data for all anadromous fish species in the Okanogan River basin and provide a basis for evaluating the overall effectiveness of salmon recovery and restoration projects conducted throughout the basin.

Although this project is limited by a lack of full funding, we will attempt to address the many fundamental questions related to management and recovery of anadromous salmonids. Including basic uncertainties about targeted fish population processes, with respect to both the trends in abundance and the factors regulating salmonid population dynamics. When coupled with well-coordinated management actions, this program will help resource managers prescribe integrated management actions and assess the successes



and failures of achieving the desired size, distribution and trends of targeted fish populations. Moreover, well-coordinated management actions, when coupled with this relevant monitoring and evaluation program will reduce uncertainty about the effect of actions on population productivity.

The Colville Tribes have used, extended, and modified the structure and methods employed by the Monitoring Strategy for the Upper Columbia Basin (Hillman 2004) for use in the Okanogan subbasin in the design of the OBMEP program. OBMEP is aligned tightly with the priorities expressed in Northwest Power and Conservation Council's (NPCC) Fish and Wildlife Program, Subbasin Plans, NOAA Fisheries guidance, 2004 BIOP, the Upper Columbia Salmon recovery Plan and the Independent Scientific Review Panel (ISRP) have placed on monitoring and evaluation.

The Okanogan subbasin plan calls for its vision to be supported by nine priority themes that represent the large scale agreement between all stake holders within the subbasin. The eighth theme is "continue Research, Monitoring, and Evaluation" and OBMEP is specifically linked to this activity;

"Continued Research, Monitoring, and Evaluation: To apply adaptive management and make informed decisions will require an on-going commitment to research, monitoring and evaluation. Research allows important questions to be answered in a scientific rather than subjective manner and allows the best possible decisions on how and why to take a specific course of action. A considerable lack of knowledge exists in the Okanogan and this situation will continue to exist without continued research efforts. Evaluation of monitoring data, remote sensing data, and information from areas outside the Okanogan subbasin will also provide a mechanism to determine if progress is being made toward achieving the priority themes, and objectives contained in the subbasin plan. To track progress and inaugurate an adaptive management process, the subbasin plan relies upon a sound monitoring framework outlined under the Okanogan Basin Monitoring and Evaluation Program (OBMEP). This program was developed concurrently with Bonneville's IMW pilot studies in the Wenatchee, John Day and Salmon River systems; with guidance provided by the Pacific Northwest Aquatic Monitoring Partnership; the Coordinated Systemwide Monitoring and Evaluation Projects; the federal Research Monitoring and Evaluation Program, and, has been developed in consultation with various federal, state and tribal monitoring programs and experts. This monitoring plan will also continue to evolve as the region continues toward a fully integrated regional monitoring approach, but has at its core, the ability to effectively track status and trend for fish populations and habitat indicators in the interim. Specific monitoring elements targeting hatchery and wild fish performance, disease, ecological interactions and other parameters will be added as additional production programs come on line."(Okanogan Subbasin Plan, Management Plan, page 9).

Within the Okanogan subbasin, independent research projects and piecemeal monitoring activities are conducted by various state, federal, tribal, agencies, and to some extent by watershed councils or landowners, but until the creation of OBMEP there has been no overall framework for coordinating RM&E efforts or for interpreting and synthesizing results.

OBMEP is specifically designed to address status and trend monitoring for the Okanogan subbasin over the next 20+ years. Benefits to generating information on listed and non-listed fish will accrue in three different ways: (i) by supporting management of these species with respect to exploitation and recovery planning; (ii) by supporting the planning, development and implementation of restoration and recovery actions directly benefiting the listed and non-listed populations; and (iii) by supporting the planning, development and implementation of management actions indirectly impacting salmonid populations.

Sampling Design:

The intent of status/trend monitoring is to accurately describe existing conditions in the basin and to document changes in conditions over time. This requires temporal and spatial replication and probabilistic sampling. As adapted from Hillman (2004), we implemented the EMAP sampling framework, a statistically based and spatially explicit sampling design, to quantify trends in juvenile and adult salmonids and status and trends in stream and riparian habitats. For more information see Hillman (2004).

In the Okanogan basin, EMAP sites were selected according to the generalized random tessellation stratified design (GRTS) (Stevens 1997; Stevens and Olsen 1999; Stevens and Urquhart 2000; Stevens 2002).



Briefly, the GRTS design achieves a random, nearly regular sample point pattern via a random function that maps two-dimensional space onto a one-dimensional line (linear space). A systematic sample is selected in the linear space, and the sample points are mapped back into two-dimensional space. The GRTS design is used to select samples for all panels. OBMEP site selection process began with collaboration with Tony Olsen and the EPA regional office located in Corvallis, OR who provided the random sample of 300 possible sites. The OBMEP then verified these sites for access, secured landowner permissions when necessary, and reduced the list to the 150 sites split between the United States and Canada portions of the Okanogan basin. A map of these sites can be obtained off our web-site at: <http://nrd.colvilletribes.com/obmep/usicansites.htm>

The Monitoring Strategy for the Upper Columbia Basin (Hillman 2004) recommends a suite of biological and physical/environmental indicators suitable for status and trend monitoring. Not all indicators listed in the Hillman document are relevant for the Okanogan subbasin. The protocols provide general instructions for collecting data, but specific methodologies that alter temporal, spatial, and economic realities make sampling some of the indicators more feasible than others. The indicators selected and the methods used to collect these data were adapted from Hillman (2004). Protocols were developed specifically for the Okanogan Basin Monitoring and Evaluation Project (OBMEP) to be compatible with both the Monitoring Strategy for the Upper Columbia Basin (Hillman 2004) and the Ecosystems Diagnosis and Treatment (EDT) model input fields. The Ecosystem Diagnosis and Treatment process was previously used to identify limiting factors for anadromous fish in the assessment portion of the Okanogan Subbasin Plan and its ongoing use will require periodic updates of these data provided through OBMEP in future iterations.

To summarize data management activities to date, considerable investments have been made in developing a functional database system that allows for data to be collected in the field and assimilated with a minimum of man power and repetitive analysis can be conducted at the push of a single key. However, what remains to be completed is to connect this database with the regional data repositories like Stream-net. This work is beyond this scope of work but is acknowledged that OBMEP will play a roll in helping the region close this gap. OBMEP generates data and provides information, knowledge and expertise to BPA, NPCC, CSMEP, the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) and other established regional monitoring programs in the Columbia River basin. We will continue to provide input and products derived from our own experiences in the Okanogan. On a more local scale, OBMEP provides information to state-wide salmon recovery efforts and regional forums across the upper Columbia ESU and Columbia Cascade province. We coordinate monitoring and evaluation efforts with the Upper Columbia Regional Technical Team and with the Wenatchee subbasin RM&E program (BPA #200301700). We work to ensure that data collected from our efforts can be "rolled-up" with data from other regional populations for broader, spatial scale application.

The Okanogan River is an international watershed and the OBMEP project does not stop at international borders. We facilitate collecting seamless data by collaborating with the Okanogan Nation Alliance (ONA), who in turn facilitates collaboration with other Canadian stakeholders such as Environment Canada, the Ministry of Land, Water, and Air Protection, and the Department of Fisheries and Oceans. We developed clear guidance for the collection of all field data. To vet our field protocols, the Canadian effort in the Okanogan River basin was initiated one-year after data collection began in the United States portion of the Okanogan River basin. This allowed us to assess the compatibility of our guidance documents through field testing. Within the Okanogan subbasin, our efforts are coordinated with other management agencies and stakeholder groups that are collecting information to ensure that no duplication of efforts occurs within this watershed. Data are consolidated within the OBMEP program and onto a server located at our offices and also distributed to NMFS and summarized into annual reports and presentations that are provided to BPA and other regional stakeholders on both sides of the border.

There have been numerous recent administrative and scientific calls for a comprehensive monitoring and evaluation program to provide consistent, region-wide information about the status of salmon populations and their response to management actions (Botkin et al. 2000, ISAB 2001, ISRP 2001). In addition, the 2000 Biological Opinion on the Federal Columbia River Power System requires the development and implementation of a coordinated monitoring and evaluation program (NMFS 2000a). The call for developing a consistent, region-wide monitoring program has been strong and widespread. Once implemented, the OBMEP project increases our ability to conduct effective recovery planning and address a number of outstanding scientific agendas. This comprehensive monitoring program provides a scientifically robust



method for evaluating the status of populations and ESUs, thereby gauging progress toward recovery goals such as the de-listing criteria defined by the regional TRT's (NMFS 2000b). A basin-wide monitoring program also provides the means to develop and refine appropriate performance measures and standards for conservation actions, thus giving managers the information to quantitatively assess the impact that composite restoration actions have on fish populations.

The OBMEP status, trend and effectiveness monitoring program will not only help address these scientifically-based policy agendas, but will also help provide the framework for addressing substantive administrative issues. One such issue is implementing requirements for developing the monitoring and evaluation program outlined in the NMFS 2000 Biological Opinion on the Federal Columbia River Power System (Actions 180-184, 188, 190, 191, 193, and 195-7), specifically population and habitat status monitoring for anadromous salmonids as required under Action Item 180, and elements of the habitat action effectiveness monitoring as required under Action Item 183.

Statement of Work Report

Work Element Details

A: 185. Produce Pisces Status Report

Title: Periodic Status Reports for BPA
Description: The Contractor shall report quarterly on the status of milestones and deliverables in Pisces. When indicating a deliverable milestone as COMPLETE, the contractor shall provide metrics and the final location (latitude and longitude) prior to submitting the report to the BPA COTR.

Deliverable Specification:
ESUs:

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Mar-Jun 2007 (3/1/2007 - 6/30/2007)	7/1/2007	7/15/2007	Completed	
B. Jul-Sep 2007 (7/1/2007 - 9/30/2007)	10/1/2007	10/15/2007	Completed	
C. Oct-Dec 2007 (10/1/2007 - 12/31/2007)	1/1/2008	1/15/2008	Completed	
D. Final Jan-Feb 2008 (1/1/2008 - 2/28/2008)	2/14/2008	2/28/2008	Active	

B: 132. Produce (Annual) Progress Report

Title: Produce annual report based on tasks identified within this scope of work
Description: Develop annual report that documents the elements described in and generated from items contained in this scope of work.
 Estimated Level of Effort: 3 fisheries biologists for 1.0 month.

Deliverable Specification: Report will address:
 - Infrastructure development. How well are the major components of the system coming up to speed?
 - Hardware/software procurement, deployment, and serviceability (e.g., traps, weirs, video counting systems, handheld data recorders, etc.)
 - Data collection
 - Database development (from data entry through report generation).

Data summaries/presentations should be simple and focus on the items above, like % of EMAP-selected sites sampled, efficiency of traps and counting stations, etc. Data summaries should also illustrate how the program itself is working or needing improvement. Problems are acknowledged, learned from, and shared.

Data are compiled in a format that is useful and concise and raw-data are archived for future reference and analysis then incorporated into future technical reports.

ESUs:



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Submit report for external and COTR review	6/1/2007	6/30/2007	Completed	Use this milestone if the annual report requires external review. May be simultaneously reviewed by external parties and BPA COTR if desired.
B. Finalize Annual Report	7/1/2007	7/31/2007	Completed	Integrate review feedback and comments, and obtain internal signatures if necessary. Convert the annual report to Adobe Acrobat PDF format.
C. Confirm BPA has posted the report	8/1/2007	8/31/2007	Completed	It may take BPA ~30 days to get the report posted. To confirm posting of the report, search the BPA Publications database. http://www.efw.bpa.gov/Integrated_Fish_and_Wildlife_Program/technicalreports.aspx
Deliverable: D. Submit Final Annual Report to BPA COTR for posting		8/31/2007	Completed	<i>See the Deliverable Specification above</i>

C: 165. Produce Environmental Compliance Documentation

Title: Environmental Compliance
Description: Develop and submit permit applications for installing traps, weirs, video counting stations, gauging stations, and other necessary infrastructure for collecting biological, water quality, and physical habitat data. Receive authorization by regulatory agency to install needed infrastructure items and collect biological data related to this monitoring and evaluation effort. This work element will minimize potential negative impacts of this project.

Estimated Level of Effort: 2 fisheries biologist for 0.35 months.

Deliverable Specification: Documentation and assistance to support BPA's Environmental Compliance Group (permit applications, ESA documents, etc.). Will vary based on the type of activity.

Planned Metrics: Are herbicides used as part of work performed under this contract?: No

ESUs:

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Receive NEPA/ESA clearance from BPA for FY2007 work	3/1/2007	3/31/2007	Completed	Most activities have no negative impacts of endangered summer steelhead or bull trout therefore HIP BIOP should cover most activities. Extremely low likelihood of encountering bull trout, so no consultation with USFWS necessary.
B. Receive permits needed to complete smolt trapping work in FY2007	3/1/2007	4/30/2007	Completed	Receive shorelines and HPA permits
C. Complete/submit HPA and shorelines applications for FY2008	12/1/2007	2/28/2008	Active	HPA and shoreline permits are expected to be needed only for the Smolt trapping activities Work in 2006 will be designed to help secure 2007 permits.
D. Submit FY2008 SOW to EC group for NEPA/ESA review	12/1/2007	2/28/2008	Active	
Deliverable: E. Applicable permits and other environmental clearances received		2/28/2008	Active	<i>See the Deliverable Specification above</i>

D: 157. Collect/Generate/Validate Field and Lab Data

Title: Juvenile summer steelhead snorkel surveys on US and Canada tributary EMAP sites



Description: Collect data on juvenile summer steelhead relative abundance on the tributary EMAP sites located in the United States and Canada. Snorkeling surveys will all be done following established OBMEP protocols. There will be a high level of coordination with planners and other data collection agencies to achieve the best data available. This task has been reduced from all EMAP sites to only tributary sites due to funding cuts.

Sub-contract with ONA for sites in Canada.
 Estimated Level of Effort: Snorkeling- 3 Biologists for 1 month, 1 technician for 1 month.

Deliverable Specification: Based on snorkel counts, data on relative abundance, distribution, and size of juvenile summer steelhead correlated with habitat data at all tributary EMAP sampling locations. These data will be stored on the OBMEP server located at the Colville Tribes, Fish and Wildlife Department offices in Omak, WA.

Planned Metrics:
 * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Action Effectiveness Research

Primary Focal Species: Steelhead - Upper Columbia River DPS

State: WA **Subbasin:** OKANOGAN
County: Okanogan **HUC6 Watershed:** Multiple

ESUs: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Outside legal STUCR (Upper Columbia River Steelhead DPS) boundary | Upper Columbia River Steelhead DPS

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	CX and HIP BO completed by BPA mid-March 2005.
B. Mobilize equipment and snorkel training	7/1/2007	7/15/2007	Completed	Purchase, prepare equipment, and train field staff on fish identification and specific protocols
C. Snorkeling	7/15/2007	10/1/2007	Completed	Snorkeling at 50 EMAP sites (25 annual, 25 rotating panel) looking for adult and juvenile anadromous fish.
D. Demobilize, repair, and securely store snorkeling equipment	10/1/2007	10/31/2007	Completed	Demobilize, repair, and store snorkeling equipment.
Deliverable: E. Data on juvenile summer steelhead abundance at all tributary EMAP locations		11/30/2007	Completed	<i>See the Deliverable Specification above</i>

E: 157. Collect/Generate/Validate Field and Lab Data

Title: Smolt trapping anadromous fish produced from the Okanogan River subbasin
Description: Collect rotary screw trap data on summer/fall Chinook smolts and juvenile summer steelhead out-migrating from the Okanogan River subbasin. Smolt trapping will be done following protocols established by the Colville Confederated Tribes as part of the OBMEP project. There will be a high level of coordination to achieve the best data available with the least impact on endangered summer steelhead. Permits will be in place prior to any instream fish collection.

The rotary screw trap is located along the lower portion of the Okanogan River, below most of the spawning activity in the Okanogan basin. Section 10 permit authorizes up to two traps at this location but due to funding reduction we will only operate one trap during the months of May and June rather than 2 traps from March to July as originally proposed..

Estimated Level of Effort: Smolt trapping- 3 Biologists for 1.12 months, up to 4 technicians for 2.5 months

Deliverable Specification: Data on abundance of out-migrating juvenile summer steelhead and summer/fall Chinook smolts will be the primary target although information on other anadromous fish species and any external marks or tags will also be collected from fish leaving the Okanogan River subbasin. Bismark brown stain for the first 50 juveniles captured each day will be used in mark-recapture estimates to develop trap efficiency estimates. We will be installing, testing, and operating only 1 smolt trap in one location on the Okanogan River. These data will be stored on the OBMEP server located at the Colville Tribes, Fish and Wildlife Department offices in Omak, WA.

Planned Metrics:
 * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Uncertainties Research

Primary Focal Species: Steelhead - Upper Columbia River DPS | Chinook - Upper Columbia River Summer/Fall ESU



State: WA
County: Okanogan
ESUs: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Upper Columbia River Steelhead DPS

Subbasin: OKANOGAN
HUC6 Watershed: LOWER OKANOGAN RIVER

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	Section 10 permit number 1540 is in place until 2010. County shorlines and state HPA and scientific collection permits will be secured annually from the appropriate agency as part of environmental compliance work element.
B. Mobilize, install, and test smolt trapping equipment	4/15/2007	5/1/2007	Completed	Mobilize, install, operate, and maintain rotary screw trapping equipment at the highway 20 bridge. Work will include training staff, installing trap, collecting fish, testing trap efficiency, maintaining or repairing equipment as needed, and removal and storage of equipment after data are collected.
C. Operate, maintain and collect data from smolt traps	5/1/2007	6/30/2007	Completed	Operate and collect data from smolt traps every other day. Enumerate all smolts and bismark brown stain smolts.
D. Demobilize smolt trapping equipment and store securely	7/1/2007	7/15/2007	Completed	Demobilize equipment (trap, trailer etc.) and store in a secure area until needed next year.
Deliverable: E. Data on out-migrating smolts and parr from the Okanogan River subbasin		8/30/2007	Completed	<i>See the Deliverable Specification above</i>

F: 157. Collect/Generate/Validate Field and Lab Data

Title: Enumerate adult salmonid using underwater video at Zosel Dam
Description: Collect data on adult anadromous fish entering into Osyoos Lake through the Zosel Dam fishways using video counting technology. The Zosel dam site will operate year round with the exception of the period from May 15 to July 15 as a result of limited personnel during the smolt trapping season and a lack of funding. Tributaries will not be monitored as originally proposed due to funding reductions below our original proposed amount. Video equipment was designed and installed at Zosel Dam for this project in 2005.

Subcontract with LGL for operational support for video equipment trouble shooting and video review to ensure data are recorded in a timely manner.
 Estimated Level of Effort: 3 Biologists for 1.38 months, 6 technicians or office staff for 3.88 months.

Deliverable Specification: We installed video cameras at Zosel Dam for adult enumeration in 2005. Adult salmonids along with any external marks will be enumerated at Zosel Dam but data on other fish families encountered will not be collected due to lack of funding cuts. Data will be stored on proprietary hard drives until reviewed, numeric data will then be stored on the OBMEP server and distributed as appropriate.

Planned Metrics: * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Action Effectiveness Research

Primary Focal Species: Steelhead - Upper Columbia River DPS | Chinook - Upper Columbia River Summer/Fall ESU | Chinook - Upper Columbia River Spring ESU | Sockeye - Okanogan River ESU | Trout, Brook | Trout, Rainbow | Trout, Interior Redband | Whitefish, Mountain

State: WA
County: Okanogan
ESUs: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Upper Columbia River Steelhead DPS

Subbasin: OKANOGAN
HUC6 Watershed: UPPER OKANOGAN RIVER



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	CX completed by BPA mid-March 2005.
B. Collect data, monitor, repair, and maintain Zosel dam video counting station	3/1/2007	2/28/2008	Active	Clean, maintain, monitor, and repair video equipment at Zosel Dam video counting station to ensure a complete and accurate count of all anadromous salmonids using the Zosel Dam fishways is completed in 2007 with the exception of the time frame from May 15 through July 15 when operations will be suspended in favor of smolt trapping as a result of reduced funding for this project.
Deliverable: C. Data on adult anadromous fish passing Zosel Dam		2/28/2008	Active	<i>See the Deliverable Specification above</i>

G: 157. Collect/Generate/Validate Field and Lab Data**Title:**

Conduct census redd counts for summer steelhead throughout the Okanogan River subbasin

Description:

Collect data on steelhead redds in the Okanogan subbasin.

Estimated Level of Effort: Redd surveys- 2-Biologist for 0.95 months, 1 technician for 0.64 months and included up to 20 hours of overtime for personnel working on this work element to utilize when long survey reaches or abundant redds require extra time in the field.



Deliverable Specification:

Steelhead redd surveys will all be done following protocols established by the Colville Confederated Tribes for the OBMEP project. There will be a high level of coordination to achieve the best data available. Redd survey reaches were established after collecting data in 2005 and refined after data collection in 2006 (Arterburn et al. 2005, Arterburn and Kistler 2006). The reaches on the US portion of the Okanogan main-stem Okanogan River are:

- O1-Loop-loop Creek Rkm-26.3 downstream to Chiliwist Creek Rkm-24.4
- O2-Omak Creek Rkm-53.4 downstream to Salmon Creek Rkm-41.4
- O3-Riverside Rkm-66.1 downstream to Omak Creek Rkm-53.4
- O4-Janis Bridge Rkm-84.6 downstream to Riverside Rkm-66.1
- O5-Bonaparte Creek downstream to Janis Bridge Rkm-84.6
- O6-Confluence Rkm-119.5 downstream to Horseshoe Lake Rkm-105.6
- O7-Zosel Dam Rkm-127 downstream to Confluence Rkm-119.5

In addition to the mainstem reference areas, the following tributaries will be surveyed over their entire length that is accessible to anadromous fish, provided permissions from landowners can be secured. From the confluence upstream to the anadromous barrier on:

- Similkameen River located at Enloe Dam Rkm-14.6
- Bonaparte Creek located at Bonaparte Falls Rkm-1.6
- Tonasket Creek located at Tonasket Falls Rkm-3.5

The following creeks are limited by private property permission issues:

- Tunk Creek is only accessible upstream of the confluence for 0.2km
- Nine Mile Creek is only accessible up stream of the confluence for 1.7km

Historically developed reference reaches will be surveyed on Omak Creek below Mission Falls as follows:

- OM-1 Confluence up stream to Lower Columbia River Rd bridge Rkm-2.0
- OM-2 Lower end of EMAP site#19 Rkm-5.3 to Mission Falls Rkm-9.0

Above Mission Falls randomly selected 1 kilometer reaches relating to the EMAP sampling sites will be used and include:

- OM-12 Jim Creek Bridge Rkm-29.4 up stream to EMAP site 12 Rkm-30.4
- OM-48 lower end of EMAP site 48 Rkm-26.8 up stream to Stapaloo Creek Rkm-27.8
- OM-366 lower end of EMAP site 366 Rkm-21.5 up stream to the Dutch Anderson Bridge Rkm-22.5
- OM-361 above Mission Falls Rkm-10.75 up stream to EMAP site 361 Rkm-11.75

Other tribal efforts will provide monitoring of steelhead redds in Stapaloo Creek and these data will be shared. Other tributaries such as Loop-loop, and Salmon creeks will be included in the future if passage issues allow sufficient water for fish to access these creeks.

Subcontract with ONA to conduct redd surveys on Main-stem Okanogan and establish reference reaches, Inkameep Creek from Falls downstream to confluence, Vassuex Creek from barrier downstream to the confluence, Shuttleworth Creek, and other tributary streams that anadromous fish might have access to as deemed suitable by the ONA and Colville Tribes.

These data will be stored on the OBMEP server located at the Colville Tribes, Fish and Wildlife Department offices in Omak, WA.

Planned Metrics:

- * R, M, and E Focal Area : Tributaries
- * Primary R, M, and E Type : Status and Trend Monitoring
- * Secondary R, M, and E Type : Action Effectiveness Research

Primary Focal Species:

Steelhead - Upper Columbia River DPS

State:

WA

Subbasin:

OKANOGAN

County:

Okanogan

HUC6 Watershed:

Multiple

ESUs:

Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Upper Columbia River Steelhead DPS



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	CX and HIP BO completed by BPA mid-March 2005.
B. Mobilize equipment and conduct first pass main-stem redd counts	3/15/2007	4/1/2007	Completed	Dates for surveys established from redd survey efforts conducted in 2005 as part of this project.
C. Conduct second pass main-stem redd counts	4/1/2007	4/15/2007	Completed	Dates for surveys established from redd survey efforts conducted in 2005 as part of this project.
D. Conduct third pass main-stem redd counts	4/15/2007	4/30/2007	Completed	Dates for surveys established from redd survey efforts conducted in 2005 as part of this project.
E. Conduct tributary redd surveys and demobilize equipment	5/1/2007	7/15/2007	Completed	Dates for surveys established from redd survey efforts conducted in 2005 as part of this project.
Deliverable: F. Spawner abundance, timing, and distribution data for summer steelhead in the Okanogan subbasin		7/15/2007	Completed	<i>See the Deliverable Specification above</i>

H: 157. Collect/Generate/Validate Field and Lab Data

Title: Collect physical habitat data at up to 50 EMAP sampling sites
Description: Physical habitat data for up to 50 EMAP sampling sites.

Physical habitat data will be collected under pre-established protocols at 25 annual and 25 rotating sampling sites per EMAP GRTS six panel sampling design. The 25 rotating panel sites change every year until after the fifth year when you return to the first panel. All panel sites will likely require monumenting prior to the physical habitat surveys after a five year period (site verification and monumenting for annual sites was completed in 2004).

Subcontract with ONA for 16 sites located in Canada.
 Estimated Level of Effort: 2 Biologists for 1.08 months, 5 Technicians for 3.52 months.

Deliverable Specification: Physical habitat data will be collected at 50 (25 annual panel, 25 rotating panel) including 34 sites in the United States and 16 sites in Canada using Trimble GPS data loggers. All physical habitat data collected at each EMAP sampling sites will follow established OBMEP protocols. Information will be collected pertaining to presence and composition of large woody debris; riparian vegetation structure; canopy cover; human disturbance; substrate composition; embeddedness; side channel habitat; stream channel habitat types (pool, riffle, glide, etc.) and channel widths and depths. Physical habitat data from all 50 EMAP sampling sites will be stored on the OBMEP server located at the Colville Tribe's Fish and Wildlife office in Omak, WA, and forwarded to NMFS.

Planned Metrics: * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Action Effectiveness Research

Primary Focal Species: Steelhead - Upper Columbia River DPS | Chinook - Upper Columbia River Summer/Fall ESU | Sockeye - Okanogan River ESU

State: WA **Subbasin:** OKANOGAN
County: Okanogan **HUC6 Watershed:** Multiple

ESUs: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Outside legal STUCR (Upper Columbia River Steelhead DPS) boundary | Upper Columbia River Steelhead DPS



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	
B. Physical Habitat Surveys of about 20 sites	7/1/2007	7/31/2007	Completed	Collection of physical habitat data under pre-established regionally accepted protocols at sites 1-20
C. Physical Habitat Surveys of about 20 sites	8/1/2007	8/31/2007	Completed	Collection of physical habitat data under pre-established regionally accepted protocols at sites 21-40
D. Physical Habitat Surveys of about 10 sites	9/1/2007	10/30/2007	Completed	Collection of physical habitat data under pre-established regionally accepted protocols at sites 41-50
Deliverable: E. Physical habitat data from 50 sites		11/30/2007	Completed	<i>See the Deliverable Specification above</i>

I: 157. Collect/Generate/Validate Field and Lab Data

Title: Operate & maintain 7 real-time discharge, water temperature gauging stations in Okanogan subbasin
Description: Real-time data collection at gauging stations is critical to fisheries and regulatory agencies. The Okanogan River watershed has several tributaries where water quantity and temperature are limiting for fish populations. By expanding the existing suite of gauging station sites, considerable additional data can be collected with on-going operation and proper maintenance.

Estimated Level of Effort: 1 fishery biologist, 1 month and 1 office assistant for 2-months plus sub-contracts with USGS for U.S. gauging stations and ONA for Canadian effort through Environment Canada.

Deliverable Specification: Collect, verify, and post discharge, temperature, and water quality data at DOE, USGS, and Environment Canada real-time gauging stations throughout the Okanogan Basin using satellite up links. This project provides support for both real time discharge and water temperature data through Environment Canada at Inkameep Creek, Shuttleworth Creek, and Vassuex Creek, and real-time water temperature data at USGS stations located on Ninemile Creek and along the Okanogan River mainstem at Oroville, Tonasket, and Malott, WA.

These data are accessible through the following web-sites;

USGS: <http://waterdata.usgs.gov/wa/nwis/rt>
 Environment Canada: <http://scitech.pyr.ec.gc.ca/waterweb/selectProvince.asp>
 DOE: <http://fortress.wa.gov/ecy/wrx/wrx/flows/station.asp?sta=498070>

Planned Metrics: * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Action Effectiveness Research

Primary Focal Species: Steelhead - Upper Columbia River DPS | Chinook - Upper Columbia River Summer/Fall ESU | Sockeye - Okanogan River ESU

State: WA **Subbasin:** OKANOGAN
County: Okanogan **HUC6 Watershed:** Multiple

ESUs: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Outside legal STUCR (Upper Columbia River Steelhead DPS) boundary | Upper Columbia River Steelhead DPS



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	CX and HIP BO completed by BPA mid-March 2005.
B. Develop agreements with Environment Canada and USGS to operate and maintain gauging stations	3/1/2007	10/30/2007	Completed	Develop the contract or agreements to operate, maintain, and post water quality gauging data for both temperature and discharge in the Okanogan drainage.
C. Collect and post data collected at DOE, Environment Canada and USGS gauging stations	3/1/2007	2/28/2008	Active	Collect and post data collected at DOE, Environment Canada, and USGS gauging stations throughout the Okanogan River basin
Deliverable: D. Web accessible data for discharge, temperature and other water quality parameters		2/28/2008	Active	<i>See the Deliverable Specification above</i>

J: 157. Collect/Generate/Validate Field and Lab Data

Title: Collect continuous water temperature data from 31 tributary EMAP sites
Description: Water temperature is a critical limiting factor identified for the Okanogan River, therefore, it is important to understand temperature as it relates to anadromous fish throughout the Okanogan River basin. To properly measure changes in temperature over time requires highly detailed continuous temperature monitoring. The use of electronic technology allows continuous monitoring of water temperature at a multitude of sites both technically and economically practical. Data will be collected from 31 tributary EMAP sites with 10 located in Canada and 21 located in the United States. Temperature monitoring for the mainstem Okanogan River will occur only at stream gauging stations under the previous work element.

Subcontract with ONA for data from 10 sites in Canada
 Estimated Level of Effort: 2 Biologists for 0.80 months, 1 Technician for 3 months.

Deliverable Specification: Temperature data will be collected continuously (once per hour) from March to October of 2007 at the annual and year-3 panel, tributary EMAP locations and at USGS sites along the Okanogan River main-stem. Then in October of 2007, data loggers will be moved to the year-4 panel sites. Data loggers will be monitored and downloaded once per 3 months. The original 50 EMAP sites were reduced after reviewing long-term data sets collected along the Okanogan River main-stem (2004 annual report). These data showed that little additional information would be gained by collecting this data at multiple sites along the main-stem beyond what has been collected at already established monitoring sites.

Planned Metrics:
 * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Action Effectiveness Research

Primary Focal Species: Steelhead - Upper Columbia River DPS | Chinook - Upper Columbia River Summer/Fall ESU | Sockeye - Okanogan River ESU

State: WA **Subbasin:** OKANOGAN
County: Okanogan **HUC6 Watershed:** Multiple

ESUs: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary | Outside legal STUCR (Upper Columbia River Steelhead DPS) boundary | Upper Columbia River Steelhead DPS



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	3/1/2007	3/1/2007	Completed	CX and HIP BO completed by BPA mid-March 2005.
B. Download data from January 2007 to present	3/1/2007	3/31/2007	Completed	Data will be downloaded from electronic data logger once every quarter to protect against data lost from equipment malfunction or loss.
C. Download data from April 2007 to present	6/1/2007	6/30/2007	Completed	Data will be downloaded from electronic data logger once every quarter to protect against data lost from equipment malfunction or loss.
D. Download data from July 2007 to present and relocate panel sites	10/1/2007	10/31/2007	Completed	Data will be downloaded from electronic data logger once every quarter to protect against data lost from equipment malfunction or loss. Water temperature data is collected for a water year that begins in October and ends in October for each year. Rotating panel sites will be relocated at this time.
E. Download data from October 2007 to present	2/1/2008	2/28/2008	Active	Data will be downloaded from electronic data logger once every quarter to protect against data lost from equipment malfunction or loss. Winter data collection is contingent on weather and ice condition at each site.
Deliverable: F. Continuous water temperature data from 31 tributary EMAP sites.		2/28/2008	Active	<i>See the Deliverable Specification above</i>

K: 119. Manage and Administer Projects

Title: Manage Projects: produce invoices, accrual estimates, develop contracts, etc.
Description: This task will be on-going to better track progress of individual tasks, products, and expenses and to help facilitate numerous sub-contacts that help produce deliverables for the scope of work.

Estimated Level of Effort: 1 fisheries biologist, 1.4 months; Staff assistant 3.0 months; Contract specialist 1.0 months; Accounting Specialist 1.5 months.

Deliverable Specification: BPA Project Administration Requirements (Includes Contract Package (SOW, budget, and property inventory), Metrics and Locations Report, Financial Income Report, and Accrual Reports. All of the above components need to be completed by the due date.

Invoices, accrual estimates, SOW package, purchase orders, employee records etc. - Maintain files to include copies of sub-contracts, hours by staff, purchase orders for necessary items. Complete processing of accounts payable, invoices, employee hiring packets, and subcontracts as needed to complete tasks identified in this scope of work. Produce accrual estimates and other financial tasks requested by BPA. Provide SOW and budget to BPA for next year's work. Provide metrics information to BPA as requested.

ESUs:

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Accrual - Submit September estimate to BPA	8/20/2007	9/20/2007	Completed	Provide BPA with an estimate of contract work that will occur prior to September 30 but will not be billed until October 1 or later. Generally, this should be done by September 10.
B. Provide BPA with 2008 SOW, budget, etc.	11/15/2007	1/31/2008	Active	90 days in advance of contract end date.
Deliverable: C. Deliverables as stipulated by BPA		2/28/2008	Active	<i>See the Deliverable Specification above</i>

L: 189. Regional Coordination

Title: Project coordination/public outreach



Description: OBMEP was developed under a regional Monitoring and Evaluation scheme involving coordination with multiple entities to ensure that all M&E efforts are compatible throughout the Columbia Basin and the region. The Okanogan subbasin is a trans-boundary watershed and therefore coordination with Canadian entities will be necessary. Coordination with multiple entities will be necessary as region-wide M&E efforts continue to evolve.

The OBMEP utilizes a GRTS EMAP sampling design provided by the EPA. Under this sampling design, 150 sampling sites (90 U.S., 60 Canadian) are randomly selected throughout the Okanogan watershed. As many of these sites fall within areas of private ownership, landowners must be contacted (public outreach) and access granted before field crews can conduct surveys. In years 2004, 2005, & 2006 landowners were contacted and permission granted as necessary to access the annual panel sites surveyed. Landowners will continue to be contacted in year 2007 to secure access to this year's panel sites.

Subcontract with ONA to provide support as needed in Canada
 Estimated Level of Effort: 3 Fishery Biologists for 1.23 months.

Deliverable Specification: OBMEP biologists will contact and coordinate directly with other entities performing M&E related activities within the region to ensure compatibility with other regional M&E and salmon recovery efforts. Private landowners will also be contacted under this task so that OBMEP field personnel may gain access to EMAP sampling sites. Landowner contacts and other coordination activities will be documented.

ESUs:

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Attend Regional Coordination Meetings	3/1/2007	2/28/2008	Active	Conduct coordination with regional M&E entities. We anticipate at least one meeting per month. Periodic RTT meetings when a presentation is requested. Upper Columbia Annual Pre-season Field Coordination Meeting.
B. Contact landowners for rotating panel to be sampled in 2007	3/1/2007	2/28/2008	Active	Contact private landowners and secure permission for EMAP sampling sites.
Deliverable: C. Coordination efforts will be described in the Annual Report		2/28/2008	Active	<i>See the Deliverable Specification above</i>

M: 161. Disseminate Raw/Summary Data and Results

Title: Workshop/conference attendance and publication
Description: Workshops and conferences are periodically held by the American Fisheries Society, EPA, PNAMP, and other entities within the Columbia Basin. These workshops and conferences offer an important forum for information exchange between fisheries scientists. OBMEP biologists will attend these events only when requested make a formal presentations about OBMEP in an attempt to disseminate data collected. The dissemination of data to interested parties will primarily be done through the use of web based efforts.

Estimated Level of Effort: 3 fishery biologists for 0.46 months.

Deliverable Specification: Professional presentations, dissemination of raw data to interested parties, Additionally OBMEP biologist will prepare and post material at our web-site.

Primary Focal Species: Steelhead - Upper Columbia River DPS | Chinook - Upper Columbia River Summer/Fall ESU | Sockeye - Okanogan River ESU

ESUs:



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Develop content, post data, and reports on OBMEP web-site	3/1/2007	2/28/2008	Active	Develop, maintain, and update the OBMEP web-site based on current activities of the OBMEP project.
B. Attend RTT, Bilateral Okanogan workshop, and other regional R,M&E meetings	3/1/2007	2/28/2008	Active	Participate in regional forums on R, M&E including involvement with the Upper Columbia RTT monitoring and evaluation subcommittee, bilateral working group annual meeting to communicate with agencies in Canada, host three meetings between ONA and CCT to exchange programmatic information between agencies.
C. EPA workshops for Bio- assesment, large river monitoring, and EMAP analysis	8/1/2007	12/30/2007	Completed	EPA has a wide variety of workshops throughout the year that provide opportunities to exchange data and programmatic information and network with other professionals specifically about EMAP, macro invertebrate monitoring, and large river data collection.
D. Attend practitioner's workshops for PNAMP and other PNAMP meetings	1/1/2008	2/28/2008	Active	PNAMP is the regional coordination group for R, M&E activities in the Pacific Northwest. It is important to maintain an active roll with this group to maintain compatibility between programs collecting data and people attempting to roll-up data to a larger scale. The practitioner workshops bring together other project managers to share information and solutions to common problems or issues.
Deliverable: E. Presentations at conferences, updated OBMEP website		2/28/2008	Active	<i>See the Deliverable Specification above</i>

N: 160. Create/Manage/Maintain Database

Title: Complete, manage, and maintain database

Description: To summarize data management activities to date, a database for this project has been in development since late 2005 to support ongoing collection of field data in the Okanogan basin and a limited status and trend analysis. The sampling protocols have mostly been defined but many data analysis questions remain for future development. Input routines have been completed and some output queries built but more work is needed in 2007.

Data auditing is an important step in our QA/QC efforts and should occur annually as part of the maintenance of a database system. Our efforts are closely linked to the ISEMP project and work that NOAA Fisheries and the Upper Columbia Salmon Recovery Boards are undertaking to roll data up to larger scales. Migration of data to larger scales will hopefully occur through these other efforts rather than directly from the OBMEP project as limited funding does not allow the necessary resources to integrate our data with these larger systems.

Subcontract with Summit Environmental to provide the primary technical resources for development and auditing, the Colville Tribes are responsible for data inclusion from data collect work elements for this work element. Estimated Level of Effort: 3 Fishery Biologists for 0.62 months, 1 Field Technician for 0.2 months (Labor time is primarily related to data entry and input).

Deliverable Specification: Input and manipulation of data from 2006 and 2007 field collection and critical historical data identified by the Colville Tribes and other agencies working in the Okanogan sub-basin into the developed database. In addition, the primary OBMEP database will require modifications, updating, and auditing to maintain the integrity of the database and effectively assimilate collected data.

On-going operational maintenance is required because most computer systems and technology evolve and so must this database to keep pace.

ESUs:



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Training and support of CCT staff in database use, hand-held data collectors, and data migrating	3/1/2007	2/28/2008	Active	
B. Modify and update database as needed	3/1/2007	2/28/2008	Active	
C. Develop customized output routines	3/1/2007	2/28/2008	Active	
D. Audit existing data contain within the OBMEP database	12/1/2007	2/28/2008	Active	
Deliverable: E. Input of this years data, plus modification and auditing of our existing database architecture		2/28/2008	Active	<i>See the Deliverable Specification above</i>

O: 162. Analyze/Interpret Data

Title: Analyze collected and historical data on habitat, biological, and water quality parameters
Description: Data gathered by the Colville Confederated Tribe and other agencies and individuals working in the Okanogan Basin will be synthesized and interpreted to confirm that all crucial data is being collected and that we will be able to draw conclusions from this data once a long-term data set is established. Additional analysis will occur as part of the annual report writing task as necessary. Trend analysis will be incorporated after year 5 of this project therefore the design work must begin in 2007 for this to occur.

Estimated Level of Effort: 3 Fishery biologists for 0.6 months.

Deliverable Specification: We will gather data on habitat, water quality, and anadromous fish as defined in our protocols. We will then synthesize/summarize our collected data and data gathered by other agencies and individuals into usable summary tables and graphs. We may work with the EPA to analyze, interpret, and statistically test our collected data and then make decisions if we need different or more comprehensive data collection techniques in future years. After several years of data are compiled, status and trend analysis will begin (NMFS recommends minimum of 12 years of data for this analysis) but we will begin work with this analysis in year 5 (2008).

Planned Metrics:
 * R, M, and E Focal Area : Tributaries
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Uncertainties Research

Primary Focal Species: Steelhead - Upper Columbia River DPS

ESUs:

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Analyze and interpret data	10/1/2007	2/28/2008	Active	Synthesize data collected to develop models, interpret results, and run statistical analysis.
Deliverable: B. Data summaries of habitat, biological and water quality parameters		2/28/2008	Active	<i>See the Deliverable Specification above</i>