Response to Public Comments: 2002 Integrated Report

DEQ conducted a 60-day public comment period on the Policies and Procedures document and water body specific actions taken in Idaho's 2002 Integrated Report. 26-comment letters were received and DEQ most appreciates those that were provided online via DEQ's web based mapping project. Some comments came after the close of the comment period yet and all comments were considered and included.

The following 174-page table forms DEQ's response to comments regarding actions taken on the Draft 2002 Integrated Report and incorporated in the final 2002 Integrated Report. Comment 27 is DEQ internal comments reflecting updates/changes/ and/or corrections that occurred between the DRAFT and Final version of the 2002 Integrated Report. Any comments, which have no Assessment Unit identified, are comments relating to policy. In the table the reference to the "Temperature Package" directs the reader to DEQ's web site to view a collection of maps, spreadsheets and other supporting documents that prove to complex to contain in the format of this document. This package is in response to specific EPA comments in a letter dated August 14, 2003. Most of the information is contained here in Appendix A. Comments pertaining to two sets of Wilderness AUs have information supported by maps in Appendix B: Monumental Creek and Appendix C: Yellowjacket Creek.

DEQ found Comment Letter 20 from the Committee for the High Desert to be exceedingly burdensome. The Committee did not reference Assessment Units (AU). AUs are the key DEQ's geographically based reference system and are supported by an extensive online mapping project to facilitate clear and rapid comment and communication. The Committee referenced place names that lead to geographic uncertainty. DEQ spent over 3 months responding to this single comment letter. DEQ cannot exhaust these kinds of resources in the future. It is important, as DEQ noted, for comments to provide locational information, specifically AUs, so DEQ can appropriately respond to the comment. This level of effort for a single comment letter cannot be maintained. In future reporting cycles all correspondence needs to reference assessment units in order for DEQ to respond.

Appendix A.

Summary of DEQ's Proposed 303(d) Action's Regarding Water Temperature

Summary of DEQ's Proposed 303(d) Action's Regarding Water Temperature

Listed below are selected waters in Idaho that the Department of Environmental Quality (DEQ) has determined should be removed from the current 303(d) list, or not listed, for temperature as a pollutant. Reason's for delisting or not listing include:

1) Data quality did not meet minimums in Idaho's Waterbody Assessment Guidance II, i.e. more than a single grab sample temperature measurement is needed to judge impairment;

2) Frequency of exceedance less than assessment threshold, Idaho's WBAGII allows up to 10% exceedance of certain numeric criteria, including temperature, if the bio-assessment indicators are good;

3) Idaho WQS natural background provisions, and allowable de-minimus T increase of 0.3°C are met;

DEQ's proposed action varies depending on whether a water is currently listed or not, and whether there are other causes of impairment, which would cause a water to be listed, though not for temperature. The following three tables organize the selected waters by the type of action taken, and list the applicable reasons enumerated above.

Table 1. Waters in Idaho currently listed for temperature for which that Idaho proposes temperature be dropped as a pollutant either because; 1) the temperature data used for listing was insufficient, or 2) the human caused impairment is below allowable temperature increase. Since these waters are only listed for temperature they should be removed from the 303(d) list.

Stream name	WBID	On 1998 303(d) List (Yes/No)	Listing Data Source	Reason for Removing Temperature from listing
Worm Creek	16010202BR005	Yes	DEQ	Data quality, single temperature measurement
Santa Creek	17010304PN010	Yes	DEQ	Data quality, single temperature measurement
Hot Creek	17040213SK012	Yes	DEQ	Data quality, single temperature measurement
Lochsa River	17060303CL001,003,008,008,013,020	Yes	USFS	Less than de-minimus increase, HDR Modeling Report

Table 2. Waters in Idaho currently 303(d) listed which Idaho proposes be removed from the list because there are no human causes of impairment.

Stream name	WBID	On 1998 303(d) List (Yes/No)	Listing Data Source(s)	Reason for Delisting
Boulder Creek	17060303CL010	Yes	USFS	apriori natural
Fish Creek	17060303CL052…057	Yes	USFS	apriori natural
Holly Creek	17060303CL009	Yes	USFS	apriori natural

Stream name	WBID	On 1998 303(d) List (Yes/No)	Listing Data Source(s)	Reason for Delisting
Storm Creek	17060303CL032	Yes	USFS	apriori natural
Smithie Fork	17040217SK017	Yes	USFS, DEQ	apriori natural

Table 3. Waters in Idaho that were considered for 303(d) listing but were not listed.

Stream name	WBID	On 1998 303(d) List (Yes/No)	Data Source(s)	Reason for Not Listing
Running Creek	17060301CL008 … 012	No	DEQ	apriori natural, less than 10% exceedance
Bear Creek	17060301CL047 … 055	No	DEQ, USGS	apriori natural
Moose Creek	17060302CL026 ... 047	No	DEQ, USGS	apriori natural
Selway River	17060301CL001,004,014,022 & 17060302CL001, 006,022	No	DEQ, USFS	apriori natural, less than 10% exceedance
Indian Cr	17060205SL006	No	DEQ	apriori natural, less than 10% exceedance
Big Creek	17060206SL003 … 016	No	DEQ	apriori natural, less than 10% exceedance
MF Salmon	17060205SL001 17060206SL001	No	DEQ, USFS	apriori natural, less than 10% exceedance

The above three lists are not comprehensive. They are a selection of waters that have been chosen because they qualify for one or more reason as not known to be impaired for temperature. Idaho reserve's the right to propose additional waters be removed from the 303(d) list, or not listed, for these reasons in the future.

Attached are several support documents:

A) Report by HDR on modeling of water temperatures in the Lochsa River.

B) Spreadsheet summarizing information on the limited extent of human activity in watersheds identified as a priori natural.

C) Maps of watersheds identified as a priori natural.

D) Summaries of temperature data showing less than 10% exceedance of Idaho's cold water aquatic life criteria.

State of Idaho
Department of Environmental Quality
Contract # C046

Final Report

Water Temperature of The Lochsa River and Selected Tributaries

Prepared by: HDR Engineering, Inc.
418 South 9th Street, Suite 301
Boise, Idaho 83702
(208) 342-3779

July 23, 2002

Mr. Don Essig
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, Idaho 83706

Subject: Water Temperature Model for the Lochsa River and Selected Tributaries (QRP00023) – Final Report

Dear Mr. Essig:

Enclosed is the Water Temperature Model for the Lochsa River and Selected Tributaries Report. It was a pleasure to work with you on this project. We believe the results of the modeling effort and subsequent analysis contribute much to the understanding of the Lochsa River watershed.

We sincerely appreciate your input and support during all phases of this project. We look forward to working with you again in the near future. Please feel free to call us if you have any questions at (208) 342-3779.

Sincerely,

HDR Engineering, Inc.

Jason Kent

Jason Kent, PE
Project Manager

Enclosures

Cc: David L. Clark, HDR Engineering, Inc.

Lochsa River Temperature Model

Prepared for

Idaho Department of Environmental Quality

Prepared by

HDR Engineering, Inc.

418 South 9th Street
Suite 301
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July 23, 2002

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Cover Photo: J. Fellos, HDR Engineering - 2000. Lochsa River.

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Acknowledgements

This study was made possible by the collaborative effort of several engineers, researchers and scientists throughout Idaho and the west. Don Essig, project manager for the Idaho Department of Environmental Quality, provided insightful technical review commentary and guidance throughout the project. Thanks to Matt Boyd, Oregon Department of Environmental Quality, and Stillwater Sciences for their assistance during the model selection process. We extend gratitude to the Clearwater National Forest staff, including Dick Jones, Bill Wulf, Dave Schoen, Pat Murphy, and Ed Lozar, who were indispensable during the data acquisition process. Also helpful in data acquisition were Don Essig, Tad Fickel of IRZ Consulting, and Clearwater BioStudies, Inc. Thanks to Bill Wulf and Don Essig for their reviews of the methods and analysis.

Executive Summary

The Lochsa River is located in the Clearwater National Forest in north central Idaho. It is formed by the confluence of the Crooked Fork and White Sand Creek. The river flows east-northeast to west-southwest through approximately 70 river miles of forested mountain and canyon terrain. Water temperatures at the mouth of the Lochsa River (near its confluence with the Selway River) at times exceeds Idaho cold water biota (CWB) maximum daily temperature criteria of 19°C average and 22°C instantaneous, or maximum daily high. For this reason, the Lochsa River was placed on Idaho's 303(d) list of water quality-impaired waters.

An assessment of water quality in the Lochsa watershed by Idaho Department of Environmental Quality (IDEQ) (Bugosh 1999) concluded that current summer temperatures in the Lochsa were not different from historic temperatures observed in the late 1950's prior to substantial anthropogenic, or human-caused, disturbance. Thus, the above-criteria temperatures were deemed a "natural condition" and not an impairment of water quality. This led DEQ to propose the removal of the Lochsa River from the 303(d) list. This conclusion was not accepted by the U.S. Environmental Protection Agency (EPA) in their oversight role. It is for this reason that a water temperature modeling study was initiated on the Lochsa River.

The objectives of the Lochsa River Modeling Project were as follows:

- Develop a model that simulates historic daily average and maximum water temperatures in the Lochsa River and select tributaries during the summer months based on measured data.
- Apply the model to simulate the system under a range of scenarios for the purpose of understanding heat loading in the Lochsa River.

Water temperatures were to be modeled for the summer months of July and August for 1994, 1997, and 1998. These years were selected because of their range in hydrologic conditions: 1997 registered the second highest flow on record, while 1994 registered the sixth lowest flow on record. The year 1998 was an average flow year. The year 1998 was also selected because copious water temperature and flow data were collected during the summer months.

Model simulated temperature output was sought throughout the length of the Lochsa River, but specifically at Lowell, Idaho, Split Creek Packbridge, Wilderness Gateway, Eagle Mountain Packbridge, Mocus Point Packbridge, Jerry Johnson Packbridge, and Powell Ranger Station. In addition, temperature output was requested at the mouths of the modeled tributaries: Crooked Fork, White Sand Creek, Deadman Creek, and Canyon Creek.

Existing peer-reviewed temperature and water quality modeling programs were evaluated for their application to the Lochsa River Temperature Modeling Project. The candidate models were evaluated considering capabilities, limitations, input data requirements, minimum and maximum temperature predictions, applicability to the modeling project, and acceptance in the modeling community. Based on the characteristics of the candidate models and the selection criteria, the SNTEMP program was selected.

Two system models were developed: a model for 1997-1998 (high flow and average flow, respectively) and one for 1994 (low flow). The model was first calibrated to mean daily water temperatures, and then calibrated to maximum daily water temperatures through adjustment of appropriate process variables.

After the temperature models were calibrated and validated, a single-parameter sensitivity analysis (Chapra 1997) was performed to identify key input variables in the model. It was found that air temperature, inflow temperature, and incoming solar radiation, respectively, were the three variables to which the average temperature model was most

sensitive. Incoming solar radiation, air temperature, and inflow temperature were the three variables that most influenced maximum temperature, respectively. In the SNTEMP model, inflow temperature and air temperature can be directly changed by the user, while solar radiation is an internal parameter affected by several input variables.

Several model runs were performed to simulate alternate scenarios. As a result of these simulations, it was found that water temperatures did not meet Idaho CWB temperature criteria throughout the Lochsa River on the 90th percentile air temperature day. Increasing riparian vegetative shading to full potential would decrease Lochsa River daily average water temperature by as much as 1.35°C, not enough to meet Idaho CWB temperature criteria at Lowell, near the mouth of the river. Alternately, the water temperature of all tributaries to the Lochsa River would have to be reduced by more than 8°C to meet Idaho CWB temperature criteria. This scenario is not particularly reasonable, as many of the tributaries to the Lochsa River drain wilderness areas or unmanaged watersheds, and an 8°C decrease in water temperature is likely not physically possible in these areas.

Since the Lochsa River is an unregulated stream with little disturbance other than State Highway 12 and modest timber harvest over the past 45 years, the reduction in shade provided by riparian canopy cover is the primary disturbance likely to increase water temperature. Thus, the question to be answered was "what fraction of the departure between current canopy conditions and full potential canopy in the riparian zone is due to natural disturbances, and what fraction is due to human disturbances?" The question was investigated by quantifying the difference in riparian canopy conditions for stands of trees that are undisturbed or have natural changes and those that have human-caused changes. The SNTEMP model was used to determine the difference in stream temperatures that may then be attributed to human activity.

It was found that between 75% and 97% of the difference in water temperature between the existing and full potential canopy cover conditions in the Lochsa River basin is due to natural disturbances. While human-caused disturbances increase water temperatures in the basin, natural disturbances are a more dominant factor in the difference between existing condition and full potential canopy cover water temperatures.

Introduction

The Lochsa River is located in the Clearwater National Forest in north central Idaho (Figure 1). It is formed by the confluence of the Crooked Fork and White Sand Creek (aka Colt Killed Creek). The river flows east-northeast to west-southwest through approximately 70 river miles of forested mountain and canyon terrain (Figure 2). Several small tributaries flow into the Lochsa River, including Canyon Creek and Deadman Creek. At the River's mouth near the town of Lowell, Idaho, the Lochsa River merges with the Selway River to create the Middle Fork of the Clearwater River.

Data collected by federal and state resource agencies and private companies were used to build a historical temperature model for the Lochsa River. The data used include meteorological data, stream geometry, stream and watershed hydrology, local topography, and vegetation data. The model was built to predict average and maximum daily water temperature throughout the Lochsa River and four tributaries, Crooked Fork, White Sand Creek, Deadman Creek, and Canyon Creek, for the mid-summer months of July and August of 1994, 1997, and 1998.

The years to be modeled were selected because of their range in hydrologic extremes: 1997 registered the second highest flow on record, while 1994 registered the sixth lowest flow on record. 1998 was considered an average flow year. 1998 was also selected because copious water temperature and flow data were collected during the summer months.

Model Selection

Evaluation of Existing Programs

Existing peer-reviewed temperature and water quality models were evaluated for their application to the Lochsa River Temperature Modeling Project. Each model's capabilities and limitations, along with an assessment of each, are shown in Table 1.

The candidate models were evaluated considering capabilities, limitations, input data requirements, minimum and maximum temperature predictions, applicability to the modeling project, and acceptance in the modeling community. A brief description of each of the candidate models follows.

SNTEMP

SNTEMP and its companion program, SSTEMP, model temperatures in a stream as a function of hydrologic conditions, riparian and topographic shading, and meteorological conditions. The one-dimensional model assumes steady flow, complete mixing, and requires daily means for input variables. SNTEMP is a stream network model with a spatial grid as fine as 100 meters, while SSTEMP is a simplistic version of SNTEMP that can assess conditions for a single stream reach in a single time period. Both models call upon output from companion programs, SSSOLAR and SSSHADE, to provide data on short-wave radiation and shading percentages. Both SNTEMP and SSTEMP have text interfaces and are public domain models.

SNTEMP and its associated models were developed by the U. S. Fish and Wildlife Service's Instream Flow Group. This group subsequently became the U.S. Geological Survey—Mid-Continent Ecological Science Center (USGS-MESC). The USGS-MESC website (www.mesc.usgs.gov) provides the models for free download and also provides technical support.

Heat Source

Heat Source was developed as part of a Masters thesis at Oregon State University, and is currently supported by the Oregon Department of Environmental Quality (ODEQ). It is an energy-based finite difference temperature model with heavy reliance on geographic information system (GIS)-based input. Heat Source has fine internal spatial and temporal scales (100 ft, 1 minute) and is suitable for a reach scale of analysis. The model involves a wide variety of atmospheric, solar, and stream reach parameters. It has a spreadsheet-based user interface and is public domain, available on CD from ODEQ.

Figure 1. Project Vicinity Map

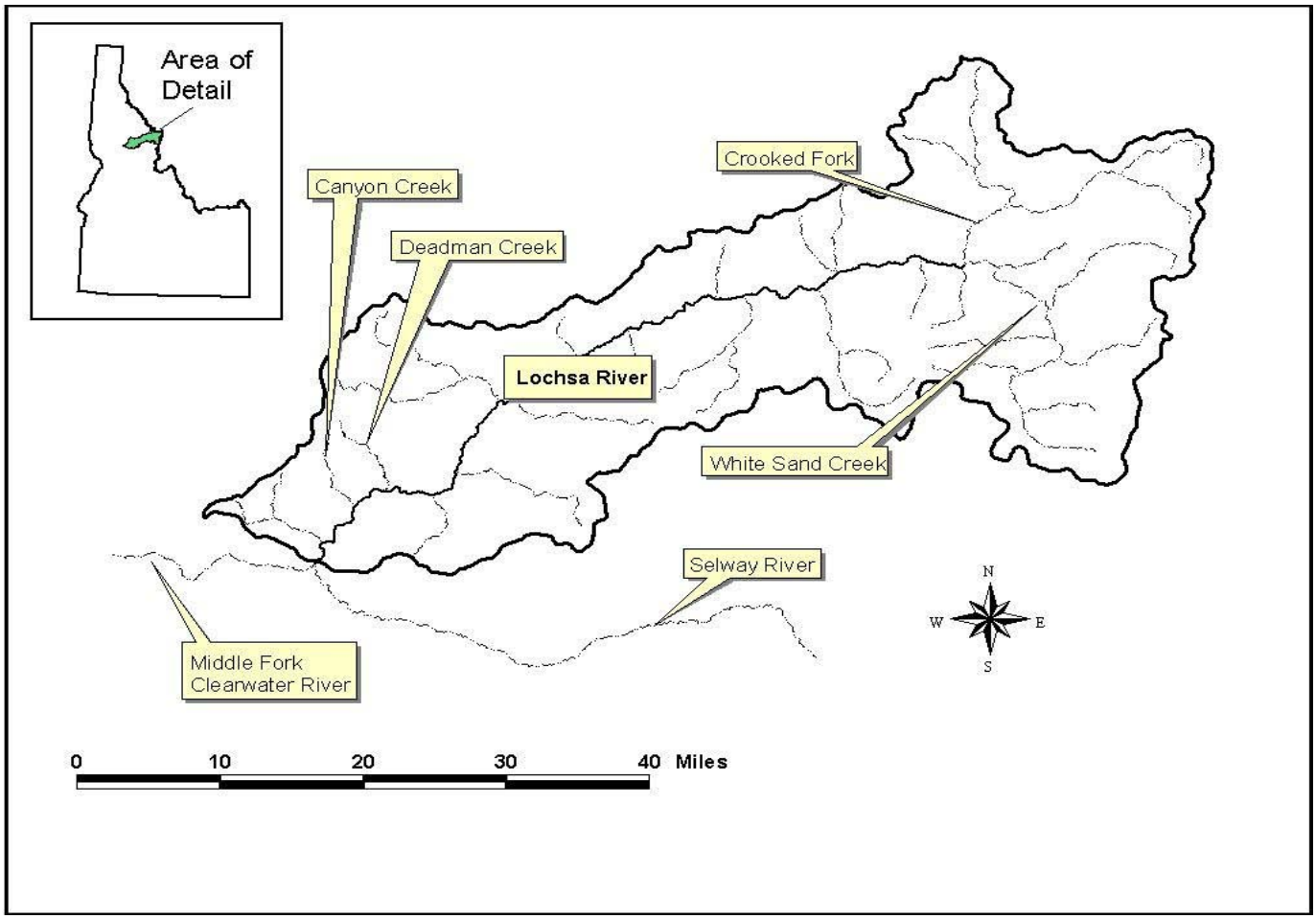


Figure 2. Photograph of Lochsa River

Model	Strengths	Weaknesses	Timestep	Applicability to Lochsa River Project	Criteria					
Process-Based Temperature Models					Mean/Max T	Network capability	Input parameters	Shading	Ease of use	Accepted
SNTEMP	Stream network model. Considers latitude and time of year, predicts topographic and riparian shading, and corrects climate data as function of elevation.	Uses algorithm to predict daily max. temps based on daily average temps. Cannot handle rapidly varying flows	daily	Applicable to project. Model known to Idaho DEQ and EPA, Public domain model. Good support network in place.	Only mean is directly calculated	Yes	Data-driven	Yes	Users manual, self-directed study, technical support	Peer-reviewed, widely used
Heat Source	Flexible time step model. Relies on Arc View for topographic input. Very fine temporal and spatial scale.	Not suited for a stream network application. Data-intensive model. Limitations in groundwater mixing and canopy density. Limited model support.	flexible	New technology, generally getting good reviews. Model familiar to Oregon DEQ but has limited project application outside of Oregon. Possibly applicable to project. Decribed by developer as a very data-intensive model. Public domain.	Calculates instantaneous temperatures for timestep	No	Heavily data-driven	Yes	Requires large amounts of data, little support	Minimally peer-reviewed, not used outside of Oregon
BasinTemp	Steady state, 1-D, GIS-linked model. Requires little collected data.	Assumes no cloud cover and does not use relative humidity data. Assumes linear relationship between mean and max. temps. Not suited for stream networks. Simplest model.	daily	New technology with limited feedback on use. May be too simplistic for this project due to its non-reliance on collected data. Proprietary model, work must be done by vendor (with associated cost).	Only mean is directly calculated	Yes	GIS-driven, requires minimum of field data	Yes	Model must be operated by Stillwater Sciences	Not peer-reviewed, new technology
Hybrid Combination Model Approaches										
SNTEMP / Heat Source	Advantages of modeling mean temperatures for July/August, and investigating maximum temperatures and diurnal changes during a period of interest.	Each node to describe multiplies the effort for setting up the Heat Source model. Requires that two distinct models be developed.	daily / flexible	Advantages of mean daily averages in the stream network, as well as maximum temps and diurnal changes in chosen segments.	See above	See above	See above	Yes	See above	See above
SNTEMP / SSTEMP	Can re-calculate maximum water temperature in a segment of interest using maximum values for air temperature	Does not directly calculate maximum temperature and cannot describe diurnal fluctuations.	daily	Each model can be calibrated to better represent maximum daily temperatures by adjustment of 3 or 4 empirical coefficients.	See above	See above	See above	Yes	See above	See above
2 calibrated SNTEMP models	Same as SNTEMP, with added value of a model calibrated to observed daily maximum temperatures.	While it is both feasible and acceptable, calibrating to maximum temperatures is not a typical operating procedure.	daily	Having two calibrated models increases the level of accuracy of the analysis. How well the maximum temperature model will calibrate is an unknown factor at this point. This option satisfies all project criteria.	See above	See above	See above	Yes	See above	See above
Multi-Constituent Water Quality Models										
CE-QUAL-W2	Flexible time step, 2-dimensional model that includes water quality parameters.	Simple shading function included in model. Extensive data requirements.	flexible	Powerful water quality model. Version 3.0 applicable to river systems. May be too sophisticated for economical application to project. Public domain model.	Calculates instantaneous temperatures for timestep	Yes	Data-driven	Simple short-wave solar radiation algorithm	Complicated model, little support	Peer-reviewed, widely used
CE-QUAL-RIV1	Flexible time step, 1-dimensional, steady and unsteady flow model with water quality parameters.	Hydrodynamics not linked with temperature.	flexible	May be applicable to project. Public domain model.	Calculates instantaneous temperatures for timestep	Yes	Data-driven	No	Complicated model, little support	Peer-reviewed
RMA-11	Inclusion of water quality parameters, 1-, 2- and 3-dimensional simulation, steady or unsteady flow, short timesteps	No shading included in model. Extensive data requirements. A 30-minute timestep is considered "relatively long".	flexible	Complex hydrodynamic and water quality model, may be too sophisticated for project. Proprietary model with prohibitative cost.	Calculates instantaneous temperatures for timestep	Yes	Data-driven	No	Complicated model, little support	Peer-reviewed
MIKE-11	Flexible time step, option of simplified or complete heat calculations, GIS-capable, stream network capable	Extensive data requirements.	flexible	Powerful hydrodynamic and water quality model. May be too sophisticated for economical application to project. Proprietary model with prohibitative cost.	Calculates instantaneous temperatures for timestep	Yes	Data-driven	Yes	Complicated model, e-mail support	Peer-reviewed

Table 1. Lochsa River Temperature Model Selection Matrix

BasinTemp

BasinTemp, developed by Stillwater Sciences, is a simple, one-dimensional, steady-state, network scale mechanistic temperature model, whose strength lies in its non-reliance on field-based data. As such, it is heavily reliant on GIS-based input data. It utilizes daily average input data to produce estimates of daily average water temperature and uses linear relationships to estimate daily maximum temperatures. It requires a minimum of atmospheric, flow, and water temperature data. It has a variable spatial network scale, allowing a network as fine as 30 meters. BasinTemp is a proprietary model that is not available to the general public at this time. All input data must be sent to Stillwater Sciences for model operation.

CE-QUAL-W2

CE-QUAL-W2 is a two-dimensional, laterally-averaged, hydrodynamic and water quality model that has been used to model over 200 waterbodies, including rivers, lakes, reservoirs, and estuaries. The model simulates temperature, dissolved oxygen (DO), the nitrogen, phosphorus, and organic carbon cycles, and up to three types of algae. It predicts instantaneous temperatures in a variable spatial scale within a user-defined temporal scale, which must be converted to average and maximum temperatures using post-modeling analysis techniques. CE-QUAL-W2 is modular in nature, such that water temperature can be modeled with or without the interactions of other constituents. CE-QUAL-W2, developed by the U.S. Army Corps of Engineers—Waterways Experiment Station (USACE—WES), is a network-scale, public domain program and has both text and Windows input user interfaces. Output is currently text files with a Windows interface scheduled for release later this year.

CE-QUAL-RIV1

The Hydrodynamic and Water Quality Model for Streams (CE-QUAL-RIV1) is a one-dimensional, network-scale, unsteady flow model capable of dynamic simulations. CE-QUAL-RIV1 was developed by USACE—WES to simulate transient water quality conditions associated with highly unsteady flow conditions that occur in regulated rivers. CE-QUAL-RIV1 allows simulation of rivers with multiple hydraulic control structures, such as run-of-the-river dams, waterway locks and dams, and regulation dams. The hydraulic model component requires that river geometry and boundary conditions are defined in order to perform hydraulic computations. CE-QUAL-RIV1 can simulate temperature, salinity, biological oxygen demand (BOD)-DO, the nitrogen and phosphorus cycles, phytoplankton in the water column, benthic algae, macrophytes, and bacteria. It predicts instantaneous temperatures in a variable spatial scale within a user-defined temporal scale, which must be converted to average and maximum temperatures using post-modeling analysis techniques. CE-QUAL-RIV1 has a text user interface and is a public domain program.

RMA-11

RMA-11, developed by Resource Management Associates, is a stream network scale finite element model for the one-, two-, or three-dimensional simulation of water quality in rivers, estuaries, and groundwater systems. This proprietary software was originally developed as the public domain model RMA-4 for the USACE. Its constituents include temperature, DO, the nitrogen and phosphorus cycles, algal growth and decay, and suspended sediments. RMA-11 is modular in nature, such that water temperature can be modeled with or without the interactions of other constituents. The user interface is DOS-based, and incorporates ASCII text files for data input. RMA-11 is a sophisticated proprietary model that is relatively expensive compared to the public domain models.

MIKE-11

The MIKE-11 model is proprietary software commercially available from DHI, Inc., formerly known as the Danish Hydraulic Institute. MIKE-11 allows dynamic water quality simulations and has a Windows user interface. It is a one-dimensional stream

network model capable of simulating water temperature and the nitrogen and phosphorus cycles, and is modular in nature, such that water temperature can be modeled with or without the interactions of other constituents. It predicts instantaneous temperatures in a variable spatial scale within a user-defined temporal scale, which must be converted to average and maximum temperatures using post-modeling analysis techniques. This is also a sophisticated model that is relatively expensive compared to the public domain models.

Hybrid Model Combinations

The use of combined models was considered in order to meet multiple project objectives. These objectives include analysis of both average and peak water temperatures. Also desired was the ability to model a stream network, as well as individual reaches. Evaluation of the candidate models indicated that no single model was capable of meeting all of these objectives. The use of two models provided the potential to combine the strengths of two tools to provide the capabilities required.

Three hybrid combination model options are summarized in Table 1. Combining SNTEMP with other models was considered, since SNTEMP appears to best meet most project objectives, including simulation of average temperatures in a stream network model, direct simulation of the effect of shade on water temperature, being peer-reviewed and in the public domain, utilizing field data-driven input parameters, and having good documentation and technical support. Combining Heat Source with SNTEMP adds an ability to simulate diurnal variations in temperature. The drawback to this approach is the added complexity involved in developing two distinct models, both Heat Source and SNTEMP. Combining SSTEMP with SNTEMP links two companion models with similar input data. The stream segment model SSTEMP provides the ability to simulate maximum temperatures in a given stream reach but not diurnal variations. Alternately, a pair of SNTEMP network models calibrated first to average water temperatures, and then to maximum temperatures, may provide a better approach. The potential drawback to this approach is that calibration of maximum daily water temperatures is empirical and its suitability is unknown.

Summary of Model Features Required for Lochsa River Modeling Project

The candidate models were assessed for the Lochsa River Modeling Project based on the following criteria:

- Prediction of mean and maximum water temperatures
- River network capability
- Availability and requirements of input parameters
- Ease of use
- Peer reviewed and utilized within the scientific community

Each of these criteria is described in the following paragraphs.

Prediction of Mean and Maximum Water Temperatures

The selected model should simulate mean and maximum water temperatures at a minimum of a daily temporal scale, with a diurnal range, if possible. The selected model should simulate temperatures at several locations in the stream network.

River Network Capability

The selected model should simulate the entire Lochsa River from its headwaters to its mouth on a network scale. The stream network includes several tributaries that must be modeled as well, and the output from those tributaries is to be modeled as input to the Lochsa River at the same temporal scale.

Availability and Requirements of Input Parameters

Idaho Department of Environmental Quality (IDEQ) and the U.S. Forest Service (USFS) have collected data for several input parameters for use in the selected water

temperature model. The selected model should take advantage of these data, as one of the purposes of the project is to utilize a peer-reviewed model to produce a calibrated process-based water temperature model based on collected data from the Lochsa River basin.

Ease of Use

The selected model should be suitable for operation by HDR Engineering, Inc. and IDEQ and should not require an inordinate amount of time for data collection or data entry. The output from the model should be exportable to a spreadsheet or database program for easy processing and reporting. In addition, documentation for the selected model should be easy to follow and technical support should be reasonably accessible.

Peer Review and Utilization of Model Within the Scientific Community

The selected model should be peer-reviewed and utilized within the scientific community.

Model Selection and Recommendation
Based on the characteristics of the candidate models and the selection criteria described above, the HDR-IDEQ team selected SNTEMP for the Lochsa River Modeling Project. The SNTEMP model was calibrated to mean daily water temperatures, and then calibrated to maximum daily water temperatures through adjustment of appropriate process variables. Based on calibration and validation performance, two models were developed: one for 1997-1998 and one for 1994. This is discussed in greater depth in the Calibration and Validation section of this report.

SNTEMP was selected based on several characteristics, including its technical capabilities, applicability to the project, the stream network component of the program, existing support network, and availability as a public domain program. SNTEMP's main shortcoming is its use of an algorithm to determine maximum water temperatures instead of calculating them directly. The equation used in SNTEMP to determine maximum water temperatures is as follows:

$$T_{\max} = T_e - \left[\left(T_e - T_{avg}\right)^{\left[-(k_x t_x)/(\rho c_p d)\right]}\right]$$

Where:

T_{max} = Average maximum daytime water temperature (at sunset) at point of interest

T_e = equilibrium water temperature for average daytime conditions

T_{avg} = average daily water temperature at travel time distance upstream from point of interest

k_x = first order thermal exchange coefficient for daytime conditions

t_x = travel time from noon to sunset

ρ = density of water

c_p = specific heat of water

d = average flow depth

Other algorithms are used to determine equilibrium water temperature, average daily water temperature, travel time, and average depth. The maximum daily temperature model was calibrated to better predict the estimated maximum water temperature by re-estimation of appropriate empirical coefficients.

Model Structure

The SNTEMP model utilizes six input files that include measured data and two system control files, as described below:

Study File
The study file includes the locations and types of nodes that define the stream network system, as well as locations in the network where output is required.

Geometry File
The geometry file provides a network definition of the modeled streams, the site location and the stream geometry (e.g. channel width, depth, and gradient).

Shade File
The shade file includes data for parameters that contribute to the shading of the stream due to topographic and vegetative conditions.

Time Period Data File
This file is primarily used by SNTEMP as a system file but includes two parameters that are used in the determination of incoming solar radiation: the dust coefficient and ground reflectivity.

Meteorology Data File
The meteorology data file includes all remaining meteorological data for the study reach for each day in the study period.

Hydrology Data File
The hydrology data file provides the mean daily stream flows and temperatures for the modeled streams and all tributaries to the stream network for each day in the study period.

Hydrology Node File
The hydrology node file contains information needed by the program on where hydrology data are required. No input data are included in this file.

Job Control File
The job control file contains information required by the program that defines the size of the network, the extent of output desired, years of data simulated, node counts, calibration factors, and file names. No input data are included in this file.

Input Data

The sources of the data that were acquired vary. Much of the measured data were furnished by the Clearwater National Forest. Most of these data came in electronic formats. Additional data used in the model were obtained from IDEQ, the USGS, Clearwater BioStudies, Inc., and the Tennessee Valley Authority (TVA).

The acquisition of the required measured data is described in Table 2. In addition, data reduction for collected data of key parameters are described in more detail in the sections that follow.

Study File—Segmentation
The SNTEMP model requires segmentation of the river network based on the following features and requirements:

- Required temperature output locations
- Confluences with certain tributaries with measured temperature data
- Locations of measured temperature data in the mainstem of the River
- Major changes in gradient
- Major changes in stream orientation
- Major changes in stream width

The Lochsa River temperature model segmentation is shown in Figure 3.

Shade File—Vegetation Parameters

East/West Crown Measurement

Used for determining vegetative shading, this parameter is defined as the average maximum diameter of the shade-producing strata of vegetation along the stream.

A crown diameter of 10 meters was assumed for all segments in the SNTEMP model. No data are available that are specific to the study area.

East/West Vegetation Height

Used for determining vegetative shading, this parameter is the average height of the shade-producing strata of vegetation, measured from the water surface. Average height of trees data were taken from a GIS database provided by Clearwater National Forest. The GIS data recorded average values of stand height and stand crown closure, a measure of density, for each distinct stand in the Clearwater National Forest. Data for the stands that were directly adjacent to the streams of interest were collected, along with a weighting factor based on the relative length the stream. An average

Table 2. Data Collection Sources

Data File	Parameter	Data Source	Adjusted in calibration?
Study File	Segmentation	GIS software and USGS 7.5-minute maps—see text	No
Geometry File	Latitude, Elevation, Azimuth	GIS software and USGS 7.5-minute maps	No
	Manning's n	Clearwater BioStudies reports (Rosgen 1994)	No
	Width	Clearwater BioStudies reports	Yes
	Ground temperature	System default to mean annual air temperature	No
	Streambed thermal gradient	System default	No
Shade File	Latitude, Azimuth	See above	No
	Width	See above	Yes
	East/west topographic altitude	GIS software	No
	East/west crown measurement	Data not available specific to study area—see text	No
	East/west vegetation height	Clearwater National Forest's Timber Stand Management Record System—see text	No
	East/west vegetation offset	Aerial photography and digital aerial infrared imagery—see text	No
	East/west vegetation density	Clearwater National Forest's Timber Stand Management Record System—see text	No
Time Period File	Dust coefficient	Suggested values in User's Manual (Theurer et al. 1984)—TVA (1972)	No
	Ground reflectivity	Suggested values in User's Manual (Theurer et al. 1984)—TVA (1972)	No
Meteorology File	Meteorology station latitude and elevation	Remote Automated Weather Stations (RAWS) located at Powell and Lowell—see text	No
	Annual air temperature	Meteorological station located at Fenn Ranger Station	No
	Time period mean air temperature	RAWS located at Powell and Lowell	Yes
	Time period mean wind speed	RAWS located at Powell and Lowell	Yes
	Time period relative humidity	RAWS located at Powell and Lowell	Yes
	Time period percent sunshine	Meteorological station located at Missoula, Montana airport	No
	Observed ground level solar radiation	Not used	N/A
Hydrology Data File	Time period discharge and water temperature	USGS gage data, USFS gages and temperature monitors. See text	Yes
	Lateral inflow water temperature	System default to mean annual air temperature	Yes
	Reservoir inflow temperature	Not used	N/A
Hydrology Node File	None	N/A	N/A
Job Control File	None	N/A	N/A

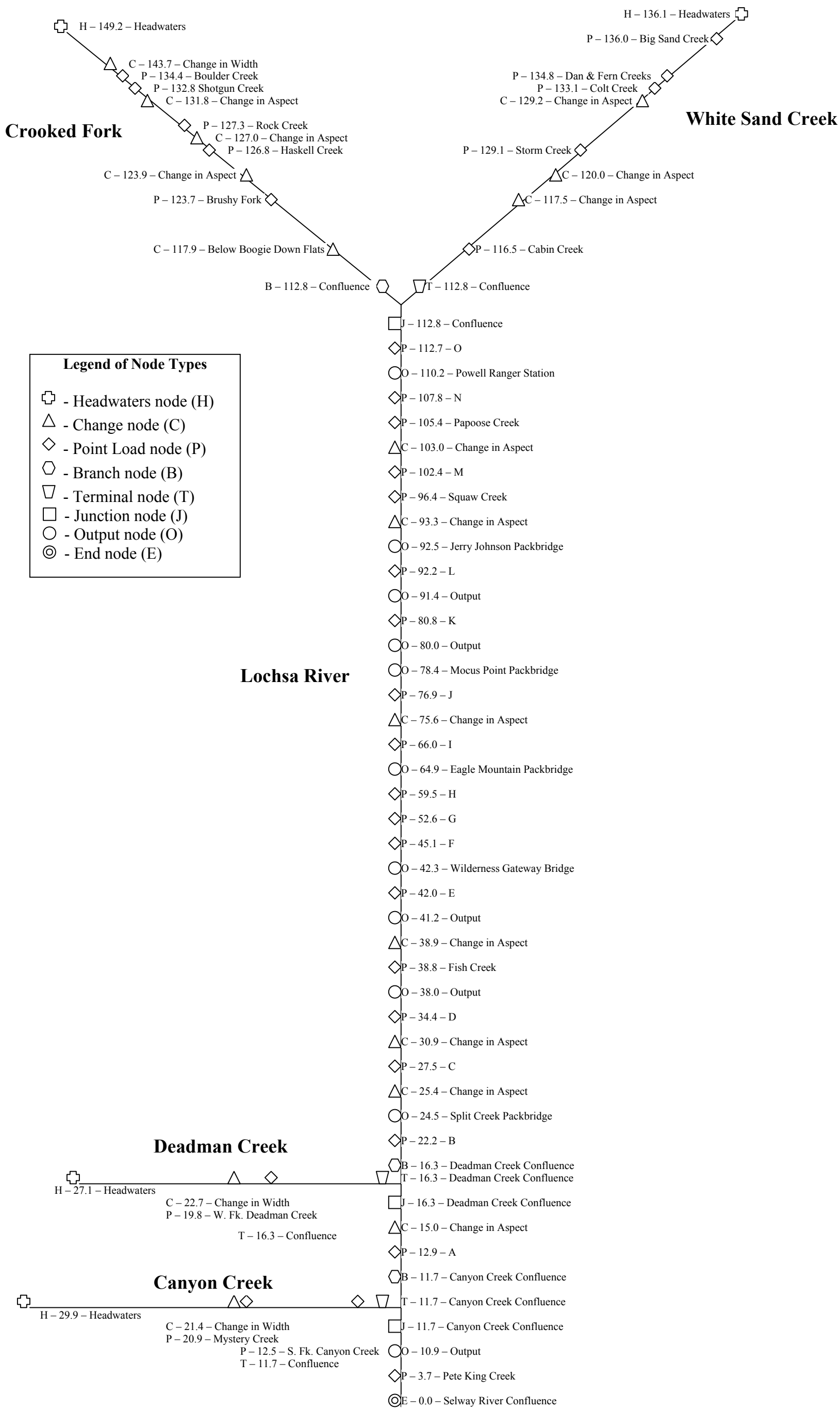


Figure 3. Schematic of Model Segmentation.

tree height was developed for each stream segment using the weighting factor for each of the stands.

East/West Vegetation Offset

This parameter is the average offset of the trunks of the shade-producing strata of vegetation from the edge of the stream.

Offset of the trunks of the riparian trees to the edge of stream was determined using aerial photography. For the Lochsa River, digital color infrared imagery was examined. An example of this imagery, photographed by IRZ Consulting (2001), is shown in Figure 4. For the four tributaries, black and white aerial photography stereo pairs were examined. The offsets used for each segment in SNTEMP reflect an average offset for the corresponding reaches.

Figure 4. Color Infrared (CIR) Imagery of Lochsa-Selway Confluence

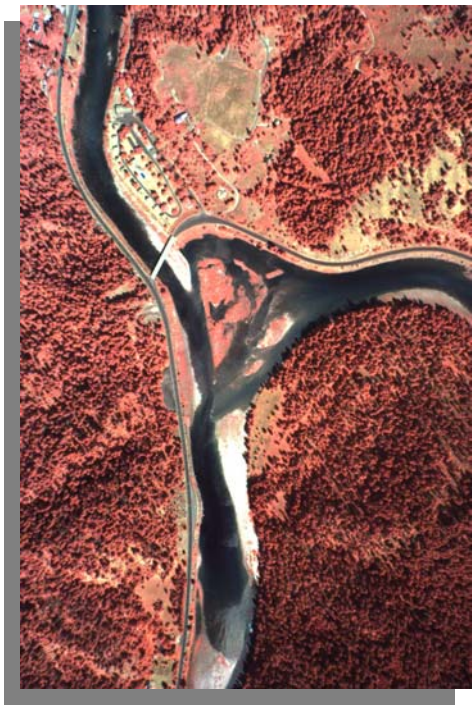


Photo: IRZ Consulting, 2001

East/West Vegetation Density

This parameter is the average screening factor, on a 0 to100 percent scale, of the shade-producing strata of vegetation along the stream.

Vegetation density data were taken from the crown closure data for each stand from the Clearwater National Forest database, as described above. The vegetation densities used for reach segment in SNTEMP reflect an average density for the corresponding examined reaches.

Meteorology Data File—Meteorology Station Latitude and Elevation

These data represent the location at which meteorology input data represent measured conditions. Because SNTEMP only accommodates one set of meteorology data, only one set of station information can be entered into the model. SNTEMP automatically applies adiabatic correction factors to air temperatures based on elevation and adjusts incoming solar radiation based on latitude.

SNTEMP requires a set of meteorology data be provided from only one station. Ideally, this station would be located at the mid-point of the river network being studied. Most meteorology data for this project were collected from Remote Automated Weather Stations (RAWS) located near the river at two separate locations: 1) near Lowell, the downstream end of the Lochsa River, at about River Kilometer (RKM) 0.0, and 2) near Powell, Idaho, the upstream end of the Lochsa River, at about RKM 112.8. The air temperature, wind speed, and relative humidity data used in the SNTEMP meteorology data file are weighted average values of the data from the Lowell and Powell RAWS. The weighted average corresponds with a meteorology station located at approximately RKM 101.5.

Hydrology Data File—Time Period Discharge and Water Temperature

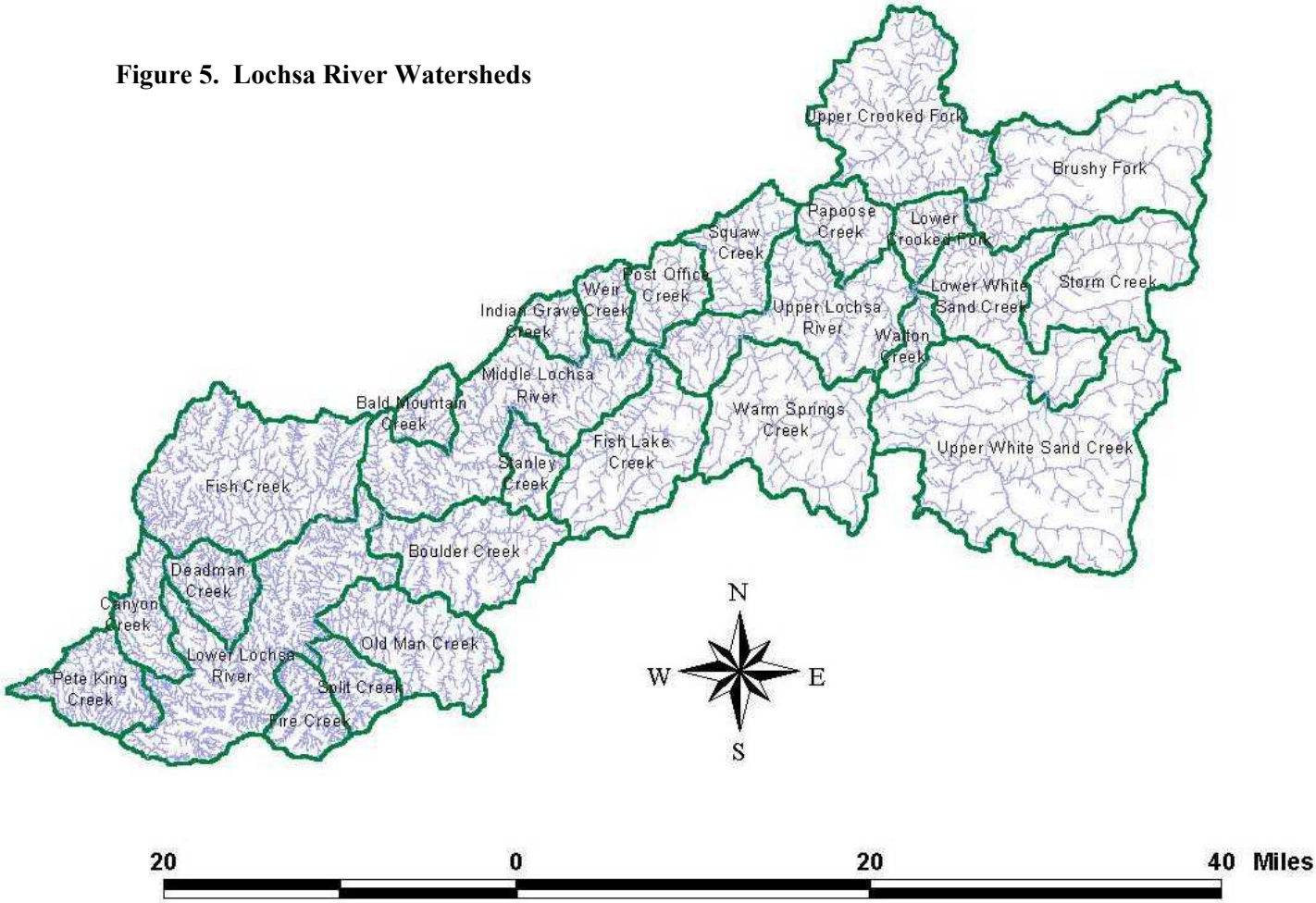
These parameters describe the mean daily flow and mean daily water temperature for each day in the modeling period for each point of inflow into the system. Known discharges and water temperatures in the modeled streams, if available, are included in this data file.

Discharge data were provided for all study years for the downstream end of the Lochsa River at the USGS Lowell gage. In addition, Clearwater National Forest staff collected discharge data for Pete King Creek, Canyon Creek, Deadman Creek, Fish Creek, Squaw Creek, Papoose Creek, Crooked Fork, and White Sand Creek for a portion of the study years. In some cases, discharge data were missing for large portions of the study period. These missing data were too large to be reproduced using the methods provided in the SNTEMP model for synthesizing data. Therefore, linear interpolation was used to produce input to substitute for the missing data. In the few cases where extrapolation was necessary, the last known discharge was used to fill in the missing points.

Many of the tributary streams that were to be modeled in SNTEMP as point source discharges had measured water temperature data but no associated flow rate. Estimated discharges were created using a normalization to area method that determined the discharge of a stream based on the area of the tributary subbasin in relation to a discharge and subbasin area of a similar gaged stream. This method was also used to create discharges on the gaged streams for years in which field data were not collected. Subbasin areas were determined from the watershed delineation map developed by Don Essig of IDEQ, shown in Figure 5.

This normalization to area method did not result in a total discharge equal to the observed Lochsa River discharge at Lowell. There are a number of potential explanations for this discrepancy. Two of the most important explanations are that minor laterals and groundwater recharge were not considered. The remainder of the unaccounted for flow was redistributed geographically throughout the system by adjusting the flows of each of the streams by an equivalent percentage, such that the total estimated flow at Lowell matched the observed flows.

Figure 5. Lochsa River Watersheds



After the redistribution of the remaining discharge, the stream discharges were grouped and summed based on the model segmentation and converted to metric units for entry into SNTEMP.

Measured temperature data were not collected in all streams for all study years. Therefore, measured data for each stream were used when they were available. When measured data were not available, measured temperature data for the most similar stream were used. Stream temperatures were then grouped and averaged based on the model segmentation for entry into SNTEMP.

Data were not available for approximately the first two weeks of July 1998 for many upstream tributaries (the upstream-most stream with measured water temperatures for the first two weeks of July was Skookum Creek, which enters Lochsa River at RKM 63.1). For these streams without measured temperatures, the water temperature on July 1, 1997, was used as a surrogate, and water temperatures were linearly interpolated between the July 1 value and the first measured value. The 1997 (high flow) data were used instead of the 1994 (low flow) data because the hydrology in 1997 was more similar to 1998 than was 1994 hydrology.

Model Calibration and Validation

Average Temperature

Calibration

The model was calibrated by adjusting input parameters for the modeled tributaries and global calibration coefficients for July 1 to August 31 in 1994, 1997, and 1998. Headwater flows, headwater temperatures, and groundwater temperatures were adjusted in calibration of the tributaries. In addition, stream widths were adjusted in Crooked Fork, Canyon Creek, and Deadman Creek during model calibration. Table 3 shows the default, starting, and final calibration values for the 1997-1998 and 1994 models

Daily mean water temperatures in the Lochsa River were calibrated to measured temperatures by adjusting the global calibration coefficients for daily average air temperature, daily average wind speed, and daily average relative humidity. For entry into the model, these measured meteorological values were averaged between the Lowell and Powell meteorological stations. Adjusting these values using the global coefficients returns the meteorological parameters to values that better describe daily mean water temperatures. Daily average relative humidity values were increased by 20 percent to account for the increased humidity at the air-water interface. This practice is recommended in Bartholow (1989).

All four modeled tributaries were calibrated based on measured water temperature at the mouths of each stream. None of the four tributaries were gaged at or near the headwaters; thus, headwaters flows were used for tributary calibration in the model. Similarly, headwater temperatures were not known, so headwater temperatures were also used for calibration of tributaries. Groundwater temperatures were not measured at any point in the stream network; therefore, the groundwater temperature parameter was used for calibration of tributaries. Mean annual air temperature was used as the default groundwater temperature and as a starting point for calibration. Finally, for Canyon Creek, Deadman Creek, and Crooked Fork, stream widths were adjusted to calibrate the water temperature of modeled tributaries to the measured water temperature at the mouth of each stream.

Table 4 shows the results of the model calibration for 1998 (average flow). Absolute Mean Error (AME), median error (median), and percentage of error, or percent of difference from the measured value, (%) were calculated for each calibration node. All AME values were below 1°C, and the overall error was held below 5 percent.

The criterion for model validation was that the AME value for average temperatures each year was to be below 1°C. This criterion was

Table 3. Default, Starting, and Final Values for Calibration Parameters

			Default Values	1997-1998 Model Values	1994 Model Values
Global Calibration Coefficients					
		Air temperature	1	0.9	0.9
		Wind speed	1	1.1	1.1
		Relative humidity	1	1.2	1.2
		% sunshine	1	1	1
		Solar radiation	1	1	1
Groundwater Temperature					
River	**Description**	**River KM**			
Crooked Fork	Headwaters to Boulder Creek	149.2 to 134.4	10.03	4.0	4.0
	Boulder Creek to Shotgun Creek	134.4 to 132.8	10.03	5.5	5.5
	Shotgun Creek to Mouth	132.8 to 112.8	10.03	7.0	7.0
White Sand Creek	Wilderness Boundary to Dan & Fern Creeks	136.1 to 134.8	10.03	5.5	5.5
	Dan & Fern Creeks to Mouth	134.8 to 112.8	10.03	7.0	7.0
Deadman Creek	Headwaters to Mouth	27.1 to 16.3	10.03	12.0	3.0
Canyon Creek	Headwaters to Mystery Creek	29.9 to 20.9	10.03	6.9	2.0
	Mystery Creek to Mouth	20.9 to 11.9	10.03	6.9	6.9
Stream Width					
Crooked Fork	Headwaters to Hopeful Creek	149.2 to 143.7	3.4	1.7	1.7
	Hopeful Creek to Haskell Creek	143.7 to 131.8	9.6	4.8	4.8
	Haskell Creek to Brushy Fork	131.8 to 127.0	16.6	8.3	8.3
	Brushy Fork to change in aspect	127.0 to 123.9	20.8	10.4	10.4
	Change in aspect to change in aspect	123.9 to 117.9	26.4	13.2	13.2
	Change in aspect to mouth	117.9 to 112.8	26.3	13.1	13.1
White Sand Creek	Big Sand Creek to Storm Creek	136.1 to 129.2	21	21.0	21.0
	Storm Creek to change in aspect	129.2 to 120.0	19.3	19.3	19.3
	change in aspect to change in aspect	120.0 to 117.5	26.7	26.7	26.7
	change in aspect to mouth	117.5 to 112.8	30	30.0	30.0
Lochsa River	Confluence to change in aspect	112.8 to 103.0	50.2	50.2	50.2
	Change in aspect to change in aspect	103.0 to 93.3	38.1	38.1	38.1
	Change in aspect to change in aspect	93.3 to 75.6	29.1	29.1	29.1
	Change in aspect to Fish Creek	75.6 to 38.8	35.1	35.1	35.1
	Fish Creek to change in aspect	38.8 to 30.9	37.1	37.1	37.1
	Change in aspect to change in aspect	30.9 to 25.4	44.3	44.3	44.3
	Change in aspect to Deadman Creek	25.4 to 16.3	48.7	48.7	48.7

Table 3. Default, Starting, and Final Values for Calibration Parameters (continued)

			Default Values	1997-1998 Model Values	1994 Model Values
Stream Width					
River	**Description**	**River KM**			
Lochsa River (continued)	Deadman Creek to change in aspect	16.3 to 15.0	36.9	36.9	36.9
	Change in aspect to Canyon Creek	15.0 to 11.7	32.1	32.1	32.1
	Canyon Creek to mouth	11.7 to 0.0	41.7	41.7	41.7
Deadman Creek	Headwaters to West Fork Deadman Creek	27.1 to 22.7	5	3.2	3.2
	West Fork Deadman Creek to mouth	22.7 to 16.3	6.7	4.2	4.2
Canyon Creek	Headwaters to Mystery Creek	29.9 to 21.4	4.1	1.6	1.6
	Mystery Creek to mouth	21.4 to 11.7	6.2	2.5	2.5

Table 4. 1998 (Average Flow) Average Temperature Model Calibration Results

River	River KM	AME (°C)	Median Error (°C)	Range (°C)	
				Min	Max
Lochsa River	0.0	0.84	0.14	-4.00	1.40
Deadman Creek	16.3	0.81	0.09	-2.77	1.77
Lochsa River	42.3	0.70	-0.30	-2.73	1.05
Lochsa River	64.9	0.79	-0.63	-2.86	0.97
Lochsa River	78.4	0.69	-0.47	-2.08	1.13
Crooked Fork	112.8	0.81	0.24	-1.69	3.25
White Sand	117.9	0.76	0.36	-1.48	3.43
Average AME % Difference from Measured			0.77 4.69%		

met for 1998 (average flow) and 1997 (high flow), but 1994 (low flow) validation statistics indicated that re-calibration for 1994 was necessary. As a result, 1994 was separated from the model and was calibrated as a separate model using similar parameters as the original model: headwater discharge, head-water temperature, groundwater temperature, and global calibration coefficients. Stream widths were not changed in the 1994 model calibration. In addition, Canyon Creek was not calibrated in the 1994 model because it was already calibrated to 1994 measured data in the original model due to the lack of 1998 measured data. Results of 1994 average temperature model calibration are shown in Table 5.

Table 5. 1994 (Low Flow) Average Temperature Model Calibration Results

River	River KM	AME (°C)	Median Error (°C)	Range (°C)	
				Min	Max
Lochsa River	0.0	0.54	0.04	-1.52	1.78
Canyon Creek	11.7	0.49	-0.32	-1.41	0.84
Deadman Creek	16.3	1.11	0.21	-3.00	3.49
Average AME % Difference from Measured			0.71 4.55%		

Validation

Table 6 shows the results of average temperature model validation for 1997 (high flow). The AME for each node was below 0.9°C, and overall difference from measured temperatures was slightly above 4 percent.

Table 6. 1997 (High Flow) Average Temperature Model Validation Results

River	River KM	AME (°C)	Median Error (°C)	Range (°C)	
				Min	Max
Lochsa River	0.0	0.54	-0.09	-2.02	0.87
Canyon Creek	11.7	0.50	-0.04	-1.64	1.06
Deadman Creek	16.3	0.53	0.35	-0.82	1.36
Lochsa River	42.0	0.59	-0.34	-1.99	1.30
White Sand	117.9	0.86	0.29	-1.03	2.61
Average AME % Difference from Measured			0.60 4.08%		

Maximum Temperature

Calibration

Maximum water temperature calibration was accomplished by adjustment of four regression coefficients in the job control file (Theurer et al. 1984). The regression coefficients relate measured average daily air temperature to estimated maximum daily air temperature using the following model:

$$T_{ax} = T_a + \left[a_o + a_1 H_{sg} + a_2 R_h + a_3 \left(S / S_o\right)\right]$$

Where:

T_{ax} = maximum daytime air temperature (° C)

T_a = average daily air temperature (° C)

H_{sg} = ground level solar radiation ($J/m^2/sec$)

R_h = relative humidity (decimal)

S/S_o = percent possible sunshine (decimal)

a_0, a_1, a_2, a_3 = regression coefficients

The maximum daily air temperature is used by SNTEMP to find the maximum daily water temperature for a given day at all model nodes. This maximum air temperature regression model is the only method SNTEMP uses to calculate maximum water temperatures.

Maximum temperatures calculated using the above equation are not reported in SNTEMP output. Thus, a hand calculation was performed to compare the result of the equation, maximum air temperature, to the measured maximum air temperature on a random day – July 28, 1998. Final calibration regression coefficients and measured values were entered into the equation. The solar radiation value was obtained by entering the complete set of input parameters into the SSTEMP model. Values of the coefficients and variables were as follows:

T_a = 20.87°C
H_{sg} = 216.13 $J/m^2/s$
R_h = 80.2%
S/S_o = 67.3%
a_0 = -9.89
a_1 = 0.0082
a_2 = 2.79
a_3 = 0.5

The result of the equation was a maximum air temperature of 15.33°C, several degrees below the measured maximum air temperature of 23.48°C. While the difference between the two values is substantial, this is not surprising, as maximum air temperature is not treated as a state variable, rather as the only means of calibrating the SNTEMP daily average temperature model to maximum temperatures.

The maximum air temperature regression coefficients were modified from the program default values and values given in Theurer et al. (1984) using trial and error. The coefficients for the 1997-1998 (high flow-average flow) model were different than those used in the 1994 (low flow) model. Tables 7 and 8 show maximum temperature model calibration results for 1998 and 1994, respectively.

Table 7. 1998 (Average Flow) Maximum Temperature Model Calibration Results

River	River KM	AME (°C)	Median Error (°C)	Range (°C)	
				Min	Max
Lochsa River	0.0	1.14	-1.01	-3.07	0.97
Deadman Creek	16.3	0.97	0.25	-3.89	2.53
Lochsa River	42.3	1.93	-1.97	-3.47	0.43
Lochsa River	64.9	0.86	-0.16	-2.81	2.59
Lochsa River	78.4	1.03	-0.42	-2.59	1.53
Crooked Fork	112.8	2.76	-2.93	-5.23	1.23
White Sand	117.9	1.40	1.36	-1.14	6.18
Average AME % Difference from Measured			1.40 7.17%		

Table 8. 1994 (Low Flow) Maximum Temperature Model Calibration Results

River	River KM	AME (°C)	Median Error (°C)	Range (°C)	
				Min	Max
Lochsa River	0.0	0.81	-0.60	-2.74	1.19
Canyon Creek	11.7	0.46	0.17	-1.48	1.17
Deadman Creek	16.3	1.47	0.97	-3.09	3.99
Average AME % Difference from Measured			0.91 5.05%		

Validation

Table 9 shows the results of maximum temperature model validation for 1997 (high flow). The AME for the validation nodes averaged 1.31°C, with overall difference from measured values below 8 percent. The errors for the maximum temperature models are higher than those for the average temperature models and can be attributed to SNTEMP's lack of a robust maximum temperature model.

The results of the maximum temperature model validation illustrate a key limitation of the SNTEMP model, that which constrains the ability to develop a more elaborate calibration to maximum daily temperatures. An alternative model selection would be necessary to expand the analysis of maximum daily temperatures.

Table 9. 1997 (High Flow) Maximum Temperature Model Validation Results

River	River KM	AME (°C)	Median Error (°C)	Range (°C)	
				Min	Max
Lochsa River	0.0	0.72	-0.22	-2.69	1.62
Canyon Creek	11.7	1.26	0.86	-2.52	5.14
Deadman Creek	16.3	1.15	1.01	-0.49	3.18
Lochsa River	42.0	1.63	0.50	-0.79	2.56
White Sand	117.9	1.76	0.63	-3.11	5.67
Average AME % Difference from Measured			1.15 7.05%		

Model Simulations

Following model calibration and validation, the models were used to simulate scenarios to answer the following six questions posed by IDEQ:

1. What are predicted water temperatures under current canopy conditions?
2. What are predicted water temperatures with full potential canopy cover?
3. What input variable most explains predicted water temperatures?
4. How much decrease in thermal load would be necessary to meet Idaho's CWB criteria on a day that air temperature reaches the 90th percentile of the annual peaks in seven-day average of daily maximum air temperature?
5. How much of this decrease in thermal load could be provided by increased stream shading?
6. How much cooling in tributary inflow temperatures would be needed for the Lochsa River to meet CWB criteria at Lowell on the 90th percentile air temperature day?

Simulation 1—What are predicted water temperatures under current canopy conditions?

An "existing conditions" water temperature model was calibrated and validated (see

previous section) to current canopy conditions. The current canopy conditions are summarized in Table 10. Modeled temperature values under existing canopy conditions are summarized as the Baseline Condition in Table 11.

Simulation 2—What are predicted water temperatures with full potential canopy cover?

"Full potential canopy cover" was simulated by changing the vegetative shade parameters of crown width, crown height, offset, and percent (%) density for each segment of the modeled system. The changes were attained by assuming a "passive restoration" strategy, where the dominant species and habitat type would be allowed to grow to its full potential with no anthropogenic changes, nor changes due to fire or disease. The full potential was determined by observing the 80th percentile value for the tree height and canopy density variables from nearby stands with similar habitat types. Table 10 shows the habitat type groups for each of the stream segments, and the canopy densities for the existing and full potential canopy scenarios.

The theoretical maximum potential for a wilderness, unmanaged, untouched stand of trees is the 50th percentile of that stand; average values of the stand that are already at maximum potential. However, stands in the Lochsa River basin are subject to human management. Even under wilderness conditions, these stands are susceptible to fire and disease. Based on discussion with Clearwater National Forest silviculturist Bill Wulf (2001), the 80th percentile of the tree height and canopy density parameters was used for this simulation. The 80th percentile of these variables represent the natural disturbances that are an integral part of the forest landscape.

Two full potential canopy cover scenario were simulated: Scenario 1 reflects passive restoration strategy for all tributaries and the south/east bank of the Lochsa River only, and Scenario 2 reflects passive restoration strategy for all tributaries and both banks of the Lochsa River. Scenario 1 was simulated to acknowledge the continued presence of U.S. Route 12. In this scenario, the south/east bank of the Lochsa River was modeled with full potential canopy cover, while the north/west bank of the Lochsa River exhibited existing canopy cover. Scenario 2 simulates the abandonment of U.S. Route 12 to allow full potential canopy cover to generate on both banks as a result of passive restoration.

The average changes in temperature for the July-August modeling period are shown in Table 11 for the full canopy simulations. The daily average and daily maximum water temperatures under full potential canopy conditions, averaged over the modeling period, are compared to baseline conditions throughout the Lochsa River in Figures 6 and 7, respectively.

Under full potential canopy conditions, daily average water temperatures of the Lochsa River at the USGS gage would be approximately 1.0 to 1.5°C cooler than under existing canopy conditions in the modeled years. Maximum water temperatures would be decreased approximately 1.4 to 2.1°C for the same period. These changes in water temperature are not enough to meet either Idaho CWB daily average or daily maximum temperature criteria.

An additional model was run using tree height and canopy density values based on the 98th percentile of nearby stands. Average decreases in temperature were 1.3° and 2.0°C greater than those seen in the 80th percentile simulation, respectively. Water temperatures would be reduced sufficiently to meet the Idaho CWB criterion of 22.0°C for maximum temperature; however, daily average stream temperatures in the Lochsa River still would not meet Idaho CWB average temperature criterion of 19.0°C under this scenario. An average stand of trees growing to sizes

				Existing conditions					Potential full canopy - 80th percentile, Scenario 1					Potential full canopy - 80th percentile, Scenario 2				
River	Reach	River KM	Habitat type group (Clearwater NF TSMRS)	Crown width (m)	Height (m)	East Offset (m)	West Offset (m)	Density (%)	Crown width (m)	Height (m)	East Offset (m)	West Offset (m)	Density (%)	Crown width (m)	Height (m)	East Offset (m)	West Offset (m)	Density (%)
Crooked Fork	Headwaters to Hopeful Creek	149.2 to 143.7	Moist - S/SAF/MH	10	22.6	2	2	37.1	18	23.3	1	1	63	18	23.3	1	1	63
	Hopeful Creek to Haskell Creek	143.7 to 131.8	Moist - S/SAF/MH	10	22.6	2	2	37.1	18	23.3	1	1	63	18	23.3	1	1	63
	Haskell Creek to Brushy Fork	131.8 to 127.0	Moist - S/SAF/MH	10	26.1	2	2	32.3	18	23.3	1	1	63	18	23.3	1	1	63
	Brushy Fork to change in aspect	127.0 to 123.9	Moist - S/SAF/MH	10	24.7	2	2	32.1	18	27.3	1	1	54	18	27.3	1	1	54
	Change in aspect to change in aspect	123.9 to 117.9	Wet - WRC	10	30	2	2	11.2	18	32.9	1	1	74	18	32.9	1	1	74
	Change in aspect to mouth	117.9 to 112.8	Wet - WRC	10	30.7	4	4	15.8	18	32.9	1	1	74	18	32.9	1	1	74
White Sand Creek	Big Sand Creek to Storm Creek	136.1 to 129.2	Moist - S/SAF/MH	10	26.9	2	2	37.2	18	29.3	1	1	71	18	29.3	1	1	71
	Storm Creek to change in aspect	129.2 to 120.0	Moist - WRC/WH	10	26.3	2	2	41.4	18	26.9	1	1	55	18	26.9	1	1	55
	change in aspect to change in aspect	120.0 to 117.5	Moist - WRC/WH	10	27.8	2	2	47.9	18	28.1	1	1	54	18	28.1	1	1	54
	change in aspect to mouth	117.5 to 112.8	Moist - WRC/WH	10	29.9	4	4	47.8	18	28.1	1	1	54	18	28.1	1	1	54
Lochsa River	Confluence to change in aspect	112.8 to 103.0	Moist - WRC/WH	10	27.8	9	20.9	45.6	18	30.7	8.6	20.9	75	18	30.7	8.6	8.6	75
	Change in aspect to change in aspect	103.0 to 93.3	Moist - WRC/WH	10	29.4	7	40.9	51.8	18	30.7	8.6	40.9	75	18	30.7	8.6	8.6	75
	Change in aspect to change in aspect	93.3 to 75.6	Moist - WRC/WH	10	25.3	9.6	30.6	49.1	18	30.7	8.6	30.6	75	18	30.7	8.6	8.6	75
	Change in aspect to Fish Creek	75.6 to 38.8	Moist - WRC/WH	10	23.2	9.3	22.4	33.4	18	27	8.6	22.4	67	18	27	8.6	8.6	67
	Fish Creek to change in aspect	38.8 to 30.9	Moist - WRC/WH	10	20.7	12.9	27.3	32.1	18	27	8.6	27.3	67	18	27	8.6	8.6	67
	Change in aspect to change in aspect	30.9 to 25.4	Moist - WRC/WH	10	19.7	6.5	16.1	28.4	18	27	8.6	16.1	67	18	27	8.6	8.6	67
	Change in aspect to Deadman Creek	25.4 to 16.3	Moist - WRC/WH	10	22.8	10.9	44.2	28.2	18	27	8.6	44.2	67	18	27	8.6	8.6	67
	Deadman Creek to change in aspect	16.3 to 15.0	Moist - WRC/WH	10	25.1	14.9	59.8	35.5	18	26.8	8.6	59.8	67	18	26.8	8.6	8.6	67
	Change in aspect to Canyon Creek	15.0 to 11.7	Moist - WRC/WH	10	24.7	11.4	13.8	42.1	18	26.8	8.6	13.8	67	18	26.8	8.6	8.6	67
	Canyon Creek to mouth	11.7 to 0.0	Moist - WRC/WH	10	27.6	16.5	25.6	32.0	18	26.8	8.6	25.6	67	18	26.8	8.6	8.6	67
Deadman Creek	Headwaters to West Fork Deadman Creek	27.1 to 22.7	Moist - WRC/WH	10	25.4	2	2	35.3	18	31	2	2	68	18	31	2	2	68
	West Fork Deadman Creek to mouth	22.7 to 16.3	Moist - WRC/WH	10	27.2	2	2	37.4	18	31	2	2	68	18	31	2	2	68
Canyon Creek	Headwaters to Mystery Creek	29.9 to 21.4	Moist - WRC/WH	10	25.5	2	2	39.3	18	31	2	2	68	18	31	2	2	68
	Mystery Creek to mouth	21.4 to 11.7	Moist - WRC/WH	10	31.7	2	2	47.0	18	31	2	2	68	18	31	2	2	68

Note: Baseline—Existing canopy conditions
Scenario 1—Full potential canopy cover assuming the continued presence of U.S. Route 12
Scenario 2—Full potential canopy cover assuming passive restoration in place of U.S. Route 12

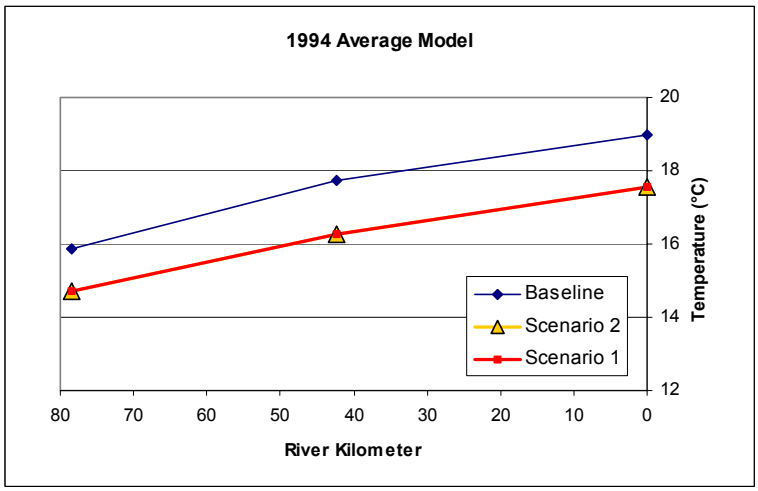
Table 10. Current and Full Potential Canopy Cover Conditions

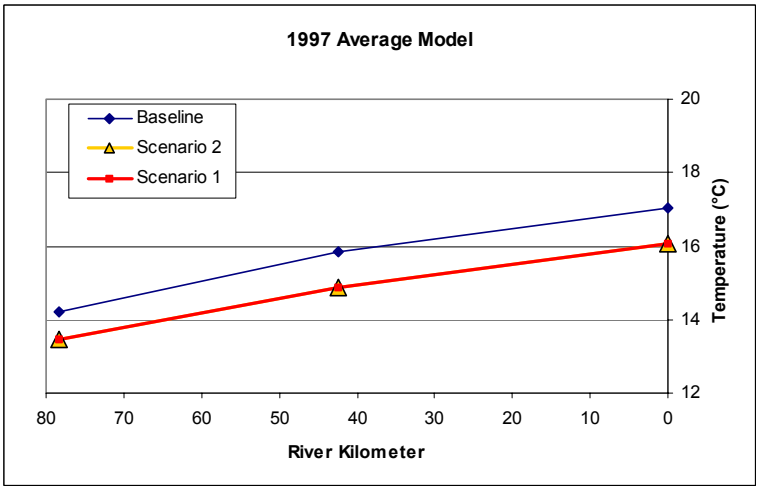
Table 11. Output from Full Potential Canopy Cover Models, Average for Modeling Period

RKM	Average Temperature Model			Maximum Temperature Model		
	Baseline	Δ Temp Scenario 1	Δ Temp Scenario 2	Baseline	Δ Temp Scenario 1	Δ Temp Scenario 2
1994 (low flow)						
0.0	18.99	-1.42	-1.45	20.87	-2.05	-2.08
42.3	17.73	-1.49	-1.49	20.23	-2.31	-2.31
78.4	15.88	-1.18	-1.18	18.15	-2.12	-2.12
1997 (high flow)						
0.0	17.02	-0.94	-0.95	18.51	-1.39	-1.41
42.3	15.86	-0.98	-0.98	17.96	-1.63	-1.63
78.4	14.21	-0.76	-0.76	16.15	-1.51	-1.51
1998 (average flow)						
0.0	19.38	-1.08	-1.09	21.07	-1.59	-1.60
42.3	18.28	-1.15	-1.15	20.59	-1.85	-1.85
78.4	16.39	-0.91	-0.91	18.54	-1.73	-1.73

Note: Baseline—Existing canopy conditions
Scenario 1—Full potential canopy cover assuming the continued presence of U.S. Route 12
Scenario 2—Full potential canopy cover assuming passive restoration in place of U.S. Route 12

Figure 6. Full Potential Canopy Cover Models vs. Baseline Model: Average Temperature, Averaged Over Modeling Period





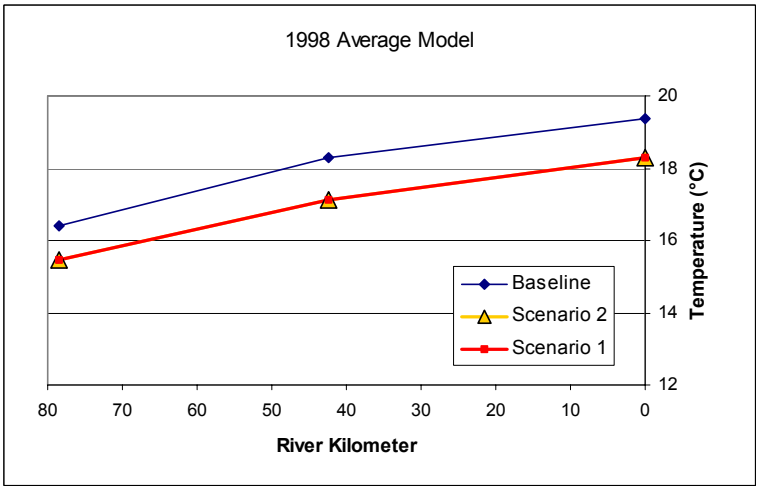
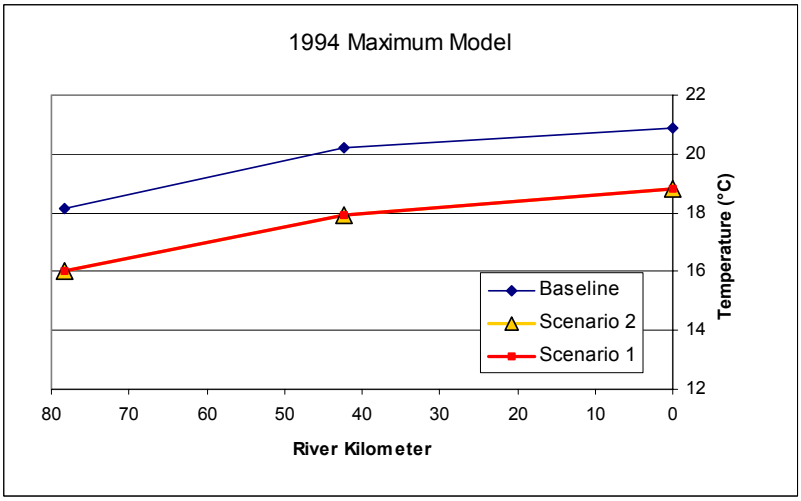
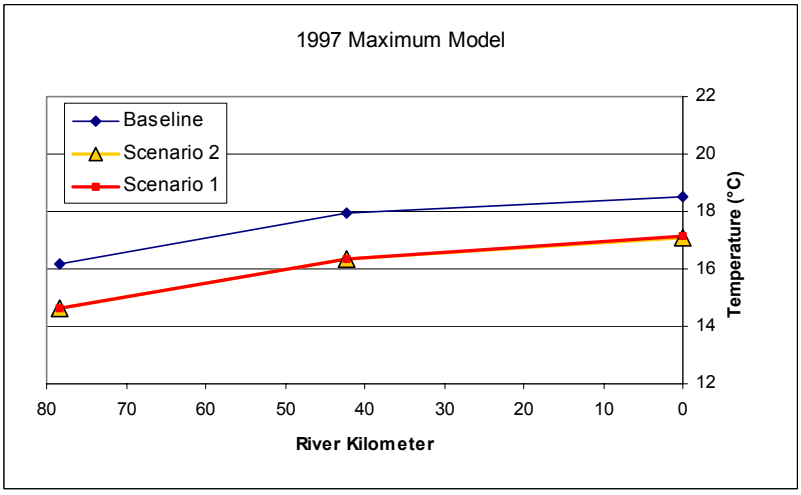
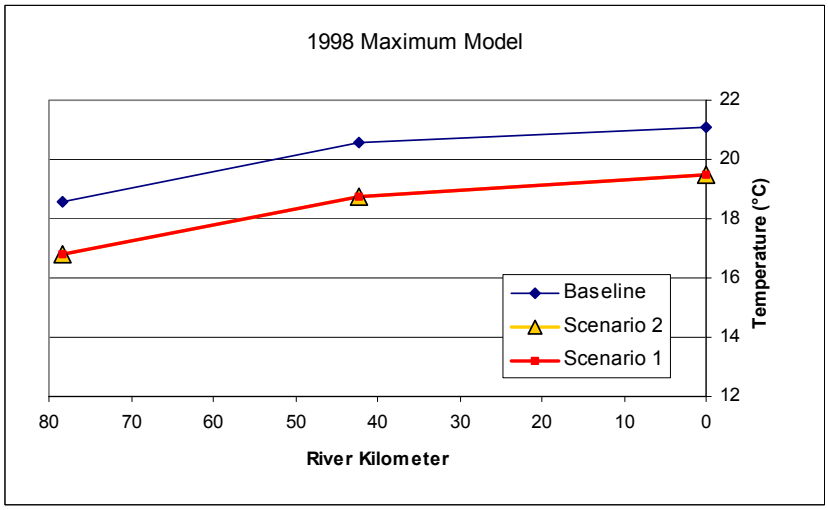


Figure 7. Full Potential Canopy Cover Models vs. Baseline Model: Maximum Temperature, Averaged Over Modeling Period







indicated by the 98th percentile for these two variables is not considered attainable in the Lochsa River basin, even with a full passive restoration effort (Wulf 2001). Therefore, the 80th percentile for the variables was used to attain a more plausible simulation.

Simulation 3—What input variable most explains predicted stream temperatures? This question can easily and accurately be answered, in the context of the SNTEMP models, using a sensitivity analysis. A sensitivity analysis is a method of identifying the important parameters and understanding the general behavior of a model by systematically changing the value of one or more input parameters (Chapra 1997). A sensitivity analysis is useful because of its role in model validation and evaluating model results when input has been changed. Other features of a sensitivity analysis include: 1) It assists in identifying the input parameters that contribute only marginally to the functional relationships of the model; 2) It quantitatively measures the change in output due to variations in the input; and 3) It describes the degree to which input parameter values can be altered without significantly affecting the model output (Hendrickson 1984).

The sensitivity of SNTEMP to various input parameters was tested by parameter perturbation of one baseline parameter per analysis (Chapra 1997). The percentage of the change of each parameter was based on what can realistically be seen in the physical system.

A parameter perturbation sensitivity analysis is performed by varying each of the model parameters while holding the other terms constant (Chapra 1997). One method of varying the parameters is raising and lowering the value of the parameter being tested a fixed percent. This is how the sensitivity analysis was performed in this study.

Sensitivity analyses involving perturbation of 12 parameters were performed and compared to quantify the sensitivity of the output to the input. The 1998 (average flow) model of the Lochsa River was selected as the model to be tested. The 62-day time series for a single parameter was increased by 10 percent from the baseline, and the model was run with the modification to the single parameter. This model was then run with a reduction of 10 percent from the baseline. This process was repeated for all 12 parameters. For each treatment, the change in output water temperature at the downstream-most node was compared to the baseline. The value that each treatment differed from the baseline was plotted in Figures 8 and 9 for average temperature and maximum temperature models, respectively. The total °C each parameter varied from the baseline is given in Table 12.

As shown in Figures 8 and 9, the parameters that the 1998 (average flow) model were most sensitive to were air temperature, inflow temperature, solar radiation, stream width, relative humidity, and stream flow. Five of these six parameters were also recognized as the top six most sensitive parameters in a sensitivity analysis described in Bartholow (1989). Note that the relative "importance" of an input parameter to ultimate downstream water temperature predictions varies between the average and maximum water temperature models, as shown in Table 12.

Figure 10 plots the full range of values for each of the input parameters. Comparing the full range of input to the change in output based on parameter perturbation, given in Figures 8 and 9, gives a good indication of the sensitivity of the system to each parameter. For example, in Figure 8, 10 percent increases and decreases of the relative humidity and stream flow input parameters result in an approximately equal change in output temperature. However, values of stream flow vary more in the 1998 data set than do values of relative humidity, as shown in Figure 10. Because of the great range of stream flows over the course of the two month data set, the stream flow variable can be considered more important than relative humidity in explaining stream temperatures.

Figure 8. Sensitivity of the Output Water Temperature Predictions of the 1998 Average Temperature Model to the 10% Increase and Decrease of Selected Input Parameters

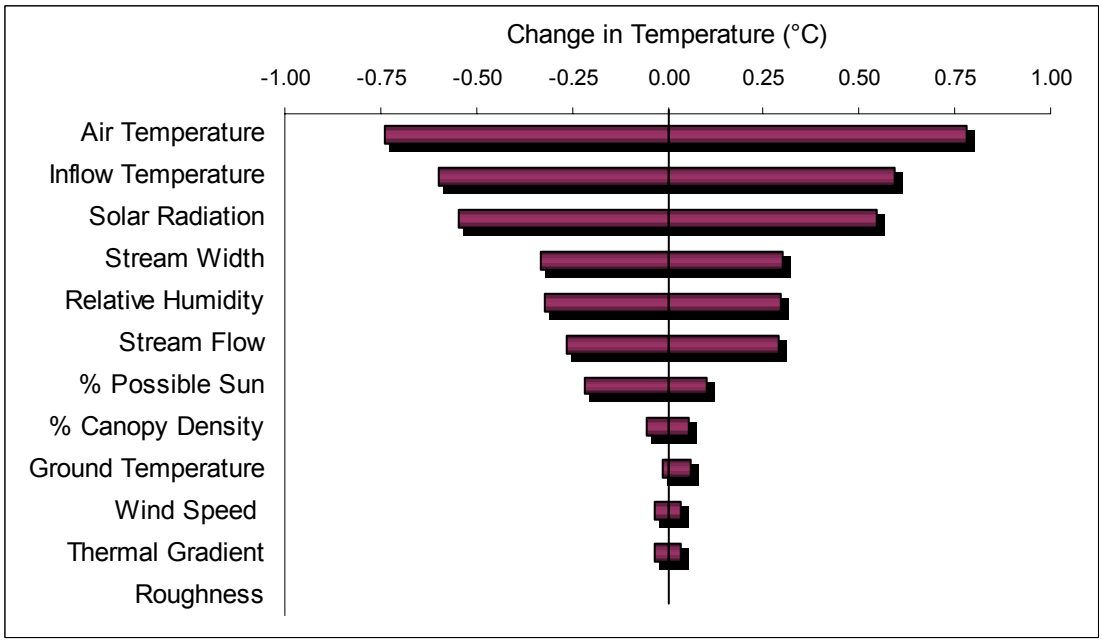


Figure 9. Sensitivity of the Output Water Temperature Predictions of the 1998 Maximum Temperature Model to the 10% Increase and Decrease of Selected Input Parameters

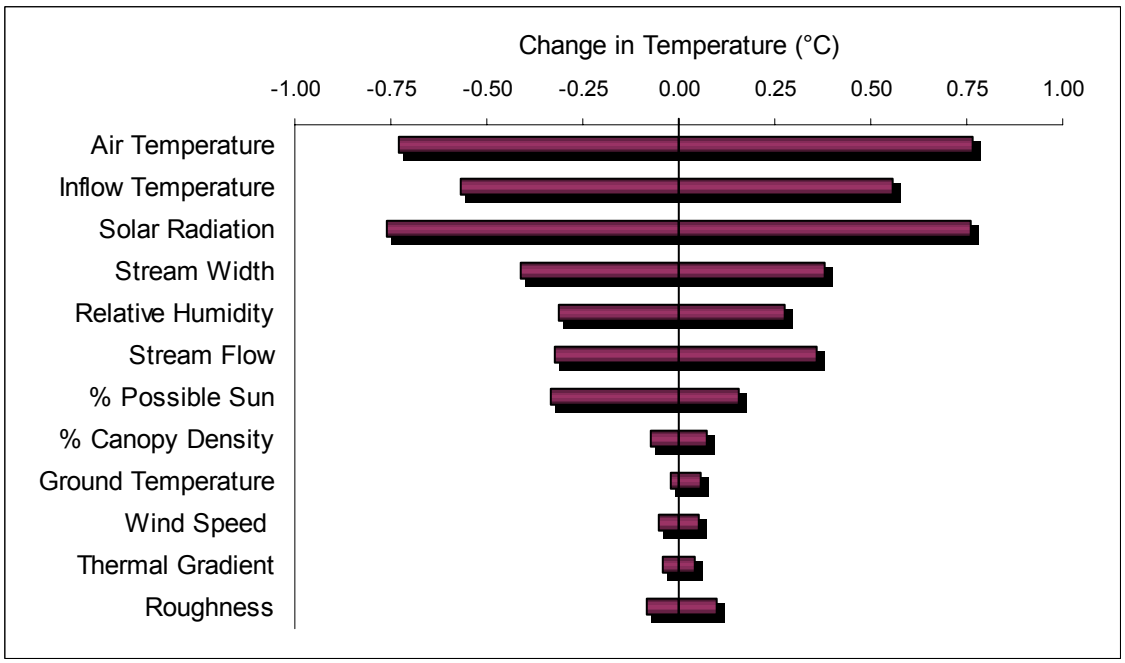


Figure 10. Temporal Range of Input Parameters at Lochsa River RM 42.3, 1998 Model

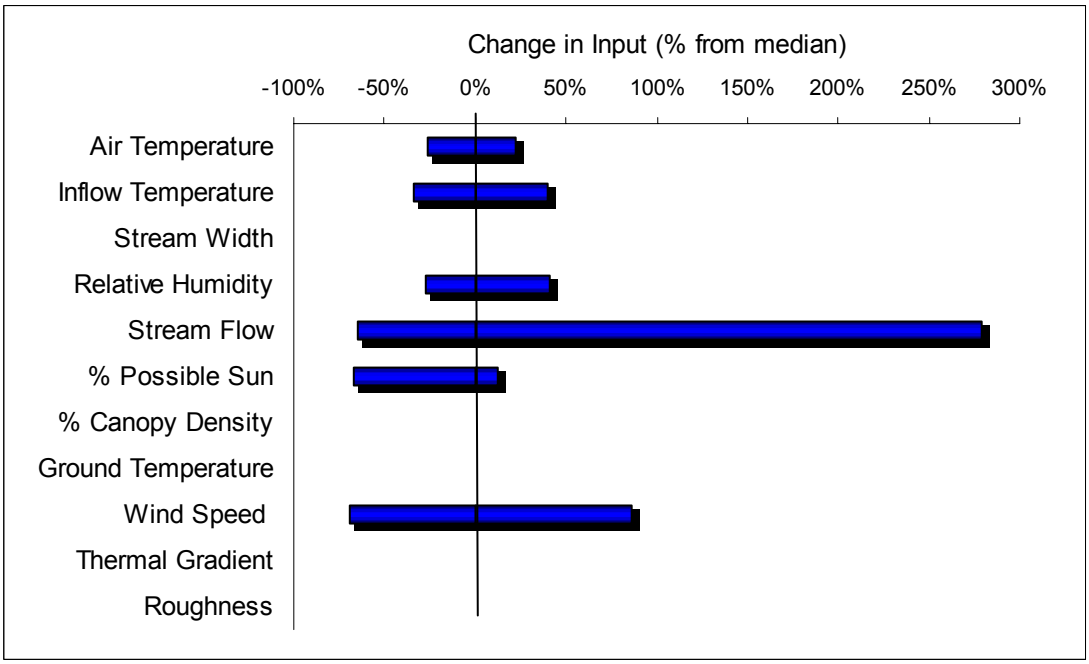


Table 12. Sensitivity of the Temporal Scale Input Parameter Values and Output Water Temperature Predictions of the 1998 Models Based on ±10% Parameter Perturbation[1]

Parameter	Scale	Input Range Min %	Input Range Max %	Average T Model (°C)	Maximum T Model (°C)
Air Temperature	Temporal	-26.3%	21.9%	1.52	1.50
Inflow Temperature	Temporal & Spatial	-33.9%	40.3%	1.19	1.12
Solar Radiation	Temporal	[2]	[2]	1.09	1.52
Stream Width	Spatial	--	--	0.63	0.79
Relative Humidity	Temporal	-27.0%	41.0%	0.62	0.59
Stream Flow	Temporal & Spatial	-64.5%	278.9%	0.55	0.68
% Possible Sun	Temporal	-66.9%	11.9%	0.32	0.49
% Canopy Density	Spatial	--	--	0.11	0.15
Ground Temperature	Spatial	--	--	0.07	0.08
Wind Speed	Temporal	-69.6%	86.6%	0.07	0.10
Thermal Gradient	Constant	--	--	0.07	0.08
Roughness	Spatial	--	--	0.00	0.18

[1] – Input ranges are measured in percentage difference from the median, and output ranges are measured in total °C change from baseline temperature.

[2] – Ranges of incoming solar radiation cannot be obtained easily from SNTEMP output. See text for further explanation.

(Note: A sensitivity analysis was performed on the solar radiation parameter by adjusting the global calibration coefficient for solar radiation in the job control file. The range of solar radiation in the input set is determined internally by the model and is not recorded in the model output. Therefore, the range of input values could not be determined. However, the results of the sensitivity analysis for solar radiation are included in Figures 8 and 9 and Table 12.)

Based on the above analysis, it can be inferred that air temperature is the input variable that most explains stream temperatures in the Lochsa River. Inflow water temperature is another important input variable. However, the great variability of the stream flow input underscores its significance to Lochsa River water temperatures, as the Lochsa River is not flow regulated.

Simulation 4—How much decrease in thermal load would be necessary to meet Idaho's CWB criteria on a day that air temperature reaches the 90th percentile of the annual peaks in seven-day average of daily maximum air temperature?

The Lochsa River falls within National Climatic Data Center—Idaho Climate Division 4, in which there are three official weather stations. The study site lies closest to the McCall, Idaho, weather station (Coop Station ID # 105708). Analysis of maximum temperature data recorded at the McCall station indicates that 7-day average maximum air temperature exceeded the 90th percentile (32.78°C) during the period of July 23 through August 1, 1994. The 90th percentile was not exceeded in 1997 (high flow) or 1998 (average flow).

Of the July 23 through August 1, 1994, period, the 7-day average maximum temperature on August 1 most closely matched the 90th percentile (32.94°C). The 1994 (low flow) maximum temperature model was run for August 1 (Julian Day 213) to answer this question.

The average flow at the Lochsa River gage near Lowell on August 1, 1994, was 18.21 m^3/s. Measured temperatures indicate the average daily water temperature on this date was 22.3°C; 3.3°C above the average daily temperature criterion. The maximum measured water temperature on this date was 25.2° C; 3.2°C above the instantaneous temperature criterion.

For the water temperature at this section of the Lochsa River to decrease to the instantaneous criterion on this date, approximately 2.432×10^8 joules (J) (2.305×10^5 BTU, 5.813×10^4 C) would have to be removed from the river.

The average temperature of 22.3°C reflects an average value of water temperature throughout a 24-hour period. A daily thermal load contributes to this temperature. To decrease the water temperature at this location to the average water temperature criterion, a thermal load of approximately 2.167×10^{13} J/day (2.054×10^{10} BTU/day, 5.179×10^9 C/day) would have to be removed from the river.

Simulation 5—How much of this decrease in thermal load could be provided by increased stream shading?

Energy, in units of joules (J), British Thermal Units (BTU), or kilocalories (C), cannot be extracted from the SNTEMP model output without significant changes to the source code. However, increasing vegetative shade in the reach can simulate a reduction of thermal load. The increased shading prevents energy, in the form of solar radiation, from entering the river. The decreased temperature as a result of increased vegetative shading reflects the reduction in thermal load input to the Lochsa River.

The full potential canopy cover simulation, as described above, simulates reduced thermal conditions due to increased stream shading. Table 13 compares output from the two full potential canopy cover scenarios with the baseline simulation on the 90th percentile air temperature day, August 1, 1994.

As shown in Table 13, full potential canopy cover can decrease the average stream temperature on August 1, 1994, at RKM 0.0 by as much as 1.35°C. However, since the target decrease is 2.76°C, increasing stream shading to full potential canopy cover will not decrease water temperatures below the average temperature criterion. Maximum temperatures at the same location can be reduced by as much as 1.88°C under the 80th percentile full potential canopy cover scenario. The target reduction in maximum water temperature to meet the instantaneous criterion is 1.32°C. Thus, on the 90th percentile air temperature day represented by August 1, 1994, the maximum water temperature criterion can be met if stream shading is increased to full potential canopy cover conditions.

Simulation 6—How much cooling in tributary inflow temperatures would be needed for the Lochsa River to meet CWB criteria at Lowell on 90th percentile air temperature day?

Model inflow water temperatures on August 1, 1994, were adjusted to answer this question. The inflow temperatures were reduced using a trial-and-error process until the Idaho CWB temperature criteria were met for both daily average temperature (19.0°C) and maximum temperature (22.0°C). A total tributary reduction of 8.53°C would be needed to meet Idaho CWB temperature criteria at Lowell on August 1, 1994. The average temperature criterion is the limiting factor, as the maximum temperature criterion is met with an approximately 4.6°C reduction in inflow temperature. This conclusion is consistent with the results of Simulations 2 and 5, in which a change in vegetative shading resulted in a greater decrease in maximum water temperature than average water temperature.

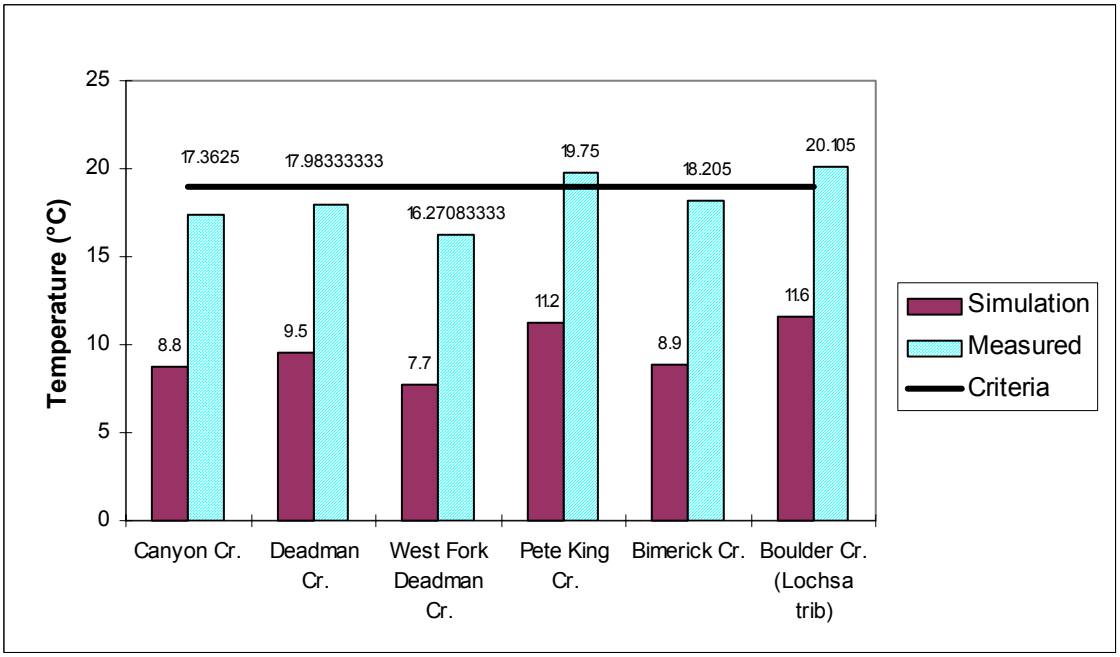
Decreasing all tributaries by an average of 8.53°C in the mid-summer is not a physically attainable goal. Figure 11 compares the measured average water temperature for August 1, 1994 with the simulated water temperature an the same date and the CWB criterion. Many of these tributaries are in unmanaged (i.e. Bimerick Creek) or wilderness (i.e. Boulder Creek) areas, and riparian cover is at or near maximum potential throughout the creeks. The simulated temperatures are represented at the mouths of each of the creeks, implying that temperatures would be even colder upstream. Two of the tributaries, Boulder Creek and Pete King Creek, have average measured water temperatures at the mouths of the creeks higher than the 19°C CWB criterion on August 1, 1994. As stated earlier, Boulder Creek drains a mostly un-managed area. Inducing a reduction of approximately 8.5°C on this day is very unlikely.

Table 13. Full Potential Canopy Cover Simulation Results for August 1, 1994

	Average Temperature Model			Maximum Temperature Model		
RKM	Baseline (°C)	Δ Temp Scenario 1 (°C)	Δ Temp Scenario 2 (°C)	Baseline (°C)	Δ Temp Scenario 1 (°C)	Δ Temp Scenario 2 (°C)
0.0	21.76	-1.33	-1.35	23.32	-1.86	-1.88
Target Δ Temp (°C)		2.76			1.32	

Note: Baseline—Existing canopy conditions
Scenario 1—Full potential canopy cover assuming the continued presence of U.S. Route 12
Scenario 2—Full potential canopy cover assuming passive restoration in place of U.S. Route 12

Figure 11. 1994 July-August Simulated vs. Measured Tributary Water Temperatures, Simulation 6



Discussion

Results of the model simulations indicate the following:

- Water temperatures in the Lochsa River exceed Idaho CWB temperature criteria on a 90th percentile air temperature day.
- The reduction in thermal load to meet Idaho CWB temperature criteria on a 90th percentile air temperature day would be approximately 2.167×10^{13} J/day (2.054×10^{10} BTU/day, 5.179×10^{9} C/day).
- Allowing passive restoration strategies to generate full potential canopy cover in riparian areas throughout the watershed would decrease average and maximum water temperatures but not enough to satisfy Idaho CWB temperature criteria.
- To satisfy Idaho daily average temperature criteria on a 90th percentile air temperature day without adjusting canopy cover, inflow temperatures for all tributaries in the Lochsa River watershed would have to be reduced by more than 8°C. This is unrealistic as the water temperatures at the mouths of many tributaries would be as low as 7.7° C or lower in the months of July and August.
- Air temperature, inflow temperature, and stream flow are the input variables that are most important in determining water temperature in the Lochsa River.

Conclusions

A water temperature model of the Lochsa River and four of its tributaries, Crooked Fork, White Sand Creek, Deadman Creek, and Canyon Creek, was developed based on measured meteorological and hydrologic data in 1994, 1997, and 1998. Other measured data used in the model included stream geometry, stream and watershed hydrology, local topography, and vegetation data. After a comprehensive evaluation process of several temperature models and hybrid model combinations, the model selected to simulate water temperatures was SNTEMP, developed by the U.S. Fish and Wildlife Service (Theurer et al. 1984).

Two models were developed: a 1994 model and a 1997-1998 model. These years were selected due to their range in hydrologic extremes: 1997 registered the second highest flow on record, while 1994 registered the sixth lowest flow on record. The year 1998 was considered an average flow year. The year 1998 was also selected because copious water temperature and flow data were collected during the summer months.

The models predicted average daily water temperatures throughout the modeled system with an average calibration error of less than 0.8°C and a validation error of 0.6°C. Maximum temperatures were also predicted using the maximum air temperature regression method within SNTEMP.

After the temperature models were calibrated and validated, a single-parameter sensitivity analysis (Chapra 1997) was performed to identify key input variables in the model. It was found that air temperature, inflow temperature, and incoming solar radiation, respectively, were the three variables to which the average temperature model was most sensitive. Incoming solar radiation, air temperature, and inflow temperature were the three variables that most influenced maximum temperature, respectively.

Several model runs were performed to simulate alternate scenarios. As a result of these simulations, it was found that water temperatures exceeded Idaho CWB temperature criteria throughout the Lochsa River on the 90th percentile air temperature day. Increasing riparian vegetative shading to full potential would decrease Lochsa River water temperature but not enough to meet Idaho CWB temperature criteria. Alternately, the water temperature of all tributaries to the Lochsa River would have to be reduced by more than 8°C in order for the Lochsa River to meet Idaho CWB temperature criteria. This latter step does not seem feasible, as it would require unrealistically low temperatures (e.g. 7.7°C or lower) in some tributaries during the hottest months of the year.

Canopy Cover Refinement

Introduction

Water temperature modeling of the Lochsa River and its tributaries Crooked Fork, White Sand Creek, Canyon Creek, and Deadman Creek, explored the effects of riparian canopy on water temperature (see discussion in the previous sections of this report). The original modeling study indicated that water temperatures in the Lochsa River exceeded the Idaho maximum daily temperature criteria for cold water biota (CWB) under existing canopy conditions. In addition, modeling of full potential canopy cover conditions (defined as the 80th percentile of tree height and crown closure for a large sample of measured stands in the vicinity of the study reach) showed that increased canopy cover would reduce stream temperatures, but that the Idaho CWB temperature criteria would still be exceeded.

The analysis showed the departure between existing and full potential canopy conditions for riparian canopy cover and the associated change in water temperature. However, this analysis did not distinguish between the differences in cover and resulting water temperature due to natural disturbances, such as lightning-caused fires, disease, and wind, and those due to human-caused disturbances, such as timber harvest and human-caused fires.

Since the Lochsa River is an unregulated stream with little disturbance other than State Highway 12 and modest timber harvest over the past 45 years, the reduction in shade provided by riparian canopy cover is the primary disturbance likely to increase water temperature. Thus, the question to be answered is "what fraction of the departure between current canopy conditions and full potential canopy in the riparian zone is due to natural disturbances, and what fraction is due to human disturbances?" This question is investigated in the present study by quantifying the difference in riparian canopy conditions for stands of trees that are undisturbed or have natural changes and those that have human-caused changes for the same modeling period as the previous study (July and August of 1994, 1997, and 1998). The SNTEMP model was used to determine the difference in stream temperatures that may then be attributed to human activity. Thus, the objective of this study is to assess the difference in water temperatures in the Lochsa River and four tributaries based on changes in riparian vegetation. Differences between natural and human-caused disturbances in vegetation are evaluated.

Methods

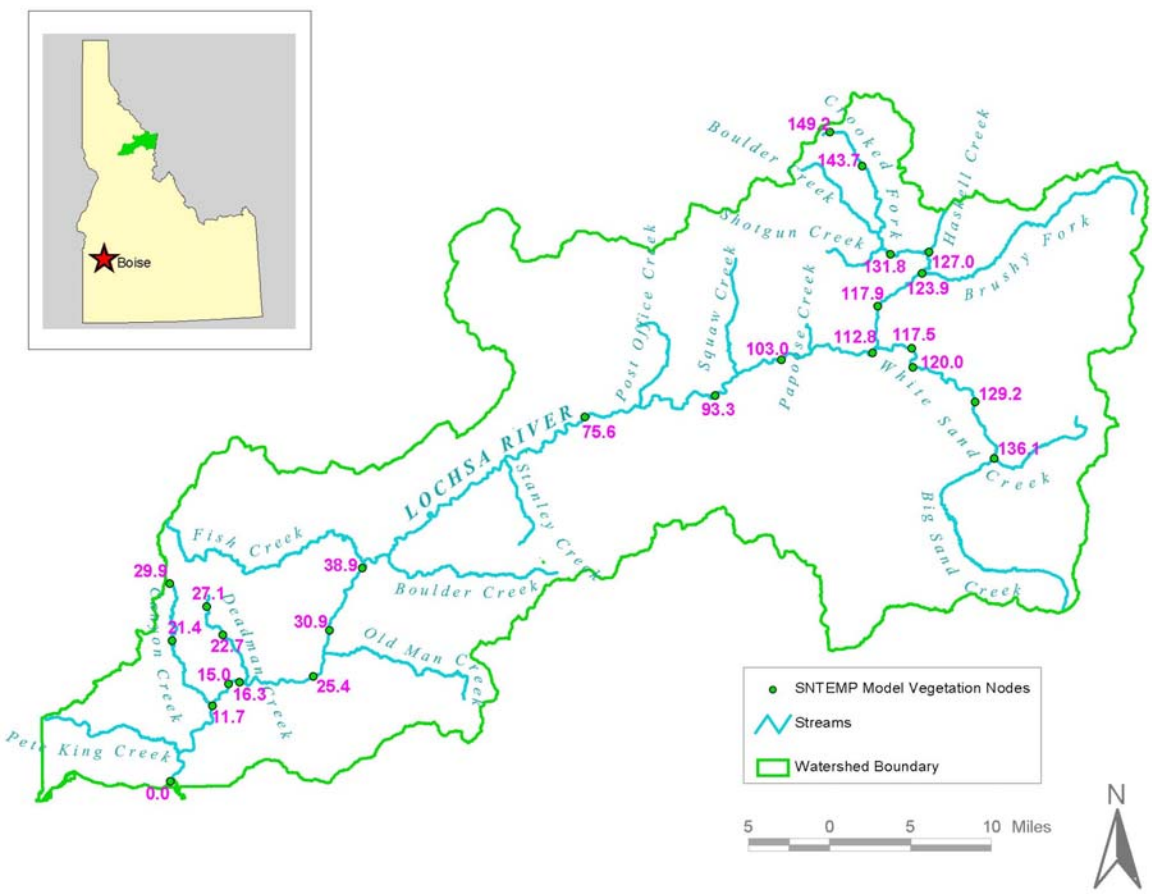
Clearwater National Forest 2001 Forest Inventory Vegetation Data, known as the "cstands database," were used for this study. The data were stratified based on location, defined in Table 10, and change activities, defined as natural or human-caused disturbances that affect the trees in a stand. Change activities were recorded in the cstands database by USFS personnel during on-site field visits. The stands were identified as having human-caused disturbances, natural disturbances, or no disturbances by using codes that identified the cause of the disturbance. The codes were linked to the change activities (either having human-caused, natural, or no disturbances) as shown in Table 14. Codes that begin with the numbers "49" are typically burning activities that follow a harvest. However, the cstands database does not indicate when the harvest was or to what extent the stand was harvested. In these cases, the change activities were considered to be fire-caused.

The stands were then organized into the riparian vegetation reaches defined in the shade file of the original SNTEMP model (Figure 12).

Table 14. Clearwater National Forest Vegetation Change Codes

Field Code	Description	Was Cause Of Disturbance Fire, Harvest, Or Natural?	Change Activity
4113	Human Caused	Harvest	Stand
4230	Human Caused	Harvest	Sanitation/Salvage
4250	Natural	Natural	Natural Changes
4260	Human Caused	Fire	Man Caused Fire Damage
4270	Human Caused	Harvest	Permanent Land Clearing
4471	Human Caused	Fire	Burning
4976	Human Caused	Fire	Burn Hand Piles
4978	Human Caused	Fire	Broadcast Burn
4985	Human Caused	Fire	Wildlife Burn
4986	Human Caused	Fire	Hand Piling
4987	Human Caused	Fire	Fireline Construction
4994	Human Caused	Fire	Fuelbreak
4996	Human Caused	Fire	Natural Abatement
4997	Human Caused	Fire	Burn Landings

Figure 12. Map of Lochsa River Basin and Locations of Vegetation Reaches



As was done for the full potential canopy cover simulation, only the crown closure and tree height parameters from the database were used in the study. The crown diameter and distance from bank parameters were not changed because new information for these parameters was not available. Average crown closure and tree height were calculated for each activity grouping of stands in each vegetation reach. The activity grouping of stands were "human-caused disturbances," "no human-caused disturbances," and "existing conditions." These are not the same as the vegetation codes. Stands that were identified as possessing human-caused disturbances were considered in the "human-caused disturbances" grouping. Stands that were identified as possessing natural disturbances were considered in the "no human-caused disturbances" grouping along with those stands that were not identified as possessing any disturbances. The "existing conditions" grouping included all measured stands.

Also as in the original study, the crown closure parameter in the cstands database was used to represent the canopy density parameter in the SNTEMP shade input file. From this point forward, the crown closure parameter shall be referred to as canopy density. See the Input Data section of this report for details on the data reduction procedure for the canopy density and tree height parameters.

The new canopy density and tree height data were entered into a new set of shade files in the SNTEMP model for the existing conditions and no human-caused disturbances scenarios. Model output of the two scenarios were tabulated and graphed with the full potential canopy cover scenario from the original study.

Three model scenarios were run. The existing conditions scenario represented the existing condition of the riparian canopy at the time of data collection, 2001 in this case, and used the "existing conditions" shade file. The no human-caused disturbances scenario represented the riparian canopy if human-caused disturbances had not occurred, and used the "no human-caused disturbances" shade file. The full potential canopy cover scenario was the 80th percentile of tree height and canopy cover for the dominant habitat type of a large local sample of stands. This scenario was unchanged from the original study.

The new shade files were run with the input files of the original models (1994 and 1997-1998) to predict water temperatures. The predicted water temperatures for the existing conditions and no human-caused disturbances scenarios were tabulated and graphed with the water temperatures of the full potential canopy cover scenario.

Results

Vegetation Data

Based on two single factor ANOVAS, the full potential canopy cover grouping had significantly higher values of average canopy density and average height ($\alpha = 0.05$, $P<0.0001$) than the no human-caused disturbances and existing conditions groupings (Table 15). The existing conditions grouping, representing the existing conditions of the riparian canopy at the time of data collection had lower values of average height and significantly lower values of average canopy density ($\alpha = 0.05$, $P<0.0007$) than the no human-caused disturbances grouping. However, there were instances where average canopy density and height values were higher than those for the no human-caused disturbances grouping when the stands with human-caused disturbances possessed average parameter values greater than those of the existing conditions grouping (the vegetation reach average). This situation was rare, but happened with one reach in the Crooked Fork subbasin for average canopy density, two reaches in the Lochsa River basin for average canopy density, and one reach in the Lochsa River basin for both average canopy density and average tree height (Table 15).

Table 15. Lochsa River Basin Measured Vegetation Values

Reach	Average Canopy Density (%)					Average Tree Height (m)				
	Existing conditions	Human-caused fire damage stands only	Harvested stands only	Stands with no disturbances	Full potential canopy cover	Existing conditions	Human-caused fire damage stands only	Harvested stands only	Stands with no disturbances	Full potential canopy cover
Crooked Fork										
149.2 to 143.7	50.5 (n=20)	--	--	50.5 (n=20)	63	24.2 (n=20)	--	--	24.2 (n=20)	23.3
143.7 to 131.8	58.8 (40)	--	--	58.8 (40)	63	24.7 (40)	--	--	24.7 (40)	23.3
131.8 to 127.0*	45.0 (2)	--	--	--	63	29.0 (2)	--	--	--	23.3
127.0 to 123.9	45.4 (11)	0.0 (n=1)	47.6 (n=7)	55.3 (3)	54	21.9 (11)	0.0 (1)	22.3 (7)	28.5 (3)	27.3
123.9 to 117.9	58.6 (24)	--	50.2 (6)	61.3 (18)	74	28.7 (24)	--	26.5 (6)	29.4 (18)	32.9
117.9 to 112.8	61.2 (9)	--	66.5 (2)	59.7 (7)	74	32.0 (9)	--	27.6 (2)	33.3 (7)	32.9
White Sand Creek										
136.1 to 129.2	49.9 (33)	--	--	49.9 (33)	71	24.5 (33)	--	--	24.5 (33)	29.3
129.2 to 120.0	46.6 (21)	--	--	46.6 (21)	55	20.8 (21)	--	--	20.8 (21)	26.9
120.0 to 117.5	59.2 (19)	--	--	59.2 (19)	54	22.6 (19)	--	--	22.6 (19)	28.1
117.5 to 112.8	75.5 (4)	--	73.0 (1)	76.3 (3)	54	28.7 (4)	--	21.9 (1)	30.9 (3)	28.1
Lochsa River										
112.8 to 103.0	65.4 (21)	--	43.5 (5)	72.0 (16)	75	27.4 (21)	--	23.3 (5)	28.7 (16)	30.7
103.0 to 93.3	49.9 (72)	52.8 (4)	51.9 (5)	49.5 (63)	75	23.0 (71)	31.6 (4)	19.6 (5)	22.8 (63)	30.7
93.3 to 75.6	55.3 (73)	66.0 (2)	29.8 (3)	57.9 (66)	75	22.0 (73)	29.3 (2)	13.9 (3)	22.8 (66)	30.7
75.6 to 38.8	49.1 (193)	29.4 (18)	--	48.2 (175)	67	20.5 (193)	15.7 (18)	--	21.1 (175)	27.0
38.8 to 30.9	39.8 (53)	0.0 (1)	--	42.1 (50)	67	18.2 (53)	0.0 (1)	--	19.2 (50)	27.0
30.9 to 25.4	37.2 (41)	12.0 (1)	--	41.4 (36)	67	17.2 (41)	6.7 (1)	--	19.2 (36)	27.0
25.4 to 16.3	40.0 (52)	17.7 (5)	--	39.8 (42)	67	19.0 (52)	15.4 (5)	--	21.5 (42)	27.0
16.3 to 15.0	33.8 (4)	0.0 (1)	--	45.0 (3)	67	17.9 (4)	0.0 (1)	--	23.8 (3)	26.8
11.7 to 15.0	47.8 (18)	13.7 (2)	--	53.8 (16)	67	24.2 (18)	12.3 (2)	--	26.3 (16)	26.8
0.0 to 11.7	44.1 (45)	--	--	44.1 (45)	67	21.9 (45)	--	--	21.9 (45)	26.8
Deadman Creek										
27.1 to 22.7	43.7 (17)	--	29.0 (7)	51.5 (10)	68	22.1 (17)	--	5.3 (7)	31.1 (10)	31.0
22.7 to 16.3	47.7 (32)	38.7 (3)	0.0 (1)	51.2 (28)	68	25.6 (32)	27.9 (3)	0.0 (1)	26.8 (28)	31.0
Canyon Creek										
29.9 to 21.4	53.5 (34)	36.0 (1)	48.6 (14)	59.1 (17)	68	22.2 (34)	5.6 (1)	11.1 (14)	31.4 (17)	31.0
21.4 to 11.7	57.2 (38)	24.0 (1)	28.7 (3)	59.2 (35)	68	32.6 (38)	2.0 (1)	10.5 (3)	34.4 (35)	31.0

* - This stand was burned in the 2000 Crooked Fire. Vegetation data collected prior to 2000 were used for this analysis.

In addition, the no human-caused disturbances grouping was broken down to "human-caused fire disturbances" and "harvest activities." Some vegetation reaches contained both fire and harvest disturbances, several reaches had only one of the two human-caused disturbances, and some reaches had no human-caused disturbances. For example, of the four vegetation reaches that represent White Sand Creek, the three upstream reaches did not possess human-caused disturbances. For these vegetation reaches, the existing conditions data were equal to the no human-caused disturbances data.

Model Output

Generally, average water temperatures in the Lochsa River and its tributaries were lowest in the full potential canopy cover scenario and highest in the existing conditions scenario. For White Sand Creek, the existing conditions and no human-caused disturbances output were close to identical, as were the input data for the two scenarios (see discussion above). The output data are given in Table 16 and displayed in Figures 13, 14, and 15.

Discussion

Vegetation Data

The purpose of this study was to assess water temperature differences due to naturally occurring and human-caused disturbances of the riparian vegetation of the Lochsa River and four of its tributaries. The key to the study is the accuracy and level of detail of the collected vegetation data. These data were collected by the Clearwater National Forest and entered into the Forest Inventory database.

Historically, large fires have consumed much of the Lochsa River basin. Fires prior to 1910 are not well documented, and only the largest fires in the 20th Century are delineated by their boundaries (Figure 16). Pre- and post-fire stand data are not available for these fires. As such, there is no way of knowing which stands within the fire boundaries were burned, and at what intensity (Wulf 2002). Therefore, current parameters describing forest stands that have not been disturbed by humans are categorized as "having no historical disturbances or natural disturbances only." This assumes, as is generally believed, that the largest fires in the 20th Century were started by lightning strikes and not by human activities (Wulf 2002).

A paired t-test of the new vegetation data (Table 15) with the vegetation data from the previous study (Table 10) shows that the average canopy density parameter has significantly increased since the original data were collected ($\alpha = 0.05$, $P<0.0001$). This is ostensibly due to tree growth. However, data collection and data management may play a part in the changes in average values for an entire stand.

A sizeable fire occurred in the Crooked Fork basin in the summer of 2000, known as the Crooked Fire. The fire engulfed portions of the Haskell Creek, Rock Creek, and Crooked Fork drainages (Figure 17) and completely burned nearly every stand within its boundaries. On the Crooked Fork, the fire was contained entirely within one vegetation reach, RKM 131.8-127.0. For this reach, the vegetation data for the previous study was used for the existing conditions scenario because the previous vegetation data better describes the forest conditions for this reach during the modeling periods, July and August of 1994, 1997 and 1998. The no human-caused disturbances scenario was not run for the affected reach.

Figure 18 shows typical vegetation data, used as input for the shade files, in this case for the downstream vegetation reach of Canyon Creek, RKM 21.4 to 11.7. In this reach, the average canopy density is less than that of the full potential canopy cover and stands that have no human-caused disturbances. The average value is decreased by the low canopy density values in the harvested stands and the stands disturbed by human-caused fires. This is also the case for average tree height, except that the value for the no human-caused disturbances average is higher than that of the full potential. There are several possible explanations for this. First, the "full potential" value is actually the 80th percentile for the

Table 16. Predicted Water Temperatures at Selected Locations in Lochsa River Basin

Model	Stream	River KM	Average Temperature Model (°C)			Maximum Temperature Model (°C)		
			Existing Conditions	No Human-Caused Disturbances	Full potential canopy cover	Existing Conditions	No Human-Caused Disturbances	Full potential canopy cover
1994 (low flow)	Crooked Fork	117.9	10.99	10.91	10.44	12.42	12.20	10.88
	White Sand Creek	112.8	14.04	14.00	13.66	16.37	16.16	15.95
	Deadman Creek	16.3	14.38	14.06	12.84	16.83	16.26	13.75
	Canyon Creek	11.7	13.57	13.42	12.98	14.80	14.55	13.62
	Lochsa River	78.4	15.70	15.64	14.70	18.06	17.94	16.03
	Lochsa River	42.3	17.53	17.49	16.25	19.96	19.90	17.92
	Lochsa River	0.0	18.88	18.83	17.54	20.81	20.75	18.79
1997 (high flow)	Crooked Fork	112.8	10.46	10.43	10.25	11.79	11.66	10.87
	White Sand Creek	112.8	13.10	13.08	12.88	15.33	15.17	15.09
	Deadman Creek	16.3	14.35	14.19	13.64	16.72	16.36	14.86
	Canyon Creek	11.7	13.09	12.98	12.67	14.63	14.43	13.70
	Lochsa River	78.4	14.07	14.03	13.45	16.05	15.97	14.64
	Lochsa River	42.3	15.71	15.67	14.88	17.73	17.69	16.33
	Lochsa River	0.0	16.92	16.88	16.07	18.43	18.39	17.11
1998 (average flow)	Crooked Fork	112.8	11.78	11.74	11.51	13.22	13.07	12.18
	White Sand Creek	112.8	14.91	14.88	14.58	17.53	17.33	17.17
	Deadman Creek	16.3	15.04	14.86	14.24	17.39	17.01	15.43
	Canyon Creek	11.7	13.59	13.51	13.28	14.85	14.69	14.11
	Lochsa River	78.4	16.24	16.19	15.48	18.44	18.35	16.82
	Lochsa River	42.3	18.12	18.08	17.13	20.34	20.30	18.74
	Lochsa River	0.0	19.28	19.24	18.28	20.99	20.95	19.47

Figure 13. 1994 Average Predicted Water Temperatures in the Lochsa River

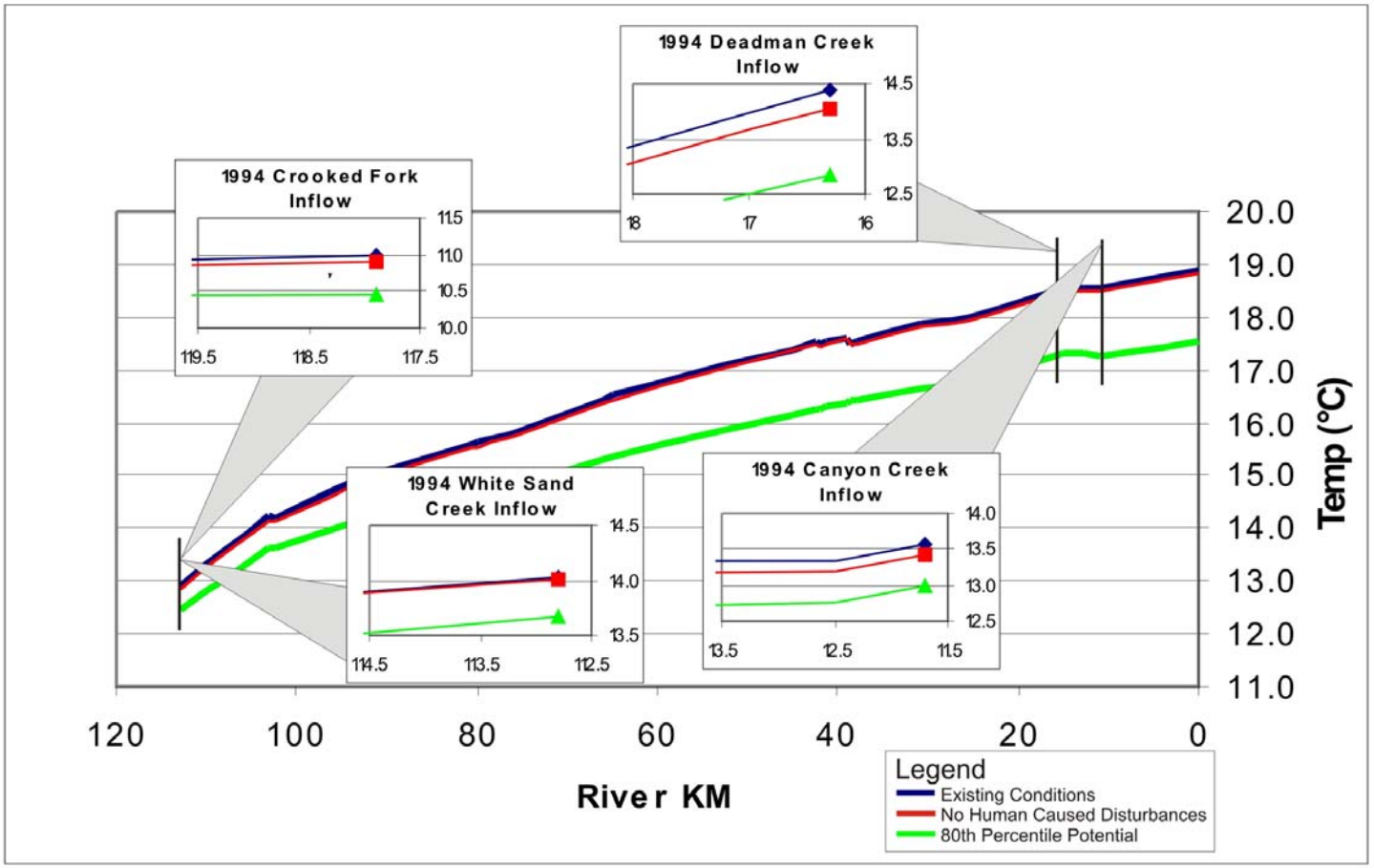


Figure 14. 1997 Average Predicted Water Temperatures in the Lochsa River

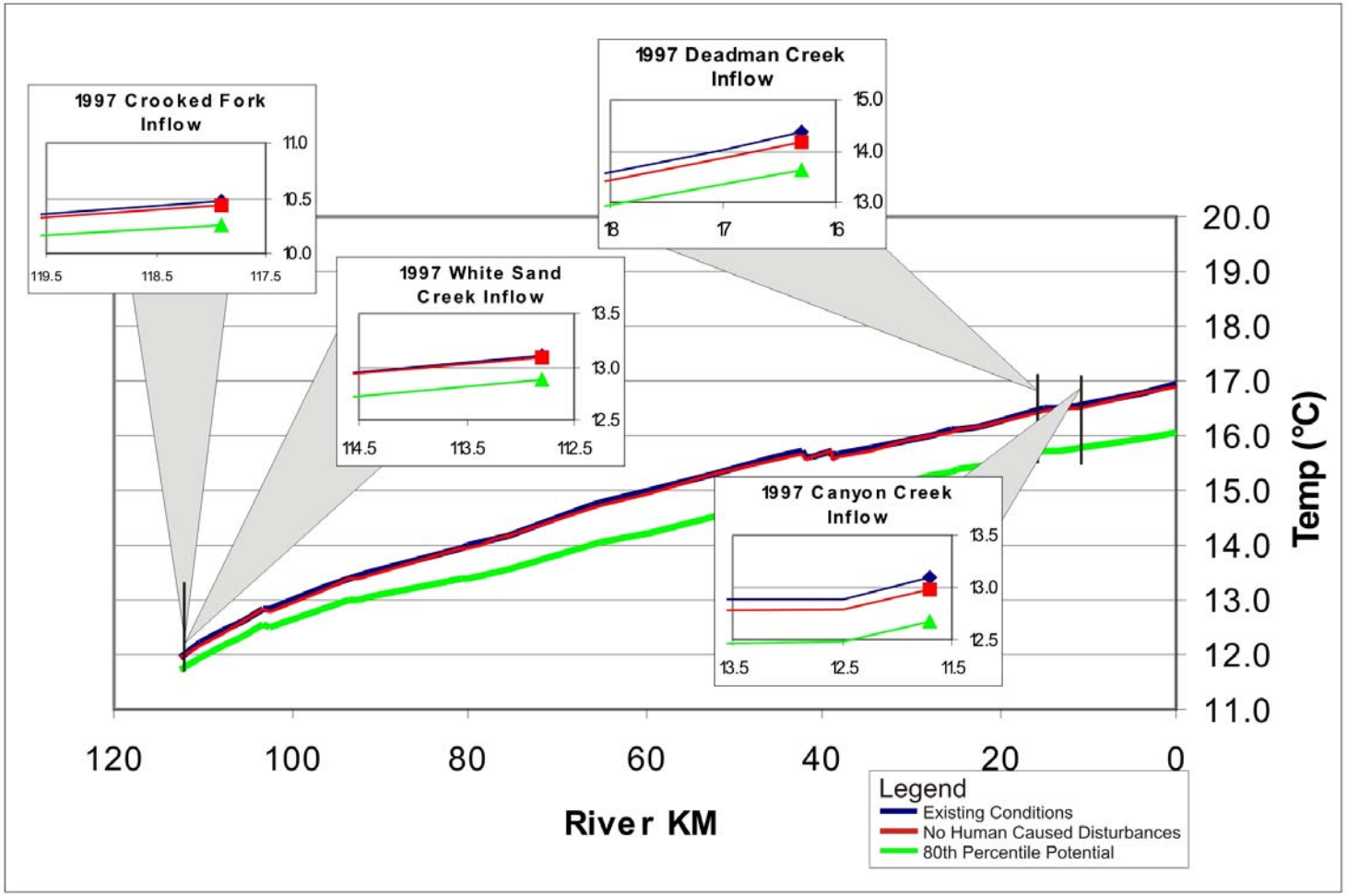


Figure 15. 1998 Average Predicted Water Temperatures in the Lochsa River

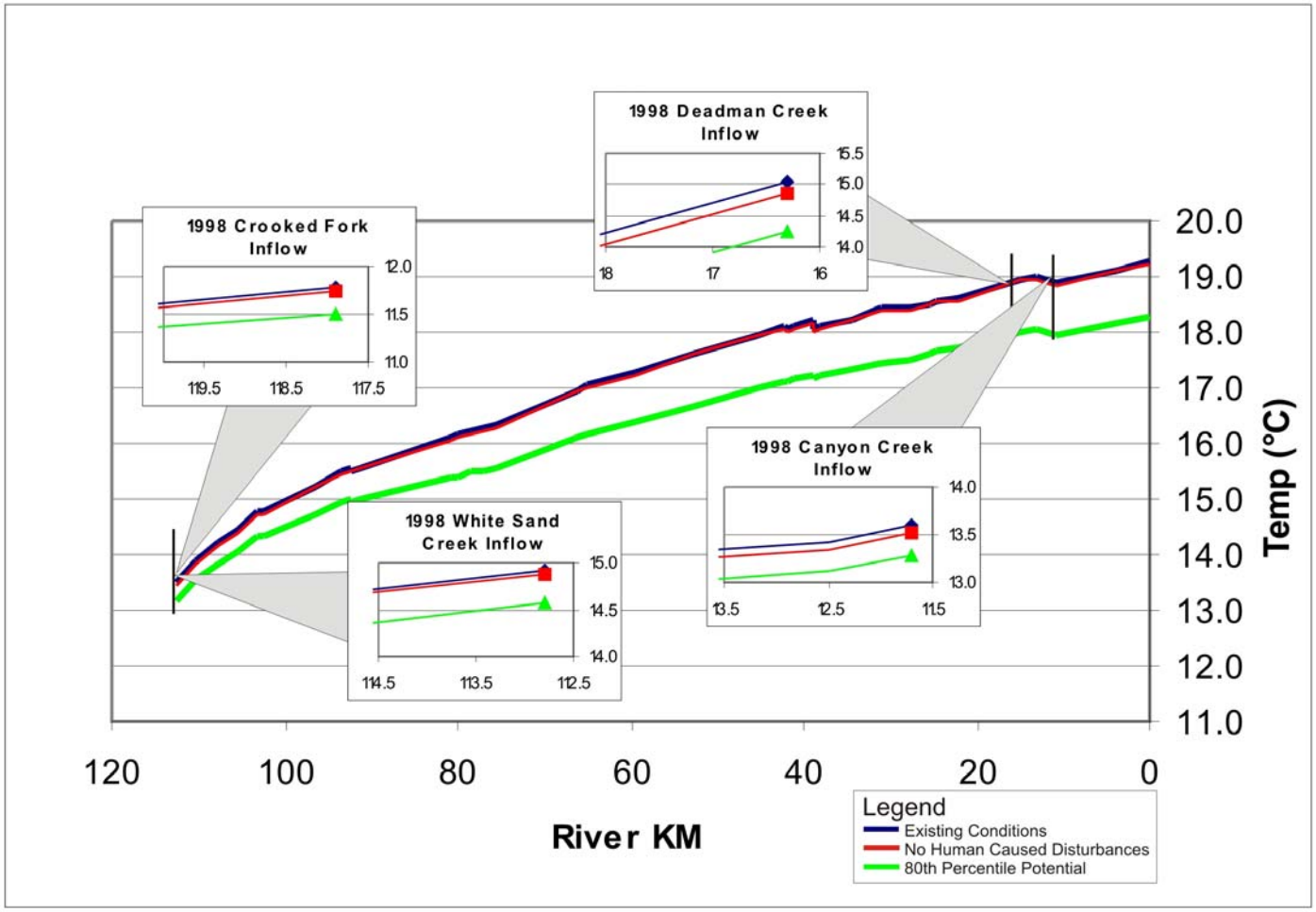


Figure 16. Boundaries of Historical Fires in the Lochsa River Basin

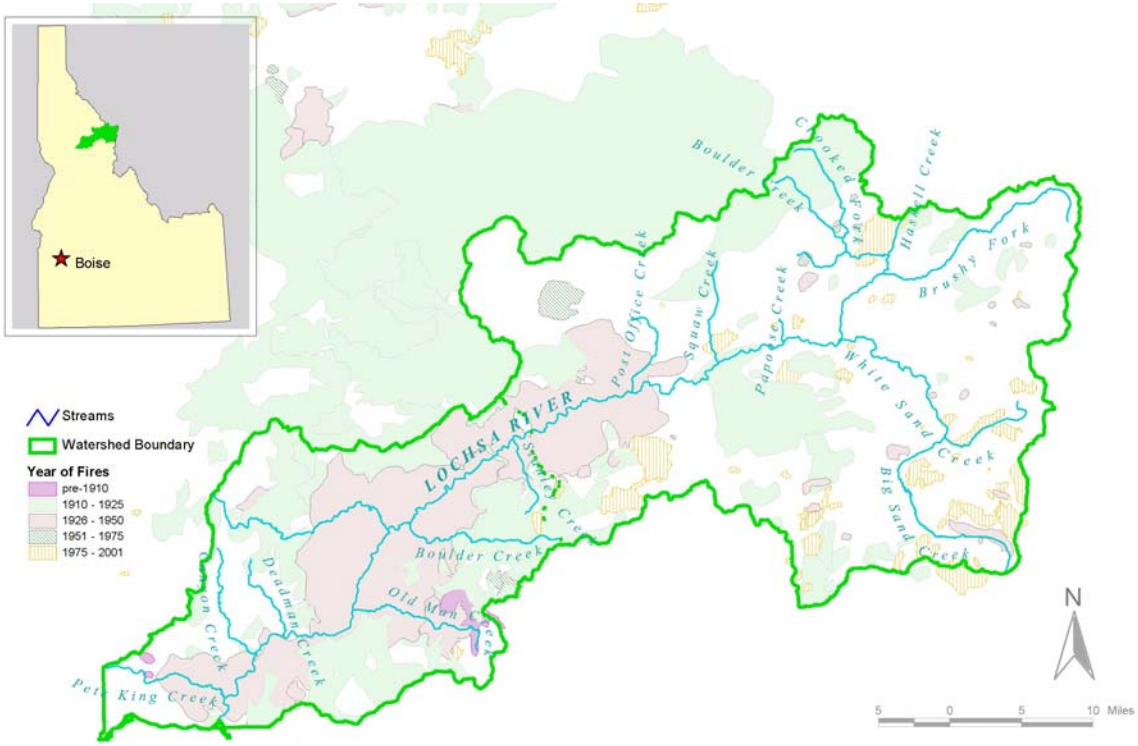
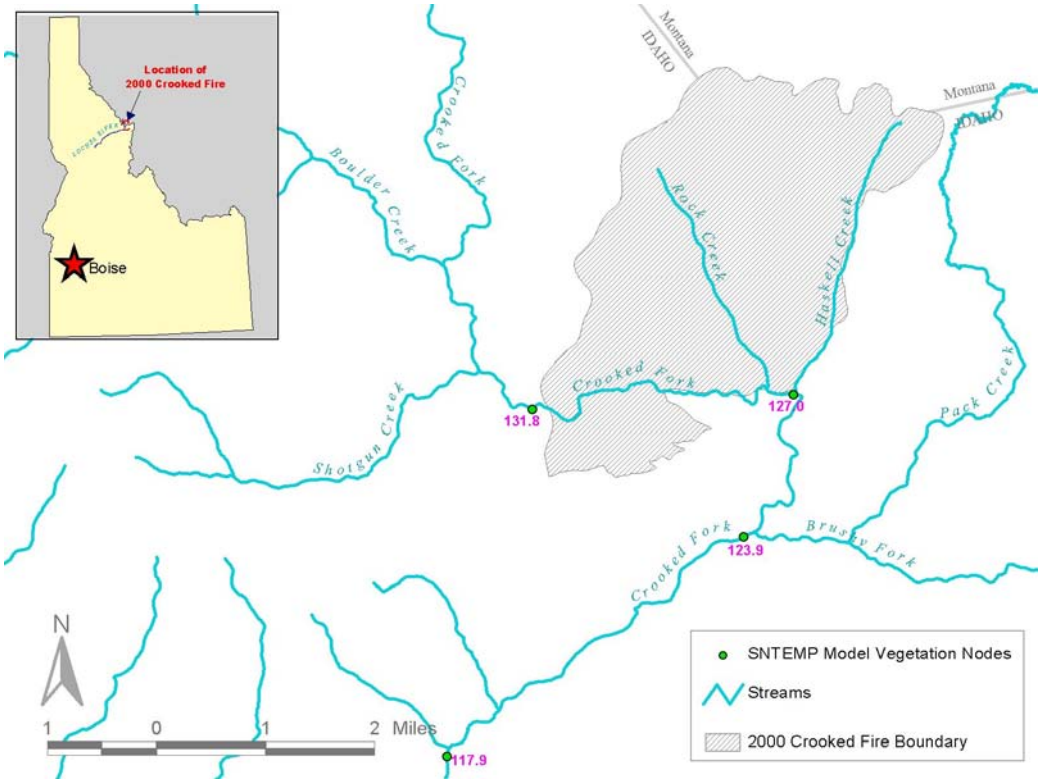


Figure 17. Boundaries of the 2000 Crooked Fire



dominant habitat type of a large local sample of stands. The tree heights in this vegetation reach may exist in the 85th percentile, for example, of the same sample. Another explanation could be that the full potential value represents the dominant habitat type (and the corresponding range of species) for that area, while the reach values include all habitat types. The different habitat types present in the reach can increase or decrease the average reach values of canopy density and tree height relative to the full potential values of the dominant habitat type.

Undisturbed stands generally possessed much higher values of canopy density and tree height than stands with human-caused disturbances (Figure 19). However, the difference in average canopy density and average tree height between undisturbed stands and the existing condition was much less distinct for most vegetation segments. For the Lochsa River, differences in these parameters varied significantly from upstream to downstream based on t-tests ($\alpha = 0.05$, $P < 0.03$ for both parameters). There were a few segments with existing conditions values slightly greater than those with no human-caused disturbances for average canopy density (Figure 19, three of 10 reaches) and average tree height (Figure 20, one of 10 reaches). The values of these parameters for both scenarios never reached those of the full potential canopy cover scenario for the Lochsa River. Average values for both parameters generally decreased in the downstream direction, then trended upwards again near the vicinity of the confluence with Deadman Creek.

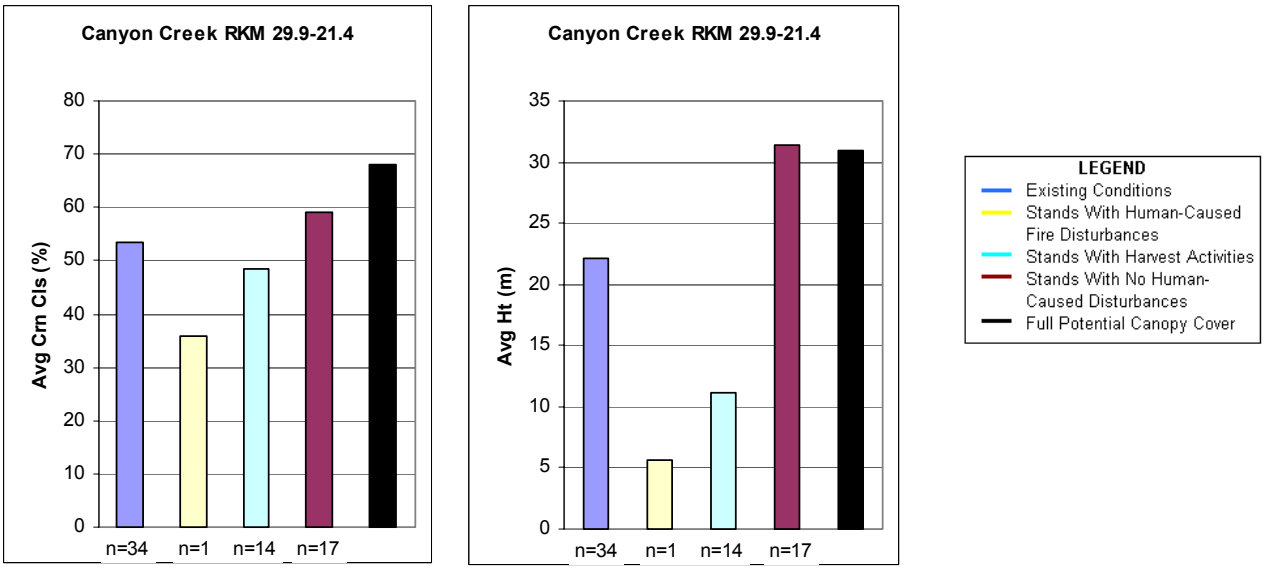
Model Output

Riparian canopy conditions play a major role in water temperatures in the Lochsa River basin, as shown in the original study. In most vegetation reaches, full potential canopy cover possessed higher values of average density and average tree height than both the existing conditions and the conditions with no human-caused disturbances. There were a few exceptions to this, located in the uppermost reaches of Crooked Fork and White Sand Creek and the lower reach of Canyon Creek, but none on the Lochsa mainstem. The result was that water temperatures throughout the Lochsa River basin were lower for the full potential canopy cover model than for the existing conditions and the no human-caused disturbances models. The departure was greater at the mouth of the Lochsa River, where there was an average temperature difference of 1.34°C between the existing conditions and the full potential canopy cover models in July and August of the low flow year of 1994, than upstream in the system, where average temperature differences were 1.00°C, 0.55°C, and 0.37°C at the Mocus Point Packbridge on the Lochsa River, the mouth of Crooked Fork, and the mouth of White Sand Creek, respectively, for the same modeling period (Table 16 and Figure 21).

The difference in water temperatures between the existing conditions and no human-caused disturbances models was much less than between the existing conditions and full potential canopy cover models. The temperature difference was almost zero at the mouth of White Sand Creek because there are very few human-caused disturbances in the White Sand Creek subbasin. There were more disturbances elsewhere in the Lochsa River basin, and predicted temperature differences were more apparent in these locations. In July and August of the low flow year of 1994, for example, the average temperature differences were 0.32°C, 0.08°C, and 0.06°C at the mouth of Deadman Creek, the mouth of Crooked Fork, and at both the Mocus Point Packbridge and the mouth of the Lochsa River, respectively (Table 16 and Figure 21).

Based on the above analysis, natural disturbances accounted for 96.3%, 95.3%, and 96.0% of the departure of existing water temperatures from the full potential canopy cover at the mouth of the Lochsa River, and human-caused disturbances accounted for the remainder during the low flow year of 1994, the high flow year of 1997, and the average flow year of 1998, respectively (Table 17). The percentages of maximum temperature

Figure 18. Measured Vegetation Parameters in Canyon Creek, RKM 29.9-21.4



departure due to human-caused disturbances for White Sand Creek are relatively high because the maximum temperature difference between the existing conditions and the full potential conditions for White Sand Creek are relatively small. As such, the small departure in temperature as a result of the few human-caused disturbances in the basin calculate as a large percentage.

Based on t-tests of the 1994, 1997, and 1998 models, human-caused disturbances factored more upstream in the system and in the modeled tributaries ($\alpha = 0.05$, $P<0.010$, $P<0.021$, $P<0.017$). Under existing conditions, the mouth of White Sand Creek exhibits maximum water temperatures near that of the full potential canopy cover scenario (Table 16). Although maximum water temperatures as a result of human-caused disturbances contributes a relatively large percentage of the deviation from full potential canopy cover temperature conditions, the overall deviation in water temperature is small, ranging from 0.16°C to 0.21°C.

A reason that the water temperatures of the existing conditions of the Lochsa subbasin were so much greater than those of the full potential canopy cover scenario, and relatively close to those of the no human-caused disturbances scenario, is that there are relatively few stands in riparian zone of the Lochsa River (and its tributaries) that have been disturbed by human causes. Of the 876 riparian stands used in this analysis, 94 were disturbed by human causes. The remaining 782 stands were subject to natural conditions. Only three of these 782 stands exhibited obvious disturbances due to natural causes. However, this does not take into account possibility that the undisturbed riparian stands were subject to unseen natural stresses that were not apparent in the collected data.

While the water temperatures of the existing condition and no human-caused disturbance models differ greatly than those of the full potential canopy cover model, there is little difference in water temperatures between the existing condition and the no human-caused disturbance models. However, the mechanism for the differences is exactly the same. Increased canopy cover, in the form of

Figure 19. Average Canopy Density in Riparian Vegetation Reaches of Lochsa River

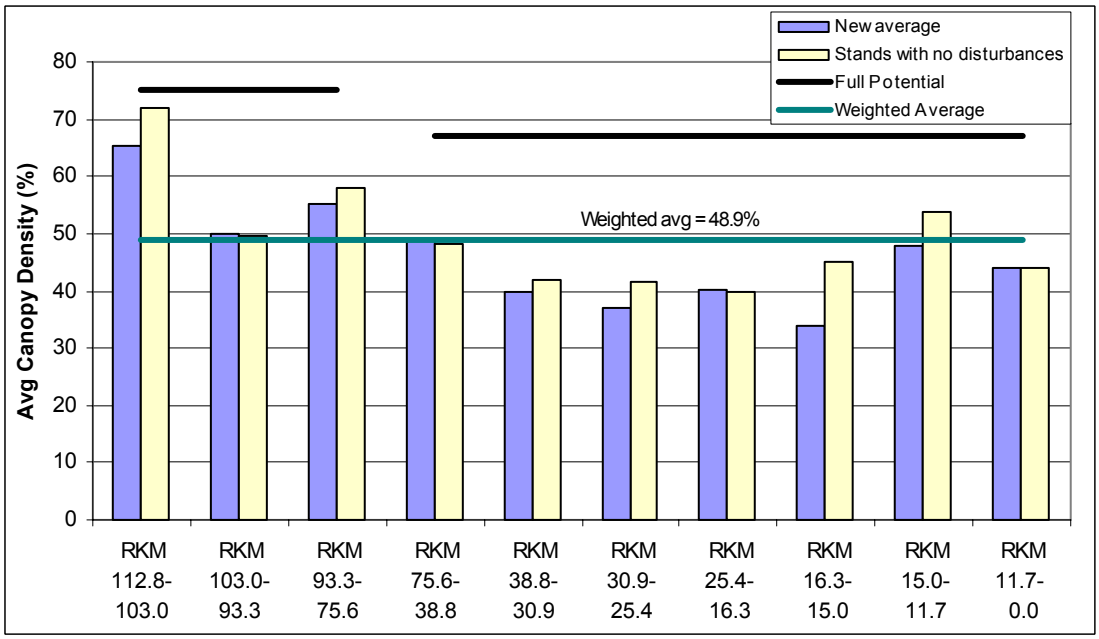


Figure 20. Average Tree Height in Vegetation Reaches of Lochsa River

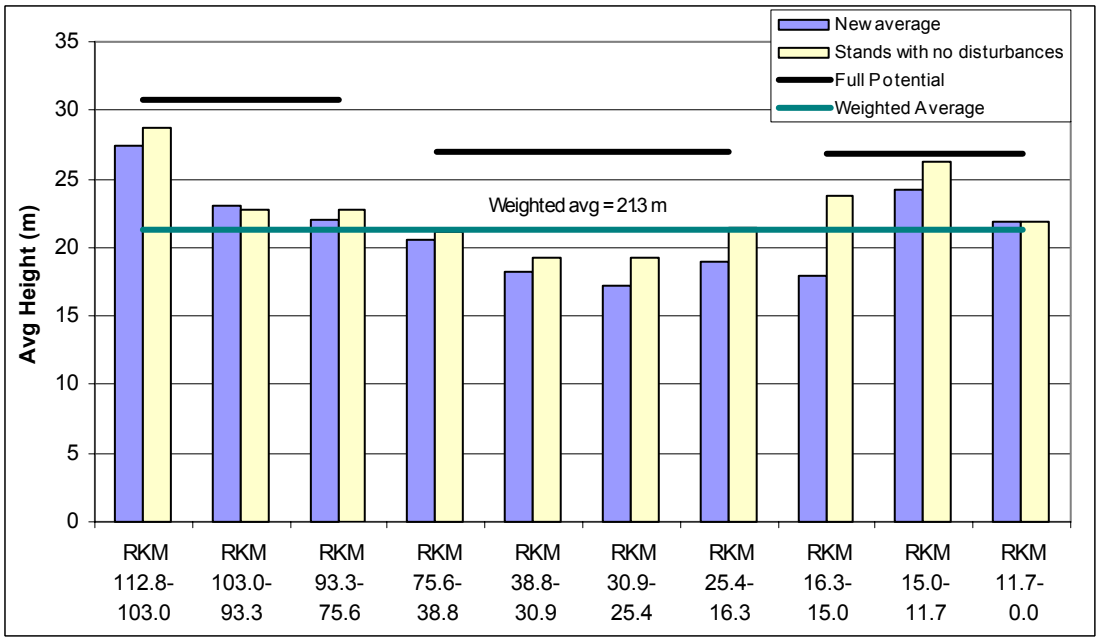


Figure 21. Predicted Water Temperatures at Selected Locations in Lochsa River Basin

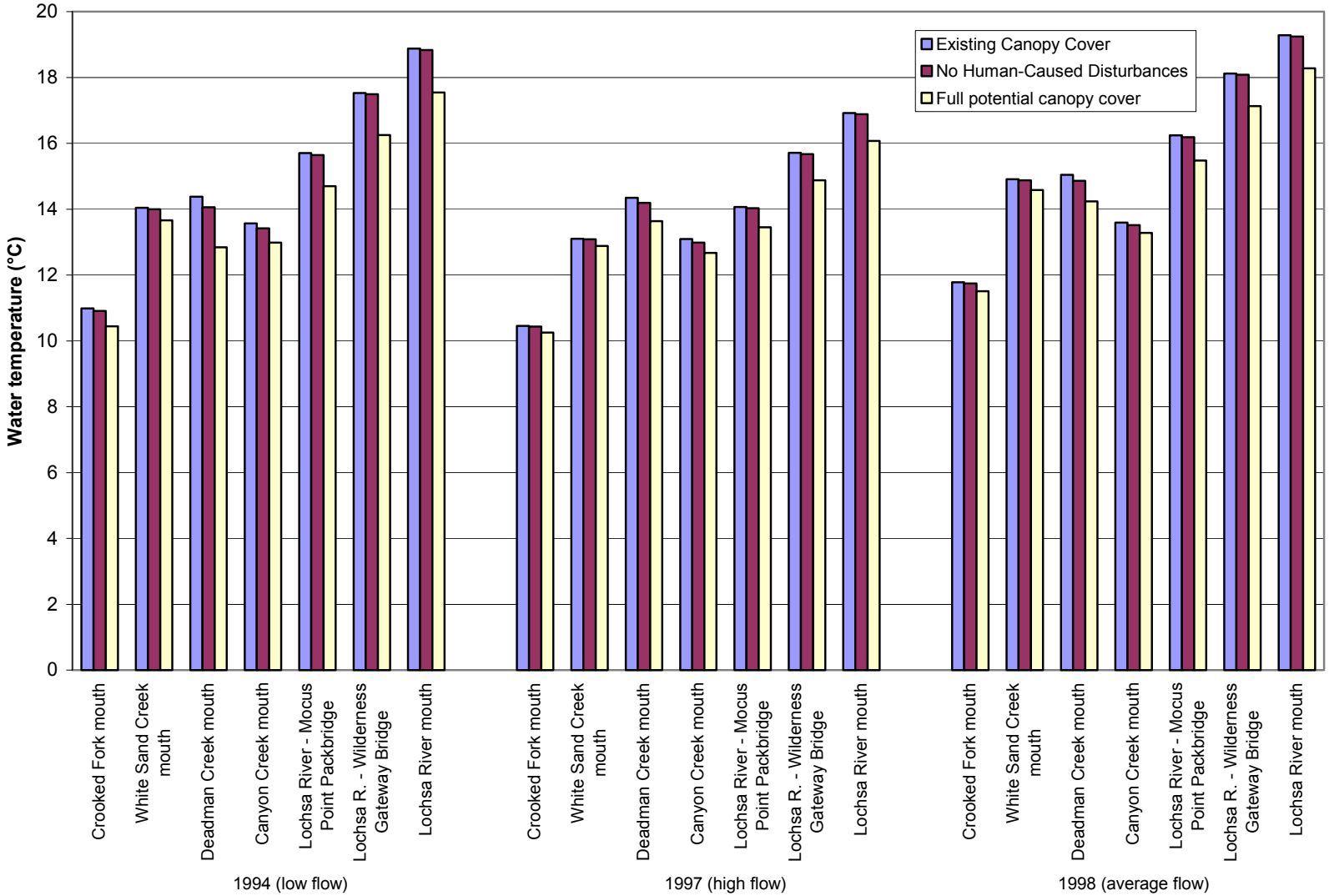


Table 17. Fraction of Temperature Departure From Full Potential Canopy Cover Model Due To Natural or Human-Caused Disturbances

Model	Stream	River KM	Average Temperature Model (°C)		Maximum Temperature Model (°C)	
			Due to natural disturbances	Due to human-caused disturbances	Due to natural disturbances	Due to human-caused disturbances
1994 (low flow)	Crooked Fork	117.9	85.5%	14.5%	85.7%	14.3%
	White Sand Creek	112.8	89.5%	10.5%	50.0%	50.0%
	Deadman Creek	16.3	79.2%	20.8%	81.5%	18.5%
	Canyon Creek	11.7	74.6%	25.4%	78.8%	21.2%
	Lochsa River	78.4	94.0%	6.0%	94.1%	5.9%
	Lochsa River	42.3	96.9%	3.1%	97.1%	2.9%
	Lochsa River	0.0	96.3%	3.7%	97.0%	3.0%
1997 (high flow)	Crooked Fork	112.8	85.7%	14.3%	85.9%	14.1%
	White Sand Creek	112.8	90.9%	9.1%	33.3%	66.7%
	Deadman Creek	16.3	77.5%	22.5%	80.6%	19.4%
	Canyon Creek	11.7	73.8%	26.2%	78.5%	21.5%
	Lochsa River	78.4	93.5%	6.5%	94.3%	5.7%
	Lochsa River	42.3	95.2%	4.8%	97.1%	2.9%
	Lochsa River	0.0	95.3%	4.7%	97.0%	3.0%
1998 (average flow)	Crooked Fork	112.8	85.2%	14.8%	85.6%	14.4%
	White Sand Creek	112.8	90.9%	9.1%	44.4%	55.6%
	Deadman Creek	16.3	77.5%	22.5%	80.6%	19.4%
	Canyon Creek	11.7	74.2%	25.8%	78.4%	21.6%
	Lochsa River	78.4	93.4%	6.6%	94.4%	5.6%
	Lochsa River	42.3	96.0%	4.0%	97.5%	2.5%
	Lochsa River	0.0	96.0%	4.0%	97.4%	2.6%

increased tree height and canopy density, blocks a fraction of incoming solar radiation to the water surface that would otherwise convert its energy to heat and contribute to increased water temperatures. Predicted maximum temperatures responded similarly to predicted average temperatures. Maximum water temperature model output is given in Table 16.

One aspect of this study that may have contributed to possible inaccuracies is that 2001 vegetation data was used with 1994, 1997 and 1998 meteorological and water temperature data in the models. While the stands remained relatively unchanged between 1994 and 2001, save for the vegetation reach burned in the 2000 Crooked Fire, undoubtedly some growth was measured as increases in average tree height and average canopy density (crown closure) between the old and new data. This growth may account for slightly lower predicted water temperatures in the modeled streams. The new models were not recalibrated to account for the new vegetation data. As tree growth is likely to be relatively uniform throughout the Lochsa River basin, the growth would not affect the conclusions of the study.

Conclusion

This goal of this study was to find what fraction of the departure between current canopy conditions and full potential canopy cover in the riparian zone was due to natural disturbances, and what fraction was due to human disturbances. It was found that between 75% and 97% of the difference in water temperature between the existing and full potential canopy cover conditions in the Lochsa River basin is due to natural disturbances. While human-caused disturbances increase water temperatures in the basin, natural disturbances are a more dominant factor in the difference between existing condition and full potential canopy cover water temperatures.

The influence of human-caused disturbances on average temperatures is most apparent in Deadman and Canyon Creeks, and least apparent in the mainstem Lochsa River. In White Sand Creek, existing condition average and maximum water temperatures were close to those for the full potential condition because there were few stands with observed human-caused disturbances and no stands with observed natural disturbances.

The disparity in the departures of water temperature values between the existing conditions and the maximum potential canopy cover scenarios, and the existing conditions and the no human-caused disturbances scenarios, provides a glimpse into the mechanism of the riparian zone in the Lochsa River basin. While human-caused disturbances decrease the average canopy densities and tree heights of the stands they affect, and thereby increase the water temperature of the stream they are adjacent to, only 10.7% of the stands in the Lochsa basin had been subject to human-caused disturbances. In contrast, all of the stands were subject to naturally occurring physical and biological processes, including snow, wind, rain, fire, disease, insects, extreme heat and cold, temperature fluctuations, over- and under-exposure to sunlight. These natural factors, as well as undocumented fires prior to 1910 and the poorly documented fires in the early 20th Century, have served to keep average stand values of canopy density and tree height below the maximum potential values. These factors, in turn, led to the majority of the departures in water temperature between existing conditions and the full potential canopy cover scenario. While the departure in average water temperature due to human-caused disturbances is discernable in all but the White Sand Creek subbasin, the reduction in canopy cover due to natural factors is apparently the driving force in higher water temperatures in the Lochsa River basin.

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Summary of Charateristics for Watersheds Identified as *a priori* Natural

Stream Name	Total Watershed Acreage	Wilderness Acres	Wilderness % of watershed	Roadless Acres	Roadless % of watershed	Roadless + Wild % of watershed		Timber Harvest Acres	% of watershed harvested	Ag Use Acres		Road miles
Boulder Creek	29,999	27,441	91.5	2,518	8.4	99.9		0	0.0%	0		0
Fish Creek	56,303	0	0.0	54,183	96.2	96.2		0	0.0%	0		32
Holly Creek	58,674	217	0.4	54,840	93.5	93.8		99	0.2%	0		36
Storm Creek	32,602	27,938	85.7	4,428	13.6	99.3		0	0.0%	0		3
Lochsa River*	755,738	235,879	31.2	331,880	43.9	75.1		17985	2.4%	0		786
Bear Creek	115,097	115,034	99.9	0	0.0	99.9		0	0.0%	0		0
Moose Creek	232,959	232,819	99.9	77	0.0	100.0		0	0.0%	0		0
Running Creek	58,082	28,460	49.0	29,582	51.0	100.0		0	0.0%	0		11
Selway River**	1,285,598	976,749	76.0	251,000	19.5	95.5		8913	0.7%	0		362
Selway R II***	1,147,721	964,440	84.0	176,281	15.4	99.4		1085	0.1%	0		146
Big Creek	381,134	340,418	89.3	27,398	7.2	96.5		0	0.0%	0		104
Indian Creek	53,229	53,135	99.8	3	0.0	99.8		0	0.0%	0		5
MF Salmon River #	1,838,789	1,450,368	78.9	261,472	14.2	93.1		1630	0.1%	727		628
Smithie Fork	28,268	0	0.0	15,747	55.7	55.7		65	0.2%	99		37

* all of 4th Field HUC 17060303
** all of 4th field HUCs 17060301 & 17060302
*** Everything draining to the confluence of Meadow Creek (all of 17060301 & most of 17060302)
# all of 4th field HUCs 17060205 & 17060206

NOTES:
Timber harvest acres is total by USFS since harvest began over 50 years ago.
In the Lochsa this does not include harvest on intemingled private land, which brings the precent acres harvested to about 8%
Forest Service reports no timber harvest in Riparian Habitat Conservation Areas (300ft stream buffer) in the MF Salmon and Selway drainages
Ag use is primarily hay meadows on private inholdings
Calculation of RHCA acres in roads uses a 30' roadbed width and assumes entire road is within buffer

Road density mi/sq mi	Miles of 1:100K stream	Stream crossings	Stream xings per stream mi	Riparian Roads Miles (300ft)	% of RHCA in roads	Riparian Roads Miles (150ft)	% of RHCA in roads		# of Hot Springs	# of Dams
0.0	50	0	0.00	0	0.0%	0.0	0.0%		1	0
0.4	131	2	0.02	1	0.1%	0.6	0.0%		0	0
0.4	86	13	0.15	15	0.9%	1.0	0.1%		0	0
0.1	47	0	0.00	0	0.0%	0.0	0.0%		0	0
0.7	1377	229	0.17	169	0.6%	48.3	0.4%		7	0
0.0	183	0	0.00	0	0.0%	0.0	0.0%		0	0
0.0	434	0	0.00	1	0.0%	0.2	0.0%		1	0
0.1	120	6	0.05	2	0.1%	0.7	0.1%		1	0
0.2	2542	118	0.05	69	0.1%	23.2	0.1%		4	0
0.1	2270	73	0.03	45	0.1%	16.0	0.1%		4	0
0.2	650	55	0.08	41	0.3%	15.2	0.2%		0	0
0.1	106	0	0.00	0	0.0%	0.0	0.0%		2	0
0.2	3554	340	0.10	213	0.3%	77.7	0.2%		18	0
0.8	18	6	0.33	5	1.3%	0.8	0.4%		0	0

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	1.12	0.48	0.92			20	
2	2-Jan-01	0.32	0.00	0.02			20	
3	3-Jan-01	0.16	0.00	0.01			20	
4	4-Jan-01	0.64	0.00	0.22			20	
5	5-Jan-01	0.80	0.32	0.58			20	
6	6-Jan-01	0.64	0.00	0.26			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.53
8	8-Jan-01	0.00	0.00	0.00			20	0.37
9	9-Jan-01	0.00	0.00	0.00			20	0.32
10	10-Jan-01	0.00	0.00	0.00			20	0.30
11	11-Jan-01	0.00	0.00	0.00			20	0.21
12	12-Jan-01	0.00	0.00	0.00			20	0.09
13	13-Jan-01	0.00	0.00	0.00			20	0.00
14	14-Jan-01	0.00	0.00	0.00			20	0.00
15	15-Jan-01	0.00	0.00	0.00			20	0.00
16	16-Jan-01	0.00	0.00	0.00			20	0.00
17	17-Jan-01	0.00	0.00	0.00			20	0.00
18	18-Jan-01	0.00	0.00	0.00			20	0.00
19	19-Jan-01	0.00	0.00	0.00			20	0.00
20	20-Jan-01	0.00	0.00	0.00			20	0.00
21	21-Jan-01	0.00	0.00	0.00			20	0.00
22	22-Jan-01	0.80	0.00	0.26			20	0.11
23	23-Jan-01	0.80	0.16	0.62			20	0.23
24	24-Jan-01	0.16	0.00	0.01			20	0.25
25	25-Jan-01	0.48	0.00	0.09			20	0.32
26	26-Jan-01	0.80	0.16	0.53			20	0.43
27	27-Jan-01	0.16	0.00	0.01			20	0.46
28	28-Jan-01	0.00	0.00	0.00			20	0.46
29	29-Jan-01	0.00	0.00	0.00			20	0.34
30	30-Jan-01	0.00	0.00	0.00			20	0.23
31	31-Jan-01	0.00	0.00	0.00			20	0.21
32	1-Feb-01	0.00	0.00	0.00			20	0.14
33	2-Feb-01	0.00	0.00	0.00			20	0.02
34	3-Feb-01	0.00	0.00	0.00			20	0.00
35	4-Feb-01	0.64	0.00	0.22			20	0.09
36	5-Feb-01	0.96	0.00	0.46			20	0.23
37	6-Feb-01	1.28	0.48	0.89			20	0.41
38	7-Feb-01	1.12	0.16	0.40			20	0.57
39	8-Feb-01	0.16	0.00	0.01			20	0.59
40	9-Feb-01	0.00	0.00	0.00			20	0.59
41	10-Feb-01	0.00	0.00	0.00			20	0.59
42	11-Feb-01	0.00	0.00	0.00			20	0.50
43	12-Feb-01	0.00	0.00	0.00			20	0.37
44	13-Feb-01	0.00	0.00	0.00			20	0.18
45	14-Feb-01	0.00	0.00	0.00			20	0.02
46	15-Feb-01	0.32	0.00	0.09			20	0.05
47	16-Feb-01	1.28	0.16	0.65			20	0.23

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	3	4%	
19 °C Average	8	10%	
Days Evaluated & Date Range	80	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	26	28%	
9 °C Average Spring	34	37%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	25	31%	
9 °C Average Fall	29	36%	
Fall Days Eval'd w/in Dates	81	15-Aug	15-Nov
13 °C Instantaneous Total *	51	29%	
9 °C Average Total *	63	36%	
Tot Days Eval'd w/in Both Dates *	173		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	68	76%	
Juvenile Days Eval'd w/in Dates	89	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	15	29%	
Spawning Days Eval'd w/in Dates	52	1-Sep	31-Oct

NOTES

Comments: Data from one deployment wrapped so that fall 2000 data follows summer 2001 data. Data gap from 8-29 thru 9-9. This stream is *a priori* natural, watershed is entirely in Wilderness. Monitored as state Outstanding Resource Water nominee. temperature exceeds Idaho's cold water aquatic life daily maximum criterion less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
48	17-Feb-01	1.76	0.96	1.37			20	0.48
49	18-Feb-01	2.08	1.12	1.62			20	0.78
50	19-Feb-01	2.08	1.28	1.70			20	1.07
51	20-Feb-01	2.08	0.48	1.16			20	1.37
52	21-Feb-01	2.08	1.28	1.74			20	1.67
53	22-Feb-01	2.55	1.28	1.90			20	1.99
54	23-Feb-01	2.24	1.44	1.98			20	2.12
55	24-Feb-01	2.24	1.12	1.78			20	2.19
56	25-Feb-01	1.92	0.16	1.07			20	2.17
57	26-Feb-01	2.40	0.48	1.25			20	2.22
58	27-Feb-01	2.24	0.00	0.71			20	2.24
59	28-Feb-01	0.96	0.00	0.11			20	2.08
60	1-Mar-01	0.00	0.00	0.00			20	1.71
61	2-Mar-01	1.60	0.00	0.73			20	1.62
62	3-Mar-01	2.24	0.16	1.07			20	1.62
63	4-Mar-01	2.40	0.32	1.30			20	1.69
64	5-Mar-01	2.87	1.28	2.08			20	1.76
65	6-Mar-01	3.34	0.64	1.95			20	1.92
66	7-Mar-01	3.19	0.48	1.91			20	2.23
67	8-Mar-01	3.34	0.32	1.79			20	2.71
68	9-Mar-01	2.71	1.28	1.93			20	2.87
69	10-Mar-01	3.34	1.44	2.25			20	3.03
70	11-Mar-01	2.55	1.60	2.14			20	3.05
71	12-Mar-01	3.50	1.76	2.47			20	3.14
72	13-Mar-01	4.12	2.08	3.03			20	3.25
73	14-Mar-01	3.34	1.92	2.59			20	3.27
74	15-Mar-01	3.97	1.28	2.45			20	3.36
75	16-Mar-01	3.81	1.76	2.71			20	3.52
76	17-Mar-01	3.97	1.60	2.71			20	3.61
77	18-Mar-01	5.07	2.40	3.55			20	3.97
78	19-Mar-01	3.97	2.87	3.41			20	4.04
79	20-Mar-01	5.69	2.08	3.43			20	4.26
80	21-Mar-01	5.54	1.28	3.06			20	4.57
81	22-Mar-01	5.38	0.96	2.90			20	4.78
82	23-Mar-01	5.85	1.44	3.25			20	5.07
83	24-Mar-01	5.54	2.40	3.71			20	5.29
84	25-Mar-01	3.34	2.24	2.85			20	5.04
85	26-Mar-01	3.97	2.40	3.10			20	5.04
86	27-Mar-01	5.07	2.55	3.55			20	4.96
87	28-Mar-01	4.91	3.34	4.04			20	4.87
88	29-Mar-01	5.69	3.50	4.47			20	4.91
89	30-Mar-01	5.54	3.66	4.40			20	4.87
90	31-Mar-01	4.12	2.55	3.45			20	4.66
91	1-Apr-01	6.16	3.34	4.48			19	5.07
92	2-Apr-01	4.60	3.50	3.95			20	5.16
93	3-Apr-01	5.69	2.40	3.64			20	5.24
94	4-Apr-01	5.69	3.03	4.06			20	5.36
95	5-Apr-01	6.16	1.92	3.70			20	5.42
96	6-Apr-01	4.91	2.71	3.78			20	5.33
97	7-Apr-01	5.54	3.66	4.38			20	5.54

STATISTICS	
Maximum Daily Maximum (MDM)	23.0 ºC
Maximum 7-Day Maximum (MWM)	22.1 ºC
Maximum Daily Average (MDA)	20.0 ºC
Maximum 7-Day Average (MWA)	19.2 ºC
Mean Daily Maximum	7.4 ºC
Mean Daily Average	6.2 ºC
Mean Daily Minimum	5.2 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	6.2 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	88	80%	
Nmbr of 7-Day Avg's w/in Dates	110	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	80	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	5.07	2.71	3.62			20	5.38
99	9-Apr-01	4.75	2.71	3.61			20	5.40
100	10-Apr-01	5.38	2.71	3.88			20	5.36
101	11-Apr-01	5.38	3.03	4.02			20	5.31
102	12-Apr-01	5.22	3.50	4.27			20	5.18
103	13-Apr-01	5.54	3.19	4.13			20	5.27
104	14-Apr-01	6.47	2.87	4.22			20	5.40
105	15-Apr-01	7.40	2.24	4.50			20	5.73
106	16-Apr-01	7.71	2.87	5.10			20	6.16
107	17-Apr-01	8.32	3.97	6.00			20	6.58
108	18-Apr-01	7.55	5.07	6.23			20	6.89
109	19-Apr-01	7.24	4.75	5.88			20	7.18
110	20-Apr-01	5.38	3.66	4.57			20	7.15
111	21-Apr-01	6.16	3.97	4.96			20	7.11
112	22-Apr-01	7.24	3.81	5.25			20	7.09
113	23-Apr-01	7.09	4.91	5.86			20	7.00
114	24-Apr-01	9.41	5.22	6.85			20	7.15
115	25-Apr-01	8.79	4.60	6.61			20	7.33
116	26-Apr-01	7.55	3.97	5.93			20	7.37
117	27-Apr-01	6.31	3.66	5.01			20	7.51
118	28-Apr-01	5.22	3.34	4.37			20	7.37
119	29-Apr-01	5.38	3.34	4.37			20	7.11
120	30-Apr-01	4.91	4.28	4.64			20	6.80
121	1-May-01	4.60	3.34	3.98			20	6.11
122	2-May-01	5.22	3.03	4.03			20	5.60
123	3-May-01	6.62	2.87	4.64			20	5.47
124	4-May-01	7.86	3.81	5.67			20	5.69
125	5-May-01	6.94	5.07	5.74			20	5.93
126	6-May-01	6.78	3.19	4.90			20	6.13
127	7-May-01	7.71	3.50	5.48			20	6.53
128	8-May-01	7.55	4.44	6.11			20	6.95
129	9-May-01	7.40	4.60	6.07			20	7.27
130	10-May-01	7.86	4.28	6.07			20	7.44
131	11-May-01	8.02	3.97	6.00			20	7.47
132	12-May-01	8.02	4.44	6.18			20	7.62
133	13-May-01	6.94	4.91	5.92			20	7.64
134	14-May-01	6.31	4.60	5.50			20	7.44
135	15-May-01	6.00	4.60	5.38			20	7.22
136	16-May-01	6.00	5.22	5.56			20	7.02
137	17-May-01	6.94	3.81	5.32			20	6.89
138	18-May-01	6.78	5.54	6.11			20	6.71
139	19-May-01	7.71	4.60	6.09			20	6.67
140	20-May-01	7.55	5.69	6.62			20	6.76
141	21-May-01	8.02	4.28	6.08			20	7.00
142	22-May-01	9.25	5.38	7.15			20	7.46
143	23-May-01	9.56	5.85	7.64			20	7.97
144	24-May-01	9.25	6.00	7.61			20	8.30
145	25-May-01	9.72	6.78	8.02			20	8.72
146	26-May-01	9.41	6.78	8.08			20	8.97
147	27-May-01	9.10	7.09	8.16			20	9.19
148	28-May-01	9.72	7.09	8.47			20	9.43

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msrmts per day	7-Day Average of High
149	29-May-01	9.56	7.24	8.19			20	9.47
150	30-May-01	8.48	5.85	7.13			20	9.32
151	31-May-01	10.35	7.71	8.82			20	9.48
152	1-Jun-01	10.35	8.02	9.16			20	9.57
153	2-Jun-01	10.35	8.64	9.22			20	9.70
154	3-Jun-01	8.48	6.47	7.40			20	9.61
155	4-Jun-01	6.47	3.81	4.91			20	9.15
156	5-Jun-01	6.78	4.60	5.62			20	8.75
157	6-Jun-01	8.79	6.00	7.20			20	8.80
158	7-Jun-01	8.02	6.16	7.14			20	8.46
159	8-Jun-01	10.19	6.47	8.20			20	8.44
160	9-Jun-01	10.96	8.48	9.76			20	8.53
161	10-Jun-01	10.35	8.64	9.43			20	8.79
162	11-Jun-01	9.87	8.02	8.99			20	9.28
163	12-Jun-01	9.25	6.47	7.87			20	9.63
164	13-Jun-01	6.31	4.91	5.59			20	9.28
165	14-Jun-01	8.17	5.69	6.79			20	9.30
166	15-Jun-01	10.96	7.24	8.77			20	9.41
167	16-Jun-01	11.74	7.09	9.25			20	9.52
168	17-Jun-01	11.58	8.94	10.15			20	9.70
169	18-Jun-01	11.74	8.17	9.82			20	9.96
170	19-Jun-01	12.04	7.71	9.79			20	10.36
171	20-Jun-01	13.44	8.79	10.88			20	11.38
172	21-Jun-01	14.84	10.19	12.28			20	12.33
173	22-Jun-01	15.80	11.42	13.43	J		20	13.03
174	23-Jun-01	15.48	12.20	13.87	J		20	13.56
175	24-Jun-01	15.00	12.20	13.58	J		20	14.05
176	25-Jun-01	14.37	11.27	12.80	J		20	14.42
177	26-Jun-01	15.64	11.58	13.43	J		20	14.94
178	27-Jun-01	15.32	12.36	13.83	J		20	15.21
179	28-Jun-01	16.43	12.67	14.37	J		20	15.43
180	29-Jun-01	17.39	12.51	14.76	J		20	15.66
181	30-Jun-01	16.91	13.29	15.08	J		20	15.87
182	1-Jul-01	18.67	13.60	15.98	J		20	16.39
183	2-Jul-01	19.00	13.90	16.37	J		20	17.05
184	3-Jul-01	19.49	14.06	16.70	J		20	17.60
185	4-Jul-01	18.51	15.16	16.53	J		20	18.06
186	5-Jul-01	16.91	15.64	16.02	J		20	18.13
187	6-Jul-01	19.16	13.60	16.02	J		20	18.38
188	7-Jul-01	18.03	13.29	15.72	J		20	18.54
189	8-Jul-01	19.16	14.69	16.67	J		20	18.61
190	9-Jul-01	19.00	15.48	17.11	J		20	18.61
191	10-Jul-01	21.45	15.32	18.13	J		20	18.89
192	11-Jul-01	19.32	15.32	17.47	J		20	19.00
193	12-Jul-01	19.49	15.48	17.32	J		20	19.37
194	13-Jul-01	17.87	14.52	16.24	J		20	19.19
195	14-Jul-01	20.62	13.44	16.72	J		20	19.56
196	15-Jul-01	18.35	15.48	16.79	J		20	19.44
197	16-Jul-01	15.96	13.90	14.77	J		20	19.01

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	16.11	12.20	14.01	J		20	18.25
199	18-Jul-01	16.91	12.51	14.50	J		20	17.90
200	19-Jul-01	19.97	13.14	16.09	J		20	17.97
201	20-Jul-01	19.49	14.21	16.65	J		20	18.20
202	21-Jul-01	20.30	14.84	17.18	J		20	18.16
203	22-Jul-01	21.12	14.69	17.67	J		20	18.55
204	23-Jul-01	20.79	13.90	17.41	J		20	19.24
205	24-Jul-01	21.12	14.06	17.60	J		20	19.96
206	25-Jul-01	21.62	14.69	18.07	J		20	20.63
207	26-Jul-01	21.45	14.52	18.00	J		20	20.84
208	27-Jul-01	21.62	14.37	18.08	J		20	21.15
209	28-Jul-01	19.97	15.32	17.83	J		20	21.10
210	29-Jul-01	17.71	13.60	15.86	J		20	20.61
211	30-Jul-01	15.48	13.29	14.24	J		20	19.85
212	31-Jul-01	14.52	12.51	13.43	J		20	18.91
213	1-Aug-01	17.55	10.81	13.76	J		20	18.33
214	2-Aug-01	20.30	12.82	16.12	J		20	18.16
215	3-Aug-01	19.81	14.21	17.08	J		20	17.91
216	4-Aug-01	19.16	14.84	17.06	J		20	17.79
217	5-Aug-01	21.29	14.06	17.40	J		20	18.30
218	6-Aug-01	22.29	15.00	18.59	J		20	19.27
219	7-Aug-01	22.96	16.11	19.61	J		20	20.48
220	8-Aug-01	22.79	16.91	20.01	J		20	21.23
221	9-Aug-01	21.79	16.11	19.14	J		20	21.44
222	10-Aug-01	21.79	15.48	18.80	J		20	21.72
223	11-Aug-01	21.12	15.16	18.40	J		20	22.00
224	12-Aug-01	21.95	15.32	18.71	J		20	22.10
225	13-Aug-01	21.45	17.55	19.94	J		20	21.98
226	14-Aug-01	21.95	16.75	19.49	J		20	21.83
227	15-Aug-01	21.79	16.43	19.37	J		20	21.69
228	16-Aug-01	21.62	16.27	19.17	J		20	21.67
229	17-Aug-01	20.79	15.80	18.69	J		20	21.52
230	18-Aug-01	21.12	16.59	19.22	J		20	21.52
231	19-Aug-01	19.97	15.48	18.17	J		20	21.24
232	20-Aug-01	19.49	14.21	17.18	J		20	20.96
233	21-Aug-01	19.32	14.37	17.20	J		20	20.59
234	22-Aug-01	18.35	14.69	17.03	J		20	20.09
235	23-Aug-01	18.51	14.69	16.87	J		20	19.65
236	24-Aug-01	19.65	16.27	17.93	J		20	19.49
237	25-Aug-01	19.16	14.37	17.02	J		20	19.21
238	26-Aug-01	19.65	14.37	17.22	J		20	19.16
239	27-Aug-01	19.97	15.48	17.85	J		20	19.23
240	28-Aug-01	19.49	15.80	17.75	J		20	19.25
241	10-Sep-01	13.14	10.04	10.93		S	20	18.51
242	11-Sep-01	12.98	10.19	11.34		S	20	17.72
243	12-Sep-01	14.37	9.87	11.88		S	20	16.97
244	13-Sep-01	15.80	10.96	13.17		S	20	16.49
245	14-Sep-01	15.96	11.58	13.92		S	20	15.96
246	15-Sep-01	16.43	12.20	14.48		S	20	15.45

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
247	16-Sep-01	17.07	13.60	15.65		S	20	15.11
248	17-Sep-01	17.07	14.06	15.75		S	20	15.67
249	18-Sep-01	16.59	13.44	14.74		S	20	16.18
250	19-Sep-01	15.48	13.90	14.69		S	20	16.34
251	20-Sep-01	14.84	11.58	13.09		S	20	16.21
252	21-Sep-01	13.29	11.27	12.08		S	20	15.82
253	22-Sep-01	10.96	8.02	9.02		S	20	15.04
254	23-Sep-01	8.94	5.07	6.95			20	13.88
255	24-Sep-01	8.32	4.44	6.50			20	12.63
256	25-Sep-01	8.79	4.91	6.95			20	11.52
257	26-Sep-01	8.94	5.38	7.34			20	10.58
258	27-Sep-01	9.10	5.54	7.52			20	9.76
259	28-Sep-01	9.10	6.16	7.85			20	9.16
260	29-Sep-01	9.10	7.09	8.24			20	8.90
261	30-Sep-01	9.41	8.48	8.85			20	8.97
262	1-Oct-01	9.87	9.10	9.42		S	20	9.19
263	2-Oct-01	9.72	8.48	9.05		S	20	9.32
264	3-Oct-01	8.79	7.09	7.85			20	9.30
265	4-Oct-01	8.48	5.38	6.65			20	9.21
266	5-Oct-01	7.55	4.75	5.99			20	8.99
267	6-Oct-01	6.62	3.50	4.86			20	8.63
268	7-Oct-01	6.62	3.19	4.64			20	8.24
269	8-Oct-01	7.09	3.50	5.01			20	7.84
270	9-Oct-01	7.55	3.97	5.48			20	7.53
271	10-Oct-01	7.55	5.54	6.50			20	7.35
272	11-Oct-01	8.79	6.78	7.52			20	7.40
273	12-Oct-01	8.02	7.40	7.61			20	7.46
274	13-Oct-01	7.55	6.78	7.15			20	7.60
275	14-Oct-01	7.24	6.16	6.66			20	7.68
276	15-Oct-01	8.17	6.31	6.89			20	7.84
277	16-Oct-01	7.40	5.38	6.32			20	7.82
278	17-Oct-01	7.40	5.07	6.07			20	7.80
279	18-Oct-01	7.24	5.07	5.99			20	7.57
280	19-Oct-01	8.17	6.62	7.14			20	7.60
281	20-Oct-01	6.78	5.85	6.42			20	7.49
282	21-Oct-01	7.09	5.85	6.66			20	7.46
283	22-Oct-01	5.69	4.28	5.04			20	7.11
284	23-Oct-01	3.97	2.40	3.26			20	6.62
285	24-Oct-01	4.44	2.40	3.15			20	6.20
286	25-Oct-01	4.28	2.55	3.29			20	5.77
287	26-Oct-01	4.60	2.71	3.54			20	5.26
288	27-Oct-01	6.16	4.12	5.05			20	5.18
289	28-Oct-01	5.38	3.81	4.64			20	4.93
290	29-Oct-01	6.16	4.91	5.48			21	5.00
291	30-Oct-01	6.16	5.38	5.67			20	5.31
292	31-Oct-01	5.69	4.60	5.20			20	5.49
293	1-Nov-01	5.07	3.81	4.49			20	5.60
294	2-Nov-01	3.66	2.24	3.12			20	5.47
295	3-Nov-01	2.87	1.28	1.94			20	5.00
296	4-Nov-01	2.55	1.12	1.81			20	4.59

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
297	5-Nov-01	2.24	1.92	2.17			20	4.03
298	6-Nov-01	3.03	2.08	2.45			20	3.59
299	7-Nov-01	2.40	1.28	1.95			20	3.12
300	8-Nov-01	1.12	0.16	0.59			20	2.55
301	9-Nov-01	1.60	0.48	0.96			20	2.26
302	10-Nov-01	0.16	0.00	0.01			20	1.87
303	11-Nov-01	0.00	0.00	0.00			20	1.51
304	12-Nov-01	0.00	0.00	0.00			20	1.19
305	13-Nov-01	0.00	0.00	0.00			20	0.75
306	14-Nov-01	0.00	0.00	0.00			20	0.41
307	15-Nov-01	0.00	0.00	0.00			20	0.25
308	16-Nov-01	0.00	0.00	0.00			20	0.02
309	17-Nov-01	0.00	0.00	0.00			20	0.00
310	18-Nov-01	0.00	0.00	0.00			20	0.00
311	19-Nov-01	0.00	0.00	0.00			20	0.00
312	20-Nov-01	0.00	0.00	0.00			20	0.00
313	21-Nov-01	0.00	0.00	0.00			20	0.00
314	22-Nov-01	0.00	0.00	0.00			20	0.00
315	23-Nov-01	0.00	0.00	0.00			20	0.00
316	24-Nov-01	0.00	0.00	0.00			20	0.00
317	25-Nov-01	0.00	0.00	0.00			20	0.00
318	26-Nov-01	0.00	0.00	0.00			20	0.00
319	27-Nov-01	0.00	0.00	0.00			20	0.00
320	28-Nov-01	0.00	0.00	0.00			20	0.00
321	29-Nov-01	0.00	0.00	0.00			20	0.00
322	30-Nov-01	0.00	0.00	0.00			20	0.00
323	1-Dec-01	0.00	0.00	0.00			20	0.00
324	2-Dec-01	0.00	0.00	0.00			20	0.00
325	3-Dec-01	0.00	0.00	0.00			20	0.00
326	4-Dec-01	0.48	0.00	0.06			20	0.07
327	5-Dec-01	1.44	0.48	0.95			20	0.27
328	6-Dec-01	1.28	0.00	0.78			20	0.46
329	7-Dec-01	0.00	0.00	0.00			20	0.46
330	8-Dec-01	0.00	0.00	0.00			20	0.46
331	9-Dec-01	0.00	0.00	0.00			20	0.46
332	10-Dec-01	0.00	0.00	0.00			20	0.46
333	11-Dec-01	0.00	0.00	0.00			20	0.39
334	12-Dec-01	0.00	0.00	0.00			20	0.18
335	13-Dec-01	0.00	0.00	0.00			20	0.00
336	14-Dec-01	0.00	0.00	0.00			20	0.00
337	15-Dec-01	0.00	0.00	0.00			20	0.00
338	16-Dec-01	0.00	0.00	0.00			20	0.00
339	17-Dec-01	0.00	0.00	0.00			20	0.00
340	18-Dec-01	0.00	0.00	0.00			20	0.00
341	19-Dec-01	0.00	0.00	0.00			20	0.00
342	20-Dec-01	0.00	0.00	0.00			20	0.00
343	21-Dec-01	0.00	0.00	0.00			20	0.00
344	22-Dec-01	0.00	0.00	0.00			20	0.00
345	23-Dec-01	0.00	0.00	0.00			20	0.00
346	24-Dec-01	0.00	0.00	0.00			20	0.00
347	25-Dec-01	0.00	0.00	0.00			20	0.00

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Bear Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 767 M
Waterbody ID Number: 47

Import File : ... wAway\Selway 2001\Bear Creek 2001-00ed.txt
Calibration Factor : 0.07

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msrmts per day	7-Day Average of High
348	26-Dec-01	0.00	0.00	0.00			20	0.00
349	27-Dec-01	0.00	0.00	0.00			20	0.00
350	28-Dec-01	0.16	0.00	0.05			20	0.02
351	29-Dec-01	0.16	0.00	0.01			20	0.05
352	30-Dec-01	0.80	0.00	0.24			20	0.16
353	31-Dec-01	1.12	0.64	0.91			20	0.32

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
1	1-Jan-01	0.00	0.00	0.00			20	
2	2-Jan-01	0.00	0.00	0.00			20	
3	3-Jan-01	0.00	0.00	0.00			20	
4	4-Jan-01	0.00	0.00	0.00			20	
5	5-Jan-01	0.00	0.00	0.00			20	
6	6-Jan-01	0.00	0.00	0.00			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.00
8	8-Jan-01	0.00	0.00	0.00			20	0.00
9	9-Jan-01	0.00	0.00	0.00			20	0.00
10	10-Jan-01	0.00	0.00	0.00			20	0.00
11	11-Jan-01	0.00	0.00	0.00			20	0.00
12	12-Jan-01	0.00	0.00	0.00			20	0.00
13	13-Jan-01	0.00	0.00	0.00			20	0.00
14	14-Jan-01	0.00	0.00	0.00			20	0.00
15	15-Jan-01	0.00	0.00	0.00			20	0.00
16	16-Jan-01	0.00	0.00	0.00			20	0.00
17	17-Jan-01	0.00	0.00	0.00			20	0.00
18	18-Jan-01	0.00	0.00	0.00			20	0.00
19	19-Jan-01	0.00	0.00	0.00			20	0.00
20	20-Jan-01	0.00	0.00	0.00			20	0.00
21	21-Jan-01	0.00	0.00	0.00			20	0.00
22	22-Jan-01	0.16	0.00	0.03			20	0.02
23	23-Jan-01	0.16	0.00	0.04			20	0.05
24	24-Jan-01	0.16	0.00	0.06			20	0.07
25	25-Jan-01	0.16	0.00	0.05			20	0.09
26	26-Jan-01	0.00	0.00	0.00			20	0.09
27	27-Jan-01	0.00	0.00	0.00			20	0.09
28	28-Jan-01	0.16	0.00	0.01			20	0.11
29	29-Jan-01	0.16	0.16	0.16			20	0.11
30	30-Jan-01	0.32	0.16	0.31			20	0.14
31	31-Jan-01	0.32	0.16	0.26			20	0.16
32	1-Feb-01	0.16	0.00	0.10			20	0.16
33	2-Feb-01	0.48	0.16	0.23			20	0.23
34	3-Feb-01	0.32	0.00	0.20			20	0.27
35	4-Feb-01	0.48	0.00	0.22			20	0.32
36	5-Feb-01	0.48	0.16	0.30			20	0.37
37	6-Feb-01	0.64	0.00	0.32			20	0.41
38	7-Feb-01	0.32	0.00	0.14			20	0.41
39	8-Feb-01	0.00	0.00	0.00			20	0.39
40	9-Feb-01	0.00	0.00	0.00			20	0.32
41	10-Feb-01	0.00	0.00	0.00			20	0.27
42	11-Feb-01	0.00	0.00	0.00			20	0.21
43	12-Feb-01	0.00	0.00	0.00			20	0.14
44	13-Feb-01	0.32	0.00	0.05			20	0.09
45	14-Feb-01	0.00	0.00	0.00			20	0.05
46	15-Feb-01	0.32	0.00	0.12			20	0.09
47	16-Feb-01	0.48	0.16	0.28			20	0.16

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	0	0%	
19 °C Average	1	1%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	35	38%	
9 °C Average Spring	53	58%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	36	39%	
9 °C Average Fall	41	44%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	71	38%	
9 °C Average Total *	94	51%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	0	0%	
Juvenile Days Eval'd w/in Dates	0	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	0	0%	
Spawning Days Eval'd w/in Dates	0	1-Sep	31-Oct

NOTES

Comments: Data from one deployment wrapped so that fall 2000 data follows summer 2001. Stream is *a priori* natural. Monitored as state Outstanding Resource Water nominee. Temperature exceeds Idaho's cold water aquatic life criteria less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
48	17-Feb-01	0.64	0.00	0.32			20	0.25
49	18-Feb-01	0.81	0.00	0.38			20	0.37
50	19-Feb-01	0.64	0.00	0.31			20	0.46
51	20-Feb-01	0.48	0.16	0.35			20	0.48
52	21-Feb-01	1.12	0.32	0.61			20	0.64
53	22-Feb-01	0.96	0.32	0.58			20	0.73
54	23-Feb-01	0.96	0.16	0.48			20	0.80
55	24-Feb-01	0.96	0.16	0.49			20	0.85
56	25-Feb-01	0.32	0.00	0.10			20	0.78
57	26-Feb-01	0.32	0.00	0.10			20	0.73
58	27-Feb-01	0.16	0.00	0.02			20	0.69
59	28-Feb-01	0.00	0.00	0.00			20	0.53
60	1-Mar-01	0.00	0.00	0.00			20	0.39
61	2-Mar-01	0.00	0.00	0.00			20	0.25
62	3-Mar-01	0.81	0.00	0.31			20	0.23
63	4-Mar-01	0.96	0.00	0.45			20	0.32
64	5-Mar-01	1.44	0.48	0.79			20	0.48
65	6-Mar-01	1.76	0.16	0.76			20	0.71
66	7-Mar-01	1.91	0.16	0.77			20	0.98
67	8-Mar-01	1.91	0.16	0.82			20	1.26
68	9-Mar-01	1.44	0.81	1.01			20	1.46
69	10-Mar-01	1.91	0.64	1.11			20	1.62
70	11-Mar-01	1.44	0.64	0.99			20	1.69
71	12-Mar-01	2.38	0.81	1.31			20	1.82
72	13-Mar-01	2.54	0.32	1.19			20	1.93
73	14-Mar-01	1.76	0.48	1.16			20	1.91
74	15-Mar-01	1.91	0.00	0.85			20	1.91
75	16-Mar-01	1.91	0.48	1.15			20	1.98
76	17-Mar-01	2.86	0.32	1.27			20	2.11
77	18-Mar-01	3.02	0.96	1.72			20	2.34
78	19-Mar-01	2.23	1.12	1.60			20	2.32
79	20-Mar-01	5.52	1.91	3.32			20	2.74
80	21-Mar-01	5.98	2.86	4.15			20	3.35
81	22-Mar-01	6.14	2.70	4.16			20	3.95
82	23-Mar-01	6.45	3.02	4.56			20	4.60
83	24-Mar-01	6.76	4.11	5.39			20	5.16
84	25-Mar-01	6.14	4.42	5.03			20	5.60
85	26-Mar-01	4.89	3.80	4.46			20	5.98
86	27-Mar-01	5.83	3.02	4.23			20	6.03
87	28-Mar-01	7.07	4.27	5.38			20	6.18
88	29-Mar-01	7.99	5.21	6.39			20	6.45
89	30-Mar-01	7.99	5.52	6.63			20	6.67
90	31-Mar-01	7.22	4.42	5.42			20	6.73
91	1-Apr-01	7.69	4.58	5.73			19	6.95
92	2-Apr-01	7.38	4.27	5.42			20	7.31
93	3-Apr-01	5.52	2.38	3.82			20	7.27
94	4-Apr-01	6.29	3.64	4.62			20	7.15
95	5-Apr-01	7.07	3.17	4.85			20	7.02
96	6-Apr-01	7.07	4.58	5.38			20	6.89
97	7-Apr-01	5.52	3.80	4.61			20	6.65

STATISTICS	
Maximum Daily Maximum (MDM)	21.2 ºC
Maximum 7-Day Maximum (MWM)	20.4 ºC
Maximum Daily Average (MDA)	19.1 ºC
Maximum 7-Day Average (MWA)	18.7 ºC
Mean Daily Maximum	8.1 ºC
Mean Daily Average	7.0 ºC
Mean Daily Minimum	6.1 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	-0.2 ºC
Mean of all Data	7.0 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	119	98%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	4.89	3.33	4.17			20	6.25
99	9-Apr-01	4.89	2.86	3.74			20	5.89
100	10-Apr-01	6.14	2.70	4.09			20	5.98
101	11-Apr-01	5.83	3.96	4.78			20	5.92
102	12-Apr-01	5.98	4.11	5.00			20	5.76
103	13-Apr-01	5.83	3.96	4.82			20	5.58
104	14-Apr-01	7.84	3.64	5.34			20	5.91
105	15-Apr-01	8.61	4.89	6.64			20	6.45
106	16-Apr-01	9.07	5.67	7.26			20	7.04
107	17-Apr-01	10.47	6.61	8.47			20	7.66
108	18-Apr-01	10.32	7.22	8.78			20	8.30
109	19-Apr-01	9.69	7.07	8.20			20	8.83
110	20-Apr-01	8.31	5.98	6.83			20	9.19
111	21-Apr-01	7.53	5.36	6.36			20	9.14
112	22-Apr-01	8.46	4.89	6.44			20	9.12
113	23-Apr-01	8.61	6.61	7.49			20	9.06
114	24-Apr-01	11.71	6.92	8.83			20	9.23
115	25-Apr-01	12.63	8.31	10.41			20	9.56
116	26-Apr-01	12.17	8.61	10.30			20	9.92
117	27-Apr-01	10.47	8.31	9.48			20	10.23
118	28-Apr-01	9.84	7.38	8.17			20	10.56
119	29-Apr-01	7.53	5.52	6.44			20	10.42
120	30-Apr-01	7.53	5.98	6.47			20	10.27
121	1-May-01	7.53	5.36	6.51			20	9.67
122	2-May-01	6.61	4.27	5.27			20	8.81
123	3-May-01	8.46	3.80	5.64			20	8.28
124	4-May-01	9.84	5.67	7.51			20	8.19
125	5-May-01	10.16	7.69	9.00			20	8.24
126	6-May-01	9.07	5.52	7.42			20	8.46
127	7-May-01	9.84	5.83	7.71			20	8.79
128	8-May-01	9.53	7.22	8.49			20	9.07
129	9-May-01	9.23	7.07	8.18			20	9.45
130	10-May-01	9.53	6.45	7.90			20	9.60
131	11-May-01	9.53	6.45	8.03			20	9.56
132	12-May-01	9.69	7.07	8.30			20	9.49
133	13-May-01	9.69	7.38	8.47			20	9.58
134	14-May-01	8.46	6.76	7.62			20	9.38
135	15-May-01	7.84	6.45	7.06			20	9.14
136	16-May-01	7.53	6.29	6.95			20	8.90
137	17-May-01	7.69	5.52	6.65			20	8.63
138	18-May-01	9.53	6.76	7.88			20	8.63
139	19-May-01	9.23	6.92	8.03			20	8.57
140	20-May-01	9.53	7.07	8.27			20	8.54
141	21-May-01	9.84	5.98	7.82			20	8.74
142	22-May-01	11.39	7.38	9.25			20	9.25
143	23-May-01	12.01	8.31	10.17			20	9.89
144	24-May-01	11.39	8.61	10.25			20	10.42
145	25-May-01	10.78	8.61	9.86			20	10.60
146	26-May-01	10.93	8.31	9.71			20	10.84
147	27-May-01	10.63	8.92	9.68			20	11.00
148	28-May-01	11.09	7.99	9.47			20	11.17

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
149	29-May-01	11.24	8.31	9.91			20	11.15
150	30-May-01	10.93	7.53	9.32			20	11.00
151	31-May-01	13.41	9.07	10.92			20	11.29
152	1-Jun-01	12.94	9.84	11.60			20	11.60
153	2-Jun-01	13.25	10.63	11.83			20	11.93
154	3-Jun-01	12.01	8.61	9.55			20	12.12
155	4-Jun-01	8.31	6.29	7.15			20	11.73
156	5-Jun-01	8.15	6.29	7.18			20	11.29
157	6-Jun-01	10.63	7.53	8.65			20	11.24
158	7-Jun-01	10.47	7.99	9.39			20	10.82
159	8-Jun-01	12.63	8.61	10.42			20	10.78
160	9-Jun-01	13.25	10.01	11.72			20	10.78
161	10-Jun-01	13.25	10.01	11.66			20	10.96
162	11-Jun-01	12.48	10.32	11.53			20	11.55
163	12-Jun-01	11.09	8.77	9.53			20	11.97
164	13-Jun-01	9.23	6.61	7.87			20	11.77
165	14-Jun-01	9.84	6.76	8.41			20	11.68
166	15-Jun-01	13.25	7.84	10.08			20	11.77
167	16-Jun-01	14.33	9.38	11.79			20	11.92
168	17-Jun-01	14.81	11.24	12.93			20	12.15
169	18-Jun-01	14.33	10.16	12.32			20	12.41
170	19-Jun-01	14.97	10.01	12.37			20	12.97
171	20-Jun-01	16.08	10.78	13.30			20	13.94
172	21-Jun-01	16.87	12.32	14.61			20	14.95
173	22-Jun-01	18.15	13.25	15.64			20	15.65
174	23-Jun-01	18.15	13.71	15.91			20	16.19
175	24-Jun-01	17.67	13.41	15.64			20	16.60
176	25-Jun-01	16.23	12.32	14.41			20	16.87
177	26-Jun-01	17.18	12.94	14.93			20	17.19
178	27-Jun-01	16.71	13.56	15.10			20	17.28
179	28-Jun-01	18.31	12.94	15.19			20	17.49
180	29-Jun-01	18.96	13.56	16.08			20	17.60
181	30-Jun-01	18.15	14.65	16.51			20	17.60
182	1-Jul-01	19.93	14.02	16.82			20	17.92
183	2-Jul-01	20.74	15.44	18.06			20	18.57
184	3-Jul-01	21.24	16.23	18.67			20	19.15
185	4-Jul-01	20.41	17.02	18.52			20	19.68
186	5-Jul-01	19.28	16.71	17.68			20	19.82
187	6-Jul-01	18.96	14.49	16.51			20	19.82
188	7-Jul-01	18.47	15.76	17.25			20	19.86
189	8-Jul-01	18.63	15.13	16.62			20	19.68
190	9-Jul-01	18.47	15.92	17.23			20	19.35
191	10-Jul-01	19.93	14.97	17.13			20	19.16
192	11-Jul-01	19.44	16.71	18.14			20	19.03
193	12-Jul-01	19.93	16.08	17.93			20	19.12
194	13-Jul-01	19.28	16.08	17.86			20	19.16
195	14-Jul-01	19.12	15.60	17.55			20	19.26
196	15-Jul-01	18.31	16.08	16.99			20	19.21
197	16-Jul-01	16.71	14.49	15.63			20	18.96

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	16.08	13.71	14.85			20	18.41
199	18-Jul-01	15.92	13.25	14.52			20	17.91
200	19-Jul-01	18.15	13.09	15.30			20	17.65
201	20-Jul-01	17.99	14.97	16.51			20	17.47
202	21-Jul-01	18.63	14.65	16.64			20	17.40
203	22-Jul-01	19.44	15.28	17.28			20	17.56
204	23-Jul-01	19.61	15.44	17.55			20	17.97
205	24-Jul-01	20.09	15.60	17.84			20	18.55
206	25-Jul-01	20.58	16.55	18.53			20	19.21
207	26-Jul-01	20.41	16.71	18.78			20	19.54
208	27-Jul-01	20.09	16.71	18.57			20	19.84
209	28-Jul-01	19.93	16.55	17.87			20	20.02
210	29-Jul-01	17.99	14.97	16.59			20	19.81
211	30-Jul-01	17.34	14.97	15.78			20	19.49
212	31-Jul-01	16.23	13.25	14.48			20	18.94
213	1-Aug-01	17.51	13.25	15.08			20	18.50
214	2-Aug-01	18.96	14.81	16.71			20	18.29
215	3-Aug-01	18.96	16.23	17.67			20	18.13
216	4-Aug-01	18.96	16.87	17.97			20	17.99
217	5-Aug-01	19.61	15.92	17.65			20	18.22
218	6-Aug-01	20.41	16.87	18.52			20	18.66
219	7-Aug-01	20.25	17.51	18.83			20	19.24
220	8-Aug-01	20.91	17.34	18.90			20	19.72
221	9-Aug-01	20.74	17.51	19.06			20	19.98
222	10-Aug-01	20.25	17.02	18.76			20	20.16
223	11-Aug-01	20.25	17.34	18.53			20	20.35
224	12-Aug-01	19.28	16.55	18.03			20	20.30
225	13-Aug-01	19.12	17.18	18.16			20	20.11
226	14-Aug-01	18.63	16.08	17.32			20	19.88
227	15-Aug-01	19.44	16.55	17.91			20	19.67
228	16-Aug-01	19.77	16.71	18.19			20	19.53
229	17-Aug-01	19.61	16.71	18.24			20	19.44
230	18-Aug-01	19.44	16.55	18.06			20	19.33
231	19-Aug-01	19.28	16.23	17.76			20	19.33
232	20-Aug-01	19.12	15.76	17.27			20	19.33
233	21-Aug-01	18.31	15.28	16.81			20	19.28
234	22-Aug-01	17.99	15.13	16.68			20	19.07
235	23-Aug-01	17.83	15.13	16.50			20	18.80
236	24-Aug-01	18.31	15.28	16.68			20	18.61
237	25-Aug-01	18.80	15.28	16.95			20	18.52
238	26-Aug-01	19.12	15.92	17.54			20	18.50
239	27-Aug-01	19.61	16.39	17.94			20	18.57
240	28-Aug-01	19.61	16.55	18.11			20	18.75
241	29-Aug-01	19.12	15.76	17.45			20	18.91
242	30-Aug-01	18.96	15.92	17.46			20	19.08
243	31-Aug-01	18.31	16.08	17.14			20	19.08
244	1-Sep-01	17.83	15.60	16.88			20	18.94
245	2-Sep-01	18.15	15.28	16.72			20	18.80
246	3-Sep-01	18.15	15.28	16.74			20	18.59

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
247	4-Sep-01	18.15	15.28	16.48			20	18.38
248	5-Sep-01	16.87	14.97	15.93			20	18.06
249	6-Sep-01	15.76	12.17	13.17			20	17.60
250	7-Sep-01	12.94	11.39	12.11			20	16.84
251	8-Sep-01	13.56	10.32	11.71			20	16.23
252	9-Sep-01	14.18	10.93	12.38			20	15.66
253	10-Sep-01	14.97	11.55	13.06			20	15.20
254	11-Sep-01	15.44	12.63	13.94			20	14.82
255	12-Sep-01	15.76	13.25	14.39			20	14.66
256	13-Sep-01	17.18	14.65	15.63			20	14.86
257	14-Sep-01	17.34	14.97	16.07			20	15.49
258	15-Sep-01	17.18	14.33	15.62			20	16.01
259	16-Sep-01	16.55	14.18	15.38			20	16.35
260	17-Sep-01	16.08	13.56	14.80			20	16.50
261	18-Sep-01	15.60	12.94	14.05			20	16.53
262	19-Sep-01	15.13	12.48	13.66			20	16.44
263	20-Sep-01	14.33	11.39	12.70			11	16.03
264	21-Sep-01	12.32	10.93	11.56			20	15.31
265	22-Sep-01	10.78	7.69	8.91			20	14.40
266	23-Sep-01	8.92	5.52	7.14			20	13.31
267	24-Sep-01	8.77	5.05	6.72			20	12.26
268	25-Sep-01	9.53	5.52	7.11			20	11.40
269	26-Sep-01	10.16	6.45	8.01			20	10.69
270	27-Sep-01	10.16	6.76	8.28			20	10.09
271	28-Sep-01	10.01	7.07	8.47			20	9.76
272	29-Sep-01	10.01	7.84	8.90			20	9.65
273	30-Sep-01	10.47	8.77	9.48			20	9.87
274	1-Oct-01	12.01	10.16	10.92			20	10.34
275	2-Oct-01	11.71	9.07	10.24			20	10.65
276	3-Oct-01	9.84	7.53	8.72			20	10.60
277	4-Oct-01	9.23	6.45	7.73			20	10.47
278	5-Oct-01	8.15	5.52	6.66			20	10.20
279	6-Oct-01	6.92	4.27	5.51			20	9.76
280	7-Oct-01	6.76	3.80	5.07			20	9.23
281	8-Oct-01	7.07	4.11	5.27			20	8.53
282	9-Oct-01	7.53	4.42	5.67			20	7.93
283	10-Oct-01	8.46	6.14	6.98			20	7.73
284	11-Oct-01	8.61	7.22	7.92			20	7.64
285	12-Oct-01	8.31	7.38	7.72			20	7.67
286	13-Oct-01	7.22	6.29	6.68			20	7.71
287	14-Oct-01	8.15	6.14	6.85			20	7.91
288	15-Oct-01	8.15	6.45	7.05			20	8.06
289	16-Oct-01	7.22	5.21	6.23			20	8.02
290	17-Oct-01	7.07	5.05	5.91			20	7.82
291	18-Oct-01	6.92	4.89	5.74			20	7.58
292	19-Oct-01	7.84	6.14	6.77			20	7.51
293	20-Oct-01	7.84	5.98	6.78			20	7.60
294	21-Oct-01	7.84	6.45	7.28			20	7.55
295	22-Oct-01	6.14	3.80	4.66			20	7.27
296	23-Oct-01	3.96	2.38	3.14			20	6.80

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
297	24-Oct-01	3.48	1.76	2.52			20	6.29
298	25-Oct-01	3.64	1.91	2.64			20	5.82
299	26-Oct-01	4.74	2.54	3.39			20	5.38
300	27-Oct-01	6.14	4.42	5.05			20	5.13
301	28-Oct-01	6.14	4.58	5.34			20	4.89
302	29-Oct-01	6.45	5.67	5.99			21	4.94
303	30-Oct-01	5.98	5.36	5.74			20	5.22
304	31-Oct-01	5.83	5.21	5.50			20	5.56
305	1-Nov-01	5.21	3.80	4.58			20	5.78
306	2-Nov-01	3.48	1.76	2.36			20	5.60
307	3-Nov-01	1.60	0.48	1.02			20	4.96
308	4-Nov-01	1.91	0.16	0.95			20	4.35
309	5-Nov-01	2.70	1.60	2.05			20	3.82
310	6-Nov-01	2.54	1.91	2.23			20	3.32
311	7-Nov-01	2.23	0.96	1.50			20	2.81
312	8-Nov-01	0.81	0.00	0.46			20	2.18
313	9-Nov-01	1.28	0.00	0.56			20	1.87
314	10-Nov-01	0.32	0.00	0.04			20	1.68
315	11-Nov-01	0.32	0.00	0.09			20	1.46
316	12-Nov-01	0.48	0.00	0.12			20	1.14
317	13-Nov-01	0.00	0.00	0.00			20	0.78
318	14-Nov-01	0.00	-0.16	-0.05			20	0.46
319	15-Nov-01	0.00	0.00	0.00			20	0.34
320	16-Nov-01	0.00	0.00	0.00			20	0.16
321	17-Nov-01	0.00	0.00	0.00			20	0.11
322	18-Nov-01	0.00	0.00	0.00			20	0.07
323	19-Nov-01	0.00	0.00	0.00			20	0.00
324	20-Nov-01	0.00	0.00	0.00			20	0.00
325	21-Nov-01	0.00	0.00	0.00			20	0.00
326	22-Nov-01	0.00	0.00	0.00			20	0.00
327	23-Nov-01	0.16	0.00	0.01			20	0.02
328	24-Nov-01	0.16	0.00	0.07			20	0.05
329	25-Nov-01	0.00	0.00	0.00			20	0.05
330	26-Nov-01	0.00	0.00	0.00			20	0.05
331	27-Nov-01	0.16	0.00	0.01			20	0.07
332	28-Nov-01	0.00	0.00	0.00			20	0.07
333	29-Nov-01	0.16	0.00	0.07			20	0.09
334	30-Nov-01	0.00	0.00	0.00			20	0.07
335	1-Dec-01	0.00	0.00	0.00			20	0.05
336	2-Dec-01	0.16	0.00	0.04			20	0.07
337	3-Dec-01	0.16	0.00	0.09			20	0.09
338	4-Dec-01	0.16	0.00	0.05			20	0.09
339	5-Dec-01	0.00	0.00	0.00			20	0.09
340	6-Dec-01	0.00	0.00	0.00			20	0.07
341	7-Dec-01	0.00	0.00	0.00			20	0.07
342	8-Dec-01	0.00	0.00	0.00			20	0.07
343	9-Dec-01	0.00	0.00	0.00			20	0.05
344	10-Dec-01	0.00	0.00	0.00			20	0.02
345	11-Dec-01	0.00	0.00	0.00			20	0.00
346	12-Dec-01	0.00	0.00	0.00			20	0.00
347	13-Dec-01	0.16	0.00	0.01			20	0.02

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Big Creek
Data Collection Site: ~1km above mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1050 M
Waterbody ID Number: 3

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : 0.1

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
348	14-Dec-01	0.00	0.00	0.00			20	0.02
349	15-Dec-01	0.00	0.00	0.00			20	0.02
350	16-Dec-01	0.00	0.00	0.00			20	0.02
351	17-Dec-01	0.00	0.00	0.00			20	0.02
352	18-Dec-01	0.00	0.00	0.00			20	0.02
353	19-Dec-01	0.00	0.00	0.00			20	0.02
354	20-Dec-01	0.00	0.00	0.00			20	0.00
355	21-Dec-01	0.00	0.00	0.00			20	0.00
356	22-Dec-01	0.00	0.00	0.00			20	0.00
357	23-Dec-01	0.00	0.00	0.00			20	0.00
358	24-Dec-01	0.00	0.00	0.00			20	0.00
359	25-Dec-01	0.16	0.00	0.05			20	0.02
360	26-Dec-01	0.00	0.00	0.00			20	0.02
361	27-Dec-01	0.00	0.00	0.00			20	0.02
362	28-Dec-01	0.00	0.00	0.00			20	0.02
363	29-Dec-01	0.00	0.00	0.00			20	0.02
364	30-Dec-01	0.00	0.00	0.00			20	0.02
365	31-Dec-01	0.00	0.00	0.00			20	0.02

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
1	1-Jan-01	0.00	0.00	0.00			20	
2	2-Jan-01	0.00	0.00	0.00			20	
3	3-Jan-01	0.00	0.00	0.00			20	
4	4-Jan-01	0.00	0.00	0.00			20	
5	5-Jan-01	0.00	0.00	0.00			20	
6	6-Jan-01	0.00	0.00	0.00			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.00
8	8-Jan-01	0.00	0.00	0.00			20	0.00
9	9-Jan-01	0.00	0.00	0.00			20	0.00
10	10-Jan-01	0.00	0.00	0.00			20	0.00
11	11-Jan-01	0.00	0.00	0.00			20	0.00
12	12-Jan-01	0.16	0.00	0.06			20	0.02
13	13-Jan-01	0.16	0.00	0.03			20	0.05
14	14-Jan-01	0.16	0.00	0.05			20	0.07
15	15-Jan-01	0.16	0.00	0.01			20	0.09
16	16-Jan-01	0.00	0.00	0.00			20	0.09
17	17-Jan-01	0.00	0.00	0.00			20	0.09
18	18-Jan-01	0.00	0.00	0.00			20	0.09
19	19-Jan-01	0.16	0.00	0.02			20	0.09
20	20-Jan-01	0.00	0.00	0.00			20	0.07
21	21-Jan-01	0.16	0.00	0.02			20	0.07
22	22-Jan-01	0.16	0.00	0.06			20	0.07
23	23-Jan-01	0.16	0.00	0.07			20	0.09
24	24-Jan-01	0.16	0.00	0.06			20	0.11
25	25-Jan-01	0.16	0.00	0.09			20	0.14
26	26-Jan-01	0.48	0.00	0.22			20	0.18
27	27-Jan-01	0.00	0.00	0.00			20	0.18
28	28-Jan-01	0.00	0.00	0.00			20	0.16
29	29-Jan-01	0.00	0.00	0.00			20	0.14
30	30-Jan-01	0.00	0.00	0.00			20	0.11
31	31-Jan-01	0.00	0.00	0.00			20	0.09
32	1-Feb-01	0.16	0.00	0.04			20	0.09
33	2-Feb-01	0.16	0.00	0.06			20	0.05
34	3-Feb-01	0.48	0.00	0.19			20	0.11
35	4-Feb-01	1.28	0.32	0.73			20	0.30
36	5-Feb-01	1.59	0.80	1.11			20	0.52
37	6-Feb-01	1.28	0.32	0.75			20	0.71
38	7-Feb-01	0.64	0.00	0.29			20	0.80
39	8-Feb-01	0.00	0.00	0.00			20	0.78
40	9-Feb-01	0.00	0.00	0.00			20	0.75
41	10-Feb-01	0.00	0.00	0.00			20	0.68
42	11-Feb-01	0.16	0.00	0.01			20	0.52
43	12-Feb-01	0.16	0.00	0.02			20	0.32
44	13-Feb-01	0.00	0.00	0.00			20	0.14
45	14-Feb-01	0.00	0.00	0.00			20	0.05
46	15-Feb-01	0.16	0.00	0.06			20	0.07
47	16-Feb-01	0.32	0.00	0.12			20	0.11

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	9	10%	
19 °C Average	0	0%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	45	49%	
9 °C Average Spring	47	51%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	50	54%	
9 °C Average Fall	49	53%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	95	51%	
9 °C Average Total *	96	52%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	85	92%	
Juvenile Days Eval'd w/in Dates	92	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	32	52%	
Spawning Days Eval'd w/in Dates	61	1-Sep	31-Oct

NOTES

Comments: Combined data from two deployments. Stream is *a priori* natural. Monitored as state Outstanding Resource Water nominee. Temperature exceeds Idaho's cold water aquatic life criteria less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
48	17-Feb-01	1.76	0.32	0.87			20	0.37
49	18-Feb-01	1.76	0.48	0.96			20	0.59
50	19-Feb-01	2.07	0.64	1.21			20	0.87
51	20-Feb-01	1.43	0.80	1.16			20	1.07
52	21-Feb-01	2.23	1.12	1.57			20	1.39
53	22-Feb-01	2.39	1.12	1.56			20	1.71
54	23-Feb-01	1.76	0.32	0.96			20	1.91
55	24-Feb-01	1.76	0.00	0.59			20	1.91
56	25-Feb-01	1.28	0.00	0.32			20	1.85
57	26-Feb-01	0.96	0.00	0.18			20	1.69
58	27-Feb-01	0.00	0.00	0.00			20	1.48
59	28-Feb-01	0.00	0.00	0.00			20	1.16
60	1-Mar-01	0.00	0.00	0.00			20	0.82
61	2-Mar-01	0.16	0.00	0.08			20	0.59
62	3-Mar-01	2.07	0.00	0.73			20	0.64
63	4-Mar-01	2.39	0.32	1.20			20	0.80
64	5-Mar-01	2.86	1.28	1.76			20	1.07
65	6-Mar-01	3.49	0.48	1.66			20	1.57
66	7-Mar-01	3.33	0.32	1.40			20	2.04
67	8-Mar-01	3.18	0.16	1.38			20	2.50
68	9-Mar-01	3.18	0.96	1.88			20	2.93
69	10-Mar-01	4.58	1.59	2.57			20	3.29
70	11-Mar-01	4.43	1.43	2.53			20	3.58
71	12-Mar-01	5.05	1.91	3.00			20	3.89
72	13-Mar-01	4.58	0.96	2.50			20	4.05
73	14-Mar-01	4.27	1.28	2.40			20	4.18
74	15-Mar-01	3.02	0.00	1.35			20	4.16
75	16-Mar-01	4.12	1.12	2.35			20	4.29
76	17-Mar-01	4.12	0.96	2.36			20	4.23
77	18-Mar-01	5.05	1.76	3.20			20	4.32
78	19-Mar-01	5.36	2.71	3.76			20	4.36
79	20-Mar-01	7.07	2.23	4.03			20	4.72
80	21-Mar-01	7.22	1.59	3.64			20	5.14
81	22-Mar-01	7.22	0.96	3.42			20	5.74
82	23-Mar-01	6.92	1.59	3.78			20	6.14
83	24-Mar-01	7.22	2.23	4.47			20	6.58
84	25-Mar-01	5.83	3.18	4.21			20	6.69
85	26-Mar-01	5.52	2.54	3.89			20	6.71
86	27-Mar-01	6.61	0.64	3.26			20	6.65
87	28-Mar-01	7.99	2.54	4.69			20	6.76
88	29-Mar-01	9.23	3.18	5.44			20	7.05
89	30-Mar-01	8.46	3.33	4.93			20	7.27
90	31-Mar-01	5.36	1.43	3.54			20	7.00
91	1-Apr-01	8.46	2.71	5.13			19	7.38
92	2-Apr-01	5.67	2.07	3.78			20	7.40
93	3-Apr-01	7.38	0.48	3.15			20	7.51
94	4-Apr-01	9.38	1.12	3.96			20	7.71
95	5-Apr-01	9.23	0.48	3.83			20	7.71
96	6-Apr-01	5.05	1.76	3.33			20	7.22
97	7-Apr-01	4.89	1.91	3.30			20	7.15

STATISTICS	
Maximum Daily Maximum (MDM)	23.6 ºC
Maximum 7-Day Maximum (MWM)	22.1 ºC
Maximum Daily Average (MDA)	17.3 ºC
Maximum 7-Day Average (MWA)	16.5 ºC
Mean Daily Maximum	9.3 ºC
Mean Daily Average	6.6 ºC
Mean Daily Minimum	4.7 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	6.6 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	122	100%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	3.81	2.07	3.00			20	6.49
99	9-Apr-01	6.61	0.32	2.90			20	6.62
100	10-Apr-01	6.76	0.16	3.16			20	6.53
101	11-Apr-01	5.98	1.76	3.36			20	6.05
102	12-Apr-01	6.61	2.54	3.99			20	5.67
103	13-Apr-01	5.67	2.07	3.60			20	5.76
104	14-Apr-01	9.38	1.12	4.54			20	6.40
105	15-Apr-01	8.30	1.43	4.68			20	7.04
106	16-Apr-01	10.47	2.07	5.70			20	7.60
107	17-Apr-01	11.70	3.18	6.76			20	8.30
108	18-Apr-01	10.77	3.33	6.63			20	8.99
109	19-Apr-01	7.84	3.96	5.70			20	9.16
110	20-Apr-01	6.92	3.81	5.15			20	9.34
111	21-Apr-01	7.22	3.02	4.90			20	9.03
112	22-Apr-01	8.30	2.39	5.20			20	9.03
113	23-Apr-01	7.53	3.96	5.54			20	8.61
114	24-Apr-01	12.63	3.49	7.34			20	8.74
115	25-Apr-01	12.94	4.12	7.86			20	9.05
116	26-Apr-01	10.31	4.58	7.30			20	9.41
117	27-Apr-01	10.31	5.05	7.54			20	9.89
118	28-Apr-01	8.14	4.43	6.14			20	10.02
119	29-Apr-01	8.30	3.33	5.71			20	10.02
120	30-Apr-01	7.22	4.74	5.86			20	9.98
121	1-May-01	7.84	3.49	5.14			20	9.29
122	2-May-01	6.45	2.54	4.26			20	8.37
123	3-May-01	10.77	2.07	5.62			20	8.43
124	4-May-01	12.01	3.33	7.08			20	8.68
125	5-May-01	12.01	5.36	7.92			20	9.23
126	6-May-01	10.62	3.02	6.26			20	9.56
127	7-May-01	11.86	3.33	6.99			20	10.22
128	8-May-01	10.47	4.58	7.37			20	10.60
129	9-May-01	10.00	5.05	7.35			20	11.11
130	10-May-01	11.54	3.96	7.18			20	11.22
131	11-May-01	11.70	4.12	7.55			20	11.17
132	12-May-01	12.16	5.05	8.21			20	11.19
133	13-May-01	11.70	6.14	8.33			20	11.35
134	14-May-01	9.69	5.67	7.47			20	11.04
135	15-May-01	7.53	5.52	6.61			20	10.62
136	16-May-01	9.84	5.67	7.10			20	10.59
137	17-May-01	9.53	3.81	6.53			20	10.31
138	18-May-01	11.39	5.67	7.88			20	10.26
139	19-May-01	10.31	4.89	7.43			20	10.00
140	20-May-01	11.08	5.36	7.72			20	9.91
141	21-May-01	11.86	3.81	7.39			20	10.22
142	22-May-01	13.56	5.36	8.93			20	11.08
143	23-May-01	13.40	6.29	9.66			20	11.59
144	24-May-01	13.24	7.07	9.87			20	12.12
145	25-May-01	12.47	7.38	9.85			20	12.27
146	26-May-01	12.78	7.38	9.88			20	12.63
147	27-May-01	12.16	7.68	9.58			20	12.78
148	28-May-01	13.56	7.07	9.84			20	13.02

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msrmts per day	7-Day Average of High
149	29-May-01	13.24	7.07	9.67			20	12.98
150	30-May-01	13.40	5.67	9.14			20	12.98
151	31-May-01	15.27	7.07	10.66			20	13.27
152	1-Jun-01	14.96	7.53	10.94	J		20	13.62
153	2-Jun-01	14.64	9.23	11.36	J		20	13.89
154	3-Jun-01	9.69	7.22	7.95	J		20	13.54
155	4-Jun-01	7.53	5.36	6.40			20	12.68
156	5-Jun-01	8.92	4.89	6.72			20	12.06
157	6-Jun-01	11.54	6.14	8.46			20	11.79
158	7-Jun-01	13.24	6.29	9.28			20	11.50
159	8-Jun-01	15.27	7.07	10.82			20	11.55
160	9-Jun-01	15.59	8.14	11.38			20	11.68
161	10-Jun-01	16.06	7.99	11.29			20	12.59
162	11-Jun-01	13.40	8.92	10.94	J		20	13.43
163	12-Jun-01	9.53	7.38	8.47	J		20	13.52
164	13-Jun-01	11.54	5.52	7.81	J		20	13.52
165	14-Jun-01	12.78	5.21	8.51	J		20	13.45
166	15-Jun-01	15.27	6.45	10.32	J		20	13.45
167	16-Jun-01	16.38	6.61	10.90	J		20	13.57
168	17-Jun-01	16.22	8.30	11.81	J		20	13.59
169	18-Jun-01	15.11	7.53	11.07	J		20	13.83
170	19-Jun-01	16.38	7.07	11.26	J		20	14.81
171	20-Jun-01	17.97	8.14	12.48	J		20	15.73
172	21-Jun-01	19.26	9.69	13.84	J		20	16.66
173	22-Jun-01	19.75	10.31	14.48	J		20	17.30
174	23-Jun-01	18.13	10.77	14.25	J		20	17.55
175	24-Jun-01	19.10	10.47	14.26	J		20	17.96
176	25-Jun-01	16.85	9.38	12.76	J		20	18.21
177	26-Jun-01	19.91	10.47	14.33	J		20	18.71
178	27-Jun-01	14.96	10.93	13.29	J		20	18.28
179	28-Jun-01	19.75	11.54	14.79	J		20	18.35
180	29-Jun-01	20.07	10.62	14.90	J		20	18.40
181	30-Jun-01	18.94	11.24	14.73	J		20	18.51
182	1-Jul-01	21.38	11.24	15.75	J		20	18.84
183	2-Jul-01	21.71	12.01	16.41	J		20	19.53
184	3-Jul-01	21.88	12.16	16.62	J		20	19.81
185	4-Jul-01	19.59	13.86	16.48	J		20	20.47
186	5-Jul-01	19.59	14.48	16.72	J		20	20.45
187	6-Jul-01	20.56	12.94	16.42	J		20	20.52
188	7-Jul-01	17.17	12.63	15.13	J		20	20.27
189	8-Jul-01	18.29	13.40	15.50	J		20	19.83
190	9-Jul-01	18.45	12.94	15.03	J		20	19.36
191	10-Jul-01	21.05	12.63	16.12	J		20	19.24
192	11-Jul-01	20.07	13.86	16.51	J		20	19.31
193	12-Jul-01	21.54	12.94	16.88	J		20	19.59
194	13-Jul-01	20.23	12.78	16.39	J		20	19.54
195	14-Jul-01	19.75	12.32	16.17	J		20	19.91
196	15-Jul-01	17.64	12.94	15.33	J		20	19.82
197	16-Jul-01	17.33	12.16	14.52	J		20	19.66

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	16.38	10.16	13.22	J		20	18.99
199	18-Jul-01	17.17	10.00	13.08	J		20	18.58
200	19-Jul-01	20.39	9.38	14.23	J		20	18.41
201	20-Jul-01	18.77	11.39	15.10	J		20	18.20
202	21-Jul-01	20.88	10.77	15.26	J		20	18.37
203	22-Jul-01	21.38	10.31	15.08	J		20	18.90
204	23-Jul-01	20.72	11.24	15.42	J		20	19.38
205	24-Jul-01	22.38	11.08	16.11	J		20	20.24
206	25-Jul-01	22.71	11.39	16.40	J		20	21.03
207	26-Jul-01	22.54	11.70	16.47	J		20	21.34
208	27-Jul-01	21.54	10.93	15.84	J		20	21.74
209	28-Jul-01	20.23	11.08	15.25	J		20	21.64
210	29-Jul-01	20.23	10.16	14.59	J		20	21.48
211	30-Jul-01	14.96	12.78	13.52	J		20	20.66
212	31-Jul-01	18.29	10.62	13.46	J		20	20.07
213	1-Aug-01	19.75	9.07	13.85	J		20	19.65
214	2-Aug-01	22.21	10.62	15.70	J		20	19.60
215	3-Aug-01	20.23	11.54	15.54	J		20	19.41
216	4-Aug-01	21.21	12.78	16.22	J		20	19.55
217	5-Aug-01	22.21	10.93	15.80	J		20	19.84
218	6-Aug-01	23.21	11.54	16.61	J		20	21.02
219	7-Aug-01	21.21	12.32	16.43	J		20	21.43
220	8-Aug-01	23.55	12.63	17.33	J		20	21.98
221	9-Aug-01	20.72	12.01	16.03	J		20	21.76
222	10-Aug-01	22.38	12.16	16.62	J		20	22.07
223	11-Aug-01	21.54	12.78	16.57	J		20	22.12
224	12-Aug-01	21.05	12.01	16.08	J		20	21.95
225	13-Aug-01	20.39	12.47	15.89	J		20	21.55
226	14-Aug-01	19.10	12.16	15.53	J		20	21.25
227	15-Aug-01	19.75	12.94	16.09	J		20	20.70
228	16-Aug-01	21.54	11.70	15.95	J		20	20.82
229	17-Aug-01	22.38	11.70	16.34	J		20	20.82
230	18-Aug-01	21.88	11.54	16.14	J		20	20.87
231	19-Aug-01	21.38	11.24	15.63	J		20	20.92
232	20-Aug-01	20.07	9.69	14.35	J		20	20.87
233	21-Aug-01	20.07	10.16	14.53	J		20	21.01
234	22-Aug-01	19.59	10.00	14.38	J		20	20.99
235	23-Aug-01	20.07	10.16	14.55	J		20	20.78
236	24-Aug-01	20.56	10.00	14.48	J		20	20.52
237	25-Aug-01	20.88	9.69	14.51	J		20	20.37
238	26-Aug-01	20.56	10.47	14.87	J		20	20.26
239	27-Aug-01	19.42	11.54	14.93	J		20	20.16
240	28-Aug-01	17.81	10.93	14.30	J		20	19.84
241	29-Aug-01	19.91	10.47	14.73	J		20	19.89
242	30-Aug-01	16.38	10.16	13.37	J		20	19.36
243	31-Aug-01	17.49	10.77	13.98	J		20	18.92
244	1-Sep-01	17.81	10.62	14.12		S	20	18.48
245	2-Sep-01	18.45	10.47	14.09		S	20	18.18
246	3-Sep-01	17.81	10.00	13.81		S	20	17.95

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
247	4-Sep-01	16.69	10.00	13.42		S	20	17.79
248	5-Sep-01	17.17	10.62	13.54		S	20	17.40
249	6-Sep-01	14.17	9.69	11.37		S	20	17.08
250	7-Sep-01	14.33	7.38	10.19		S	20	16.63
251	8-Sep-01	15.43	6.29	9.98		S	20	16.29
252	9-Sep-01	16.53	6.61	10.70		S	20	16.02
253	10-Sep-01	17.17	7.38	11.45		S	20	15.93
254	11-Sep-01	17.97	8.46	12.30		S	20	16.11
255	12-Sep-01	17.97	10.00	13.28		S	20	16.22
256	13-Sep-01	19.10	11.70	14.45		S	20	16.93
257	14-Sep-01	18.61	11.70	13.90		S	17	17.54
258	15-Sep-01	18.25	9.79	13.15		S	20	17.94
259	16-Sep-01	15.86	11.19	13.00		S	20	17.85
260	17-Sep-01	16.49	10.57	12.66		S	20	17.75
261	18-Sep-01	17.28	9.33	12.21		S	20	17.65
262	19-Sep-01	15.54	8.41	11.29		S	20	17.30
263	20-Sep-01	15.23	6.86	10.20		S	20	16.75
264	21-Sep-01	15.23	6.86	10.19		S	20	16.27
265	22-Sep-01	15.38	6.86	10.24		S	20	15.86
266	23-Sep-01	15.86	7.32	10.74		S	20	15.86
267	24-Sep-01	16.33	7.94	11.22		S	20	15.84
268	25-Sep-01	14.75	7.79	10.75		S	20	15.47
269	26-Sep-01	15.23	9.48	11.21		S	20	15.43
270	27-Sep-01	15.07	7.02	10.28		S	20	15.41
271	28-Sep-01	14.28	9.18	11.18		S	20	15.27
272	29-Sep-01	14.59	7.17	10.18		S	20	15.16
273	30-Sep-01	13.82	5.93	9.02		S	20	14.87
274	1-Oct-01	14.13	6.24	9.26		S	20	14.55
275	2-Oct-01	13.67	6.09	9.17		S	20	14.40
276	3-Oct-01	13.20	5.93	8.87			20	14.11
277	4-Oct-01	12.43	5.62	8.24			20	13.73
278	5-Oct-01	11.19	4.06	6.86			20	13.29
279	6-Oct-01	11.19	3.91	6.74			20	12.80
280	7-Oct-01	10.42	4.69	7.44			20	12.32
281	8-Oct-01	11.19	7.48	8.69			20	11.90
282	9-Oct-01	8.10	5.47	6.81			20	11.10
283	10-Oct-01	8.10	2.17	4.93			20	10.37
284	11-Oct-01	8.25	5.31	6.36			20	9.78
285	12-Oct-01	6.86	2.81	4.68			20	9.16
286	13-Oct-01	9.48	4.84	6.39			20	8.91
287	14-Oct-01	10.42	5.93	7.35			20	8.91
288	15-Oct-01	9.02	4.84	6.22			20	8.60
289	16-Oct-01	9.18	3.28	5.68			20	8.76
290	17-Oct-01	9.33	5.16	7.15			20	8.93
291	18-Oct-01	7.32	2.33	4.53			20	8.80
292	19-Oct-01	9.64	5.00	6.66			20	9.20
293	20-Oct-01	9.02	4.69	6.48			20	9.13
294	21-Oct-01	7.94	2.33	4.73			20	8.78
295	22-Oct-01	7.63	4.37	5.92			20	8.58
296	23-Oct-01	6.55	3.59	5.12			20	8.20

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
297	24-Oct-01	5.93	2.17	3.34			20	7.72
298	25-Oct-01	5.78	2.17	3.51			20	7.50
299	26-Oct-01	6.24	1.70	3.35			20	7.01
300	27-Oct-01	6.86	1.54	3.84			20	6.70
301	28-Oct-01	8.10	5.78	6.59			21	6.73
302	29-Oct-01	8.41	5.93	6.98			20	6.84
303	30-Oct-01	8.10	6.24	7.07			20	7.06
304	31-Oct-01	7.48	6.09	6.75			20	7.28
305	1-Nov-01	6.71	5.31	6.06			20	7.41
306	2-Nov-01	7.17	5.31	6.09			20	7.55
307	3-Nov-01	5.93	3.91	5.07			20	7.41
308	4-Nov-01	5.16	2.96	3.66			20	6.99
309	5-Nov-01	5.47	2.17	3.46			20	6.57
310	6-Nov-01	5.62	2.02	3.64			20	6.22
311	7-Nov-01	4.22	1.54	2.78			20	5.75
312	8-Nov-01	2.81	0.10	1.05			20	5.20
313	9-Nov-01	2.49	0.10	0.76			20	4.53
314	10-Nov-01	2.81	0.10	0.85			20	4.08
315	11-Nov-01	2.96	0.10	1.12			20	3.77
316	12-Nov-01	4.37	1.22	2.38			20	3.61
317	13-Nov-01	5.00	1.86	3.19			20	3.52
318	14-Nov-01	5.78	3.12	4.15			20	3.75
319	15-Nov-01	5.16	2.49	3.67			20	4.08
320	16-Nov-01	4.69	2.02	3.09			20	4.40
321	17-Nov-01	4.69	2.49	3.52			20	4.66
322	18-Nov-01	5.47	3.28	4.41			20	5.02
323	19-Nov-01	4.53	2.33	3.32			20	5.05
324	20-Nov-01	5.62	2.81	4.04			20	5.13
325	21-Nov-01	5.31	3.91	4.55			20	5.07
326	22-Nov-01	4.22	1.70	3.19			20	4.93
327	23-Nov-01	3.75	2.02	3.02			20	4.80
328	24-Nov-01	1.70	0.74	1.26			20	4.37
329	25-Nov-01	3.12	0.74	1.59			20	4.04
330	26-Nov-01	2.17	0.10	0.84			20	3.70
331	27-Nov-01	0.58	0.10	0.16			20	2.98
332	28-Nov-01	0.26	0.10	0.12			20	2.26
333	29-Nov-01	0.26	0.10	0.12			20	1.69
334	30-Nov-01	0.26	0.10	0.14			20	1.19
335	1-Dec-01	0.26	0.10	0.14			20	0.99
336	2-Dec-01	0.26	0.10	0.14			20	0.58
337	3-Dec-01	1.22	0.10	0.44			20	0.44
338	4-Dec-01	0.74	0.10	0.18			20	0.47
339	5-Dec-01	0.10	0.10	0.10			20	0.44
340	6-Dec-01	0.10	0.10	0.10			20	0.42
341	7-Dec-01	0.10	0.10	0.10			20	0.40
342	8-Dec-01	0.10	0.10	0.10			20	0.37
343	9-Dec-01	0.26	0.10	0.14			20	0.37
344	10-Dec-01	0.10	0.10	0.10			20	0.21
345	11-Dec-01	0.26	0.10	0.13			20	0.15
346	12-Dec-01	0.26	0.10	0.11			20	0.17
347	13-Dec-01	0.26	0.10	0.14			20	0.19

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Indian Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1403 M
Waterbody ID Number: 6

Import File : ... way\Selway 2001\Temp\Indian Creek 2001.txt
Calibration Factor : 0

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msr mts per day	7-Day Average of High
348	14-Dec-01	0.26	0.10	0.24			20	0.21
349	15-Dec-01	0.10	0.10	0.10			20	0.21
350	16-Dec-01	0.26	0.10	0.16			20	0.21
351	17-Dec-01	0.26	0.10	0.24			20	0.24
352	18-Dec-01	0.26	0.10	0.11			20	0.24
353	19-Dec-01	0.26	0.10	0.20			20	0.24
354	20-Dec-01	0.26	0.10	0.22			20	0.24
355	21-Dec-01	0.26	0.10	0.16			20	0.24
356	22-Dec-01	0.10	0.10	0.10			20	0.24
357	23-Dec-01	0.26	0.10	0.23			20	0.24
358	24-Dec-01	0.26	0.10	0.20			20	0.24
359	25-Dec-01	0.26	0.10	0.12			20	0.24
360	26-Dec-01	0.26	0.10	0.20			20	0.24
361	27-Dec-01	0.10	0.10	0.10			20	0.21
362	28-Dec-01	0.10	0.10	0.10			20	0.19
363	29-Dec-01	0.10	0.10	0.10			20	0.19
364	30-Dec-01	0.10	0.10	0.10			20	0.17
365	31-Dec-01	0.10	0.10	0.10			20	0.15

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	0.00	0.00	0.00			20	
2	2-Jan-01	0.00	0.00	0.00			20	
3	3-Jan-01	0.00	0.00	0.00			20	
4	4-Jan-01	0.00	0.00	0.00			20	
5	5-Jan-01	0.00	0.00	0.00			20	
6	6-Jan-01	0.00	0.00	0.00			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.00
8	8-Jan-01	0.00	0.00	0.00			20	0.00
9	9-Jan-01	0.00	0.00	0.00			20	0.00
10	10-Jan-01	0.00	0.00	0.00			20	0.00
11	11-Jan-01	0.00	0.00	0.00			20	0.00
12	12-Jan-01	0.00	0.00	0.00			20	0.00
13	13-Jan-01	0.00	0.00	0.00			20	0.00
14	14-Jan-01	0.00	0.00	0.00			20	0.00
15	15-Jan-01	0.00	0.00	0.00			20	0.00
16	16-Jan-01	0.00	0.00	0.00			20	0.00
17	17-Jan-01	0.00	0.00	0.00			20	0.00
18	18-Jan-01	0.00	0.00	0.00			20	0.00
19	19-Jan-01	0.00	0.00	0.00			20	0.00
20	20-Jan-01	0.00	0.00	0.00			20	0.00
21	21-Jan-01	0.00	0.00	0.00			20	0.00
22	22-Jan-01	0.00	0.00	0.00			20	0.00
23	23-Jan-01	0.00	0.00	0.00			20	0.00
24	24-Jan-01	0.00	0.00	0.00			20	0.00
25	25-Jan-01	0.00	0.00	0.00			20	0.00
26	26-Jan-01	0.00	0.00	0.00			20	0.00
27	27-Jan-01	0.00	0.00	0.00			20	0.00
28	28-Jan-01	0.00	0.00	0.00			20	0.00
29	29-Jan-01	0.00	0.00	0.00			20	0.00
30	30-Jan-01	0.00	0.00	0.00			20	0.00
31	31-Jan-01	0.00	0.00	0.00			20	0.00
32	1-Feb-01	0.00	0.00	0.00			20	0.00
33	2-Feb-01	0.00	0.00	0.00			20	0.00
34	3-Feb-01	0.00	0.00	0.00			20	0.00
35	4-Feb-01	0.00	0.00	0.00			20	0.00
36	5-Feb-01	0.00	0.00	0.00			20	0.00
37	6-Feb-01	0.00	0.00	0.00			20	0.00
38	7-Feb-01	0.00	0.00	0.00			20	0.00
39	8-Feb-01	0.00	0.00	0.00			20	0.00
40	9-Feb-01	0.00	0.00	0.00			20	0.00
41	10-Feb-01	0.00	0.00	0.00			20	0.00
42	11-Feb-01	0.00	0.00	0.00			20	0.00
43	12-Feb-01	0.00	0.00	0.00			20	0.00
44	13-Feb-01	0.00	0.00	0.00			20	0.00
45	14-Feb-01	0.00	0.00	0.00			20	0.00
46	15-Feb-01	0.00	0.00	0.00			20	0.00
47	16-Feb-01	0.00	0.00	0.00			20	0.00

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	7	8%	
19 °C Average	28	30%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	50	54%	
9 °C Average Spring	76	83%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	47	51%	
9 °C Average Fall	55	59%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	97	52%	
9 °C Average Total *	131	71%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	0	0%	
Juvenile Days Eval'd w/in Dates	0	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	0	0%	
Spawning Days Eval'd w/in Dates	0	1-Sep	31-Oct

NOTES

Comments: Combined data from two deployments. Stream is *a priori* natural. Monitored as state Outstanding Resource Water nominee. Temperature exceeds Idaho's cold water aquatic life daily maximum criterion less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
48	17-Feb-01	0.00	0.00	0.00			20	0.00
49	18-Feb-01	0.00	0.00	0.00			20	0.00
50	19-Feb-01	0.00	0.00	0.00			20	0.00
51	20-Feb-01	0.00	0.00	0.00			20	0.00
52	21-Feb-01	0.00	0.00	0.00			20	0.00
53	22-Feb-01	0.00	0.00	0.00			20	0.00
54	23-Feb-01	0.00	0.00	0.00			20	0.00
55	24-Feb-01	0.00	0.00	0.00			20	0.00
56	25-Feb-01	0.00	0.00	0.00			20	0.00
57	26-Feb-01	0.00	0.00	0.00			20	0.00
58	27-Feb-01	0.00	0.00	0.00			20	0.00
59	28-Feb-01	0.00	0.00	0.00			20	0.00
60	1-Mar-01	0.00	0.00	0.00			20	0.00
61	2-Mar-01	0.00	0.00	0.00			20	0.00
62	3-Mar-01	0.17	0.00	0.07			20	0.02
63	4-Mar-01	0.33	0.00	0.13			20	0.07
64	5-Mar-01	0.97	0.17	0.47			20	0.21
65	6-Mar-01	1.92	0.17	0.93			20	0.48
66	7-Mar-01	2.24	0.17	1.13			20	0.80
67	8-Mar-01	2.71	0.65	1.67			20	1.19
68	9-Mar-01	3.34	2.55	2.91			20	1.67
69	10-Mar-01	5.05	3.03	3.75			20	2.37
70	11-Mar-01	4.28	3.34	3.77			20	2.93
71	12-Mar-01	4.74	3.34	3.98			20	3.47
72	13-Mar-01	5.05	3.34	4.27			20	3.92
73	14-Mar-01	4.90	3.65	4.12			20	4.30
74	15-Mar-01	3.65	2.08	2.95			20	4.43
75	16-Mar-01	4.12	2.39	3.21			20	4.54
76	17-Mar-01	4.59	2.24	3.45			20	4.48
77	18-Mar-01	5.21	3.49	4.38			20	4.61
78	19-Mar-01	6.45	4.90	5.59			20	4.85
79	20-Mar-01	7.85	5.52	6.59			20	5.25
80	21-Mar-01	7.85	5.05	6.55			20	5.67
81	22-Mar-01	7.54	4.74	6.32			20	6.23
82	23-Mar-01	7.69	5.05	6.46			20	6.74
83	24-Mar-01	8.00	5.68	6.94			20	7.23
84	25-Mar-01	7.38	6.30	6.89			20	7.54
85	26-Mar-01	6.92	5.83	6.39			20	7.60
86	27-Mar-01	6.30	3.97	5.31			20	7.38
87	28-Mar-01	7.85	5.05	6.22			20	7.38
88	29-Mar-01	9.23	6.14	7.54			20	7.62
89	30-Mar-01	9.08	6.77	7.81			20	7.82
90	31-Mar-01	7.85	5.68	6.68			20	7.80
91	1-Apr-01	8.15	5.52	6.79			19	7.91
92	2-Apr-01	7.54	5.83	6.52			20	8.00
93	3-Apr-01	6.14	3.34	4.92			20	7.98
94	4-Apr-01	7.69	4.28	5.81			20	7.95
95	5-Apr-01	7.85	4.12	5.92			20	7.76
96	6-Apr-01	7.08	5.52	6.28			20	7.47
97	7-Apr-01	6.30	4.90	5.45			20	7.25

STATISTICS	
Maximum Daily Maximum (MDM)	22.7 ºC
Maximum 7-Day Maximum (MWM)	21.7 ºC
Maximum Daily Average (MDA)	20.6 ºC
Maximum 7-Day Average (MWA)	20.0 ºC
Mean Daily Maximum	9.2 ºC
Mean Daily Average	8.3 ºC
Mean Daily Minimum	7.4 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	8.3 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	122	100%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	5.05	3.97	4.48			20	6.81
99	9-Apr-01	5.99	3.34	4.56			20	6.59
100	10-Apr-01	6.45	3.97	5.25			20	6.63
101	11-Apr-01	5.83	4.74	5.30			20	6.36
102	12-Apr-01	5.83	4.74	5.26			20	6.08
103	13-Apr-01	5.99	4.59	5.33			20	5.92
104	14-Apr-01	8.00	4.43	5.97			20	6.16
105	15-Apr-01	8.92	5.37	7.13			20	6.72
106	16-Apr-01	10.17	6.45	8.22			20	7.31
107	17-Apr-01	11.40	7.38	9.34			20	8.02
108	18-Apr-01	11.25	8.46	9.98			20	8.79
109	19-Apr-01	10.17	8.15	9.11			20	9.41
110	20-Apr-01	8.77	7.38	8.00			20	9.81
111	21-Apr-01	8.46	6.30	7.38			20	9.88
112	22-Apr-01	8.62	5.83	7.22			20	9.83
113	23-Apr-01	9.08	7.08	7.92			20	9.68
114	24-Apr-01	11.55	6.92	9.00			20	9.70
115	25-Apr-01	13.26	8.92	10.92			20	9.99
116	26-Apr-01	12.95	10.17	11.64			20	10.38
117	27-Apr-01	12.18	10.32	11.21			20	10.87
118	28-Apr-01	10.48	8.62	9.34			20	11.16
119	29-Apr-01	8.46	6.14	7.46			20	11.14
120	30-Apr-01	7.85	7.38	7.60			20	10.96
121	1-May-01	7.85	6.30	7.05			20	10.43
122	2-May-01	7.08	5.05	6.24			20	9.55
123	3-May-01	8.77	5.05	6.67			20	8.95
124	4-May-01	10.94	7.23	8.82			20	8.78
125	5-May-01	12.02	9.85	10.68			20	9.00
126	6-May-01	10.63	8.31	9.50			20	9.31
127	7-May-01	10.63	7.85	9.24			20	9.70
128	8-May-01	10.79	9.38	10.19			20	10.12
129	9-May-01	10.63	9.23	10.11			20	10.63
130	10-May-01	10.79	8.15	9.58			20	10.92
131	11-May-01	11.25	8.77	10.11			20	10.96
132	12-May-01	11.87	9.54	10.71			20	10.94
133	13-May-01	12.02	10.63	11.51			20	11.14
134	14-May-01	11.71	9.23	10.44			20	11.29
135	15-May-01	10.32	8.31	9.09			20	11.23
136	16-May-01	9.54	7.38	8.37			20	11.07
137	17-May-01	9.38	6.92	8.39			20	10.87
138	18-May-01	11.25	8.46	9.73			20	10.87
139	19-May-01	10.79	8.92	10.04			20	10.72
140	20-May-01	10.94	8.77	10.02			20	10.56
141	21-May-01	10.94	8.00	9.66			20	10.45
142	22-May-01	12.80	9.54	11.11			20	10.81
143	23-May-01	13.87	10.94	12.48			20	11.42
144	24-May-01	13.87	11.55	12.96			20	12.07
145	25-May-01	13.72	11.87	12.98			20	12.42
146	26-May-01	13.57	11.71	12.78			20	12.82

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
147	27-May-01	13.10	11.55	12.57			20	13.12
148	28-May-01	13.57	10.94	12.43			20	13.50
149	29-May-01	13.57	11.09	12.58			20	13.61
150	30-May-01	13.10	10.63	12.05			20	13.50
151	31-May-01	14.81	11.87	13.20			20	13.63
152	1-Jun-01	15.13	12.95	14.16			20	13.84
153	2-Jun-01	15.29	13.72	14.39			20	14.08
154	3-Jun-01	14.03	10.32	12.16			20	14.21
155	4-Jun-01	10.17	8.62	9.12			20	13.73
156	5-Jun-01	8.62	7.54	8.14			20	13.02
157	6-Jun-01	12.02	8.62	9.85			20	12.87
158	7-Jun-01	13.26	10.32	11.57			20	12.65
159	8-Jun-01	15.45	11.71	13.33			20	12.69
160	9-Jun-01	16.55	13.57	14.75			20	12.87
161	10-Jun-01	16.24	13.26	14.73			20	13.19
162	11-Jun-01	15.29	13.57	14.43			20	13.92
163	12-Jun-01	13.87	10.63	12.18			20	14.67
164	13-Jun-01	11.09	8.92	9.90			20	14.54
165	14-Jun-01	12.02	9.23	10.56			20	14.36
166	15-Jun-01	14.81	10.32	12.28			20	14.27
167	16-Jun-01	16.08	12.02	13.89			20	14.20
168	17-Jun-01	16.87	13.26	14.95			20	14.29
169	18-Jun-01	16.55	12.80	14.56			20	14.47
170	19-Jun-01	16.71	12.49	14.54			20	14.88
171	20-Jun-01	18.31	13.57	15.68			20	15.91
172	21-Jun-01	19.60	15.13	17.23			20	16.99
173	22-Jun-01	20.25	16.08	18.13			20	17.77
174	23-Jun-01	19.44	16.71	18.16			20	18.25
175	24-Jun-01	19.60	15.92	17.61			20	18.64
176	25-Jun-01	17.99	15.13	16.63			20	18.84
177	26-Jun-01	19.44	15.29	17.05			20	19.23
178	27-Jun-01	17.83	16.08	17.02			20	19.16
179	28-Jun-01	19.77	15.77	17.50			20	19.19
180	29-Jun-01	20.74	16.39	18.43			20	19.26
181	30-Jun-01	19.93	16.87	18.43			20	19.33
182	1-Jul-01	21.24	16.71	18.82			20	19.56
183	2-Jul-01	22.24	17.67	19.83			20	20.17
184	3-Jul-01	22.74	18.31	20.51			20	20.64
185	4-Jul-01	21.74	19.28	20.54			20	21.20
186	5-Jul-01	21.57	19.28	20.59			20	21.46
187	6-Jul-01	21.90	18.80	20.43			20	21.62
188	7-Jul-01	20.58	18.47	19.32			20	21.72
189	8-Jul-01	19.60	17.67	18.64			20	21.48
190	9-Jul-01	19.12	17.99	18.69			20	21.04
191	10-Jul-01	20.25	16.87	18.48			20	20.68
192	11-Jul-01	21.40	17.99	19.55			20	20.63
193	12-Jul-01	22.24	18.63	20.30			20	20.73
194	13-Jul-01	21.40	18.80	20.22			20	20.66
195	14-Jul-01	21.57	18.31	20.04			20	20.80

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msrmts per day	7-Day Average of High
196	15-Jul-01	20.25	17.83	18.68			20	20.89
197	16-Jul-01	18.63	16.87	17.75			20	20.82
198	17-Jul-01	17.19	15.77	16.57			20	20.38
199	18-Jul-01	17.67	14.81	16.06			20	19.85
200	19-Jul-01	19.12	14.81	16.86			20	19.40
201	20-Jul-01	18.96	15.92	17.55			20	19.06
202	21-Jul-01	20.41	16.24	18.25			20	18.89
203	22-Jul-01	20.58	16.55	18.63			20	18.94
204	23-Jul-01	21.40	17.50	19.37			20	19.33
205	24-Jul-01	21.90	17.99	19.94			20	20.01
206	25-Jul-01	22.24	18.15	20.10			20	20.66
207	26-Jul-01	22.24	18.31	20.22			20	21.10
208	27-Jul-01	21.24	17.67	19.59			20	21.43
209	28-Jul-01	20.41	17.34	18.92			20	21.43
210	29-Jul-01	19.28	16.08	17.66			20	21.24
211	30-Jul-01	18.31	16.08	17.12			20	20.80
212	31-Jul-01	17.83	14.49	16.05			20	20.22
213	1-Aug-01	18.96	14.49	16.66			20	19.75
214	2-Aug-01	20.74	15.92	18.12			20	19.54
215	3-Aug-01	20.09	17.34	18.79			20	19.37
216	4-Aug-01	20.74	17.67	19.10			20	19.42
217	5-Aug-01	21.40	16.87	18.89			20	19.72
218	6-Aug-01	22.07	17.50	19.80			20	20.26
219	7-Aug-01	21.40	18.63	20.22			20	20.77
220	8-Aug-01	22.57	18.15	20.10			20	21.29
221	9-Aug-01	21.07	18.47	20.00			20	21.33
222	10-Aug-01	21.57	17.83	19.61			20	21.55
223	11-Aug-01	21.40	18.31	20.00			20	21.64
224	12-Aug-01	20.74	17.67	19.42			20	21.55
225	13-Aug-01	20.58	17.83	19.34			20	21.33
226	14-Aug-01	20.41	17.50	18.99			20	21.19
227	15-Aug-01	20.58	17.83	19.26			20	20.91
228	16-Aug-01	21.24	17.67	19.53			20	20.93
229	17-Aug-01	21.57	17.83	19.67			20	20.93
230	18-Aug-01	21.07	17.83	19.56			20	20.88
231	19-Aug-01	20.74	17.34	18.97			20	20.88
232	20-Aug-01	19.93	16.24	18.15			20	20.79
233	21-Aug-01	19.93	16.08	17.93			20	20.72
234	22-Aug-01	18.96	16.08	17.79			20	20.49
235	23-Aug-01	19.28	15.77	17.53			20	20.21
236	24-Aug-01	19.60	15.45	17.36			20	19.93
237	25-Aug-01	19.93	15.92	17.96			20	19.77
238	26-Aug-01	20.25	16.39	18.37			20	19.70
239	27-Aug-01	20.25	17.19	18.86			20	19.74
240	28-Aug-01	19.60	16.87	18.23			20	19.70
241	29-Aug-01	19.93	16.24	17.94			20	19.83
242	30-Aug-01	19.12	16.39	17.97			20	19.81
243	31-Aug-01	18.63	16.39	17.67			20	19.67
244	1-Sep-01	18.31	16.08	17.24			20	19.44

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
245	2-Sep-01	18.63	15.45	17.01			20	19.21
246	3-Sep-01	18.63	15.45	17.18			20	18.98
247	4-Sep-01	17.83	15.77	16.94			20	18.73
248	5-Sep-01	17.99	15.45	16.69			20	18.45
249	6-Sep-01	16.55	13.57	14.53			20	18.08
250	7-Sep-01	13.72	11.55	12.61			20	17.38
251	8-Sep-01	14.18	10.79	12.42			20	16.79
252	9-Sep-01	14.81	11.25	13.06			20	16.24
253	10-Sep-01	15.77	12.33	14.04			20	15.84
254	11-Sep-01	16.55	13.42	15.01			20	15.65
255	12-Sep-01	16.39	14.49	15.49			20	15.42
256	13-Sep-01	18.47	15.29	16.53			20	15.70
257	14-Sep-01	18.47	15.77	17.06			20	16.38
258	15-Sep-01	17.99	15.29	16.84			20	16.92
259	16-Sep-01	17.03	14.97	16.00			20	17.24
260	17-Sep-01	16.24	14.03	15.06			20	17.31
261	18-Sep-01	16.38	13.57	14.99			20	17.28
262	19-Sep-01	15.43	13.24	14.48			20	17.14
263	20-Sep-01	14.48	12.00	13.40			20	16.57
264	21-Sep-01	14.02	11.54	12.99			20	15.94
265	22-Sep-01	14.02	11.39	12.89			20	15.37
266	23-Sep-01	14.48	11.85	13.29			20	15.01
267	24-Sep-01	14.95	12.47	13.77			20	14.82
268	25-Sep-01	14.64	12.63	13.64			20	14.57
269	26-Sep-01	14.33	12.16	13.30			20	14.42
270	27-Sep-01	14.02	11.70	13.11			20	14.35
271	28-Sep-01	14.17	12.47	13.38			20	14.37
272	29-Sep-01	14.17	12.00	13.23			20	14.39
273	30-Sep-01	13.24	10.77	12.19			20	14.22
274	1-Oct-01	12.78	10.62	11.92			20	13.91
275	2-Oct-01	12.63	10.62	11.81			20	13.62
276	3-Oct-01	12.16	10.30	11.42			20	13.31
277	4-Oct-01	11.85	9.99	11.04			20	13.00
278	5-Oct-01	10.93	8.60	9.71			20	12.54
279	6-Oct-01	9.83	7.99	9.05			20	11.92
280	7-Oct-01	9.68	8.60	9.21			20	11.41
281	8-Oct-01	10.15	9.21	9.65			20	11.03
282	9-Oct-01	10.15	8.29	8.97			20	10.68
283	10-Oct-01	8.14	6.28	7.18			20	10.10
284	11-Oct-01	7.99	6.90	7.45			20	9.55
285	12-Oct-01	7.68	5.97	6.56			20	9.09
286	13-Oct-01	8.29	6.43	7.19			20	8.87
287	14-Oct-01	8.90	7.68	8.25			20	8.76
288	15-Oct-01	8.60	7.05	7.86			20	8.54
289	16-Oct-01	8.14	6.59	7.47			20	8.25
290	17-Oct-01	8.60	7.68	8.06			20	8.31
291	18-Oct-01	7.99	5.97	6.88			20	8.31
292	19-Oct-01	7.99	6.59	7.16			20	8.36
293	20-Oct-01	8.29	7.21	7.68			20	8.36

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
294	21-Oct-01	7.99	5.97	6.85			20	8.23
295	22-Oct-01	7.21	6.59	6.84			20	8.03
296	23-Oct-01	7.21	6.28	6.71			20	7.90
297	24-Oct-01	5.97	4.09	4.84			20	7.52
298	25-Oct-01	4.72	3.63	4.20			20	7.05
299	26-Oct-01	4.57	3.31	4.10			20	6.57
300	27-Oct-01	5.34	3.31	4.19			20	6.14
301	28-Oct-01	7.05	5.50	6.22			21	6.01
302	29-Oct-01	8.14	7.05	7.57			20	6.14
303	30-Oct-01	8.45	7.68	8.07			20	6.32
304	31-Oct-01	8.29	7.52	7.83			20	6.65
305	1-Nov-01	7.52	6.74	6.93			20	7.05
306	2-Nov-01	6.90	6.43	6.67			20	7.38
307	3-Nov-01	6.59	5.81	6.18			20	7.56
308	4-Nov-01	5.97	4.57	5.13			20	7.41
309	5-Nov-01	4.88	3.63	4.23			20	6.94
310	6-Nov-01	4.25	3.15	3.74			20	6.34
311	7-Nov-01	4.09	3.31	3.68			20	5.74
312	8-Nov-01	3.31	1.58	2.21			20	5.14
313	9-Nov-01	1.73	0.45	0.98			20	4.40
314	10-Nov-01	0.78	-0.03	0.39			20	3.57
315	11-Nov-01	0.78	-0.03	0.41			20	2.83
316	12-Nov-01	1.89	0.78	1.19			20	2.40
317	13-Nov-01	3.15	1.73	2.25			20	2.25
318	14-Nov-01	4.40	3.00	3.73			20	2.29
319	15-Nov-01	4.25	3.47	3.91			20	2.43
320	16-Nov-01	3.94	3.31	3.71			20	2.74
321	17-Nov-01	3.78	3.31	3.56			20	3.17
322	18-Nov-01	4.88	3.78	4.31			20	3.76
323	19-Nov-01	4.72	4.25	4.42			20	4.16
324	20-Nov-01	4.25	3.47	3.82			20	4.32
325	21-Nov-01	5.19	4.40	4.79			20	4.43
326	22-Nov-01	5.03	4.57	4.80			20	4.54
327	23-Nov-01	4.57	3.31	3.86			20	4.63
328	24-Nov-01	3.15	1.73	2.24			20	4.54
329	25-Nov-01	1.58	0.94	1.23			20	4.07
330	26-Nov-01	1.25	0.78	1.04			20	3.57
331	27-Nov-01	0.94	-0.03	0.58			20	3.10
332	28-Nov-01	-0.03	-0.03	-0.03			20	2.36
333	29-Nov-01	-0.03	-0.03	-0.03			20	1.63
334	30-Nov-01	0.13	-0.03	-0.02			20	1.00
335	1-Dec-01	0.29	-0.03	0.02			20	0.59
336	2-Dec-01	-0.03	-0.03	-0.03			20	0.36
337	3-Dec-01	0.13	-0.03	0.02			20	0.20
338	4-Dec-01	-0.03	-0.03	-0.03			20	0.06
339	5-Dec-01	-0.03	-0.03	-0.03			20	0.06
340	6-Dec-01	-0.03	-0.03	-0.03			20	0.06
341	7-Dec-01	-0.03	-0.03	-0.03			20	0.04
342	8-Dec-01	-0.03	-0.03	-0.03			20	-0.01
343	9-Dec-01	-0.03	-0.03	-0.03			20	-0.01
344	10-Dec-01	-0.03	-0.03	-0.03			20	-0.03

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon River abv Camas Cr.
Data Collection Site: right bank
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060206
HUC4 Name: Lower Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1163 M
Waterbody ID Number: 1

Import File : ... 2001\Temp\MF Salmon abv Camas Cr 2001.txt
Calibration Factor : 0.09

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
345	11-Dec-01	-0.03	-0.03	-0.03			20	-0.03
346	12-Dec-01	-0.03	-0.03	-0.03			20	-0.03
347	13-Dec-01	-0.03	-0.03	-0.03			20	-0.03
348	14-Dec-01	-0.03	-0.03	-0.03			20	-0.03
349	15-Dec-01	-0.03	-0.03	-0.03			20	-0.03
350	16-Dec-01	-0.03	-0.03	-0.03			20	-0.03
351	17-Dec-01	-0.03	-0.03	-0.03			20	-0.03
352	18-Dec-01	-0.03	-0.03	-0.03			20	-0.03
353	19-Dec-01	-0.03	-0.03	-0.03			20	-0.03
354	20-Dec-01	-0.03	-0.03	-0.03			20	-0.03
355	21-Dec-01	-0.03	-0.03	-0.03			20	-0.03
356	22-Dec-01	-0.03	-0.03	-0.03			20	-0.03
357	23-Dec-01	-0.03	-0.03	-0.03			20	-0.03
358	24-Dec-01	-0.03	-0.03	-0.03			20	-0.03
359	25-Dec-01	-0.03	-0.03	-0.03			20	-0.03
360	26-Dec-01	-0.03	-0.03	-0.03			20	-0.03
361	27-Dec-01	-0.03	-0.03	-0.03			20	-0.03
362	28-Dec-01	-0.03	-0.03	-0.03			20	-0.03
363	29-Dec-01	-0.03	-0.03	-0.03			20	-0.03
364	30-Dec-01	-0.03	-0.03	-0.03			20	-0.03
365	31-Dec-01	-0.03	-0.03	-0.03			20	-0.03

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
1	1-Jan-02	0.02	0.00	0.00			20	
2	2-Jan-02	0.02	0.00	0.00			20	
3	3-Jan-02	0.02	0.00	0.00			20	
4	4-Jan-02	0.02	0.00	0.00			20	
5	5-Jan-02	0.16	0.00	0.10			20	
6	6-Jan-02	0.02	0.00	0.00			20	
7	7-Jan-02	0.02	0.00	0.00			20	0.04
8	8-Jan-02	0.16	0.00	0.03			20	0.06
9	9-Jan-02	0.16	0.00	0.02			20	0.08
10	10-Jan-02	0.02	0.00	0.00			20	0.08
11	11-Jan-02	0.02	0.00	0.00			20	0.08
12	12-Jan-02	0.02	0.00	0.00			20	0.06
13	13-Jan-02	0.16	0.00	0.02			20	0.08
14	14-Jan-02	0.02	0.00	0.00			20	0.08
15	15-Jan-02	0.02	0.00	0.00			20	0.06
16	16-Jan-02	0.02	0.00	0.00			20	0.04
17	17-Jan-02	0.02	0.00	0.00			20	0.04
18	18-Jan-02	0.02	0.00	0.00			20	0.04
19	19-Jan-02	0.02	0.00	0.00			20	0.04
20	20-Jan-02	0.02	0.00	0.00			20	0.02
21	21-Jan-02	0.02	0.00	0.00			20	0.02
22	22-Jan-02	0.02	0.00	0.00			20	0.02
23	23-Jan-02	0.02	0.00	0.00			20	0.02
24	24-Jan-02	0.02	0.00	0.00			20	0.02
25	25-Jan-02	0.02	0.00	0.00			20	0.02
26	26-Jan-02	0.02	0.00	0.00			20	0.02
27	27-Jan-02	0.02	0.00	0.00			20	0.02
28	28-Jan-02	0.02	0.00	0.00			20	0.02
29	29-Jan-02	0.02	0.00	0.00			20	0.02
30	30-Jan-02	0.02	0.00	0.00			20	0.02
31	31-Jan-02	0.02	0.00	0.00			20	0.02
32	1-Feb-02	0.02	0.00	0.00			20	0.02
33	2-Feb-02	0.02	0.00	0.00			20	0.02
34	3-Feb-02	0.02	0.00	0.00			20	0.02
35	4-Feb-02	0.02	0.00	0.00			20	0.02
36	5-Feb-02	0.02	0.00	0.00			20	0.02
37	6-Feb-02	0.02	0.00	0.00			20	0.02
38	7-Feb-02	0.02	0.00	0.00			20	0.02
39	8-Feb-02	0.02	0.00	0.00			20	0.02
40	9-Feb-02	0.02	0.00	0.00			20	0.02
41	10-Feb-02	0.02	0.00	0.00			20	0.02
42	11-Feb-02	0.02	0.00	0.00			20	0.02
43	12-Feb-02	0.02	0.00	0.00			20	0.02
44	13-Feb-02	0.02	0.00	0.00			20	0.02
45	14-Feb-02	0.02	0.00	0.00			20	0.02
46	15-Feb-02	0.02	0.00	0.00			20	0.02
47	16-Feb-02	0.02	0.00	0.00			20	0.02

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	0	0%	
19 °C Average	4	4%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	24	26%	
9 °C Average Spring	48	52%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	50	54%	
9 °C Average Fall	53	57%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	74	40%	
9 °C Average Total *	101	55%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	0	0%	
Juvenile Days Eval'd w/in Dates	0	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	0	0%	
Spawning Days Eval'd w/in Dates	0	1-Sep	31-Oct

NOTES

Comments: Data from one deployment wrapped so that fall 2001 data follows summer 2002 data. Stream is *a priori* natural. Monitored as state Outstanding Resource Water nominee. Temperature exceeds Idaho' cold water aquatic life criteria less than 10% of c

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
48	17-Feb-02	0.02	0.00	0.00			20	0.02
49	18-Feb-02	0.02	0.00	0.00			20	0.02
50	19-Feb-02	0.02	0.00	0.00			20	0.02
51	20-Feb-02	0.16	0.00	0.02			20	0.04
52	21-Feb-02	0.02	0.00	0.00			20	0.04
53	22-Feb-02	0.16	0.00	0.02			20	0.06
54	23-Feb-02	0.02	0.00	0.00			20	0.06
55	24-Feb-02	0.16	0.00	0.01			20	0.08
56	25-Feb-02	0.16	0.00	0.03			20	0.10
57	26-Feb-02	0.16	0.00	0.02			20	0.12
58	27-Feb-02	0.16	0.00	0.04			20	0.12
59	28-Feb-02	0.16	0.00	0.01			20	0.14
60	1-Mar-02	0.16	0.00	0.02			20	0.14
61	2-Mar-02	0.16	0.00	0.02			20	0.16
62	3-Mar-02	0.16	0.00	0.02			20	0.16
63	4-Mar-02	0.16	0.00	0.01			20	0.16
64	5-Mar-02	0.16	0.00	0.04			20	0.16
65	6-Mar-02	0.16	0.00	0.04			20	0.16
66	7-Mar-02	0.16	0.00	0.05			20	0.16
67	8-Mar-02	0.16	0.00	0.03			20	0.16
68	9-Mar-02	0.16	0.00	0.05			20	0.16
69	10-Mar-02	0.16	0.00	0.05			20	0.16
70	11-Mar-02	0.16	0.00	0.03			20	0.16
71	12-Mar-02	0.16	0.00	0.04			20	0.16
72	13-Mar-02	0.32	0.00	0.10			20	0.18
73	14-Mar-02	0.80	0.16	0.32			20	0.27
74	15-Mar-02	1.44	0.16	0.81			20	0.46
75	16-Mar-02	1.91	0.48	1.05			20	0.71
76	17-Mar-02	0.96	0.00	0.44			20	0.82
77	18-Mar-02	1.59	0.00	0.76			20	1.03
78	19-Mar-02	2.38	0.48	1.51			20	1.34
79	20-Mar-02	3.96	1.75	2.79			20	1.86
80	21-Mar-02	5.99	2.38	4.09			20	2.60
81	22-Mar-02	6.30	3.33	4.88			20	3.30
82	23-Mar-02	6.30	3.80	4.99			20	3.93
83	24-Mar-02	5.99	3.96	4.99			20	4.64
84	25-Mar-02	8.00	4.27	5.88			20	5.56
85	26-Mar-02	6.45	4.43	5.49			20	6.14
86	27-Mar-02	7.54	4.11	5.62			20	6.65
87	28-Mar-02	7.69	4.43	5.77			20	6.90
88	29-Mar-02	7.08	3.49	5.16			20	7.01
89	30-Mar-02	9.08	4.43	6.59			20	7.40
90	31-Mar-02	8.76	5.36	6.96			20	7.80
91	1-Apr-02	8.61	4.90	6.66			20	7.89
92	2-Apr-02	7.23	4.74	6.08			20	8.00
93	3-Apr-02	8.46	4.58	6.35			20	8.13
94	4-Apr-02	8.15	4.74	6.38			20	8.20
95	5-Apr-02	6.92	5.05	6.19			20	8.17
96	6-Apr-02	8.30	5.83	6.97			20	8.06
97	7-Apr-02	7.23	5.21	5.90			19	7.84

STATISTICS	
Maximum Daily Maximum (MDM)	21.7 ºC
Maximum 7-Day Maximum (MWM)	20.5 ºC
Maximum Daily Average (MDA)	20.1 ºC
Maximum 7-Day Average (MWA)	19.2 ºC
Mean Daily Maximum	8.0 ºC
Mean Daily Average	7.1 ºC
Mean Daily Minimum	6.4 ºC
Minimum 7-Day Minimum	-0.1 ºC
Minimum Daily Minimum	-0.7 ºC
Mean of all Data	7.1 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	115	94%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-02	6.92	4.11	5.50			20	7.60
99	9-Apr-02	6.76	5.68	6.07			20	7.53
100	10-Apr-02	6.76	5.52	6.03			20	7.29
101	11-Apr-02	6.30	5.05	5.57			20	7.03
102	12-Apr-02	7.84	5.36	6.35			20	7.16
103	13-Apr-02	7.69	6.45	6.97			20	7.07
104	14-Apr-02	7.54	6.30	6.88			20	7.12
105	15-Apr-02	6.45	3.65	4.44			20	7.05
106	16-Apr-02	5.05	3.18	4.11			20	6.80
107	17-Apr-02	4.90	3.18	3.89			20	6.54
108	18-Apr-02	5.36	3.49	4.27			20	6.40
109	19-Apr-02	7.08	4.11	5.41			20	6.30
110	20-Apr-02	7.23	4.58	6.02			20	6.23
111	21-Apr-02	6.92	5.21	6.27			20	6.14
112	22-Apr-02	8.92	5.68	7.08			20	6.49
113	23-Apr-02	8.61	6.76	7.70			20	7.00
114	24-Apr-02	7.08	4.27	5.94			20	7.31
115	25-Apr-02	8.00	4.90	6.57			20	7.69
116	26-Apr-02	8.00	6.30	7.32			20	7.82
117	27-Apr-02	8.76	6.30	7.47			20	8.04
118	28-Apr-02	8.15	5.68	6.99			20	8.22
119	29-Apr-02	8.92	5.36	7.26			20	8.22
120	30-Apr-02	8.92	7.08	8.19			20	8.26
121	1-May-02	9.23	6.45	7.91			20	8.57
122	2-May-02	8.92	6.14	7.83			20	8.70
123	3-May-02	8.92	6.61	7.82			20	8.83
124	4-May-02	8.46	5.21	7.02			20	8.79
125	5-May-02	8.15	5.99	6.73			20	8.79
126	6-May-02	7.84	4.90	6.27			20	8.63
127	7-May-02	7.69	4.90	6.13			20	8.46
128	8-May-02	5.83	3.18	4.49			20	7.97
129	9-May-02	5.68	3.49	4.65			20	7.51
130	10-May-02	7.08	4.58	5.77			20	7.25
131	11-May-02	9.23	5.52	7.35			20	7.36
132	12-May-02	10.63	6.76	8.83			20	7.71
133	13-May-02	10.47	7.69	9.34			20	8.09
134	14-May-02	11.09	8.15	9.75			20	8.57
135	15-May-02	10.16	6.92	8.02			20	9.19
136	16-May-02	9.08	5.83	7.35			20	9.68
137	17-May-02	9.54	6.92	8.14			20	10.03
138	18-May-02	10.63	7.23	8.87			20	10.23
139	19-May-02	10.47	8.30	9.34			20	10.21
140	20-May-02	9.85	7.54	8.24			20	10.12
141	21-May-02	7.54	6.14	6.64			20	9.61
142	22-May-02	5.99	5.21	5.62			20	9.01
143	23-May-02	6.45	5.52	5.90			20	8.64
144	24-May-02	8.46	5.52	6.61			20	8.48
145	25-May-02	9.08	7.23	8.13			20	8.26
146	26-May-02	9.85	8.46	9.13			20	8.17
147	27-May-02	10.00	8.30	9.12			20	8.20
148	28-May-02	10.47	8.76	9.63			20	8.61

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
149	29-May-02	10.94	8.92	9.87			20	9.32
150	30-May-02	10.94	8.76	9.41			20	9.96
151	31-May-02	10.31	8.30	9.09			20	10.23
152	1-Jun-02	10.31	9.08	9.45			20	10.40
153	2-Jun-02	8.92	8.15	8.54			20	10.27
154	3-Jun-02	9.69	7.84	8.59			20	10.23
155	4-Jun-02	9.39	8.76	9.11			20	10.07
156	5-Jun-02	10.31	8.46	9.18			20	9.98
157	6-Jun-02	10.94	9.08	10.01			20	9.98
158	7-Jun-02	10.78	9.23	9.96			20	10.05
159	8-Jun-02	10.16	8.15	8.94			20	10.03
160	9-Jun-02	8.00	6.45	7.20			20	9.90
161	10-Jun-02	7.84	6.14	6.78			20	9.63
162	11-Jun-02	9.69	7.08	8.12			20	9.67
163	12-Jun-02	10.78	8.30	9.43			20	9.74
164	13-Jun-02	12.02	9.23	10.46			20	9.90
165	14-Jun-02	12.64	10.63	11.69			20	10.16
166	15-Jun-02	12.64	11.24	12.05			20	10.52
167	16-Jun-02	13.25	11.24	12.22			20	11.27
168	17-Jun-02	13.25	11.55	12.31			20	12.04
169	18-Jun-02	12.48	11.09	11.54			20	12.44
170	19-Jun-02	11.40	8.61	10.00			20	12.53
171	20-Jun-02	12.64	9.69	11.09			20	12.61
172	21-Jun-02	12.64	11.24	12.13			20	12.61
173	22-Jun-02	12.48	11.24	11.90			20	12.59
174	23-Jun-02	12.95	11.24	12.15			20	12.55
175	24-Jun-02	14.64	11.86	13.05			20	12.75
176	25-Jun-02	15.59	13.10	14.28			20	13.19
177	26-Jun-02	15.75	14.02	14.88			20	13.81
178	27-Jun-02	15.91	13.71	14.85			20	14.28
179	28-Jun-02	16.06	14.49	15.39			20	14.77
180	29-Jun-02	16.06	14.18	15.05			20	15.28
181	30-Jun-02	15.43	13.10	14.35			20	15.63
182	1-Jul-02	15.59	13.71	14.78			20	15.77
183	2-Jul-02	15.75	13.56	14.74			20	15.79
184	3-Jul-02	16.38	14.33	15.34			20	15.88
185	4-Jul-02	17.18	15.28	16.21			20	16.06
186	5-Jul-02	16.86	14.80	16.00			20	16.18
187	6-Jul-02	17.02	15.59	16.38			20	16.32
188	7-Jul-02	17.81	16.54	17.10			20	16.66
189	8-Jul-02	17.98	16.23	17.10			20	17.00
190	9-Jul-02	17.65	15.28	16.63			20	17.27
191	10-Jul-02	18.78	16.23	17.37			20	17.61
192	11-Jul-02	20.08	17.34	18.58			20	18.03
193	12-Jul-02	21.05	18.14	19.41			20	18.62
194	13-Jul-02	20.73	18.62	19.63			20	19.15
195	14-Jul-02	21.71	18.94	20.08			20	19.71
196	15-Jul-02	20.40	18.78	19.67			20	20.06
197	16-Jul-02	19.26	17.65	18.39			20	20.29

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-02	19.91	17.02	18.36			20	20.45
199	18-Jul-02	19.59	18.14	18.75			20	20.38
200	19-Jul-02	18.62	17.34	17.99			20	20.03
201	20-Jul-02	19.26	16.54	17.79			20	19.82
202	21-Jul-02	19.59	17.34	18.40			20	19.52
203	22-Jul-02	18.94	17.34	18.00			20	19.31
204	23-Jul-02	19.26	16.54	17.74			20	19.31
205	24-Jul-02	19.43	17.50	18.56			20	19.24
206	25-Jul-02	18.94	17.18	18.11			20	19.15
207	26-Jul-02	19.10	16.86	17.98			20	19.22
208	27-Jul-02	18.62	17.02	17.91			20	19.13
209	28-Jul-02	18.78	16.06	17.39			20	19.01
210	29-Jul-02	19.26	16.70	17.88			20	19.06
211	30-Jul-02	18.94	17.02	17.99			20	19.01
212	31-Jul-02	18.78	16.70	17.81			20	18.92
213	1-Aug-02	18.30	15.75	17.13			20	18.83
214	2-Aug-02	18.14	16.06	17.08			20	18.69
215	3-Aug-02	17.50	15.59	16.69			20	18.53
216	4-Aug-02	17.81	15.91	16.92			20	18.39
217	5-Aug-02	18.30	16.38	17.28			20	18.25
218	6-Aug-02	18.14	15.91	17.07			20	18.14
219	7-Aug-02	17.18	15.75	16.46			20	17.91
220	8-Aug-02	16.23	14.18	15.28			20	17.61
221	9-Aug-02	16.86	13.41	15.11			20	17.43
222	10-Aug-02	17.65	14.49	15.93			20	17.45
223	11-Aug-02	17.98	15.28	16.57			20	17.48
224	12-Aug-02	18.30	15.28	16.71			20	17.48
225	13-Aug-02	18.78	15.43	16.99			20	17.57
226	14-Aug-02	18.78	15.75	17.25			20	17.80
227	15-Aug-02	18.94	15.91	17.43			20	18.18
228	16-Aug-02	18.94	16.06	17.51			20	18.48
229	17-Aug-02	17.98	15.28	16.73			20	18.53
230	18-Aug-02	17.81	14.64	16.23			20	18.50
231	19-Aug-02	17.50	14.64	16.17			20	18.39
232	20-Aug-02	16.70	15.11	15.83			20	18.09
233	21-Aug-02	15.75	14.64	15.24			20	17.66
234	22-Aug-02	15.91	12.95	14.37			20	17.23
235	23-Aug-02	15.59	13.10	14.38			20	16.75
236	24-Aug-02	15.28	13.10	14.25			20	16.36
237	25-Aug-02	16.38	13.10	14.56			20	16.16
238	26-Aug-02	15.43	13.56	14.41			20	15.86
239	27-Aug-02	14.96	13.10	13.96			20	15.61
240	28-Aug-02	15.75	13.56	14.64			20	15.61
241	29-Aug-02	14.96	13.41	14.27			20	15.48
242	30-Aug-02	14.80	13.10	13.98			20	15.37
243	31-Aug-02	16.70	13.56	14.83			20	15.57
244	1-Sep-02	16.38	14.18	15.30			20	15.57
245	2-Sep-02	17.50	14.18	15.67			20	15.86
246	3-Sep-02	16.86	14.96	16.08			20	16.14

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
247	4-Sep-02	16.86	14.64	15.88			20	16.29
248	5-Sep-02	16.70	14.49	15.66			20	16.54
249	6-Sep-02	15.91	14.33	14.86			20	16.70
250	7-Sep-02	14.64	12.95	13.53			20	16.41
251	8-Sep-02	14.33	11.09	12.57			20	16.11
252	9-Sep-02	14.18	10.63	12.45			20	15.64
253	10-Sep-02	14.80	10.94	12.80			20	15.35
254	11-Sep-02	15.59	11.86	13.60			20	15.16
255	12-Sep-02	16.06	12.64	14.32			20	15.07
256	13-Sep-02	16.06	12.79	14.44			20	15.09
257	14-Sep-02	15.59	12.48	14.19			20	15.23
258	15-Sep-02	15.28	13.10	14.27			20	15.37
259	16-Sep-02	14.96	12.79	13.97			20	15.48
260	17-Sep-02	16.86	13.25	14.90			20	15.77
261	18-Sep-02	16.70	13.10	14.86			20	15.93
262	19-Sep-02	15.75	12.48	14.14			20	15.89
263	20-Sep-02	15.11	11.09	13.15			20	15.75
264	21-Sep-02	14.49	10.78	12.74			20	15.59
265	22-Sep-02	15.11	10.63	12.74			20	15.57
266	23-Sep-02	15.59	10.94	13.17			20	15.66
267	24-Sep-02	16.06	11.55	13.64			20	15.54
268	25-Sep-02	15.11	11.71	13.41			20	15.32
269	26-Sep-02	15.11	11.24	13.11			20	15.23
270	27-Sep-02	14.96	10.94	12.92			20	15.20
271	28-Sep-02	14.64	11.71	13.13			20	15.23
272	29-Sep-02	14.96	11.09	12.93			20	15.20
273	30-Sep-02	13.87	9.85	11.92			20	14.96
274	1-Oct-02	13.87	9.69	11.76			20	14.65
275	2-Oct-02	13.25	9.69	11.50			20	14.38
276	3-Oct-02	13.10	9.39	11.22			20	14.09
277	4-Oct-02	12.48	9.08	10.79			20	13.74
278	5-Oct-02	11.09	7.84	9.54			20	13.23
279	6-Oct-02	10.78	6.92	8.87			20	12.63
280	7-Oct-02	9.85	7.69	8.96			20	12.06
281	8-Oct-02	10.94	8.61	9.55			20	11.64
282	9-Oct-02	9.39	7.69	8.48			20	11.09
283	10-Oct-02	7.84	5.36	6.73			20	10.34
284	11-Oct-02	8.61	6.45	7.20			20	9.79
285	12-Oct-02	6.76	5.21	6.09			20	9.17
286	13-Oct-02	8.76	5.68	6.92			20	8.88
287	14-Oct-02	8.76	7.08	7.86			20	8.72
288	15-Oct-02	9.08	6.76	7.71			20	8.46
289	16-Oct-02	8.46	5.83	7.23			20	8.32
290	17-Oct-02	9.23	7.38	8.04			20	8.52
291	18-Oct-02	7.54	5.36	6.45			20	8.37
292	19-Oct-02	7.54	5.83	6.75			20	8.48
293	20-Oct-02	8.92	6.45	7.62			20	8.50
294	21-Oct-02	7.38	5.05	6.37			20	8.31
295	22-Oct-02	7.08	5.99	6.58			20	8.02

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
296	23-Oct-02	7.08	5.36	6.40			20	7.82
297	24-Oct-02	5.05	3.49	4.19			20	7.23
298	25-Oct-02	5.05	3.18	3.95			20	6.87
299	26-Oct-02	5.05	2.86	3.85			20	6.52
300	27-Oct-02	5.36	2.70	4.03			20	6.01
301	28-Oct-02	7.08	5.21	6.11			21	5.96
302	29-Oct-02	8.15	6.92	7.44			20	6.12
303	30-Oct-02	8.30	7.38	7.77			20	6.29
304	31-Oct-02	7.84	7.23	7.47			20	6.69
305	1-Nov-02	7.08	6.14	6.51			20	6.98
306	2-Nov-02	6.92	5.99	6.35			20	7.25
307	3-Nov-02	6.61	5.21	5.93			20	7.43
308	4-Nov-02	5.36	4.27	4.84			20	7.18
309	5-Nov-02	4.74	3.49	3.98			20	6.69
310	6-Nov-02	4.27	2.86	3.58			20	6.12
311	7-Nov-02	3.80	2.70	3.32			20	5.54
312	8-Nov-02	2.54	1.28	1.73			20	4.89
313	9-Nov-02	1.12	0.00	0.62			20	4.06
314	10-Nov-02	0.64	0.00	0.22			20	3.21
315	11-Nov-02	0.80	0.00	0.29			20	2.56
316	12-Nov-02	1.91	0.48	1.12			20	2.15
317	13-Nov-02	3.18	1.44	2.26			20	2.00
318	14-Nov-02	4.74	3.01	3.74			20	2.13
319	15-Nov-02	4.43	3.18	3.79			20	2.40
320	16-Nov-02	3.96	3.01	3.53			20	2.81
321	17-Nov-02	3.65	2.70	3.28			20	3.24
322	18-Nov-02	5.21	3.65	4.30			20	3.87
323	19-Nov-02	4.43	3.49	4.12			20	4.23
324	20-Nov-02	4.27	3.01	3.56			20	4.38
325	21-Nov-02	5.05	4.27	4.64			20	4.43
326	22-Nov-02	4.90	4.11	4.43			20	4.50
327	23-Nov-02	3.96	2.86	3.42			20	4.50
328	24-Nov-02	2.70	1.12	1.71			20	4.36
329	25-Nov-02	1.28	0.32	0.80			20	3.80
330	26-Nov-02	1.28	0.48	0.78			20	3.35
331	27-Nov-02	0.64	0.00	0.18			20	2.83
332	28-Nov-02	0.16	-0.65	-0.05			20	2.13
333	29-Nov-02	0.16	0.00	0.15			20	1.45
334	30-Nov-02	0.02	0.00	0.00			20	0.89
335	1-Dec-02	0.16	0.00	0.04			20	0.53
336	2-Dec-02	0.16	0.00	0.09			20	0.37
337	3-Dec-02	0.16	0.16	0.16			20	0.21
338	4-Dec-02	0.16	0.00	0.14			20	0.14
339	5-Dec-02	0.16	0.16	0.16			20	0.14
340	6-Dec-02	0.16	0.16	0.16			20	0.14
341	7-Dec-02	0.32	0.16	0.17			20	0.18
342	8-Dec-02	0.32	0.16	0.21			20	0.21
343	9-Dec-02	0.16	0.16	0.16			20	0.21
344	10-Dec-02	0.16	0.16	0.16			20	0.21
345	11-Dec-02	0.32	0.16	0.21			20	0.23
346	12-Dec-02	0.32	0.16	0.23			20	0.25

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: MF Salmon R. abv Loon Creek
Data Collection Site: right bank
Data Period: 1/1/02 - 12/31/02

HUC4 Number: 17060205
HUC4 Name: Upper Middle Fork Salmon
South of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 1228 M
Waterbody ID Number: 1

Import File : ... way\Selway 2001\Temp\Big Creek 2001-00.txt
Calibration Factor : -0.02

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msrmts per day	7-Day Average of High
347	13-Dec-02	0.32	0.16	0.21			20	0.27
348	14-Dec-02	0.32	0.16	0.18			20	0.27
349	15-Dec-02	0.32	0.16	0.22			20	0.27
350	16-Dec-02	0.48	0.16	0.32			20	0.32
351	17-Dec-02	0.32	0.16	0.20			20	0.34
352	18-Dec-02	0.32	0.16	0.18			20	0.34
353	19-Dec-02	0.16	0.16	0.16			20	0.32
354	20-Dec-02	0.16	0.16	0.16			20	0.30
355	21-Dec-02	0.16	0.16	0.16			20	0.27
356	22-Dec-02	0.32	0.00	0.15			20	0.27
357	23-Dec-02	0.32	0.00	0.21			20	0.25
358	24-Dec-02	0.32	-0.16	0.15			20	0.25
359	25-Dec-02	0.32	0.00	0.14			20	0.25
360	26-Dec-02	0.02	0.00	0.00			20	0.23
361	27-Dec-02	0.02	0.00	0.00			20	0.21
362	28-Dec-02	0.02	0.00	0.00			20	0.19
363	29-Dec-02	0.02	0.00	0.00			20	0.15
364	30-Dec-02	0.02	0.00	0.00			20	0.11
365	31-Dec-02	0.02	0.00	0.00			20	0.06

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	2.08	0.80	1.18			20	
2	2-Jan-01	1.60	0.48	1.02			20	
3	3-Jan-01	1.12	0.00	0.41			20	
4	4-Jan-01	1.28	0.16	0.63			20	
5	5-Jan-01	2.08	0.48	1.01			20	
6	6-Jan-01	1.75	0.48	1.02			20	
7	7-Jan-01	0.32	0.00	0.03			20	1.46
8	8-Jan-01	0.16	0.00	0.10			20	1.19
9	9-Jan-01	0.16	0.16	0.16			20	0.98
10	10-Jan-01	0.32	0.16	0.22			20	0.87
11	11-Jan-01	0.48	0.16	0.25			20	0.75
12	12-Jan-01	0.32	0.16	0.22			20	0.50
13	13-Jan-01	0.80	0.16	0.36			20	0.37
14	14-Jan-01	1.12	0.16	0.53			20	0.48
15	15-Jan-01	1.75	0.32	0.70			20	0.71
16	16-Jan-01	1.12	0.16	0.55			20	0.84
17	17-Jan-01	1.28	0.00	0.40			20	0.98
18	18-Jan-01	0.32	0.00	0.15			20	0.96
19	19-Jan-01	0.80	0.16	0.38			20	1.03
20	20-Jan-01	1.92	0.48	0.86			20	1.19
21	21-Jan-01	1.75	0.16	0.78			20	1.28
22	22-Jan-01	2.55	0.80	1.34			20	1.39
23	23-Jan-01	2.39	0.48	1.31			20	1.57
24	24-Jan-01	0.64	0.00	0.29			20	1.48
25	25-Jan-01	1.28	0.16	0.58			20	1.62
26	26-Jan-01	2.39	0.48	1.09			20	1.85
27	27-Jan-01	1.75	0.00	0.60			20	1.82
28	28-Jan-01	0.96	0.00	0.22			20	1.71
29	29-Jan-01	0.16	0.00	0.09			20	1.37
30	30-Jan-01	0.32	0.16	0.19			20	1.07
31	31-Jan-01	0.48	0.16	0.29			20	1.05
32	1-Feb-01	1.44	0.32	0.65			20	1.07
33	2-Feb-01	0.64	0.00	0.29			20	0.82
34	3-Feb-01	2.23	0.32	0.93			20	0.89
35	4-Feb-01	0.80	0.00	0.58			20	0.87
36	5-Feb-01	1.92	0.00	0.81			20	1.12
37	6-Feb-01	2.23	0.48	1.15			20	1.39
38	7-Feb-01	1.28	0.16	0.54			20	1.51
39	8-Feb-01	0.48	0.00	0.14			20	1.37
40	9-Feb-01	0.48	0.00	0.15			20	1.35
41	10-Feb-01	0.64	0.16	0.31			20	1.12
42	11-Feb-01	1.92	0.16	0.62			20	1.28
43	12-Feb-01	2.08	0.16	0.66			20	1.30
44	13-Feb-01	2.39	0.32	1.09			20	1.32
45	14-Feb-01	1.44	0.16	0.69			20	1.35
46	15-Feb-01	1.28	0.00	0.50			20	1.46
47	16-Feb-01	2.39	0.16	1.15			20	1.73

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	28	30%	
19 °C Average	15	16%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	27	29%	
9 °C Average Spring	38	41%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	50	54%	
9 °C Average Fall	52	56%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	77	42%	
9 °C Average Total *	90	49%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	72	78%	
Juvenile Days Eval'd w/in Dates	92	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	35	57%	
Spawning Days Eval'd w/in Dates	61	1-Sep	31-Oct

NOTES

Comments: Combined data from two deployments. Stream is a priori natural. Monitored as state Outstanding Resource Water nominee.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
48	17-Feb-01	3.81	1.28	2.14			20	2.19
49	18-Feb-01	3.65	1.44	2.28			20	2.43
50	19-Feb-01	4.74	1.60	2.54			20	2.81
51	20-Feb-01	3.81	0.16	1.72			20	3.02
52	21-Feb-01	3.18	1.75	2.33			20	3.27
53	22-Feb-01	4.28	1.92	2.74			20	3.69
54	23-Feb-01	3.34	1.75	2.38			20	3.83
55	24-Feb-01	4.12	1.44	2.52			20	3.87
56	25-Feb-01	4.28	0.48	2.07			20	3.96
57	26-Feb-01	4.28	0.16	1.94			20	3.90
58	27-Feb-01	3.50	0.00	1.21			20	3.85
59	28-Feb-01	2.71	0.00	0.60			20	3.79
60	1-Mar-01	1.60	0.00	0.42			20	3.40
61	2-Mar-01	2.71	0.16	1.13			20	3.31
62	3-Mar-01	4.90	0.32	1.96			20	3.43
63	4-Mar-01	3.97	0.48	2.09			20	3.38
64	5-Mar-01	3.97	1.60	2.57			20	3.34
65	6-Mar-01	5.68	0.48	2.56			20	3.65
66	7-Mar-01	5.37	0.16	2.28			20	4.03
67	8-Mar-01	4.74	0.16	2.19			20	4.48
68	9-Mar-01	3.03	1.92	2.41			20	4.52
69	10-Mar-01	4.12	1.92	2.83			20	4.41
70	11-Mar-01	3.03	1.92	2.50			20	4.28
71	12-Mar-01	4.12	2.08	2.83			20	4.30
72	13-Mar-01	5.52	2.23	3.54			20	4.28
73	14-Mar-01	3.97	2.08	2.99			20	4.08
74	15-Mar-01	5.05	1.75	3.14			20	4.12
75	16-Mar-01	5.83	2.39	3.72			20	4.52
76	17-Mar-01	4.90	1.92	3.33			20	4.63
77	18-Mar-01	6.14	2.87	4.24			20	5.08
78	19-Mar-01	4.28	2.39	3.57			20	5.10
79	20-Mar-01	6.30	1.75	3.27			20	5.21
80	21-Mar-01	6.14	1.12	3.12			20	5.52
81	22-Mar-01	6.30	0.96	3.14			20	5.70
82	23-Mar-01	6.46	1.28	3.46			20	5.79
83	24-Mar-01	5.83	2.08	3.87			20	5.92
84	25-Mar-01	3.65	2.39	3.01			20	5.57
85	26-Mar-01	4.28	2.71	3.43			20	5.57
86	27-Mar-01	6.14	2.55	3.92			20	5.54
87	28-Mar-01	5.37	3.34	4.28			20	5.43
88	29-Mar-01	6.30	3.50	4.64			20	5.43
89	30-Mar-01	5.99	3.65	4.66			20	5.37
90	31-Mar-01	4.28	2.71	3.63			20	5.14
91	1-Apr-01	6.62	2.87	4.45			19	5.57
92	2-Apr-01	5.05	3.65	4.21			20	5.68
93	3-Apr-01	7.39	2.71	4.53			20	5.86
94	4-Apr-01	7.54	3.34	4.96			20	6.17
95	5-Apr-01	7.70	2.23	4.52			20	6.37
96	6-Apr-01	5.83	3.03	4.44			20	6.34
97	7-Apr-01	5.99	3.97	4.83			20	6.59

STATISTICS	
Maximum Daily Maximum (MDM)	25.0 ºC
Maximum 7-Day Maximum (MWM)	24.2 ºC
Maximum Daily Average (MDA)	21.2 ºC
Maximum 7-Day Average (MWA)	20.4 ºC
Mean Daily Maximum	9.4 ºC
Mean Daily Average	7.5 ºC
Mean Daily Minimum	6.0 ºC
Minimum 7-Day Minimum	-0.1 ºC
Minimum Daily Minimum	-0.1 ºC
Mean of all Data	7.5 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	115	94%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
98	8-Apr-01	5.52	3.03	4.16			20	6.43
99	9-Apr-01	4.90	2.87	3.96			20	6.41
100	10-Apr-01	5.83	3.03	4.33			20	6.19
101	11-Apr-01	6.30	3.34	4.60			20	6.01
102	12-Apr-01	6.46	3.97	4.85			20	5.83
103	13-Apr-01	6.30	3.50	4.75			20	5.90
104	14-Apr-01	6.93	3.03	4.72			20	6.03
105	15-Apr-01	8.77	2.55	5.30			20	6.50
106	16-Apr-01	9.24	3.18	5.95			20	7.12
107	17-Apr-01	8.77	4.43	6.67			20	7.54
108	18-Apr-01	8.47	5.37	6.91			20	7.85
109	19-Apr-01	7.39	5.05	6.22			20	7.98
110	20-Apr-01	6.30	3.65	4.98			20	7.98
111	21-Apr-01	6.77	4.12	5.42			20	7.96
112	22-Apr-01	8.32	4.12	5.86			20	7.89
113	23-Apr-01	7.54	5.37	6.37			20	7.65
114	24-Apr-01	10.48	5.52	7.44			20	7.90
115	25-Apr-01	9.85	4.59	7.10			20	8.09
116	26-Apr-01	8.47	4.59	6.50			20	8.25
117	27-Apr-01	6.77	4.28	5.71			20	8.31
118	28-Apr-01	5.68	3.97	4.94			20	8.16
119	29-Apr-01	5.83	3.81	4.93			20	7.80
120	30-Apr-01	5.52	4.74	5.01			20	7.51
121	1-May-01	4.74	3.65	4.18			20	6.69
122	2-May-01	5.52	3.18	4.25			20	6.08
123	3-May-01	7.24	3.18	5.11			20	5.90
124	4-May-01	8.47	4.28	6.28			20	6.14
125	5-May-01	7.54	5.52	6.33			20	6.41
126	6-May-01	7.39	3.18	5.26			20	6.63
127	7-May-01	8.16	3.65	5.91			20	7.01
128	8-May-01	8.00	4.74	6.57			20	7.47
129	9-May-01	8.32	5.05	6.68			20	7.87
130	10-May-01	8.47	4.74	6.61			20	8.05
131	11-May-01	8.32	4.43	6.42			20	8.03
132	12-May-01	8.32	4.74	6.52			20	8.14
133	13-May-01	7.39	5.37	6.09			20	8.14
134	14-May-01	7.08	4.90	5.95			20	7.99
135	15-May-01	6.62	4.74	5.66			20	7.79
136	16-May-01	6.46	5.21	5.77			20	7.52
137	17-May-01	7.54	3.65	5.55			20	7.39
138	18-May-01	7.08	5.52	6.18			20	7.21
139	19-May-01	8.62	4.43	6.44			20	7.26
140	20-May-01	8.00	5.52	6.78			20	7.34
141	21-May-01	8.77	4.12	6.42			20	7.58
142	22-May-01	10.17	5.21	7.57			20	8.09
143	23-May-01	10.64	5.68	8.01			20	8.69
144	24-May-01	10.94	6.14	8.25			20	9.17
145	25-May-01	10.94	6.77	8.57			20	9.73
146	26-May-01	10.64	6.62	8.47			20	10.01
147	27-May-01	10.48	6.77	8.59			20	10.37
148	28-May-01	10.94	7.39	9.07			20	10.68

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msr mts per day	7-Day Average of High
149	29-May-01	10.02	6.93	8.41			20	10.66
150	30-May-01	9.39	5.05	7.25			20	10.48
151	31-May-01	11.56	7.54	9.31			20	10.57
152	1-Jun-01	11.87	7.85	9.82			20	10.70
153	2-Jun-01	11.56	8.62	9.63			20	10.83
154	3-Jun-01	8.32	6.62	7.39			20	10.52
155	4-Jun-01	6.62	3.50	4.83			20	9.91
156	5-Jun-01	7.24	4.90	5.97			20	9.51
157	6-Jun-01	9.24	6.30	7.65			20	9.49
158	7-Jun-01	8.62	6.46	7.61			20	9.07
159	8-Jun-01	10.94	7.08	8.89			20	8.93
160	9-Jun-01	12.03	9.54	10.88			20	9.00
161	10-Jun-01	11.25	9.54	10.15			20	9.42
162	11-Jun-01	10.94	8.16	9.52			20	10.04
163	12-Jun-01	9.70	6.62	8.14			20	10.39
164	13-Jun-01	6.62	5.52	6.08			20	10.01
165	14-Jun-01	9.24	6.30	7.62			20	10.10
166	15-Jun-01	11.40	7.85	9.51			20	10.17
167	16-Jun-01	12.18	7.54	9.88			20	10.19
168	17-Jun-01	12.18	9.24	10.77			20	10.32
169	18-Jun-01	12.49	8.77	10.49			20	10.54
170	19-Jun-01	13.12	8.00	10.42			20	11.03
171	20-Jun-01	14.50	9.54	11.84			20	12.16
172	21-Jun-01	16.24	10.94	13.37	J		20	13.16
173	22-Jun-01	17.35	12.34	14.65	J		20	14.01
174	23-Jun-01	17.52	13.27	15.21	J		20	14.77
175	24-Jun-01	16.88	13.27	14.73	J		20	15.44
176	25-Jun-01	16.40	11.87	13.86	J		20	16.00
177	26-Jun-01	16.56	12.49	14.43	J		20	16.49
178	27-Jun-01	16.72	13.42	14.95	J		20	16.81
179	28-Jun-01	18.32	13.42	15.48	J		20	17.11
180	29-Jun-01	19.45	13.42	15.98	J		20	17.41
181	30-Jun-01	18.32	14.04	16.14	J		20	17.52
182	1-Jul-01	20.75	14.35	17.17	J		20	18.07
183	2-Jul-01	21.08	14.66	17.67	J		20	18.74
184	3-Jul-01	21.58	14.66	17.87	J		20	19.46
185	4-Jul-01	20.10	15.93	17.89	J		20	19.94
186	5-Jul-01	18.64	16.88	17.50	J		20	19.99
187	6-Jul-01	21.42	14.82	17.57	J		20	20.27
188	7-Jul-01	20.42	14.19	17.30	J		20	20.57
189	8-Jul-01	21.75	15.61	18.40	J		20	20.71
190	9-Jul-01	21.92	17.19	19.36	J		20	20.83
191	10-Jul-01	23.43	17.03	19.95	J		20	21.10
192	11-Jul-01	21.25	16.40	18.94	J		20	21.26
193	12-Jul-01	22.08	16.56	18.98	J		20	21.75
194	13-Jul-01	19.78	15.77	17.76	J		20	21.52
195	14-Jul-01	22.75	14.82	18.31	J		20	21.85
196	15-Jul-01	19.94	16.56	18.33	J		20	21.59
197	16-Jul-01	17.68	15.29	16.04	J		20	20.99

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
198	17-Jul-01	17.35	12.96	14.98	J		20	20.12
199	18-Jul-01	17.68	12.96	15.10	J		20	19.61
200	19-Jul-01	21.25	13.73	16.75	J		20	19.49
201	20-Jul-01	19.13	14.82	16.96	J		20	19.40
202	21-Jul-01	20.59	15.14	17.40	J		20	19.09
203	22-Jul-01	21.42	14.82	17.86	J		20	19.30
204	23-Jul-01	22.08	14.35	17.89	J		20	19.93
205	24-Jul-01	22.42	14.66	18.35	J		20	20.65
206	25-Jul-01	22.92	15.14	18.73	J		20	21.40
207	26-Jul-01	22.75	14.98	18.68	J		20	21.62
208	27-Jul-01	23.08	14.66	18.82	J		20	22.18
209	28-Jul-01	20.42	15.93	18.26	J		20	22.16
210	29-Jul-01	17.84	14.19	16.20	J		20	21.64
211	30-Jul-01	15.93	13.88	14.94	J		20	20.77
212	31-Jul-01	17.03	13.27	14.62	J		20	20.00
213	1-Aug-01	19.62	11.72	15.25	J		20	19.52
214	2-Aug-01	22.25	13.88	17.74	J		20	19.45
215	3-Aug-01	22.42	15.45	18.87	J		20	19.36
216	4-Aug-01	19.94	16.24	18.20	J		20	19.29
217	5-Aug-01	23.25	14.50	18.41	J		20	20.06
218	6-Aug-01	24.46	15.77	19.87	J		20	21.28
219	7-Aug-01	24.98	17.35	20.93	J		20	22.42
220	8-Aug-01	24.80	17.84	21.19	J		20	23.16
221	9-Aug-01	24.29	16.72	20.42	J		20	23.45
222	10-Aug-01	23.59	16.40	19.95	J		20	23.62
223	11-Aug-01	22.92	15.61	19.28	J		20	24.04
224	12-Aug-01	24.12	15.61	19.61	J		20	24.17
225	13-Aug-01	24.12	18.16	21.08	J		20	24.12
226	14-Aug-01	24.29	17.19	20.67	J		20	24.02
227	15-Aug-01	24.12	16.56	20.17	J		20	23.92
228	16-Aug-01	23.94	16.24	19.90	J		20	23.87
229	17-Aug-01	23.77	15.77	19.66	J		20	23.90
230	18-Aug-01	23.08	16.72	20.00	J		20	23.92
231	19-Aug-01	22.08	15.29	18.66	J		20	23.63
232	20-Aug-01	21.75	13.73	17.70	J		20	23.29
233	21-Aug-01	21.58	13.88	17.71	J		20	22.90
234	22-Aug-01	19.78	14.19	17.37	J		20	22.28
235	23-Aug-01	20.92	14.50	17.41	J		20	21.85
236	24-Aug-01	21.75	16.24	18.48	J		20	21.56
237	25-Aug-01	21.75	13.27	17.43	J		20	21.37
238	26-Aug-01	22.58	13.58	17.86	J		20	21.44
239	27-Aug-01	22.42	14.50	18.32	J		20	21.54
240	28-Aug-01	21.08	14.98	18.25	J		20	21.47
241	29-Aug-01	22.08	13.58	17.59	J		20	21.80
242	30-Aug-01	21.92	13.88	17.72	J		20	21.94
243	31-Aug-01	20.26	14.35	17.39	J		20	21.73
244	1-Sep-01	21.08	14.04	17.36		S	20	21.63
245	2-Sep-01	21.28	11.60	16.99		S	21	21.45
246	3-Sep-01	21.45	14.23	17.70		S	20	21.31

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
247	4-Sep-01	20.30	13.92	17.28		S	20	21.20
248	5-Sep-01	18.84	15.02	16.58		S	20	20.73
249	6-Sep-01	18.03	13.15	15.32		S	20	20.18
250	7-Sep-01	15.33	12.53	13.82		S	20	19.47
251	8-Sep-01	16.59	9.12	12.57		S	20	18.83
252	9-Sep-01	17.23	9.12	12.86		S	20	18.25
253	10-Sep-01	18.03	10.05	13.80		S	20	17.76
254	11-Sep-01	18.68	10.98	14.64		S	20	17.53
255	12-Sep-01	18.68	11.75	15.00		S	20	17.51
256	13-Sep-01	18.84	13.46	15.97		S	20	17.63
257	14-Sep-01	20.63	13.77	16.77		S	20	18.38
258	15-Sep-01	19.49	12.53	15.95		S	20	18.80
259	16-Sep-01	18.68	12.07	15.32		S	20	19.00
260	17-Sep-01	18.19	12.84	15.45		S	20	19.03
261	18-Sep-01	18.68	12.07	14.98		S	20	19.03
262	19-Sep-01	16.44	10.98	13.83		S	20	18.71
263	20-Sep-01	16.28	9.28	12.62		S	20	18.34
264	21-Sep-01	14.85	9.43	12.21		S	20	17.52
265	22-Sep-01	16.28	8.97	12.26		S	20	17.06
266	23-Sep-01	16.75	9.74	13.02		S	20	16.78
267	24-Sep-01	17.07	10.52	13.46		S	20	16.62
268	25-Sep-01	14.70	10.37	12.92		S	20	16.05
269	26-Sep-01	16.28	12.07	13.79		S	20	16.03
270	27-Sep-01	14.54	10.83	13.00		S	20	15.78
271	28-Sep-01	14.85	11.60	13.16		S	20	15.78
272	29-Sep-01	16.13	10.37	12.88		S	20	15.76
273	30-Sep-01	14.85	8.82	11.82		S	20	15.49
274	1-Oct-01	14.70	8.66	11.55		S	20	15.15
275	2-Oct-01	13.61	8.82	11.27		S	20	14.99
276	3-Oct-01	13.30	8.04	10.59		S	20	14.57
277	4-Oct-01	12.07	6.97	9.48		S	20	14.22
278	5-Oct-01	10.98	5.41	8.11			20	13.66
279	6-Oct-01	10.21	4.79	7.44			20	12.82
280	7-Oct-01	9.28	6.03	7.94			20	12.02
281	8-Oct-01	10.83	8.50	9.39		S	20	11.47
282	9-Oct-01	9.58	8.04	8.91			20	10.89
283	10-Oct-01	10.52	6.81	8.49			20	10.50
284	11-Oct-01	9.58	7.74	8.42			20	10.14
285	12-Oct-01	7.43	6.50	7.06			20	9.63
286	13-Oct-01	8.50	6.34	7.19			20	9.39
287	14-Oct-01	8.04	6.81	7.36			20	9.21
288	15-Oct-01	9.89	6.50	7.72			20	9.08
289	16-Oct-01	8.97	4.79	6.70			20	8.99
290	17-Oct-01	10.05	6.65	7.90			20	8.92
291	18-Oct-01	7.58	5.25	6.50			20	8.64
292	19-Oct-01	7.12	6.19	6.67			20	8.59
293	20-Oct-01	9.58	6.81	7.63			20	8.75
294	21-Oct-01	7.43	4.79	6.20			20	8.66
295	22-Oct-01	7.74	6.65	7.05			20	8.35

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
296	23-Oct-01	7.12	5.25	6.09			20	8.09
297	24-Oct-01	7.27	4.47	5.32			20	7.69
298	25-Oct-01	5.57	3.69	4.56			20	7.40
299	26-Oct-01	6.81	3.85	4.86			20	7.36
300	27-Oct-01	5.25	3.38	4.23			20	6.74
301	28-Oct-01	5.72	4.94	5.32			21	6.50
302	29-Oct-01	6.65	5.25	5.90			20	6.34
303	30-Oct-01	6.97	6.34	6.61			20	6.32
304	31-Oct-01	6.97	6.50	6.71			20	6.28
305	1-Nov-01	6.81	5.88	6.30			20	6.45
306	2-Nov-01	6.97	5.88	6.39			20	6.48
307	3-Nov-01	7.89	5.88	6.71			20	6.85
308	4-Nov-01	6.50	4.63	5.36			20	6.97
309	5-Nov-01	5.57	3.69	4.52			20	6.81
310	6-Nov-01	5.72	4.47	5.09			20	6.63
311	7-Nov-01	5.72	3.07	4.63			20	6.45
312	8-Nov-01	3.53	1.33	2.23			20	5.99
313	9-Nov-01	2.75	0.53	1.31			20	5.38
314	10-Nov-01	2.43	0.04	0.97			20	4.60
315	11-Nov-01	2.43	0.20	1.01			20	4.02
316	12-Nov-01	3.38	0.85	1.78			20	3.71
317	13-Nov-01	3.07	1.64	2.30			20	3.33
318	14-Nov-01	4.63	2.75	3.60			20	3.17
319	15-Nov-01	5.10	3.69	4.17			20	3.40
320	16-Nov-01	4.94	3.22	4.02			20	3.71
321	17-Nov-01	5.57	4.63	4.93			20	4.16
322	18-Nov-01	6.19	4.00	4.87			20	4.70
323	19-Nov-01	4.16	2.43	3.28			20	4.81
324	20-Nov-01	4.79	3.07	3.76			20	5.05
325	21-Nov-01	5.88	4.32	4.88			20	5.23
326	22-Nov-01	4.94	4.32	4.69			20	5.21
327	23-Nov-01	4.94	4.00	4.47			20	5.21
328	24-Nov-01	4.00	2.59	3.15			20	4.99
329	25-Nov-01	2.90	2.12	2.50			20	4.52
330	26-Nov-01	3.07	1.96	2.46			20	4.36
331	27-Nov-01	2.90	1.48	2.20			20	4.09
332	28-Nov-01	1.33	-0.11	0.39			20	3.44
333	29-Nov-01	0.53	0.04	0.19			20	2.81
334	30-Nov-01	1.48	0.37	0.81			20	2.32
335	1-Dec-01	1.33	0.85	1.06			20	1.93
336	2-Dec-01	1.80	1.00	1.34			20	1.78
337	3-Dec-01	1.96	1.33	1.62			20	1.62
338	4-Dec-01	1.48	0.37	0.82			20	1.42
339	5-Dec-01	0.69	0.04	0.34			20	1.32
340	6-Dec-01	0.37	-0.11	0.13			20	1.30
341	7-Dec-01	1.48	0.37	0.77			20	1.30
342	8-Dec-01	1.64	0.53	0.92			20	1.35
343	9-Dec-01	1.33	0.20	0.66			20	1.28
344	10-Dec-01	1.33	0.53	0.85			20	1.19
345	11-Dec-01	0.85	0.04	0.38			20	1.10
346	12-Dec-01	0.69	0.04	0.23			20	1.10

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Moose Creek
Data Collection Site: near mouth
Data Period: 1/1/01 - 12/30/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 680 M
Waterbody ID Number: 27

Import File : ... \StowAway\Selway 2001\Moose Creek 2001.txt
Calibration Factor : 0.04

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msr mts per day	7-Day Average of High
347	13-Dec-01	0.04	-0.11	0.02			20	1.05
348	14-Dec-01	0.20	0.04	0.06			20	0.87
349	15-Dec-01	0.37	0.04	0.11			20	0.69
350	16-Dec-01	0.04	-0.11	0.02			20	0.50
351	17-Dec-01	0.53	0.04	0.18			20	0.39
352	18-Dec-01	0.20	-0.11	0.07			20	0.30
353	19-Dec-01	0.53	0.04	0.12			20	0.27
354	20-Dec-01	0.53	-0.11	0.16			20	0.34
355	21-Dec-01	0.69	0.04	0.31			20	0.41
356	22-Dec-01	1.00	0.20	0.42			20	0.50
357	23-Dec-01	0.69	-0.11	0.12			20	0.60
358	24-Dec-01	0.04	0.04	0.04			20	0.53
359	25-Dec-01	0.04	0.04	0.04			20	0.50
360	26-Dec-01	0.04	-0.11	0.02			20	0.43
361	27-Dec-01	0.04	-0.11	0.03			20	0.36
362	28-Dec-01	0.04	-0.11	0.02			20	0.27
363	29-Dec-01	0.04	0.04	0.04			20	0.13
364	30-Dec-01	0.20	0.04	0.06			20	0.06

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	0.96	0.00	0.52			20	
2	2-Jan-01	0.00	0.00	0.00			20	
3	3-Jan-01	0.48	0.00	0.10			20	
4	4-Jan-01	1.12	0.00	0.44			20	
5	5-Jan-01	1.12	0.16	0.51			20	
6	6-Jan-01	0.48	0.00	0.10			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.59
8	8-Jan-01	0.16	0.00	0.01			20	0.48
9	9-Jan-01	0.00	0.00	0.00			20	0.48
10	10-Jan-01	0.00	0.00	0.00			20	0.41
11	11-Jan-01	0.00	0.00	0.00			20	0.25
12	12-Jan-01	0.00	0.00	0.00			20	0.09
13	13-Jan-01	0.48	0.00	0.11			20	0.09
14	14-Jan-01	0.80	0.00	0.30			20	0.21
15	15-Jan-01	0.80	0.16	0.32			20	0.30
16	16-Jan-01	0.64	0.00	0.18			20	0.39
17	17-Jan-01	0.64	0.00	0.10			20	0.48
18	18-Jan-01	0.00	0.00	0.00			20	0.48
19	19-Jan-01	0.16	0.00	0.04			20	0.50
20	20-Jan-01	0.64	0.00	0.23			20	0.53
21	21-Jan-01	0.80	0.00	0.25			20	0.53
22	22-Jan-01	1.28	0.48	0.67			20	0.59
23	23-Jan-01	1.28	0.00	0.65			20	0.69
24	24-Jan-01	0.48	0.00	0.10			20	0.66
25	25-Jan-01	1.12	0.32	0.58			20	0.82
26	26-Jan-01	1.28	0.00	0.47			20	0.98
27	27-Jan-01	0.80	0.00	0.12			20	1.01
28	28-Jan-01	0.00	0.00	0.00			20	0.89
29	29-Jan-01	0.00	0.00	0.00			20	0.71
30	30-Jan-01	0.00	0.00	0.00			20	0.53
31	31-Jan-01	0.00	0.00	0.00			20	0.46
32	1-Feb-01	0.16	0.00	0.01			20	0.32
33	2-Feb-01	0.64	0.00	0.38			20	0.23
34	3-Feb-01	1.28	0.32	0.65			20	0.30
35	4-Feb-01	0.64	0.00	0.31			20	0.39
36	5-Feb-01	0.64	0.00	0.24			20	0.48
37	6-Feb-01	1.60	0.32	0.73			20	0.71
38	7-Feb-01	1.12	0.00	0.43			20	0.87
39	8-Feb-01	0.00	0.00	0.00			20	0.85
40	9-Feb-01	0.00	0.00	0.00			20	0.75
41	10-Feb-01	0.00	0.00	0.00			20	0.57
42	11-Feb-01	0.48	0.00	0.08			20	0.55
43	12-Feb-01	0.48	0.00	0.07			20	0.53
44	13-Feb-01	0.96	0.00	0.31			20	0.43
45	14-Feb-01	0.80	0.00	0.23			20	0.39
46	15-Feb-01	0.96	0.00	0.38			20	0.53
47	16-Feb-01	1.75	0.16	0.72			20	0.78

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	1	1%	
19 °C Average	0	0%	
Days Evaluated & Date Range	80	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	26	28%	
9 °C Average Spring	36	39%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	24	30%	
9 °C Average Fall	27	33%	
Fall Days Eval'd w/in Dates	81	15-Aug	15-Nov
13 °C Instantaneous Total *	50	29%	
9 °C Average Total *	63	36%	
Tot Days Eval'd w/in Both Dates *	173		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	68	76%	
Juvenile Days Eval'd w/in Dates	89	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	13	25%	
Spawning Days Eval'd w/in Dates	52	1-Sep	31-Oct

NOTES

Comments: Data from two deployments combined. Data wrapped so that fall 2000 data follows summer 2001 data. Data gap from 8-29 thru 9-9. Candidate stream for *a priori* natural. Monitored as state Outstanding Resource Water nominee. Temperature exceeds Idaho's cold water aquatic life criteria less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
48	17-Feb-01	2.23	0.64	1.05			20	1.09
49	18-Feb-01	1.75	0.80	1.13			20	1.28
50	19-Feb-01	2.55	0.48	1.20			20	1.57
51	20-Feb-01	2.23	0.32	1.03			20	1.75
52	21-Feb-01	1.91	0.96	1.29			20	1.91
53	22-Feb-01	2.39	0.96	1.46			20	2.12
54	23-Feb-01	2.55	1.28	1.64			20	2.23
55	24-Feb-01	2.55	0.80	1.50			20	2.28
56	25-Feb-01	2.71	0.00	1.03			20	2.41
57	26-Feb-01	3.02	0.16	1.14			20	2.48
58	27-Feb-01	2.71	0.00	0.64			20	2.55
59	28-Feb-01	1.12	0.00	0.15			20	2.44
60	1-Mar-01	0.64	0.00	0.13			20	2.19
61	2-Mar-01	1.75	0.16	0.74			20	2.07
62	3-Mar-01	3.02	0.00	0.96			20	2.14
63	4-Mar-01	2.39	0.00	1.04			20	2.09
64	5-Mar-01	3.65	0.96	1.87			20	2.18
65	6-Mar-01	4.27	0.32	1.71			20	2.41
66	7-Mar-01	3.81	0.32	1.47			20	2.79
67	8-Mar-01	3.34	0.32	1.48			20	3.18
68	9-Mar-01	2.07	0.80	1.34			20	3.22
69	10-Mar-01	3.50	1.28	2.15			20	3.29
70	11-Mar-01	2.86	1.75	2.21			20	3.36
71	12-Mar-01	3.65	1.91	2.49			20	3.36
72	13-Mar-01	5.06	2.07	2.97			20	3.47
73	14-Mar-01	3.34	1.43	2.30			20	3.40
74	15-Mar-01	3.50	0.48	1.94			20	3.43
75	16-Mar-01	3.34	1.60	2.40			20	3.61
76	17-Mar-01	3.81	1.28	2.45			20	3.65
77	18-Mar-01	4.59	2.07	3.19			20	3.90
78	19-Mar-01	3.81	2.39	2.94			20	3.92
79	20-Mar-01	5.21	1.60	2.95			20	3.94
80	21-Mar-01	5.21	1.43	2.91			20	4.21
81	22-Mar-01	5.21	1.12	2.76			20	4.45
82	23-Mar-01	5.68	1.43	3.17			20	4.79
83	24-Mar-01	5.21	2.55	3.64			20	4.99
84	25-Mar-01	3.50	2.39	2.88			20	4.83
85	26-Mar-01	3.81	2.23	2.97			20	4.83
86	27-Mar-01	4.75	2.07	3.22			20	4.77
87	28-Mar-01	5.21	2.86	3.77			20	4.77
88	29-Mar-01	5.68	3.02	4.15			20	4.83
89	30-Mar-01	4.12	3.34	3.71			20	4.61
90	31-Mar-01	3.96	2.07	3.15			20	4.43
91	1-Apr-01	5.37	2.71	3.95			19	4.70
92	2-Apr-01	4.27	3.34	3.71			20	4.77
93	3-Apr-01	4.59	1.91	3.02			20	4.74
94	4-Apr-01	5.52	2.55	3.79			20	4.79
95	5-Apr-01	5.68	1.43	3.30			20	4.79
96	6-Apr-01	4.43	2.07	3.18			20	4.83
97	7-Apr-01	4.75	3.02	3.72			20	4.94

STATISTICS	
Maximum Daily Maximum (MDM)	22.1 ºC
Maximum 7-Day Maximum (MWM)	21.1 ºC
Maximum Daily Average (MDA)	18.5 ºC
Maximum 7-Day Average (MWA)	17.7 ºC
Mean Daily Maximum	7.4 ºC
Mean Daily Average	5.9 ºC
Mean Daily Minimum	4.8 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	5.9 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	96	87%	
Nmbr of 7-Day Avg's w/in Dates	110	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	80	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	4.27	2.55	3.28			20	4.79
99	9-Apr-01	3.81	2.07	2.93			20	4.72
100	10-Apr-01	5.21	2.23	3.47			20	4.81
101	11-Apr-01	3.96	2.39	3.30			20	4.59
102	12-Apr-01	4.43	2.39	3.27			20	4.41
103	13-Apr-01	4.75	2.39	3.48			20	4.45
104	14-Apr-01	5.68	2.23	3.67			20	4.59
105	15-Apr-01	6.92	1.75	3.94			20	4.97
106	16-Apr-01	7.08	2.23	4.40			20	5.43
107	17-Apr-01	7.85	3.34	5.42			20	5.81
108	18-Apr-01	6.77	4.12	5.51			20	6.21
109	19-Apr-01	5.83	4.27	5.12			20	6.41
110	20-Apr-01	4.90	3.02	4.06			20	6.43
111	21-Apr-01	5.52	3.18	4.33			20	6.41
112	22-Apr-01	5.83	2.86	4.44			20	6.25
113	23-Apr-01	6.77	4.12	5.30			20	6.21
114	24-Apr-01	9.40	4.59	6.54			20	6.43
115	25-Apr-01	8.93	3.96	6.26			20	6.74
116	26-Apr-01	7.54	4.12	5.82			20	6.98
117	27-Apr-01	6.61	4.43	5.43			20	7.23
118	28-Apr-01	5.68	3.81	4.78			20	7.25
119	29-Apr-01	5.52	3.50	4.54			20	7.21
120	30-Apr-01	5.21	4.27	4.75			20	6.98
121	1-May-01	4.43	3.34	3.91			20	6.27
122	2-May-01	5.21	2.86	3.84			20	5.74
123	3-May-01	6.30	2.55	4.22			20	5.57
124	4-May-01	7.38	3.50	5.19			20	5.68
125	5-May-01	6.46	4.90	5.55			20	5.79
126	6-May-01	6.61	3.18	4.72			20	5.94
127	7-May-01	7.38	3.34	5.15			20	6.25
128	8-May-01	7.38	4.27	5.86			20	6.67
129	9-May-01	7.54	4.59	5.94			20	7.01
130	10-May-01	8.01	4.27	5.99			20	7.25
131	11-May-01	8.01	4.12	5.96			20	7.34
132	12-May-01	8.16	4.59	6.26			20	7.58
133	13-May-01	8.01	5.37	6.52			20	7.78
134	14-May-01	6.92	5.21	6.07			20	7.72
135	15-May-01	6.30	5.06	5.73			20	7.56
136	16-May-01	6.61	5.06	5.73			20	7.43
137	17-May-01	7.08	3.50	5.30			20	7.30
138	18-May-01	6.77	5.21	5.87			20	7.12
139	19-May-01	8.31	4.12	6.06			20	7.14
140	20-May-01	7.23	5.37	6.35			20	7.03
141	21-May-01	8.47	3.65	5.93			20	7.25
142	22-May-01	10.17	4.90	7.22			20	7.81
143	23-May-01	10.80	5.68	8.05			20	8.40
144	24-May-01	9.86	6.30	8.20			20	8.80
145	25-May-01	10.64	7.08	8.68			20	9.35
146	26-May-01	10.17	6.77	8.40			20	9.62
147	27-May-01	9.55	7.08	8.41			20	9.95
148	28-May-01	10.33	7.08	8.62			20	10.22

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msrmts per day	7-Day Average of High
149	29-May-01	9.24	6.92	8.19			20	10.08
150	30-May-01	9.08	4.90	6.93			20	9.84
151	31-May-01	11.56	7.38	9.10			20	10.08
152	1-Jun-01	11.41	7.70	9.57			20	10.19
153	2-Jun-01	10.80	8.31	9.15			20	10.28
154	3-Jun-01	8.16	6.77	7.23			20	10.08
155	4-Jun-01	6.61	4.75	5.41			20	9.55
156	5-Jun-01	6.77	4.59	5.63			20	9.20
157	6-Jun-01	9.08	5.83	7.19			20	9.20
158	7-Jun-01	8.16	6.15	7.11			20	8.71
159	8-Jun-01	10.64	6.46	8.31			20	8.60
160	9-Jun-01	11.41	8.62	9.89			20	8.69
161	10-Jun-01	10.17	8.47	9.46			20	8.98
162	11-Jun-01	10.17	8.16	9.09			20	9.49
163	12-Jun-01	8.93	6.61	7.73			20	9.79
164	13-Jun-01	6.92	5.37	6.12			20	9.49
165	14-Jun-01	7.85	5.83	6.81			20	9.44
166	15-Jun-01	11.41	6.92	8.63			20	9.55
167	16-Jun-01	12.18	7.08	9.36			20	9.66
168	17-Jun-01	12.03	8.62	10.23			20	9.93
169	18-Jun-01	12.18	8.16	9.98			20	10.21
170	19-Jun-01	12.34	7.54	9.75			20	10.70
171	20-Jun-01	13.73	8.47	10.75			20	11.67
172	21-Jun-01	14.98	9.71	12.05			20	12.69
173	22-Jun-01	16.26	11.10	13.32	J		20	13.39
174	23-Jun-01	16.10	12.03	13.89	J		20	13.95
175	24-Jun-01	14.82	12.03	13.43	J		20	14.34
176	25-Jun-01	14.98	10.95	12.91	J		20	14.74
177	26-Jun-01	15.46	11.72	13.47	J		20	15.19
178	27-Jun-01	15.15	12.18	13.59	J		20	15.39
179	28-Jun-01	17.37	12.50	14.58	J		20	15.73
180	29-Jun-01	17.68	12.50	14.83	J		20	15.94
181	30-Jun-01	17.05	12.96	15.01	J		20	16.07
182	1-Jul-01	18.98	13.58	15.90	J		20	16.67
183	2-Jul-01	18.98	13.73	16.17	J		20	17.24
184	3-Jul-01	19.47	13.88	16.45	J		20	17.81
185	4-Jul-01	18.01	14.82	16.24	J		20	18.22
186	5-Jul-01	16.41	15.15	15.68	J		20	18.08
187	6-Jul-01	17.85	13.27	15.43	J		20	18.11
188	7-Jul-01	17.85	12.96	15.37	J		20	18.22
189	8-Jul-01	18.01	14.51	16.14	J		20	18.08
190	9-Jul-01	18.33	14.98	16.47	J		20	17.99
191	10-Jul-01	19.95	14.98	17.27	J		20	18.06
192	11-Jul-01	18.65	14.67	16.62	J		20	18.15
193	12-Jul-01	18.65	14.98	16.66	J		20	18.47
194	13-Jul-01	16.89	14.35	15.68	J		20	18.33
195	14-Jul-01	19.14	13.42	15.98	J		20	18.52
196	15-Jul-01	17.05	14.98	16.08	J		20	18.38
197	16-Jul-01	15.15	13.73	14.38	J		20	17.93

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	15.62	12.03	13.66	J		20	17.31
199	18-Jul-01	15.46	12.18	13.67	J		20	16.85
200	19-Jul-01	17.68	12.18	14.51	J		20	16.71
201	20-Jul-01	17.68	13.27	15.30	J		20	16.83
202	21-Jul-01	18.82	13.73	15.78	J		20	16.78
203	22-Jul-01	18.82	13.73	15.95	J		20	17.03
204	23-Jul-01	18.49	13.12	15.64	J		20	17.51
205	24-Jul-01	18.65	13.27	15.83	J		20	17.94
206	25-Jul-01	19.79	13.73	16.38	J		20	18.56
207	26-Jul-01	19.79	13.73	16.52	J		20	18.86
208	27-Jul-01	20.11	13.73	16.65	J		20	19.21
209	28-Jul-01	17.68	14.35	16.14	J		20	19.05
210	29-Jul-01	16.73	12.96	14.95	J		20	18.75
211	30-Jul-01	14.67	12.96	13.67	J		20	18.20
212	31-Jul-01	15.31	12.34	13.31	J		20	17.73
213	1-Aug-01	16.89	10.95	13.67	J		20	17.31
214	2-Aug-01	19.14	12.65	15.46	J		20	17.22
215	3-Aug-01	18.49	13.58	16.04	J		20	16.99
216	4-Aug-01	18.65	14.35	16.30	J		20	17.13
217	5-Aug-01	20.27	13.58	16.53	J		20	17.63
218	6-Aug-01	21.26	14.20	17.32	J		20	18.57
219	7-Aug-01	21.76	15.15	18.10	J		20	19.49
220	8-Aug-01	22.10	15.78	18.53	J		20	20.24
221	9-Aug-01	20.43	14.82	17.48	J		20	20.42
222	10-Aug-01	21.10	14.35	17.34	J		20	20.80
223	11-Aug-01	19.79	14.20	16.94	J		20	20.96
224	12-Aug-01	20.93	14.20	17.22	J		20	21.05
225	13-Aug-01	20.60	15.94	18.13	J		20	20.96
226	14-Aug-01	19.95	15.46	17.66	J		20	20.70
227	15-Aug-01	20.93	14.67	17.43	J		20	20.53
228	16-Aug-01	21.10	14.51	17.45	J		20	20.63
229	17-Aug-01	21.10	14.20	17.29	J		20	20.63
230	18-Aug-01	21.10	14.98	17.68	J		20	20.82
231	19-Aug-01	20.11	14.04	16.85	J		20	20.70
232	20-Aug-01	19.30	12.81	15.85	J		20	20.51
233	21-Aug-01	19.30	12.65	15.73	J		20	20.42
234	22-Aug-01	18.49	12.96	15.64	J		20	20.07
235	23-Aug-01	18.65	13.12	15.72	J		20	19.72
236	24-Aug-01	19.79	14.20	16.47	J		20	19.53
237	25-Aug-01	19.47	12.50	15.69	J		20	19.30
238	26-Aug-01	19.79	12.65	15.85	J		20	19.26
239	27-Aug-01	20.11	13.42	16.36	J		20	19.37
240	28-Aug-01	17.37	13.58	15.17	J		13	19.10
241	10-Sep-01	10.64	8.62	9.51		S	20	17.97
242	11-Sep-01	13.27	9.55	10.85		S	20	17.21
243	12-Sep-01	15.15	8.77	11.46		S	20	16.54
244	13-Sep-01	17.05	9.71	12.63		S	20	16.20
245	14-Sep-01	17.52	10.33	13.18		S	20	15.87
246	15-Sep-01	17.68	10.64	13.66		S	20	15.53

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
247	16-Sep-01	18.98	12.03	14.71		S	20	15.76
248	17-Sep-01	18.98	12.65	14.89		S	20	16.95
249	18-Sep-01	14.82	11.41	13.18		S	20	17.17
250	19-Sep-01	15.62	12.81	13.93		S	20	17.24
251	20-Sep-01	14.20	9.71	11.83		S	20	16.83
252	21-Sep-01	12.65	10.02	11.33		S	20	16.13
253	22-Sep-01	10.33	7.38	8.73			20	15.08
254	23-Sep-01	10.64	4.27	6.87			20	13.89
255	24-Sep-01	10.33	3.34	6.10			20	12.66
256	25-Sep-01	10.80	3.65	6.53			20	12.08
257	26-Sep-01	11.25	4.12	6.89			20	11.46
258	27-Sep-01	11.56	4.27	7.06			20	11.08
259	28-Sep-01	10.33	4.75	7.28			20	10.75
260	29-Sep-01	10.02	5.83	7.75			20	10.70
261	30-Sep-01	9.86	7.54	8.59			20	10.59
262	1-Oct-01	10.02	9.08	9.48		S	20	10.55
263	2-Oct-01	9.40	7.54	8.45			20	10.35
264	3-Oct-01	9.08	6.77	7.64			20	10.04
265	4-Oct-01	7.08	4.90	6.07			20	9.40
266	5-Oct-01	7.08	3.81	5.27			20	8.93
267	6-Oct-01	6.30	2.86	4.34			20	8.40
268	7-Oct-01	6.46	2.55	4.17			20	7.92
269	8-Oct-01	6.92	2.86	4.59			20	7.47
270	9-Oct-01	7.23	3.50	5.06			20	7.16
271	10-Oct-01	7.70	5.21	6.25			20	6.97
272	11-Oct-01	8.31	6.77	7.45			20	7.14
273	12-Oct-01	7.54	7.08	7.32			20	7.21
274	13-Oct-01	7.08	6.30	6.64			20	7.32
275	14-Oct-01	7.23	6.15	6.67			20	7.43
276	15-Oct-01	7.70	5.83	6.74			20	7.54
277	16-Oct-01	7.38	5.06	6.14			20	7.56
278	17-Oct-01	7.38	4.90	5.93			20	7.52
279	18-Oct-01	7.08	4.75	5.95			20	7.34
280	19-Oct-01	9.08	6.61	7.32			20	7.56
281	20-Oct-01	7.23	5.52	6.35			20	7.58
282	21-Oct-01	7.23	5.99	6.80			20	7.58
283	22-Oct-01	6.30	3.96	5.18			20	7.38
284	23-Oct-01	4.27	2.07	3.09			20	6.94
285	24-Oct-01	4.27	1.91	2.84			20	6.49
286	25-Oct-01	4.27	1.91	2.88			20	6.09
287	26-Oct-01	4.59	2.23	3.32			20	5.45
288	27-Oct-01	5.83	4.12	4.74			20	5.25
289	28-Oct-01	4.75	3.02	4.05			20	4.90
290	29-Oct-01	6.15	4.59	5.29			21	4.88
291	30-Oct-01	6.15	4.90	5.41			20	5.14
292	31-Oct-01	5.99	4.75	5.17			20	5.39
293	1-Nov-01	4.90	3.18	4.21			20	5.48
294	2-Nov-01	3.65	1.43	2.45			20	5.35
295	3-Nov-01	3.02	0.96	1.59			20	4.94
296	4-Nov-01	1.91	0.48	1.32			20	4.54

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
297	5-Nov-01	2.23	1.43	1.82			20	3.98
298	6-Nov-01	3.02	1.43	2.01			20	3.53
299	7-Nov-01	3.02	0.64	1.77			20	3.11
300	8-Nov-01	0.64	0.00	0.18			20	2.50
301	9-Nov-01	1.43	0.00	0.54			20	2.18
302	10-Nov-01	0.16	0.00	0.06			20	1.77
303	11-Nov-01	0.00	0.00	0.00			20	1.50
304	12-Nov-01	0.16	0.00	0.01			20	1.20
305	13-Nov-01	0.16	0.00	0.01			20	0.80
306	14-Nov-01	0.00	0.00	0.00			20	0.36
307	15-Nov-01	0.00	0.00	0.00			20	0.27
308	16-Nov-01	0.16	0.00	0.04			20	0.09
309	17-Nov-01	0.16	0.00	0.03			20	0.09
310	18-Nov-01	0.00	0.00	0.00			20	0.09
311	19-Nov-01	0.16	0.00	0.01			20	0.09
312	20-Nov-01	0.00	0.00	0.00			20	0.07
313	21-Nov-01	0.00	0.00	0.00			20	0.07
314	22-Nov-01	0.00	0.00	0.00			20	0.07
315	23-Nov-01	0.00	0.00	0.00			20	0.05
316	24-Nov-01	0.00	0.00	0.00			20	0.02
317	25-Nov-01	0.16	0.00	0.02			20	0.05
318	26-Nov-01	0.16	0.00	0.02			20	0.05
319	27-Nov-01	0.16	0.00	0.06			20	0.07
320	28-Nov-01	0.32	0.00	0.05			20	0.11
321	29-Nov-01	0.00	0.00	0.00			20	0.11
322	30-Nov-01	0.48	0.00	0.17			20	0.18
323	1-Dec-01	0.64	0.00	0.33			20	0.27
324	2-Dec-01	0.00	0.00	0.00			20	0.25
325	3-Dec-01	0.48	0.00	0.14			20	0.30
326	4-Dec-01	0.96	0.32	0.58			20	0.41
327	5-Dec-01	1.12	0.16	0.54			20	0.53
328	6-Dec-01	0.64	0.00	0.34			20	0.62
329	7-Dec-01	0.00	0.00	0.00			20	0.55
330	8-Dec-01	0.00	0.00	0.00			20	0.46
331	9-Dec-01	0.16	0.00	0.02			20	0.48
332	10-Dec-01	0.80	0.00	0.34			20	0.53
333	11-Dec-01	0.00	0.00	0.00			20	0.39
334	12-Dec-01	0.00	0.00	0.00			20	0.23
335	13-Dec-01	0.00	0.00	0.00			20	0.14
336	14-Dec-01	0.00	0.00	0.00			20	0.14
337	15-Dec-01	0.00	0.00	0.00			20	0.14
338	16-Dec-01	0.00	0.00	0.00			20	0.11
339	17-Dec-01	0.00	0.00	0.00			20	0.00
340	18-Dec-01	0.00	0.00	0.00			20	0.00
341	19-Dec-01	0.00	0.00	0.00			20	0.00
342	20-Dec-01	0.00	0.00	0.00			20	0.00
343	21-Dec-01	0.00	0.00	0.00			20	0.00
344	22-Dec-01	0.00	0.00	0.00			20	0.00
345	23-Dec-01	0.00	0.00	0.00			20	0.00
346	24-Dec-01	0.48	0.00	0.16			20	0.07
347	25-Dec-01	0.96	0.48	0.57			20	0.21

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Running Creek
Data Collection Site: near airstrip
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 877 M
Waterbody ID Number: 8

Import File : ... ay\Selway 2001\Running Creek 2001-00ed.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msrmts per day	7-Day Average of High
348	26-Dec-01	0.64	0.00	0.28			20	0.30
349	27-Dec-01	0.80	0.00	0.33			20	0.41
350	28-Dec-01	1.12	0.16	0.61			20	0.57
351	29-Dec-01	0.16	0.00	0.02			20	0.59
352	30-Dec-01	0.80	0.16	0.45			20	0.71
353	31-Dec-01	0.96	0.32	0.67			20	0.78

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	0.00	0.00	0.00			20	
2	2-Jan-01	0.00	0.00	0.00			20	
3	3-Jan-01	0.00	0.00	0.00			20	
4	4-Jan-01	0.00	0.00	0.00			20	
5	5-Jan-01	0.00	0.00	0.00			20	
6	6-Jan-01	0.00	0.00	0.00			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.00
8	8-Jan-01	0.00	0.00	0.00			20	0.00
9	9-Jan-01	0.00	0.00	0.00			20	0.00
10	10-Jan-01	0.00	0.00	0.00			20	0.00
11	11-Jan-01	0.00	0.00	0.00			20	0.00
12	12-Jan-01	0.00	0.00	0.00			20	0.00
13	13-Jan-01	0.00	0.00	0.00			20	0.00
14	14-Jan-01	0.00	0.00	0.00			20	0.00
15	15-Jan-01	0.00	0.00	0.00			20	0.00
16	16-Jan-01	0.00	0.00	0.00			20	0.00
17	17-Jan-01	0.00	0.00	0.00			20	0.00
18	18-Jan-01	0.00	0.00	0.00			20	0.00
19	19-Jan-01	0.00	0.00	0.00			20	0.00
20	20-Jan-01	0.00	0.00	0.00			20	0.00
21	21-Jan-01	0.00	0.00	0.00			20	0.00
22	22-Jan-01	0.00	0.00	0.00			20	0.00
23	23-Jan-01	0.00	0.00	0.00			20	0.00
24	24-Jan-01	0.00	0.00	0.00			20	0.00
25	25-Jan-01	0.00	0.00	0.00			20	0.00
26	26-Jan-01	0.00	0.00	0.00			20	0.00
27	27-Jan-01	0.00	0.00	0.00			20	0.00
28	28-Jan-01	0.00	0.00	0.00			20	0.00
29	29-Jan-01	0.00	0.00	0.00			20	0.00
30	30-Jan-01	0.00	0.00	0.00			20	0.00
31	31-Jan-01	0.00	0.00	0.00			20	0.00
32	1-Feb-01	0.00	0.00	0.00			20	0.00
33	2-Feb-01	0.00	0.00	0.00			20	0.00
34	3-Feb-01	0.00	0.00	0.00			20	0.00
35	4-Feb-01	0.00	0.00	0.00			20	0.00
36	5-Feb-01	0.00	0.00	0.00			20	0.00
37	6-Feb-01	0.00	0.00	0.00			20	0.00
38	7-Feb-01	0.00	0.00	0.00			20	0.00
39	8-Feb-01	0.00	0.00	0.00			20	0.00
40	9-Feb-01	0.00	0.00	0.00			20	0.00
41	10-Feb-01	0.00	0.00	0.00			20	0.00
42	11-Feb-01	0.00	0.00	0.00			20	0.00
43	12-Feb-01	0.00	0.00	0.00			20	0.00
44	13-Feb-01	0.00	0.00	0.00			20	0.00
45	14-Feb-01	0.00	0.00	0.00			20	0.00
46	15-Feb-01	0.00	0.00	0.00			20	0.00
47	16-Feb-01	0.00	0.00	0.00			20	0.00

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	12	13%	
19 °C Average	15	16%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	29	32%	
9 °C Average Spring	43	47%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	48	52%	
9 °C Average Fall	51	55%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	77	42%	
9 °C Average Total *	94	51%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	72	78%	
Juvenile Days Eval'd w/in Dates	92	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	34	56%	
Spawning Days Eval'd w/in Dates	61	1-Sep	31-Oct

NOTES

Comments: Combined data from two deployments. Stream is a priori natural. Monitored as state Outstanding Resource Water nominee.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
48	17-Feb-01	0.16	0.00	0.03			20	0.02
49	18-Feb-01	0.16	0.00	0.05			20	0.05
50	19-Feb-01	0.32	0.00	0.06			20	0.09
51	20-Feb-01	0.16	0.00	0.04			20	0.11
52	21-Feb-01	0.16	0.00	0.10			20	0.14
53	22-Feb-01	0.48	0.00	0.22			20	0.21
54	23-Feb-01	0.96	0.16	0.50			20	0.34
55	24-Feb-01	1.60	0.16	0.79			20	0.55
56	25-Feb-01	1.28	0.00	0.58			20	0.71
57	26-Feb-01	2.08	0.00	0.92			20	0.96
58	27-Feb-01	1.60	0.00	0.58			20	1.17
59	28-Feb-01	1.28	0.00	0.29			20	1.33
60	1-Mar-01	1.28	0.00	0.35			20	1.44
61	2-Mar-01	1.76	0.00	0.62			20	1.55
62	3-Mar-01	2.55	0.00	1.01			20	1.69
63	4-Mar-01	2.24	0.00	1.07			20	1.83
64	5-Mar-01	3.03	0.48	1.64			20	1.96
65	6-Mar-01	3.18	0.00	1.49			20	2.19
66	7-Mar-01	3.03	0.00	1.31			20	2.44
67	8-Mar-01	3.18	0.00	1.39			20	2.71
68	9-Mar-01	2.08	1.13	1.61			20	2.76
69	10-Mar-01	3.18	1.13	2.05			20	2.85
70	11-Mar-01	2.86	1.76	2.31			20	2.93
71	12-Mar-01	3.81	1.92	2.61			20	3.05
72	13-Mar-01	4.91	2.39	3.45			20	3.29
73	14-Mar-01	3.81	2.24	3.09			20	3.40
74	15-Mar-01	3.81	1.28	2.53			20	3.49
75	16-Mar-01	4.13	2.08	2.98			20	3.79
76	17-Mar-01	4.13	1.76	2.86			20	3.92
77	18-Mar-01	5.38	2.86	4.00			20	4.28
78	19-Mar-01	4.60	3.50	4.06			20	4.40
79	20-Mar-01	5.84	2.71	4.07			20	4.53
80	21-Mar-01	5.53	1.76	3.52			20	4.77
81	22-Mar-01	5.69	1.44	3.43			20	5.04
82	23-Mar-01	6.15	1.92	3.87			20	5.33
83	24-Mar-01	6.31	3.34	4.76			20	5.64
84	25-Mar-01	4.60	3.03	3.56			20	5.53
85	26-Mar-01	4.28	3.03	3.54			20	5.49
86	27-Mar-01	5.38	2.71	4.04			20	5.42
87	28-Mar-01	5.84	3.65	4.73			20	5.46
88	29-Mar-01	6.78	4.13	5.24			20	5.62
89	30-Mar-01	5.53	4.28	4.92			20	5.53
90	31-Mar-01	4.60	2.86	3.81			20	5.29
91	1-Apr-01	6.62	3.50	4.84			19	5.58
92	2-Apr-01	5.69	3.97	4.61			20	5.78
93	3-Apr-01	5.84	2.55	3.95			20	5.84
94	4-Apr-01	6.31	3.34	4.61			20	5.91
95	5-Apr-01	6.62	2.24	4.32			20	5.89
96	6-Apr-01	4.91	3.18	4.13			20	5.80
97	7-Apr-01	5.53	3.97	4.60			20	5.93

STATISTICS	
Maximum Daily Maximum (MDM)	23.6 ºC
Maximum 7-Day Maximum (MWM)	22.7 ºC
Maximum Daily Average (MDA)	20.9 ºC
Maximum 7-Day Average (MWA)	20.0 ºC
Mean Daily Maximum	8.6 ºC
Mean Daily Average	7.4 ºC
Mean Daily Minimum	6.2 ºC
Minimum 7-Day Minimum	-0.1 ºC
Minimum Daily Minimum	-0.1 ºC
Mean of all Data	7.4 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	117	96%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	5.06	3.03	3.97			20	5.71
99	9-Apr-01	5.06	2.86	3.83			20	5.62
100	10-Apr-01	5.53	2.86	4.16			20	5.57
101	11-Apr-01	5.06	3.50	4.35			20	5.40
102	12-Apr-01	5.38	3.65	4.39			20	5.22
103	13-Apr-01	5.84	3.50	4.41			20	5.35
104	14-Apr-01	6.78	3.03	4.52			20	5.53
105	15-Apr-01	7.86	3.03	5.24			20	5.93
106	16-Apr-01	8.01	3.81	5.87			20	6.35
107	17-Apr-01	8.94	5.06	6.89			20	6.84
108	18-Apr-01	8.16	6.15	7.31			20	7.28
109	19-Apr-01	7.55	5.53	6.64			20	7.59
110	20-Apr-01	6.15	4.28	5.23			20	7.64
111	21-Apr-01	6.93	4.13	5.42			20	7.66
112	22-Apr-01	7.24	4.13	5.57			20	7.57
113	23-Apr-01	8.01	5.38	6.47			20	7.57
114	24-Apr-01	10.49	6.15	8.03			20	7.79
115	25-Apr-01	10.03	6.00	8.16			20	8.06
116	26-Apr-01	8.78	5.69	7.45			20	8.23
117	27-Apr-01	7.70	5.22	6.67			20	8.45
118	28-Apr-01	6.78	4.44	5.58			20	8.43
119	29-Apr-01	6.15	4.13	5.19			20	8.28
120	30-Apr-01	5.84	4.91	5.40			20	7.97
121	1-May-01	5.38	4.13	4.65			20	7.24
122	2-May-01	5.84	3.50	4.52			20	6.64
123	3-May-01	7.24	3.18	5.11			20	6.42
124	4-May-01	8.48	4.44	6.33			20	6.53
125	5-May-01	7.70	6.00	6.76			20	6.66
126	6-May-01	7.55	3.65	5.58			20	6.86
127	7-May-01	8.32	4.28	6.27			20	7.22
128	8-May-01	8.48	5.53	7.15			20	7.66
129	9-May-01	8.32	5.84	7.24			20	8.01
130	10-May-01	8.78	5.53	7.16			20	8.23
131	11-May-01	8.63	5.06	6.92			20	8.25
132	12-May-01	8.78	5.53	7.23			20	8.41
133	13-May-01	8.48	6.31	7.38			20	8.54
134	14-May-01	7.55	5.53	6.66			20	8.43
135	15-May-01	7.09	5.69	6.49			20	8.23
136	16-May-01	6.93	5.84	6.40			20	8.03
137	17-May-01	7.39	4.28	5.84			20	7.84
138	18-May-01	7.86	6.15	6.89			20	7.73
139	19-May-01	8.78	5.38	6.98			20	7.73
140	20-May-01	8.63	6.62	7.64			20	7.75
141	21-May-01	8.78	4.75	6.76			20	7.92
142	22-May-01	10.34	6.15	8.14			20	8.39
143	23-May-01	10.95	6.78	8.93			20	8.96
144	24-May-01	10.18	7.09	8.96			20	9.36
145	25-May-01	10.95	7.70	9.32			20	9.80
146	26-May-01	10.80	7.39	9.13			20	10.09
147	27-May-01	10.18	8.01	9.33			20	10.31
148	28-May-01	11.26	7.86	9.51			20	10.67

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
149	29-May-01	10.49	8.16	9.35			20	10.69
150	30-May-01	9.56	5.84	7.78			20	10.49
151	31-May-01	12.35	8.32	10.08			20	10.80
152	1-Jun-01	12.04	8.78	10.57			20	10.95
153	2-Jun-01	11.57	9.56	10.39			20	11.06
154	3-Jun-01	9.87	7.39	8.44			20	11.02
155	4-Jun-01	7.09	5.06	5.79			20	10.42
156	5-Jun-01	7.39	5.22	6.28			20	9.98
157	6-Jun-01	9.87	6.78	8.09			20	10.03
158	7-Jun-01	9.09	7.24	8.14			20	9.56
159	8-Jun-01	11.73	7.55	9.43			20	9.52
160	9-Jun-01	12.50	9.87	11.16			20	9.65
161	10-Jun-01	11.73	9.71	10.76			20	9.91
162	11-Jun-01	11.41	9.56	10.54			20	10.53
163	12-Jun-01	10.18	7.55	8.83			20	10.93
164	13-Jun-01	7.24	5.84	6.60			20	10.55
165	14-Jun-01	9.09	6.46	7.66			20	10.55
166	15-Jun-01	12.19	7.70	9.60			20	10.62
167	16-Jun-01	12.97	8.32	10.60			20	10.69
168	17-Jun-01	13.28	10.03	11.64			20	10.91
169	18-Jun-01	13.28	9.56	11.45			20	11.18
170	19-Jun-01	13.28	8.78	11.13			20	11.62
171	20-Jun-01	14.51	9.71	12.06			20	12.66
172	21-Jun-01	16.10	11.11	13.53	J		20	13.66
173	22-Jun-01	17.21	12.50	14.87	J		20	14.38
174	23-Jun-01	17.05	13.43	15.43	J		20	14.96
175	24-Jun-01	16.25	13.59	15.07	J		20	15.38
176	25-Jun-01	16.10	12.19	14.18	J		20	15.79
177	26-Jun-01	17.21	12.97	15.02	J		20	16.35
178	27-Jun-01	16.73	13.59	15.27	J		20	16.66
179	28-Jun-01	18.01	14.05	15.94	J		20	16.94
180	29-Jun-01	18.83	13.89	16.36	J		20	17.17
181	30-Jun-01	18.66	14.67	16.78	J		20	17.40
182	1-Jul-01	20.28	14.99	17.53	J		20	17.97
183	2-Jul-01	20.60	15.62	18.17	J		20	18.62
184	3-Jul-01	21.26	15.78	18.55	J		20	19.20
185	4-Jul-01	19.63	16.89	18.32	J		20	19.61
186	5-Jul-01	18.50	16.58	17.12	J		20	19.68
187	6-Jul-01	19.95	14.51	16.87	J		20	19.84
188	7-Jul-01	19.47	14.67	17.20	J		20	19.96
189	8-Jul-01	20.28	15.94	17.89	J		20	19.96
190	9-Jul-01	19.95	16.58	18.19	J		20	19.86
191	10-Jul-01	22.60	16.89	19.56	J		20	20.05
192	11-Jul-01	20.44	17.05	18.85	J		20	20.17
193	12-Jul-01	20.28	16.89	18.50	J		20	20.42
194	13-Jul-01	18.66	15.94	17.41	J		20	20.24
195	14-Jul-01	21.26	14.99	17.83	J		20	20.50
196	15-Jul-01	19.63	17.21	18.19	J		20	20.40
197	16-Jul-01	16.89	15.15	15.76	J		20	19.97

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	16.89	13.13	14.83	J		20	19.15
199	18-Jul-01	16.73	13.74	15.24	J		20	18.62
200	19-Jul-01	19.95	14.20	16.73	J		20	18.57
201	20-Jul-01	19.95	15.78	17.72	J		20	18.76
202	21-Jul-01	20.76	15.94	17.98	J		20	18.69
203	22-Jul-01	20.93	15.94	18.33	J		20	18.87
204	23-Jul-01	21.10	15.46	18.27	J		20	19.47
205	24-Jul-01	20.76	15.46	18.18	J		20	20.03
206	25-Jul-01	21.93	16.10	18.90	J		20	20.77
207	26-Jul-01	21.93	15.94	18.96	J		20	21.05
208	27-Jul-01	22.26	15.78	19.06	J		20	21.38
209	28-Jul-01	20.28	16.58	18.57	J		20	21.31
210	29-Jul-01	18.50	14.67	16.82	J		20	20.97
211	30-Jul-01	16.73	14.51	15.28	J		20	20.34
212	31-Jul-01	14.99	13.13	14.03	J		20	19.52
213	1-Aug-01	18.01	12.04	14.71	J		20	18.96
214	2-Aug-01	20.76	14.20	17.17	J		20	18.79
215	3-Aug-01	20.60	15.78	18.27	J		20	18.55
216	4-Aug-01	19.79	16.10	18.08	J		20	18.48
217	5-Aug-01	21.76	15.46	18.46	J		20	18.95
218	6-Aug-01	22.93	16.58	19.74	J		20	19.83
219	7-Aug-01	23.61	17.69	20.69	J		20	21.07
220	8-Aug-01	23.44	18.18	20.89	J		20	21.84
221	9-Aug-01	22.43	17.05	19.93	J		20	22.08
222	10-Aug-01	22.26	16.41	19.48	J		20	22.32
223	11-Aug-01	21.60	16.25	19.16	J		20	22.58
224	12-Aug-01	22.60	15.94	19.29	J		20	22.70
225	13-Aug-01	22.60	18.01	20.55	J		20	22.65
226	14-Aug-01	22.60	17.53	20.22	J		20	22.50
227	15-Aug-01	22.26	17.05	19.88	J		20	22.34
228	16-Aug-01	22.26	16.41	19.55	J		20	22.31
229	17-Aug-01	21.93	16.10	19.39	J		20	22.26
230	18-Aug-01	21.93	17.05	19.81	J		20	22.31
231	19-Aug-01	20.93	15.78	18.66	J		20	22.07
232	20-Aug-01	20.44	14.51	17.70	J		20	21.76
233	21-Aug-01	20.28	14.51	17.60	J		20	21.43
234	22-Aug-01	19.47	14.67	17.53	J		20	21.03
235	23-Aug-01	19.79	14.83	17.51	J		20	20.68
236	24-Aug-01	20.44	16.10	18.33	J		20	20.47
237	25-Aug-01	20.28	14.20	17.50	J		20	20.23
238	26-Aug-01	20.60	14.51	17.90	J		20	20.19
239	27-Aug-01	21.10	15.46	18.49	J		20	20.28
240	28-Aug-01	20.93	15.78	18.63	J		20	20.37
241	29-Aug-01	20.60	14.67	17.86	J		20	20.53
242	30-Aug-01	20.09	14.50	17.71	J		20	20.58
243	31-Aug-01	20.09	15.13	17.86	J		20	20.53
244	1-Sep-01	19.93	14.97	17.63		S	20	20.48
245	2-Sep-01	19.93	14.65	17.56		S	20	20.38
246	3-Sep-01	20.25	14.97	17.87		S	20	20.26

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
247	4-Sep-01	19.12	14.97	17.50		S	20	20.00
248	5-Sep-01	18.64	15.29	17.05		S	20	19.72
249	6-Sep-01	17.03	13.57	15.42		S	20	19.28
250	7-Sep-01	14.97	12.65	13.53		S	20	18.55
251	8-Sep-01	14.65	9.55	12.31		S	20	17.80
252	9-Sep-01	15.29	9.70	12.76		S	20	17.14
253	10-Sep-01	16.24	10.64	13.62		S	20	16.56
254	11-Sep-01	16.71	11.56	14.52		S	20	16.22
255	12-Sep-01	17.19	12.34	14.95		S	20	16.01
256	13-Sep-01	17.83	13.73	15.90		S	20	16.13
257	14-Sep-01	19.44	14.97	17.18		S	20	16.76
258	15-Sep-01	18.31	13.73	16.48		S	20	17.29
259	16-Sep-01	17.99	13.26	15.96		S	20	17.67
260	17-Sep-01	17.51	14.19	16.14		S	20	17.85
261	18-Sep-01	16.87	13.11	15.30		S	20	17.88
262	19-Sep-01	15.60	11.71	14.07		S	20	17.65
263	20-Sep-01	14.50	10.17	12.79		S	20	17.17
264	21-Sep-01	14.50	10.01	12.55		S	20	16.47
265	22-Sep-01	14.19	9.86	12.39		S	20	15.88
266	23-Sep-01	14.97	10.33	12.93		S	20	15.45
267	24-Sep-01	15.45	10.94	13.44		S	20	15.15
268	25-Sep-01	14.34	10.94	13.18		S	20	14.79
269	26-Sep-01	14.97	12.18	13.73		S	20	14.70
270	27-Sep-01	14.81	11.40	13.46		S	20	14.75
271	28-Sep-01	14.34	12.18	13.52		S	20	14.72
272	29-Sep-01	14.81	11.40	13.19		S	20	14.81
273	30-Sep-01	13.88	9.70	12.20		S	20	14.66
274	1-Oct-01	13.42	9.39	11.89		S	20	14.37
275	2-Oct-01	12.49	9.39	11.40		S	20	14.10
276	3-Oct-01	11.87	8.47	10.55		S	20	13.66
277	4-Oct-01	10.79	7.39	9.51		S	20	13.09
278	5-Oct-01	9.39	5.84	8.02			20	12.38
279	6-Oct-01	8.93	5.06	7.38			20	11.54
280	7-Oct-01	8.63	6.00	7.71			20	10.79
281	8-Oct-01	9.70	8.16	8.94			20	10.26
282	9-Oct-01	9.09	7.70	8.34			20	9.77
283	10-Oct-01	9.24	6.46	7.88			20	9.40
284	11-Oct-01	8.93	7.39	8.08			20	9.13
285	12-Oct-01	7.39	6.46	6.87			20	8.84
286	13-Oct-01	8.01	6.15	6.94			20	8.71
287	14-Oct-01	8.16	6.93	7.46			20	8.65
288	15-Oct-01	8.47	6.00	7.13			20	8.47
289	16-Oct-01	8.01	5.06	6.53			20	8.32
290	17-Oct-01	8.32	6.46	7.30			20	8.18
291	18-Oct-01	6.93	5.22	6.09			20	7.90
292	19-Oct-01	7.55	5.84	6.56			20	7.92
293	20-Oct-01	8.93	7.09	7.79			20	8.05
294	21-Oct-01	7.09	5.53	6.40			20	7.90
295	22-Oct-01	6.93	6.15	6.54			20	7.68
296	23-Oct-01	6.62	5.69	6.12			20	7.48

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
297	24-Oct-01	5.84	4.75	5.31			20	7.13
298	25-Oct-01	4.91	3.82	4.40			20	6.84
299	26-Oct-01	4.44	2.40	3.48			20	6.39
300	27-Oct-01	4.29	2.09	3.25			20	5.73
301	28-Oct-01	5.69	4.29	5.00			21	5.53
302	29-Oct-01	6.46	5.69	6.08			20	5.46
303	30-Oct-01	7.09	6.46	6.75			20	5.53
304	31-Oct-01	7.55	6.78	7.11			20	5.78
305	1-Nov-01	7.09	6.31	6.75			20	6.09
306	2-Nov-01	7.09	6.31	6.65			20	6.47
307	3-Nov-01	6.78	5.22	6.06			20	6.82
308	4-Nov-01	5.06	3.66	4.35			20	6.73
309	5-Nov-01	4.75	2.56	3.64			20	6.49
310	6-Nov-01	5.38	3.98	4.63			20	6.24
311	7-Nov-01	5.06	3.35	4.50			20	5.89
312	8-Nov-01	2.88	1.30	2.01			20	5.29
313	9-Nov-01	1.61	0.02	0.81			20	4.50
314	10-Nov-01	1.14	-0.14	0.32			20	3.70
315	11-Nov-01	1.14	-0.14	0.33			20	3.14
316	12-Nov-01	2.24	0.34	1.20			20	2.78
317	13-Nov-01	2.72	1.14	1.91			20	2.40
318	14-Nov-01	3.66	2.40	2.98			20	2.20
319	15-Nov-01	4.13	2.72	3.34			20	2.38
320	16-Nov-01	4.29	2.72	3.48			20	2.76
321	17-Nov-01	4.44	3.66	4.05			20	3.23
322	18-Nov-01	5.38	3.98	4.57			20	3.84
323	19-Nov-01	3.82	2.72	3.30			20	4.06
324	20-Nov-01	4.44	3.04	3.67			20	4.31
325	21-Nov-01	5.22	4.13	4.55			20	4.53
326	22-Nov-01	4.91	4.13	4.53			20	4.64
327	23-Nov-01	4.91	4.13	4.51			20	4.73
328	24-Nov-01	3.82	2.56	3.11			20	4.64
329	25-Nov-01	2.40	1.77	2.17			20	4.22
330	26-Nov-01	2.72	1.61	2.13			20	4.06
331	27-Nov-01	2.09	0.98	1.63			20	3.72
332	28-Nov-01	0.66	-0.14	0.00			20	3.07
333	29-Nov-01	0.02	-0.14	-0.11			20	2.37
334	30-Nov-01	0.98	-0.14	0.37			20	1.81
335	1-Dec-01	0.66	0.18	0.41			20	1.36
336	2-Dec-01	0.66	-0.14	0.32			20	1.11
337	3-Dec-01	1.30	0.02	0.64			20	0.91
338	4-Dec-01	0.82	-0.14	0.11			20	0.73
339	5-Dec-01	0.02	-0.14	-0.08			20	0.64
340	6-Dec-01	-0.08	-0.14	-0.14			20	0.62
341	7-Dec-01	0.50	-0.14	0.08			20	0.55
342	8-Dec-01	0.18	-0.14	-0.06			20	0.49
343	9-Dec-01	0.02	-0.14	-0.13			20	0.39
344	10-Dec-01	0.18	-0.14	0.04			20	0.23
345	11-Dec-01	0.02	-0.14	-0.05			20	0.12
346	12-Dec-01	-0.08	-0.14	-0.14			20	0.11
347	13-Dec-01	-0.08	-0.14	-0.14			20	0.11

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Bear Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 760 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
348	14-Dec-01	0.02	-0.14	-0.12			20	0.04
349	15-Dec-01	-0.08	-0.14	-0.14			20	0.00
350	16-Dec-01	-0.08	-0.14	-0.14			20	-0.01
351	17-Dec-01	0.02	-0.14	-0.12			20	-0.04
352	18-Dec-01	0.02	-0.14	-0.06			20	-0.04
353	19-Dec-01	-0.08	-0.14	-0.14			20	-0.04
354	20-Dec-01	-0.08	-0.14	-0.14			20	-0.04
355	21-Dec-01	-0.08	-0.14	-0.14			20	-0.05
356	22-Dec-01	0.02	-0.14	-0.07			20	-0.04
357	23-Dec-01	0.02	-0.14	-0.08			20	-0.02
358	24-Dec-01	0.02	-0.14	-0.08			20	-0.02
359	25-Dec-01	0.02	-0.14	0.01			20	-0.02
360	26-Dec-01	0.02	-0.14	0.01			20	-0.01
361	27-Dec-01	0.02	-0.14	-0.06			20	0.01
362	28-Dec-01	-0.08	-0.14	-0.14			20	0.01
363	29-Dec-01	-0.08	-0.14	-0.14			20	-0.01
364	30-Dec-01	-0.08	-0.14	-0.14			20	-0.02
365	31-Dec-01	-0.08	-0.14	-0.14			20	-0.04

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
1	1-Jan-01	0.31	0.00	0.15			20	
2	2-Jan-01	0.15	0.00	0.09			20	
3	3-Jan-01	0.15	0.00	0.07			20	
4	4-Jan-01	0.31	0.00	0.11			20	
5	5-Jan-01	0.31	0.15	0.18			20	
6	6-Jan-01	0.15	0.00	0.12			20	
7	7-Jan-01	0.15	0.00	0.01			20	0.22
8	8-Jan-01	0.15	0.00	0.11			20	0.20
9	9-Jan-01	0.03	0.00	0.00			20	0.18
10	10-Jan-01	0.15	0.00	0.08			20	0.18
11	11-Jan-01	0.15	0.00	0.05			20	0.16
12	12-Jan-01	0.15	0.00	0.11			20	0.13
13	13-Jan-01	0.15	0.15	0.15			20	0.13
14	14-Jan-01	0.31	0.00	0.15			20	0.16
15	15-Jan-01	0.15	0.15	0.15			20	0.16
16	16-Jan-01	0.31	0.00	0.12			20	0.20
17	17-Jan-01	0.15	0.00	0.05			20	0.20
18	18-Jan-01	0.15	0.00	0.08			20	0.20
19	19-Jan-01	0.15	0.00	0.09			20	0.20
20	20-Jan-01	0.15	0.00	0.11			20	0.20
21	21-Jan-01	0.31	0.00	0.13			20	0.20
22	22-Jan-01	0.31	0.15	0.19			20	0.22
23	23-Jan-01	0.31	0.00	0.16			20	0.22
24	24-Jan-01	0.15	0.00	0.09			20	0.22
25	25-Jan-01	0.31	0.15	0.20			20	0.24
26	26-Jan-01	0.31	0.00	0.14			20	0.26
27	27-Jan-01	0.31	0.00	0.14			20	0.29
28	28-Jan-01	0.03	0.00	0.00			20	0.25
29	29-Jan-01	0.15	0.00	0.06			20	0.22
30	30-Jan-01	0.03	0.00	0.00			20	0.18
31	31-Jan-01	0.15	0.00	0.04			20	0.18
32	1-Feb-01	0.31	0.15	0.17			20	0.18
33	2-Feb-01	0.15	0.00	0.13			20	0.16
34	3-Feb-01	0.31	0.15	0.20			20	0.16
35	4-Feb-01	0.31	0.00	0.17			20	0.20
36	5-Feb-01	0.47	0.00	0.21			20	0.25
37	6-Feb-01	0.47	0.15	0.26			20	0.31
38	7-Feb-01	0.31	0.00	0.12			20	0.33
39	8-Feb-01	0.15	0.00	0.04			20	0.31
40	9-Feb-01	0.15	0.00	0.06			20	0.31
41	10-Feb-01	0.15	0.00	0.04			20	0.29
42	11-Feb-01	0.15	0.00	0.06			20	0.26
43	12-Feb-01	0.15	0.00	0.04			20	0.22
44	13-Feb-01	0.47	0.00	0.20			20	0.22
45	14-Feb-01	0.31	0.00	0.13			20	0.22
46	15-Feb-01	0.31	0.00	0.17			20	0.24
47	16-Feb-01	0.64	0.15	0.33			20	0.31

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	1	1%	
19 °C Average	20	22%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	26	28%	
9 °C Average Spring	45	49%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	48	52%	
9 °C Average Fall	53	57%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	74	40%	
9 °C Average Total *	98	53%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	72	78%	
Juvenile Days Eval'd w/in Dates	92	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	36	59%	
Spawning Days Eval'd w/in Dates	61	1-Sep	31-Oct

NOTES

Comments: Combined data from two deployments. Stream is a priori natural. Monitored as state Outstanding Resource Water nominee. Exceeds Idaho's cold water aquatic life daily maximum criterion less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
48	17-Feb-01	0.80	0.31	0.46			20	0.40
49	18-Feb-01	0.80	0.31	0.49			20	0.50
50	19-Feb-01	0.80	0.15	0.42			20	0.59
51	20-Feb-01	0.96	0.15	0.37			20	0.66
52	21-Feb-01	0.96	0.31	0.54			20	0.75
53	22-Feb-01	1.12	0.47	0.69			20	0.87
54	23-Feb-01	1.28	0.64	0.91			20	0.96
55	24-Feb-01	1.60	0.80	1.15			20	1.07
56	25-Feb-01	1.28	0.64	1.02			20	1.14
57	26-Feb-01	1.44	0.64	1.03			20	1.23
58	27-Feb-01	1.28	0.64	0.89			20	1.28
59	28-Feb-01	0.64	0.15	0.27			20	1.23
60	1-Mar-01	0.64	0.00	0.27			20	1.17
61	2-Mar-01	1.12	0.31	0.64			20	1.14
62	3-Mar-01	1.44	0.64	1.02			20	1.12
63	4-Mar-01	2.07	1.28	1.62			20	1.23
64	5-Mar-01	2.39	1.60	1.97			20	1.37
65	6-Mar-01	2.55	1.76	2.09			20	1.55
66	7-Mar-01	2.39	1.76	1.96			20	1.80
67	8-Mar-01	2.39	1.60	1.91			20	2.05
68	9-Mar-01	2.86	2.23	2.49			20	2.30
69	10-Mar-01	2.86	1.91	2.41			20	2.50
70	11-Mar-01	3.02	2.55	2.72			20	2.64
71	12-Mar-01	3.02	2.55	2.79			20	2.73
72	13-Mar-01	3.65	3.18	3.37			20	2.88
73	14-Mar-01	3.96	3.34	3.67			20	3.11
74	15-Mar-01	3.34	2.71	3.09			20	3.24
75	16-Mar-01	3.81	3.18	3.48			20	3.38
76	17-Mar-01	3.49	2.86	3.20			20	3.47
77	18-Mar-01	4.59	3.49	4.07			20	3.69
78	19-Mar-01	4.75	4.43	4.61			20	3.94
79	20-Mar-01	4.90	3.81	4.31			20	4.12
80	21-Mar-01	4.90	3.02	3.90			20	4.25
81	22-Mar-01	4.59	2.71	3.68			20	4.43
82	23-Mar-01	5.37	3.02	4.02			20	4.66
83	24-Mar-01	5.84	4.12	4.96			20	4.99
84	25-Mar-01	5.68	3.65	4.21			20	5.15
85	26-Mar-01	4.27	3.49	3.88			20	5.08
86	27-Mar-01	5.37	3.34	4.17			20	5.15
87	28-Mar-01	5.52	4.27	4.89			20	5.23
88	29-Mar-01	6.15	4.59	5.32			20	5.46
89	30-Mar-01	6.15	5.06	5.43			20	5.57
90	31-Mar-01	5.21	3.81	4.24			20	5.48
91	1-Apr-01	6.30	3.96	4.75			19	5.57
92	2-Apr-01	6.15	4.59	5.13			20	5.84
93	3-Apr-01	5.68	3.34	4.30			20	5.88
94	4-Apr-01	5.52	4.12	4.75			20	5.88
95	5-Apr-01	5.52	3.34	4.49			20	5.79
96	6-Apr-01	5.68	3.96	4.69			20	5.72
97	7-Apr-01	5.37	4.43	4.92			20	5.75

STATISTICS	
Maximum Daily Maximum (MDM)	22.1 ºC
Maximum 7-Day Maximum (MWM)	21.3 ºC
Maximum Daily Average (MDA)	21.3 ºC
Maximum 7-Day Average (MWA)	20.4 ºC
Mean Daily Maximum	8.4 ºC
Mean Daily Average	7.7 ºC
Mean Daily Minimum	7.1 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	7.7 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	119	98%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	5.21	3.81	4.37			20	5.59
99	9-Apr-01	4.75	3.65	4.20			20	5.39
100	10-Apr-01	4.90	3.81	4.45			20	5.28
101	11-Apr-01	5.21	4.12	4.74			20	5.23
102	12-Apr-01	5.21	4.43	4.84			20	5.19
103	13-Apr-01	5.37	4.27	4.86			20	5.15
104	14-Apr-01	5.37	3.96	4.80			20	5.15
105	15-Apr-01	6.30	4.12	5.21			20	5.30
106	16-Apr-01	6.76	5.06	6.08			20	5.59
107	17-Apr-01	8.16	5.99	6.98			20	6.05
108	18-Apr-01	8.31	7.07	7.65			20	6.50
109	19-Apr-01	7.85	6.30	7.02			20	6.87
110	20-Apr-01	6.92	5.06	5.68			20	7.10
111	21-Apr-01	6.61	4.90	5.66			20	7.27
112	22-Apr-01	7.07	5.06	5.90			20	7.38
113	23-Apr-01	7.69	5.99	6.67			20	7.52
114	24-Apr-01	9.70	6.76	7.88			20	7.74
115	25-Apr-01	9.54	6.76	8.26			20	7.91
116	26-Apr-01	9.24	6.45	7.77			20	8.11
117	27-Apr-01	8.16	5.84	6.86			20	8.29
118	28-Apr-01	7.07	4.90	5.84			20	8.35
119	29-Apr-01	6.15	4.59	5.39			20	8.22
120	30-Apr-01	5.99	5.37	5.63			20	7.98
121	1-May-01	5.68	4.43	5.00			20	7.40
122	2-May-01	5.84	3.81	4.71			20	6.88
123	3-May-01	6.92	3.96	5.26			20	6.54
124	4-May-01	8.31	5.06	6.46			20	6.57
125	5-May-01	8.16	6.61	7.15			20	6.72
126	6-May-01	7.22	4.27	5.80			20	6.87
127	7-May-01	8.16	4.90	6.36			20	7.18
128	8-May-01	8.46	5.99	7.29			20	7.58
129	9-May-01	8.31	6.30	7.41			20	7.93
130	10-May-01	8.62	5.99	7.31			20	8.18
131	11-May-01	8.46	5.68	7.13			20	8.20
132	12-May-01	8.62	5.99	7.36			20	8.26
133	13-May-01	8.62	6.45	7.43			20	8.46
134	14-May-01	7.69	5.99	6.82			20	8.40
135	15-May-01	7.38	5.99	6.61			20	8.24
136	16-May-01	6.92	6.30	6.62			20	8.04
137	17-May-01	7.38	4.90	6.03			20	7.87
138	18-May-01	7.54	6.61	7.05			20	7.74
139	19-May-01	8.62	5.84	7.04			20	7.74
140	20-May-01	8.62	7.07	7.87			20	7.74
141	21-May-01	8.46	5.52	6.94			20	7.85
142	22-May-01	10.01	6.76	8.11			20	8.22
143	23-May-01	10.47	7.38	8.93			20	8.73
144	24-May-01	10.32	7.54	9.09			20	9.15
145	25-May-01	10.94	8.00	9.40			20	9.63
146	26-May-01	10.63	7.85	9.36			20	9.92
147	27-May-01	10.47	8.46	9.55			20	10.19
148	28-May-01	11.09	8.31	9.71			20	10.56

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msrmts per day	7-Day Average of High
149	29-May-01	10.94	8.77	9.73			20	10.69
150	30-May-01	9.54	6.76	8.18			20	10.56
151	31-May-01	12.02	8.92	10.04			20	10.80
152	1-Jun-01	12.02	9.54	10.81			20	10.96
153	2-Jun-01	11.87	10.01	10.77			20	11.14
154	3-Jun-01	10.01	8.16	8.97			20	11.07
155	4-Jun-01	7.85	5.52	6.36			20	10.61
156	5-Jun-01	7.54	5.84	6.39			20	10.12
157	6-Jun-01	9.70	7.22	8.04			20	10.14
158	7-Jun-01	9.54	7.85	8.43			20	9.79
159	8-Jun-01	11.09	8.00	9.19			20	9.66
160	9-Jun-01	12.33	10.32	11.19			20	9.72
161	10-Jun-01	12.02	10.32	10.98			20	10.01
162	11-Jun-01	11.40	9.85	10.62			20	10.52
163	12-Jun-01	10.94	8.31	9.46			20	11.00
164	13-Jun-01	8.16	6.45	6.99			20	10.78
165	14-Jun-01	9.24	6.92	7.77			20	10.74
166	15-Jun-01	11.56	8.31	9.57			20	10.81
167	16-Jun-01	12.49	8.92	10.61			20	10.83
168	17-Jun-01	12.80	10.63	11.78			20	10.94
169	18-Jun-01	12.80	10.16	11.51			20	11.14
170	19-Jun-01	12.95	9.70	11.34			20	11.43
171	20-Jun-01	14.03	10.47	12.14			20	12.27
172	21-Jun-01	15.60	11.87	13.55	J		20	13.18
173	22-Jun-01	16.71	13.26	14.89	J		20	13.91
174	23-Jun-01	16.87	14.19	15.62	J		20	14.54
175	24-Jun-01	16.55	14.34	15.40	J		20	15.07
176	25-Jun-01	15.60	13.11	14.42	J		20	15.47
177	26-Jun-01	16.71	13.87	15.02	J		20	16.01
178	27-Jun-01	16.55	14.65	15.62	J		20	16.37
179	28-Jun-01	17.35	14.81	15.90	J		20	16.62
180	29-Jun-01	18.15	14.97	16.42	J		20	16.83
181	30-Jun-01	18.15	15.92	17.00	J		20	17.01
182	1-Jul-01	19.27	16.24	17.54	J		20	17.40
183	2-Jul-01	19.60	16.87	18.22	J		20	17.97
184	3-Jul-01	20.09	17.19	18.58	J		20	18.45
185	4-Jul-01	20.09	17.82	18.79	J		20	18.96
186	5-Jul-01	19.11	17.51	18.08	J		20	19.21
187	6-Jul-01	18.63	16.07	17.09	J		20	19.28
188	7-Jul-01	18.79	16.24	17.59	J		20	19.37
189	8-Jul-01	19.27	17.03	18.12	J		20	19.37
190	9-Jul-01	19.44	17.82	18.67	J		20	19.35
191	10-Jul-01	20.57	18.31	19.28	J		20	19.41
192	11-Jul-01	20.74	18.46	19.51	J		20	19.51
193	12-Jul-01	19.27	18.15	18.86	J		20	19.53
194	13-Jul-01	19.11	17.51	18.20	J		20	19.60
195	14-Jul-01	19.11	16.71	17.84	J		20	19.64
196	15-Jul-01	19.60	18.31	18.91	J		20	19.69
197	16-Jul-01	18.15	15.92	16.76	J		20	19.51

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	15.92	14.50	15.31	J		20	18.84
199	18-Jul-01	16.39	14.97	15.75	J		20	18.22
200	19-Jul-01	17.82	15.76	16.63	J		20	18.01
201	20-Jul-01	18.31	17.35	17.86	J		20	17.90
202	21-Jul-01	18.79	17.19	18.08	J		20	17.85
203	22-Jul-01	19.44	17.82	18.69	J		20	17.83
204	23-Jul-01	19.44	17.99	18.77	J		20	18.02
205	24-Jul-01	19.60	18.15	18.94	J		20	18.54
206	25-Jul-01	19.92	18.46	19.14	J		20	19.05
207	26-Jul-01	19.92	18.63	19.36	J		20	19.35
208	27-Jul-01	20.09	18.63	19.36	J		20	19.60
209	28-Jul-01	19.76	18.79	19.36	J		20	19.74
210	29-Jul-01	18.79	16.87	17.83	J		20	19.65
211	30-Jul-01	16.71	15.76	16.38	J		20	19.26
212	31-Jul-01	15.60	14.50	15.02	J		20	18.68
213	1-Aug-01	15.92	13.57	14.60	J		20	18.11
214	2-Aug-01	18.15	16.07	16.95	J		20	17.86
215	3-Aug-01	19.27	17.99	18.61	J		20	17.74
216	4-Aug-01	19.11	18.31	18.63	J		20	17.65
217	5-Aug-01	19.44	17.51	18.30	J		20	17.74
218	6-Aug-01	20.74	18.95	19.68	J		20	18.32
219	7-Aug-01	21.72	20.25	20.79	J		20	19.19
220	8-Aug-01	22.06	20.74	21.26	J		20	20.07
221	9-Aug-01	21.39	20.09	20.71	J		20	20.53
222	10-Aug-01	20.90	19.44	20.08	J		20	20.77
223	11-Aug-01	20.57	19.11	19.77	J		20	20.97
224	12-Aug-01	20.74	18.95	19.74	J		20	21.16
225	13-Aug-01	21.89	19.92	20.75	J		20	21.32
226	14-Aug-01	21.56	20.09	20.76	J		20	21.30
227	15-Aug-01	21.39	19.76	20.53	J		20	21.21
228	16-Aug-01	21.06	19.44	20.20	J		20	21.16
229	17-Aug-01	20.74	18.79	19.78	J		20	21.14
230	18-Aug-01	20.74	19.11	19.91	J		20	21.16
231	19-Aug-01	20.09	18.46	19.24	J		20	21.07
232	20-Aug-01	19.11	17.19	18.22	J		20	20.67
233	21-Aug-01	18.95	17.03	17.97	J		20	20.30
234	22-Aug-01	18.63	17.03	17.90	J		20	19.90
235	23-Aug-01	18.63	16.87	17.79	J		20	19.56
236	24-Aug-01	19.27	17.19	18.06	J		20	19.35
237	25-Aug-01	18.95	16.87	17.92	J		20	19.09
238	26-Aug-01	19.27	16.71	17.95	J		20	18.97
239	27-Aug-01	19.76	17.19	18.45	J		20	19.07
240	28-Aug-01	19.76	17.66	18.77	J		20	19.18
241	29-Aug-01	19.27	17.03	18.20	J		20	19.27
242	30-Aug-01	19.11	16.71	17.97	J		20	19.34
243	31-Aug-01	18.95	16.87	17.96	J		20	19.30
244	1-Sep-01	18.79	16.87	17.88		S	20	19.27
245	2-Sep-01	19.58	16.71	18.15		S	20	19.32
246	3-Sep-01	19.58	16.68	18.15		S	20	19.29

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
247	4-Sep-01	19.41	16.84	18.17		S	20	19.24
248	5-Sep-01	18.44	16.84	17.51		S	20	19.12
249	6-Sep-01	17.00	15.73	16.36		S	20	18.82
250	7-Sep-01	15.89	13.84	14.96		S	20	18.38
251	8-Sep-01	14.00	12.30	13.20		S	20	17.70
252	9-Sep-01	14.46	11.99	13.10		S	20	16.97
253	10-Sep-01	15.26	12.45	13.80		S	20	16.35
254	11-Sep-01	16.05	13.38	14.65		S	20	15.87
255	12-Sep-01	16.52	14.00	15.22		S	20	15.60
256	13-Sep-01	17.47	15.10	16.25		S	20	15.66
257	14-Sep-01	18.60	16.21	17.29		S	20	16.05
258	15-Sep-01	18.12	16.21	17.27		S	20	16.64
259	16-Sep-01	17.47	15.26	16.47		S	20	17.07
260	17-Sep-01	17.47	15.57	16.47		S	20	17.39
261	18-Sep-01	17.00	15.41	16.25		S	20	17.52
262	19-Sep-01	15.89	14.15	14.99		S	20	17.43
263	20-Sep-01	14.46	12.61	13.60		S	20	17.00
264	21-Sep-01	14.00	11.83	13.04		S	20	16.34
265	22-Sep-01	13.84	11.67	12.86		S	20	15.73
266	23-Sep-01	14.31	11.83	13.14		S	20	15.28
267	24-Sep-01	14.62	12.30	13.51		S	20	14.87
268	25-Sep-01	14.62	12.61	13.78		S	20	14.53
269	26-Sep-01	14.78	13.23	14.03		S	20	14.38
270	27-Sep-01	14.31	13.07	13.80		S	20	14.35
271	28-Sep-01	14.62	13.38	13.98		S	20	14.44
272	29-Sep-01	14.00	12.61	13.40		S	20	14.47
273	30-Sep-01	13.54	11.83	12.78		S	20	14.36
274	1-Oct-01	13.07	11.21	12.26		S	20	14.13
275	2-Oct-01	12.61	11.06	11.96		S	20	13.85
276	3-Oct-01	11.83	10.28	11.23		S	20	13.43
277	4-Oct-01	10.90	9.19	10.16		S	20	12.94
278	5-Oct-01	9.66	7.96	8.83			20	12.23
279	6-Oct-01	8.57	6.87	7.87			20	11.45
280	7-Oct-01	9.04	7.34	8.29			20	10.81
281	8-Oct-01	9.66	8.57	9.10		S	20	10.32
282	9-Oct-01	9.35	8.88	9.16		S	20	9.86
283	10-Oct-01	9.04	7.96	8.54			20	9.46
284	11-Oct-01	9.04	8.42	8.71			20	9.19
285	12-Oct-01	8.42	7.34	7.93			20	9.02
286	13-Oct-01	8.11	7.19	7.57			20	8.95
287	14-Oct-01	8.26	7.80	8.03			20	8.84
288	15-Oct-01	8.26	7.50	7.83			20	8.64
289	16-Oct-01	7.65	7.03	7.36			20	8.40
290	17-Oct-01	8.11	7.19	7.71			20	8.26
291	18-Oct-01	7.50	6.87	7.15			20	8.04
292	19-Oct-01	7.19	6.87	7.01			20	7.87
293	20-Oct-01	8.11	7.19	7.68			20	7.87
294	21-Oct-01	8.11	6.87	7.38			20	7.85
295	22-Oct-01	7.34	7.03	7.23			20	7.72

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
296	23-Oct-01	7.19	6.25	6.77			20	7.65
297	24-Oct-01	6.25	5.62	5.90			20	7.38
298	25-Oct-01	5.62	5.16	5.34			20	7.12
299	26-Oct-01	5.16	4.06	4.50			20	6.83
300	27-Oct-01	4.37	4.06	4.21			20	6.29
301	28-Oct-01	5.62	4.37	5.22			21	5.94
302	29-Oct-01	6.56	5.78	6.16			20	5.82
303	30-Oct-01	7.19	6.56	6.89			20	5.82
304	31-Oct-01	7.65	7.19	7.38			20	6.02
305	1-Nov-01	7.50	7.03	7.20			20	6.29
306	2-Nov-01	7.19	6.87	7.04			20	6.58
307	3-Nov-01	7.34	6.56	6.92			20	7.01
308	4-Nov-01	6.56	5.00	5.58			20	7.14
309	5-Nov-01	5.00	4.06	4.50			20	6.92
310	6-Nov-01	5.31	4.85	5.13			20	6.65
311	7-Nov-01	5.47	4.53	5.04			20	6.34
312	8-Nov-01	4.53	2.33	3.23			20	5.91
313	9-Nov-01	2.49	1.37	1.81			20	5.24
314	10-Nov-01	1.54	0.90	1.13			20	4.41
315	11-Nov-01	1.22	0.74	0.97			20	3.65
316	12-Nov-01	1.85	1.06	1.45			20	3.20
317	13-Nov-01	2.65	2.01	2.29			20	2.82
318	14-Nov-01	3.75	2.65	3.21			20	2.58
319	15-Nov-01	3.91	3.60	3.76			20	2.49
320	16-Nov-01	4.06	3.75	3.94			20	2.71
321	17-Nov-01	4.85	4.22	4.59			20	3.18
322	18-Nov-01	4.85	4.69	4.71			20	3.70
323	19-Nov-01	4.85	3.75	4.15			20	4.13
324	20-Nov-01	4.22	3.75	3.95			20	4.36
325	21-Nov-01	5.16	4.37	4.78			20	4.56
326	22-Nov-01	5.16	4.85	5.03			20	4.74
327	23-Nov-01	5.16	5.00	5.06			20	4.89
328	24-Nov-01	5.00	3.60	4.14			20	4.91
329	25-Nov-01	3.44	2.81	3.04			20	4.71
330	26-Nov-01	2.96	2.65	2.81			20	4.44
331	27-Nov-01	2.81	2.17	2.55			20	4.24
332	28-Nov-01	2.01	0.41	1.09			20	3.79
333	29-Nov-01	0.57	0.41	0.48			20	3.14
334	30-Nov-01	0.74	0.57	0.65			20	2.50
335	1-Dec-01	1.06	0.74	0.96			20	1.94
336	2-Dec-01	1.06	0.90	0.93			20	1.60
337	3-Dec-01	1.22	0.90	1.12			20	1.35
338	4-Dec-01	1.22	0.57	0.97			20	1.13
339	5-Dec-01	0.57	0.25	0.45			20	0.92
340	6-Dec-01	0.41	0.25	0.33			20	0.90
341	7-Dec-01	0.74	0.41	0.51			20	0.90
342	8-Dec-01	0.57	0.25	0.42			20	0.83
343	9-Dec-01	0.57	0.25	0.36			20	0.76
344	10-Dec-01	0.41	0.25	0.34			20	0.64
345	11-Dec-01	0.57	0.25	0.31			20	0.55
346	12-Dec-01	0.25	0.25	0.25			20	0.50

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Moose Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 678 M
Waterbody ID Number: 1

Import File : ... y\Selway 2001\Selway abv Moose Cr 2001.txt
Calibration Factor : -0.03

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msrmts per day	7-Day Average of High
347	13-Dec-01	0.25	0.25	0.25			20	0.48
348	14-Dec-01	0.41	0.25	0.27			20	0.43
349	15-Dec-01	0.41	0.25	0.27			20	0.41
350	16-Dec-01	0.25	0.25	0.25			20	0.36
351	17-Dec-01	0.57	0.25	0.37			20	0.39
352	18-Dec-01	0.25	0.25	0.25			20	0.34
353	19-Dec-01	0.25	0.25	0.25			20	0.34
354	20-Dec-01	0.25	0.25	0.25			20	0.34
355	21-Dec-01	0.57	0.25	0.35			20	0.36
356	22-Dec-01	0.41	0.25	0.36			20	0.36
357	23-Dec-01	0.25	0.25	0.25			20	0.36
358	24-Dec-01	0.25	0.09	0.23			20	0.32
359	25-Dec-01	0.25	0.09	0.24			20	0.32
360	26-Dec-01	0.25	0.25	0.25			20	0.32
361	27-Dec-01	0.25	0.09	0.21			20	0.32
362	28-Dec-01	0.25	0.09	0.22			20	0.27
363	29-Dec-01	0.25	0.09	0.21			20	0.25
364	30-Dec-01	0.25	0.25	0.25			20	0.25
365	31-Dec-01	0.25	0.25	0.25			20	0.25

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	0.96	0.65	0.80			20	
2	2-Jan-01	0.65	0.33	0.47			20	
3	3-Jan-01	0.65	0.49	0.55			20	
4	4-Jan-01	0.65	0.33	0.50			20	
5	5-Jan-01	0.81	0.49	0.70			20	
6	6-Jan-01	0.81	0.49	0.64			20	
7	7-Jan-01	0.49	0.16	0.20			20	0.72
8	8-Jan-01	0.33	0.16	0.22			20	0.63
9	9-Jan-01	0.16	0.16	0.16			20	0.56
10	10-Jan-01	0.16	0.16	0.16			20	0.49
11	11-Jan-01	0.33	0.16	0.22			20	0.44
12	12-Jan-01	0.49	0.33	0.35			20	0.40
13	13-Jan-01	0.65	0.33	0.43			20	0.37
14	14-Jan-01	0.65	0.33	0.49			20	0.40
15	15-Jan-01	0.65	0.33	0.46			20	0.44
16	16-Jan-01	0.65	0.33	0.43			20	0.51
17	17-Jan-01	0.49	0.16	0.35			20	0.56
18	18-Jan-01	0.16	0.16	0.16			20	0.53
19	19-Jan-01	0.49	0.16	0.31			20	0.53
20	20-Jan-01	0.49	0.33	0.48			20	0.51
21	21-Jan-01	0.81	0.33	0.55			20	0.53
22	22-Jan-01	0.96	0.65	0.80			20	0.58
23	23-Jan-01	0.81	0.65	0.79			20	0.60
24	24-Jan-01	0.81	0.33	0.52			20	0.65
25	25-Jan-01	0.81	0.49	0.62			20	0.74
26	26-Jan-01	0.65	0.49	0.56			20	0.76
27	27-Jan-01	0.81	0.33	0.54			20	0.81
28	28-Jan-01	0.33	0.16	0.17			20	0.74
29	29-Jan-01	0.16	0.00	0.02			20	0.63
30	30-Jan-01	0.00	0.00	0.00			20	0.51
31	31-Jan-01	0.16	0.00	0.02			20	0.42
32	1-Feb-01	0.49	0.16	0.24			20	0.37
33	2-Feb-01	0.65	0.16	0.41			20	0.37
34	3-Feb-01	0.96	0.33	0.56			20	0.39
35	4-Feb-01	0.81	0.49	0.68			20	0.46
36	5-Feb-01	0.96	0.16	0.51			20	0.58
37	6-Feb-01	1.29	0.81	1.03			20	0.76
38	7-Feb-01	1.13	0.33	0.90			20	0.90
39	8-Feb-01	0.33	0.16	0.21			20	0.88
40	9-Feb-01	0.33	0.16	0.21			20	0.83
41	10-Feb-01	0.49	0.16	0.32			20	0.76
42	11-Feb-01	0.65	0.33	0.42			20	0.74
43	12-Feb-01	0.49	0.16	0.31			20	0.67
44	13-Feb-01	1.13	0.33	0.63			20	0.65
45	14-Feb-01	0.96	0.49	0.67			20	0.63
46	15-Feb-01	0.65	0.33	0.53			20	0.67
47	16-Feb-01	1.44	0.49	0.85			20	0.83

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	3	4%	
19 °C Average	23	27%	
Days Evaluated & Date Range	84	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	26	28%	
9 °C Average Spring	44	48%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	30	35%	
9 °C Average Fall	37	44%	
Fall Days Eval'd w/in Dates	85	15-Aug	15-Nov
13 °C Instantaneous Total *	56	32%	
9 °C Average Total *	81	46%	
Tot Days Eval'd w/in Both Dates *	177		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	0	0%	
Juvenile Days Eval'd w/in Dates	0	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	0	0%	
Spawning Days Eval'd w/in Dates	0	1-Sep	31-Oct

NOTES

Comments: Data from one deployment wrapped so that fall 2000 data follows summer 2001data. Data gap from 9-5 thru 9-12. Stream is *a priori* natural. Monitored as state Outstanding Resource Water nominee. Temperature exceeds Idaho's cold water aquatic life daily maximum criterion less than 10% of the critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
48	17-Feb-01	1.92	1.13	1.48			20	1.03
49	18-Feb-01	1.92	1.44	1.67			20	1.22
50	19-Feb-01	2.08	1.60	1.78			20	1.44
51	20-Feb-01	1.76	1.13	1.42			20	1.53
52	21-Feb-01	2.24	1.29	1.83			20	1.72
53	22-Feb-01	2.39	1.92	2.09			20	1.96
54	23-Feb-01	2.39	2.08	2.21			20	2.10
55	24-Feb-01	2.55	1.92	2.21			20	2.19
56	25-Feb-01	2.24	1.76	1.94			20	2.24
57	26-Feb-01	1.92	1.44	1.69			20	2.21
58	27-Feb-01	1.60	0.96	1.30			20	2.19
59	28-Feb-01	1.29	0.49	0.73			20	2.05
60	1-Mar-01	1.13	0.16	0.54			20	1.87
61	2-Mar-01	1.76	0.81	1.16			20	1.78
62	3-Mar-01	2.08	1.29	1.58			20	1.72
63	4-Mar-01	2.55	1.60	1.95			20	1.76
64	5-Mar-01	3.03	2.08	2.55			20	1.92
65	6-Mar-01	3.34	2.24	2.65			20	2.17
66	7-Mar-01	3.34	2.39	2.71			20	2.46
67	8-Mar-01	3.34	2.08	2.75			20	2.78
68	9-Mar-01	3.49	3.03	3.26			20	3.02
69	10-Mar-01	3.34	2.71	3.02			20	3.20
70	11-Mar-01	3.34	3.03	3.19			20	3.32
71	12-Mar-01	3.65	2.86	3.22			20	3.41
72	13-Mar-01	4.28	3.34	3.72			20	3.54
73	14-Mar-01	4.28	3.65	3.91			20	3.67
74	15-Mar-01	3.81	3.18	3.52			20	3.74
75	16-Mar-01	4.28	3.65	3.87			20	3.85
76	17-Mar-01	4.28	3.49	3.89			20	3.99
77	18-Mar-01	4.90	3.81	4.31			20	4.21
78	19-Mar-01	5.05	4.59	4.80			20	4.41
79	20-Mar-01	4.90	3.81	4.28			20	4.50
80	21-Mar-01	4.90	3.81	4.16			20	4.59
81	22-Mar-01	4.28	3.49	3.89			20	4.66
82	23-Mar-01	4.59	3.81	4.08			20	4.70
83	24-Mar-01	5.21	4.43	4.73			20	4.83
84	25-Mar-01	5.21	3.96	4.55			20	4.88
85	26-Mar-01	4.28	3.81	3.99			20	4.77
86	27-Mar-01	4.90	3.81	4.24			20	4.77
87	28-Mar-01	5.21	4.59	4.91			20	4.81
88	29-Mar-01	5.68	4.90	5.26			20	5.01
89	30-Mar-01	5.68	5.21	5.50			20	5.17
90	31-Mar-01	5.52	4.28	4.65			20	5.21
91	1-Apr-01	5.52	4.12	4.54			19	5.26
92	2-Apr-01	5.68	4.90	5.33			20	5.46
93	3-Apr-01	5.21	4.12	4.51			20	5.50
94	4-Apr-01	5.36	4.74	5.21			20	5.52
95	5-Apr-01	5.52	4.28	4.88			20	5.50
96	6-Apr-01	5.52	4.74	5.05			20	5.48
97	7-Apr-01	5.21	4.90	5.08			20	5.43

STATISTICS	
Maximum Daily Maximum (MDM)	22.1 ºC
Maximum 7-Day Maximum (MWM)	21.7 ºC
Maximum Daily Average (MDA)	21.2 ºC
Maximum 7-Day Average (MWA)	20.6 ºC
Mean Daily Maximum	7.9 ºC
Mean Daily Average	7.3 ºC
Mean Daily Minimum	6.8 ºC
Minimum 7-Day Minimum	0.1 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	7.3 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	106	93%	
Nmbr of 7-Day Avg's w/in Dates	114	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	84	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
98	8-Apr-01	5.21	4.43	4.76			20	5.39
99	9-Apr-01	4.59	4.28	4.46			20	5.23
100	10-Apr-01	5.05	4.43	4.70			20	5.21
101	11-Apr-01	5.21	4.74	5.00			20	5.19
102	12-Apr-01	5.36	4.90	5.11			20	5.16
103	13-Apr-01	5.36	5.05	5.21			20	5.14
104	14-Apr-01	5.36	4.59	5.11			20	5.16
105	15-Apr-01	5.83	4.90	5.40			20	5.25
106	16-Apr-01	6.61	5.83	6.21			20	5.54
107	17-Apr-01	7.54	6.61	6.93			20	5.90
108	18-Apr-01	7.85	7.38	7.61			20	6.27
109	19-Apr-01	7.69	6.76	7.22			20	6.61
110	20-Apr-01	7.23	5.52	6.12			20	6.87
111	21-Apr-01	6.14	5.52	5.76			20	6.98
112	22-Apr-01	6.76	5.52	6.13			20	7.12
113	23-Apr-01	7.23	6.45	6.79			20	7.21
114	24-Apr-01	8.77	7.08	7.55			20	7.38
115	25-Apr-01	8.77	7.23	8.08			20	7.51
116	26-Apr-01	8.77	6.76	7.66			20	7.67
117	27-Apr-01	8.00	6.14	6.84			20	7.78
118	28-Apr-01	6.92	5.21	5.98			20	7.89
119	29-Apr-01	5.99	5.05	5.51			20	7.78
120	30-Apr-01	5.99	5.52	5.68			20	7.60
121	1-May-01	5.68	4.74	5.07			20	7.16
122	2-May-01	5.68	4.12	4.74			20	6.72
123	3-May-01	6.45	4.43	5.26			20	6.39
124	4-May-01	7.54	5.52	6.35			20	6.32
125	5-May-01	7.85	6.76	7.24			20	6.45
126	6-May-01	6.92	4.90	5.95			20	6.59
127	7-May-01	7.38	5.36	6.30			20	6.79
128	8-May-01	7.85	6.45	7.12			20	7.10
129	9-May-01	8.00	6.61	7.31			20	7.43
130	10-May-01	8.15	6.30	7.24			20	7.67
131	11-May-01	8.15	6.14	7.12			20	7.76
132	12-May-01	8.15	6.30	7.26			20	7.80
133	13-May-01	8.15	6.61	7.24			20	7.98
134	14-May-01	7.54	5.99	6.75			20	8.00
135	15-May-01	7.23	5.83	6.50			20	7.91
136	16-May-01	6.92	6.14	6.54			20	7.76
137	17-May-01	7.23	5.05	5.99			20	7.62
138	18-May-01	7.38	6.61	6.96			20	7.51
139	19-May-01	8.31	5.99	6.86			20	7.54
140	20-May-01	8.46	7.08	7.80			20	7.58
141	21-May-01	8.31	5.83	6.91			20	7.69
142	22-May-01	9.38	6.92	7.92			20	8.00
143	23-May-01	10.01	7.54	8.75			20	8.44
144	24-May-01	10.32	7.69	8.99			20	8.88
145	25-May-01	10.79	8.00	9.26			20	9.37
146	26-May-01	10.79	8.00	9.27			20	9.72
147	27-May-01	10.48	8.31	9.39			20	10.01
148	28-May-01	10.79	8.61	9.59			20	10.37

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
149	29-May-01	10.94	8.61	9.65			20	10.59
150	30-May-01	9.54	6.92	8.14			20	10.52
151	31-May-01	11.40	8.92	9.57			20	10.68
152	1-Jun-01	11.40	9.69	10.57			20	10.76
153	2-Jun-01	11.71	10.16	10.81			20	10.89
154	3-Jun-01	10.01	8.46	9.03			20	10.83
155	4-Jun-01	8.31	5.68	6.72			20	10.47
156	5-Jun-01	7.23	5.83	6.17			20	9.94
157	6-Jun-01	9.08	7.23	7.74			20	9.88
158	7-Jun-01	9.23	7.85	8.47			20	9.57
159	8-Jun-01	10.48	8.15	8.78			20	9.44
160	9-Jun-01	11.87	10.48	10.96			20	9.46
161	10-Jun-01	12.02	10.48	11.07			20	9.75
162	11-Jun-01	10.94	9.85	10.32			20	10.12
163	12-Jun-01	10.94	8.61	9.74			20	10.65
164	13-Jun-01	8.46	6.92	7.38			20	10.56
165	14-Jun-01	9.08	7.08	7.61			20	10.54
166	15-Jun-01	10.94	8.77	9.40			20	10.61
167	16-Jun-01	11.56	9.54	10.43			20	10.56
168	17-Jun-01	12.02	10.79	11.42			20	10.56
169	18-Jun-01	12.18	10.63	11.38			20	10.74
170	19-Jun-01	12.18	10.32	11.24			20	10.92
171	20-Jun-01	13.26	11.25	12.01			20	11.60
172	21-Jun-01	14.65	12.49	13.29			20	12.40
173	22-Jun-01	15.92	13.88	14.67			20	13.11
174	23-Jun-01	16.24	14.81	15.52			20	13.78
175	24-Jun-01	16.39	14.97	15.46			20	14.40
176	25-Jun-01	15.29	13.88	14.51			20	14.85
177	26-Jun-01	15.60	14.19	14.81			20	15.34
178	27-Jun-01	15.76	15.29	15.60			20	15.69
179	28-Jun-01	16.71	15.13	15.68			20	15.99
180	29-Jun-01	17.35	15.60	16.35			20	16.19
181	30-Jun-01	17.51	16.39	16.91			20	16.37
182	1-Jul-01	18.31	16.71	17.26			20	16.65
183	2-Jul-01	18.48	17.51	18.08			20	17.10
184	3-Jul-01	18.96	17.83	18.40			20	17.58
185	4-Jul-01	19.28	18.48	18.85			20	18.09
186	5-Jul-01	18.96	17.99	18.48			20	18.41
187	6-Jul-01	17.99	16.71	17.37			20	18.50
188	7-Jul-01	18.15	17.19	17.73			20	18.59
189	8-Jul-01	18.96	17.67	18.26			20	18.68
190	9-Jul-01	19.77	18.96	19.26			20	18.87
191	10-Jul-01	20.58	18.64	19.49			20	19.10
192	11-Jul-01	20.41	19.44	19.96			20	19.26
193	12-Jul-01	19.77	18.64	19.30			20	19.38
194	13-Jul-01	19.44	18.31	18.81			20	19.58
195	14-Jul-01	19.12	17.35	18.12			20	19.72
196	15-Jul-01	19.60	18.64	19.07			20	19.81
197	16-Jul-01	18.64	16.39	17.50			20	19.65

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	16.24	15.13	15.60			20	19.03
199	18-Jul-01	16.08	15.13	15.63			20	18.41
200	19-Jul-01	17.83	15.60	16.41			20	18.14
201	20-Jul-01	18.15	17.35	17.76			20	17.95
202	21-Jul-01	18.48	17.03	17.71			20	17.86
203	22-Jul-01	19.60	17.51	18.40			20	17.86
204	23-Jul-01	19.60	17.83	18.71			20	18.00
205	24-Jul-01	19.77	17.99	18.87			20	18.50
206	25-Jul-01	20.09	18.48	19.20			20	19.07
207	26-Jul-01	20.09	18.48	19.26			20	19.40
208	27-Jul-01	20.25	18.31	19.25			20	19.70
209	28-Jul-01	19.77	18.96	19.24			20	19.88
210	29-Jul-01	18.96	17.19	17.83			20	19.79
211	30-Jul-01	17.03	16.08	16.36			20	19.42
212	31-Jul-01	15.92	14.97	15.45			20	18.87
213	1-Aug-01	15.76	14.19	15.08			20	18.25
214	2-Aug-01	18.48	15.60	16.79			20	18.02
215	3-Aug-01	19.93	17.83	18.56			20	17.98
216	4-Aug-01	19.44	18.64	18.94			20	17.93
217	5-Aug-01	19.28	17.19	18.21			20	17.98
218	6-Aug-01	20.74	18.64	19.40			20	18.51
219	7-Aug-01	21.90	19.93	20.71			20	19.36
220	8-Aug-01	22.07	20.58	21.23			20	20.26
221	9-Aug-01	21.74	20.25	20.96			20	20.73
222	10-Aug-01	21.40	19.77	20.58			20	20.94
223	11-Aug-01	20.91	19.28	20.07			20	21.15
224	12-Aug-01	21.07	18.96	19.88			20	21.40
225	13-Aug-01	21.90	19.93	20.67			20	21.57
226	14-Aug-01	22.07	20.09	21.03			20	21.59
227	15-Aug-01	22.07	19.77	20.86			20	21.59
228	16-Aug-01	21.90	19.60	20.54			20	21.62
229	17-Aug-01	21.40	18.96	20.11			20	21.62
230	18-Aug-01	21.24	18.96	20.03			20	21.66
231	19-Aug-01	20.74	18.31	19.57			20	21.62
232	20-Aug-01	20.09	17.19	18.65			20	21.36
233	21-Aug-01	19.93	16.87	18.32			20	21.05
234	22-Aug-01	18.80	16.71	17.84			20	20.59
235	23-Aug-01	19.28	16.55	17.75			20	20.21
236	24-Aug-01	19.44	17.03	18.19			20	19.93
237	25-Aug-01	19.60	16.24	17.91			20	19.70
238	26-Aug-01	20.25	16.08	18.12			20	19.63
239	27-Aug-01	20.74	16.71	18.57			20	19.72
240	28-Aug-01	20.41	16.87	18.63			20	19.79
241	29-Aug-01	20.41	16.08	18.21			20	20.02
242	30-Aug-01	20.41	15.76	18.19			20	20.18
243	31-Aug-01	19.12	16.08	17.77			20	20.13
244	1-Sep-01	19.60	15.60	17.67			20	20.13
245	2-Sep-01	19.77	15.60	17.81			20	20.07
246	3-Sep-01	20.09	15.76	17.93			20	19.97

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
247	4-Sep-01	18.96	15.60	17.13			14	19.77
249	13-Sep-01	15.60	12.33	14.05			20	19.08
250	14-Sep-01	16.39	14.81	15.41			20	18.50
251	15-Sep-01	16.87	15.13	15.81			20	18.18
252	16-Sep-01	17.67	15.76	16.51			20	17.91
253	17-Sep-01	18.31	16.24	17.09			20	17.70
254	18-Sep-01	17.03	16.24	16.73			20	17.26
255	19-Sep-01	17.19	15.92	16.32			20	17.01
256	20-Sep-01	15.76	14.50	15.11			20	17.03
257	21-Sep-01	14.34	12.95	13.78			20	16.74
258	22-Sep-01	12.80	10.63	11.82			20	16.16
259	23-Sep-01	10.32	8.77	9.49			20	15.11
260	24-Sep-01	9.08	7.69	8.26			20	13.79
261	25-Sep-01	9.38	7.38	8.15			20	12.70
262	26-Sep-01	9.54	7.54	8.34			20	11.60
263	27-Sep-01	9.85	7.69	8.59			20	10.76
264	28-Sep-01	10.16	8.00	8.89			20	10.16
265	29-Sep-01	10.01	8.46	9.22			20	9.76
266	30-Sep-01	10.16	9.23	9.64			20	9.74
267	1-Oct-01	10.79	10.16	10.34			20	9.98
268	2-Oct-01	10.79	10.01	10.30			20	10.19
269	3-Oct-01	10.32	8.92	9.47			20	10.30
270	4-Oct-01	9.08	8.00	8.58			20	10.19
271	5-Oct-01	8.15	6.92	7.58			20	9.90
272	6-Oct-01	7.08	5.99	6.59			20	9.48
273	7-Oct-01	6.30	5.52	5.96			20	8.93
274	8-Oct-01	6.45	5.52	5.90			20	8.31
275	9-Oct-01	6.92	5.99	6.32			20	7.76
276	10-Oct-01	7.69	6.61	7.14			20	7.38
277	11-Oct-01	8.46	7.69	7.93			20	7.29
278	12-Oct-01	8.77	8.31	8.58			20	7.38
279	13-Oct-01	8.77	8.15	8.46			20	7.62
280	14-Oct-01	8.15	7.69	7.86			20	7.89
281	15-Oct-01	8.15	7.85	7.93			20	8.13
282	16-Oct-01	8.31	7.85	8.08			20	8.33
283	17-Oct-01	7.85	7.38	7.62			20	8.35
284	18-Oct-01	7.54	7.08	7.31			20	8.22
285	19-Oct-01	8.15	7.23	7.75			20	8.13
286	20-Oct-01	8.31	7.54	7.88			20	8.07
287	21-Oct-01	7.69	7.54	7.66			20	8.00
288	22-Oct-01	7.54	6.30	6.85			20	7.91
289	23-Oct-01	6.30	4.28	5.21			20	7.63
290	24-Oct-01	4.43	3.65	4.07			20	7.14
291	25-Oct-01	4.12	3.65	3.86			20	6.65
292	26-Oct-01	4.28	3.81	4.07			20	6.10
293	27-Oct-01	5.36	4.28	4.91			20	5.67
294	28-Oct-01	5.83	5.52	5.72			20	5.41
295	29-Oct-01	6.30	5.83	5.97			21	5.23
296	30-Oct-01	6.61	6.30	6.37			20	5.28
297	31-Oct-01	6.30	5.83	6.09			20	5.54

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
298	1-Nov-01	5.83	5.52	5.78			20	5.79
299	2-Nov-01	5.36	4.12	4.80			20	5.94
300	3-Nov-01	4.12	2.86	3.49			20	5.76
301	4-Nov-01	2.86	2.55	2.72			20	5.34
302	5-Nov-01	3.03	2.71	2.91			20	4.87
303	6-Nov-01	3.34	3.03	3.14			20	4.41
304	7-Nov-01	3.34	2.55	2.97			20	3.98
305	8-Nov-01	2.55	1.60	2.18			20	3.51
306	9-Nov-01	1.76	1.29	1.48			20	3.00
307	10-Nov-01	1.44	0.49	0.95			20	2.62
308	11-Nov-01	0.65	0.49	0.55			20	2.30
309	12-Nov-01	0.65	0.33	0.53			20	1.96
310	13-Nov-01	0.65	0.33	0.41			20	1.58
311	14-Nov-01	0.33	0.16	0.31			20	1.15
312	15-Nov-01	0.49	0.16	0.30			20	0.85
313	16-Nov-01	0.49	0.33	0.39			20	0.67
314	17-Nov-01	0.49	0.16	0.33			20	0.54
315	18-Nov-01	0.49	0.16	0.27			20	0.51
316	19-Nov-01	0.16	0.16	0.16			20	0.44
317	20-Nov-01	0.16	0.16	0.16			20	0.37
318	21-Nov-01	0.16	0.16	0.16			20	0.35
319	22-Nov-01	0.16	0.16	0.16			20	0.30
320	23-Nov-01	0.16	0.16	0.16			20	0.25
321	24-Nov-01	0.16	0.16	0.16			20	0.21
322	25-Nov-01	0.49	0.16	0.32			20	0.21
323	26-Nov-01	0.49	0.16	0.39			20	0.25
324	27-Nov-01	0.49	0.16	0.33			20	0.30
325	28-Nov-01	0.49	0.33	0.39			20	0.35
326	29-Nov-01	0.49	0.16	0.26			20	0.40
327	30-Nov-01	0.65	0.33	0.49			20	0.47
328	1-Dec-01	0.65	0.49	0.59			20	0.54
329	2-Dec-01	0.49	0.16	0.33			20	0.54
330	3-Dec-01	0.81	0.49	0.61			20	0.58
331	4-Dec-01	1.13	0.65	0.91			20	0.67
332	5-Dec-01	1.13	0.96	1.04			20	0.76
333	6-Dec-01	1.29	0.81	1.05			20	0.88
334	7-Dec-01	0.81	0.49	0.63			20	0.90
335	8-Dec-01	0.81	0.65	0.68			20	0.92
336	9-Dec-01	0.65	0.49	0.55			20	0.95
337	10-Dec-01	0.81	0.49	0.71			20	0.95
338	11-Dec-01	0.49	0.16	0.28			20	0.86
339	12-Dec-01	0.33	0.16	0.24			20	0.74
340	13-Dec-01	0.16	0.16	0.16			20	0.58
341	14-Dec-01	0.16	0.16	0.16			20	0.49
342	15-Dec-01	0.16	0.16	0.16			20	0.39
343	16-Dec-01	0.33	0.16	0.31			20	0.35
344	17-Dec-01	0.33	0.33	0.33			20	0.28
345	18-Dec-01	0.33	0.33	0.33			20	0.26
346	19-Dec-01	0.33	0.16	0.32			20	0.26
347	20-Dec-01	0.33	0.16	0.28			20	0.28
348	21-Dec-01	0.16	0.16	0.16			20	0.28

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Pinchot Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060302
HUC4 Name: Lower Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 567 M
Waterbody ID Number: 22

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.08

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
349	22-Dec-01	0.16	0.16	0.16			20	0.28
350	23-Dec-01	0.16	0.16	0.16			20	0.26
351	24-Dec-01	0.33	0.16	0.28			20	0.26
352	25-Dec-01	0.33	0.33	0.33			20	0.26
353	26-Dec-01	0.49	0.33	0.34			20	0.28
354	27-Dec-01	0.49	0.33	0.39			20	0.30
355	28-Dec-01	0.65	0.33	0.49			20	0.37
356	29-Dec-01	0.49	0.16	0.34			20	0.42
357	30-Dec-01	0.65	0.33	0.47			20	0.49
358	31-Dec-01	0.81	0.65	0.71			20	0.56

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
1	1-Jan-01	0.00	0.00	0.00			20	
2	2-Jan-01	0.00	0.00	0.00			20	
3	3-Jan-01	0.00	0.00	0.00			20	
4	4-Jan-01	0.00	0.00	0.00			20	
5	5-Jan-01	0.00	0.00	0.00			20	
6	6-Jan-01	0.00	0.00	0.00			20	
7	7-Jan-01	0.00	0.00	0.00			20	0.00
8	8-Jan-01	0.00	0.00	0.00			20	0.00
9	9-Jan-01	0.00	0.00	0.00			20	0.00
10	10-Jan-01	0.00	0.00	0.00			20	0.00
11	11-Jan-01	0.00	0.00	0.00			20	0.00
12	12-Jan-01	0.00	0.00	0.00			20	0.00
13	13-Jan-01	0.00	0.00	0.00			20	0.00
14	14-Jan-01	0.00	0.00	0.00			20	0.00
15	15-Jan-01	0.00	0.00	0.00			20	0.00
16	16-Jan-01	0.00	0.00	0.00			20	0.00
17	17-Jan-01	0.00	0.00	0.00			20	0.00
18	18-Jan-01	0.00	0.00	0.00			20	0.00
19	19-Jan-01	0.00	0.00	0.00			20	0.00
20	20-Jan-01	0.00	0.00	0.00			20	0.00
21	21-Jan-01	0.00	0.00	0.00			20	0.00
22	22-Jan-01	0.00	0.00	0.00			20	0.00
23	23-Jan-01	0.00	0.00	0.00			20	0.00
24	24-Jan-01	0.00	0.00	0.00			20	0.00
25	25-Jan-01	0.00	0.00	0.00			20	0.00
26	26-Jan-01	0.00	0.00	0.00			20	0.00
27	27-Jan-01	0.00	0.00	0.00			20	0.00
28	28-Jan-01	0.00	0.00	0.00			20	0.00
29	29-Jan-01	0.00	0.00	0.00			20	0.00
30	30-Jan-01	0.00	0.00	0.00			20	0.00
31	31-Jan-01	0.00	0.00	0.00			20	0.00
32	1-Feb-01	0.00	0.00	0.00			20	0.00
33	2-Feb-01	0.00	0.00	0.00			20	0.00
34	3-Feb-01	0.00	0.00	0.00			20	0.00
35	4-Feb-01	0.00	0.00	0.00			20	0.00
36	5-Feb-01	0.00	0.00	0.00			20	0.00
37	6-Feb-01	0.00	0.00	0.00			20	0.00
38	7-Feb-01	0.00	0.00	0.00			20	0.00
39	8-Feb-01	0.00	0.00	0.00			20	0.00
40	9-Feb-01	0.00	0.00	0.00			20	0.00
41	10-Feb-01	0.00	0.00	0.00			20	0.00
42	11-Feb-01	0.00	0.00	0.00			20	0.00
43	12-Feb-01	0.00	0.00	0.00			20	0.00
44	13-Feb-01	0.00	0.00	0.00			20	0.00
45	14-Feb-01	0.00	0.00	0.00			20	0.00
46	15-Feb-01	0.00	0.00	0.00			20	0.00
47	16-Feb-01	0.00	0.00	0.00			20	0.00

Idaho Cold Water Aquatic Life
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
22 °C Instantaneous	0	0%	
19 °C Average	3	3%	
Days Evaluated & Date Range	92	22-Jun	21-Sep

Idaho Salmonid Spawning
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Instantaneous Spring	26	28%	
9 °C Average Spring	39	42%	
Spring Days Eval'd w/in Dates	92	15-Apr	15-Jul
13 °C Instantaneous Fall	43	46%	
9 °C Average Fall	50	54%	
Fall Days Eval'd w/in Dates	93	15-Aug	15-Nov
13 °C Instantaneous Total *	69	37%	
9 °C Average Total *	89	48%	
Tot Days Eval'd w/in Both Dates *	185		

* If spring & fall dates overlap double counting may occur.

Idaho Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
13 °C Juvnl Rearing MWMT (J)	72	78%	
Juvenile Days Eval'd w/in Dates	92	1-Jun	31-Aug
9 °C Spawning Daily Ave (S)	33	54%	
Spawning Days Eval'd w/in Dates	61	1-Sep	31-Oct

NOTES

Comments: Combined data from two deployments. Stream is a priori natural. Monitored as state Outstanding Resource Water nominee. Less than 10% exceedance of Idaho's cold water aquatic life criteria during critical summer period.

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
48	17-Feb-01	0.00	0.00	0.00			20	0.00
49	18-Feb-01	0.00	0.00	0.00			20	0.00
50	19-Feb-01	0.00	0.00	0.00			20	0.00
51	20-Feb-01	0.00	0.00	0.00			20	0.00
52	21-Feb-01	0.00	0.00	0.00			20	0.00
53	22-Feb-01	0.00	0.00	0.00			20	0.00
54	23-Feb-01	0.00	0.00	0.00			20	0.00
55	24-Feb-01	0.00	0.00	0.00			20	0.00
56	25-Feb-01	0.00	0.00	0.00			20	0.00
57	26-Feb-01	0.00	0.00	0.00			20	0.00
58	27-Feb-01	0.00	0.00	0.00			20	0.00
59	28-Feb-01	0.00	0.00	0.00			20	0.00
60	1-Mar-01	0.00	0.00	0.00			20	0.00
61	2-Mar-01	0.00	0.00	0.00			20	0.00
62	3-Mar-01	0.00	0.00	0.00			20	0.00
63	4-Mar-01	0.00	0.00	0.00			20	0.00
64	5-Mar-01	0.00	0.00	0.00			20	0.00
65	6-Mar-01	0.16	0.00	0.06			20	0.02
66	7-Mar-01	0.81	0.00	0.39			20	0.14
67	8-Mar-01	1.12	0.00	0.54			20	0.30
68	9-Mar-01	1.12	0.48	0.77			20	0.46
69	10-Mar-01	2.23	0.65	1.34			20	0.78
70	11-Mar-01	1.92	1.44	1.72			20	1.05
71	12-Mar-01	2.71	1.60	2.07			20	1.44
72	13-Mar-01	3.50	1.92	2.69			20	1.92
73	14-Mar-01	3.03	1.76	2.39			20	2.23
74	15-Mar-01	2.55	0.65	1.76			20	2.44
75	16-Mar-01	2.71	1.60	2.17			20	2.66
76	17-Mar-01	3.03	1.44	2.21			20	2.78
77	18-Mar-01	4.12	2.40	3.17			20	3.09
78	19-Mar-01	3.81	2.87	3.36			20	3.25
79	20-Mar-01	3.97	1.44	2.88			20	3.32
80	21-Mar-01	3.81	1.44	2.76			20	3.43
81	22-Mar-01	3.97	1.28	2.72			20	3.63
82	23-Mar-01	4.59	1.60	3.13			20	3.90
83	24-Mar-01	5.06	2.71	3.84			20	4.19
84	25-Mar-01	3.97	2.55	3.06			20	4.17
85	26-Mar-01	3.81	2.55	3.10			20	4.17
86	27-Mar-01	4.59	2.40	3.42			20	4.26
87	28-Mar-01	4.90	3.35	4.10			20	4.41
88	29-Mar-01	5.68	3.66	4.64			20	4.66
89	30-Mar-01	5.21	3.97	4.54			20	4.75
90	31-Mar-01	4.43	2.71	3.49			20	4.66
91	1-Apr-01	5.83	3.18	4.25			19	4.92
92	2-Apr-01	5.52	3.66	4.15			20	5.17
93	3-Apr-01	4.59	2.40	3.43			20	5.17
94	4-Apr-01	4.90	3.03	3.90			20	5.17
95	5-Apr-01	4.90	2.23	3.71			20	5.05
96	6-Apr-01	4.90	2.71	3.71			20	5.01
97	7-Apr-01	4.43	3.35	4.01			20	5.01

STATISTICS	
Maximum Daily Maximum (MDM)	21.9 ºC
Maximum 7-Day Maximum (MWM)	20.6 ºC
Maximum Daily Average (MDA)	19.8 ºC
Maximum 7-Day Average (MWA)	18.8 ºC
Mean Daily Maximum	7.9 ºC
Mean Daily Average	6.9 ºC
Mean Daily Minimum	5.9 ºC
Minimum 7-Day Minimum	0.0 ºC
Minimum Daily Minimum	0.0 ºC
Mean of all Data	6.9 ºC

EPA Bull Trout
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	116	95%	
Nmbr of 7-Day Avg's w/in Dates	122	1-Jun	30-Sep

Seasonal Cold Water
Criteria Exceedance Summary

Criteria	Exceedance Counts Nmbr	Prcnt	
26 °C Instantaneous	0	0%	
23 °C Average	0	0%	
Days Evaluated and Date Range	92	22-Jun	21-Sep

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
98	8-Apr-01	4.28	2.71	3.41			20	4.79
99	9-Apr-01	4.12	2.55	3.36			20	4.59
100	10-Apr-01	4.75	2.71	3.72			20	4.61
101	11-Apr-01	4.59	3.18	3.90			20	4.57
102	12-Apr-01	4.59	3.03	3.76			20	4.52
103	13-Apr-01	4.43	3.03	3.77			20	4.46
104	14-Apr-01	5.37	3.03	4.11			20	4.59
105	15-Apr-01	6.15	2.71	4.46			20	4.86
106	16-Apr-01	6.46	3.50	5.07			20	5.19
107	17-Apr-01	8.16	4.43	6.26			20	5.68
108	18-Apr-01	7.86	5.37	6.50			20	6.15
109	19-Apr-01	6.93	5.06	6.00			20	6.48
110	20-Apr-01	5.83	3.81	4.75			20	6.68
111	21-Apr-01	5.83	3.97	4.88			20	6.75
112	22-Apr-01	6.15	3.97	5.07			20	6.75
113	23-Apr-01	6.93	4.90	5.82			20	6.81
114	24-Apr-01	9.39	5.52	7.17			20	6.99
115	25-Apr-01	9.08	5.52	7.36			20	7.16
116	26-Apr-01	8.16	5.06	6.75			20	7.34
117	27-Apr-01	7.55	4.90	6.11			20	7.58
118	28-Apr-01	6.15	4.12	5.14			20	7.63
119	29-Apr-01	5.68	3.81	4.77			20	7.56
120	30-Apr-01	5.52	4.59	5.10			20	7.36
121	1-May-01	5.21	3.50	4.29			20	6.76
122	2-May-01	5.52	3.03	4.15			20	6.26
123	3-May-01	7.08	3.03	4.83			20	6.10
124	4-May-01	8.16	3.97	5.96			20	6.19
125	5-May-01	7.40	5.52	6.28			20	6.37
126	6-May-01	7.24	3.35	5.18			20	6.59
127	7-May-01	8.01	3.81	5.85			20	6.95
128	8-May-01	8.16	5.06	6.76			20	7.37
129	9-May-01	8.01	5.21	6.80			20	7.72
130	10-May-01	8.32	5.06	6.71			20	7.90
131	11-May-01	8.32	4.59	6.50			20	7.92
132	12-May-01	8.77	5.06	6.91			20	8.12
133	13-May-01	8.16	5.83	6.84			20	8.25
134	14-May-01	7.24	5.21	6.31			20	8.14
135	15-May-01	6.93	5.52	6.22			20	7.96
136	16-May-01	6.62	5.68	6.08			20	7.77
137	17-May-01	7.40	3.97	5.62			20	7.63
138	18-May-01	7.70	5.83	6.75			20	7.55
139	19-May-01	8.47	4.90	6.67			20	7.50
140	20-May-01	8.32	6.31	7.31			20	7.53
141	21-May-01	8.62	4.28	6.42			20	7.72
142	22-May-01	10.17	5.68	7.82			20	8.19
143	23-May-01	10.80	6.31	8.51			20	8.78
144	24-May-01	9.86	6.62	8.44			20	9.13
145	25-May-01	10.33	7.24	8.75			20	9.51
146	26-May-01	10.48	7.08	8.75			20	9.80
147	27-May-01	9.86	7.70	8.92			20	10.02
148	28-May-01	10.80	7.40	9.12			20	10.33

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl S-spawn		Nbr of Msrmts per day	7-Day Average of High
149	29-May-01	10.33	7.55	8.86			20	10.35
150	30-May-01	9.55	5.37	7.39			20	10.17
151	31-May-01	12.34	8.01	9.78			20	10.53
152	1-Jun-01	11.56	8.16	10.05			20	10.70
153	2-Jun-01	11.41	9.24	10.25			20	10.84
154	3-Jun-01	9.86	6.77	7.98			20	10.84
155	4-Jun-01	6.46	4.28	5.18			20	10.22
156	5-Jun-01	7.08	5.06	5.94			20	9.75
157	6-Jun-01	9.55	6.46	7.64			20	9.75
158	7-Jun-01	8.93	6.77	7.72			20	9.26
159	8-Jun-01	11.26	7.24	9.05			20	9.22
160	9-Jun-01	12.18	9.24	10.62			20	9.33
161	10-Jun-01	11.41	9.08	10.34			20	9.55
162	11-Jun-01	10.80	8.93	9.99			20	10.17
163	12-Jun-01	9.86	6.93	8.33			20	10.57
164	13-Jun-01	6.77	5.37	6.07			20	10.17
165	14-Jun-01	8.47	6.15	7.17			20	10.11
166	15-Jun-01	11.72	7.40	9.08			20	10.17
167	16-Jun-01	12.50	7.70	9.96			20	10.22
168	17-Jun-01	12.50	9.55	11.10			20	10.37
169	18-Jun-01	12.65	8.93	10.77			20	10.64
170	19-Jun-01	12.96	8.16	10.43			20	11.08
171	20-Jun-01	14.04	9.08	11.35			20	12.12
172	21-Jun-01	15.61	10.48	12.81	J		20	13.14
173	22-Jun-01	16.72	11.87	14.06	J		20	13.85
174	23-Jun-01	16.72	12.81	14.66	J		20	14.46
175	24-Jun-01	15.46	12.81	14.23	J		20	14.88
176	25-Jun-01	15.30	11.72	13.36	J		20	15.26
177	26-Jun-01	16.25	12.18	13.97	J		20	15.73
178	27-Jun-01	16.09	12.96	14.40	J		20	16.02
179	28-Jun-01	16.88	13.27	14.86	J		20	16.20
180	29-Jun-01	18.16	12.96	15.36	J		20	16.41
181	30-Jun-01	17.52	13.88	15.76	J		20	16.52
182	1-Jul-01	19.30	14.20	16.56	J		20	17.07
183	2-Jul-01	19.78	14.82	17.24	J		20	17.71
184	3-Jul-01	20.10	15.14	17.63	J		20	18.26
185	4-Jul-01	18.97	16.09	17.12	J		20	18.67
186	5-Jul-01	17.20	15.61	16.23	J		20	18.72
187	6-Jul-01	18.81	13.88	16.06	J		20	18.81
188	7-Jul-01	17.68	14.35	16.28	J		20	18.83
189	8-Jul-01	18.16	15.30	16.79	J		20	18.67
190	9-Jul-01	19.13	15.93	17.33	J		20	18.58
191	10-Jul-01	21.08	16.25	18.56	J		20	18.72
192	11-Jul-01	19.94	16.09	18.01	J		20	18.86
193	12-Jul-01	18.97	15.93	17.45	J		20	19.11
194	13-Jul-01	18.00	15.14	16.50	J		20	18.99
195	14-Jul-01	19.62	14.35	16.87	J		20	19.27
196	15-Jul-01	19.13	16.41	17.32	J		20	19.41
197	16-Jul-01	16.25	14.20	14.86	J		20	19.00

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
198	17-Jul-01	15.77	12.34	13.96	J		20	18.24
199	18-Jul-01	16.25	13.12	14.56	J		20	17.71
200	19-Jul-01	18.48	13.27	15.80	J		20	17.64
201	20-Jul-01	18.48	14.82	16.76	J		20	17.71
202	21-Jul-01	18.81	14.82	16.89	J		20	17.60
203	22-Jul-01	19.62	15.30	17.59	J		20	17.67
204	23-Jul-01	19.62	14.82	17.35	J		20	18.15
205	24-Jul-01	19.30	14.82	17.30	J		20	18.65
206	25-Jul-01	20.26	15.61	18.03	J		20	19.22
207	26-Jul-01	20.26	15.61	18.13	J		20	19.48
208	27-Jul-01	20.42	15.46	18.15	J		20	19.76
209	28-Jul-01	19.30	16.09	17.73	J		20	19.83
210	29-Jul-01	17.52	14.51	16.22	J		20	19.53
211	30-Jul-01	15.93	14.04	14.64	J		20	19.00
212	31-Jul-01	14.20	12.18	13.18	J		20	18.27
213	1-Aug-01	16.41	11.41	13.64	J		20	17.72
214	2-Aug-01	18.81	13.58	16.03	J		20	17.51
215	3-Aug-01	18.48	14.98	16.98	J		20	17.24
216	4-Aug-01	18.65	15.61	17.13	J		20	17.14
217	5-Aug-01	19.94	14.98	17.50	J		20	17.49
218	6-Aug-01	20.75	15.93	18.51	J		20	18.18
219	7-Aug-01	21.25	16.88	19.23	J		20	19.18
220	8-Aug-01	21.92	17.52	19.81	J		20	19.97
221	9-Aug-01	20.26	16.72	18.80	J		20	20.18
222	10-Aug-01	20.42	16.25	18.44	J		20	20.46
223	11-Aug-01	19.46	16.09	18.07	J		20	20.57
224	12-Aug-01	20.42	15.77	18.11	J		20	20.64
225	13-Aug-01	20.59	17.68	19.31	J		20	20.62
226	14-Aug-01	20.75	17.04	18.97	J		20	20.55
227	15-Aug-01	20.59	16.57	18.80	J		20	20.36
228	16-Aug-01	20.42	16.25	18.51	J		20	20.38
229	17-Aug-01	20.10	16.09	18.27	J		20	20.33
230	18-Aug-01	20.59	17.04	18.79	J		20	20.49
231	19-Aug-01	19.46	15.93	17.93	J		20	20.36
232	20-Aug-01	18.65	14.82	16.89	J		20	20.08
233	21-Aug-01	18.65	14.66	16.70	J		20	19.78
234	22-Aug-01	17.84	14.51	16.48	J		20	19.39
235	23-Aug-01	18.16	14.98	16.66	J		20	19.06
236	24-Aug-01	18.97	15.77	17.13	J		20	18.90
237	25-Aug-01	18.65	14.51	16.60	J		20	18.63
238	26-Aug-01	18.97	14.82	16.90	J		20	18.56
239	27-Aug-01	19.46	15.46	17.40	J		20	18.67
240	28-Aug-01	19.28	15.77	17.55	J		20	18.76
241	29-Aug-01	18.96	14.49	16.81	J		20	18.92
242	30-Aug-01	18.80	14.49	16.65	J		20	19.01
243	31-Aug-01	18.80	15.13	16.97	J		20	18.99
244	1-Sep-01	18.31	14.81	16.57		S	20	18.94
245	2-Sep-01	18.31	14.81	16.60		S	20	18.85
246	3-Sep-01	18.96	15.13	17.00		S	20	18.77

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msrmts per day	7-Day Average of High
247	4-Sep-01	17.03	15.13	16.36		S	20	18.45
248	5-Sep-01	17.51	14.81	16.06		S	20	18.25
249	6-Sep-01	15.29	12.95	14.32		S	20	17.74
250	7-Sep-01	13.87	11.86	12.62		S	20	17.04
251	8-Sep-01	13.26	9.53	11.44		S	20	16.32
252	9-Sep-01	13.56	9.69	11.67		S	20	15.64
253	10-Sep-01	14.49	10.78	12.58		S	20	15.00
254	11-Sep-01	15.13	11.55	13.33		S	20	14.73
255	12-Sep-01	14.97	12.17	13.65		S	20	14.37
256	13-Sep-01	16.24	13.87	14.99		S	20	14.50
257	14-Sep-01	17.67	14.33	15.86		S	20	15.05
258	15-Sep-01	16.71	13.87	15.43		S	20	15.54
259	16-Sep-01	16.24	13.26	14.82		S	20	15.92
260	17-Sep-01	16.08	13.56	14.80		S	20	16.15
261	18-Sep-01	15.29	12.32	13.99		S	20	16.17
262	19-Sep-01	14.18	11.70	12.97		S	20	16.06
263	20-Sep-01	12.95	10.31	11.78		S	20	15.59
264	21-Sep-01	12.48	10.16	11.32		S	20	14.85
265	22-Sep-01	12.48	9.53	11.05		S	20	14.24
266	23-Sep-01	13.26	10.31	11.78		S	20	13.82
267	24-Sep-01	13.87	10.93	12.31		S	20	13.50
268	25-Sep-01	13.56	11.23	12.52		S	20	13.25
269	26-Sep-01	14.02	11.55	12.83		S	20	13.23
270	27-Sep-01	13.56	11.39	12.57		S	20	13.32
271	28-Sep-01	13.71	11.86	12.76		S	20	13.49
272	29-Sep-01	13.10	11.08	12.25		S	20	13.58
273	30-Sep-01	12.32	10.31	11.45		S	20	13.45
274	1-Oct-01	11.70	9.53	10.77		S	20	13.14
275	2-Oct-01	11.23	9.53	10.42		S	20	12.81
276	3-Oct-01	10.47	8.61	9.64		S	20	12.30
277	4-Oct-01	9.38	7.52	8.60			20	11.70
278	5-Oct-01	7.99	5.82	6.98			20	10.88
279	6-Oct-01	7.21	5.04	6.19			20	10.04
280	7-Oct-01	7.99	5.97	6.98			20	9.42
281	8-Oct-01	8.91	7.52	8.18			20	9.03
282	9-Oct-01	8.14	7.21	7.74			20	8.58
283	10-Oct-01	7.99	5.97	7.01			20	8.23
284	11-Oct-01	7.68	7.06	7.34			20	7.99
285	12-Oct-01	7.06	5.82	6.34			20	7.85
286	13-Oct-01	7.37	5.97	6.57			20	7.88
287	14-Oct-01	7.21	6.75	6.95			20	7.77
288	15-Oct-01	7.21	5.66	6.38			20	7.52
289	16-Oct-01	6.44	4.41	5.57			20	7.28
290	17-Oct-01	7.37	6.13	6.63			20	7.19
291	18-Oct-01	6.60	4.73	5.58			20	7.04
292	19-Oct-01	6.91	5.66	6.17			20	7.02
293	20-Oct-01	7.68	6.91	7.31			20	7.06
294	21-Oct-01	7.21	5.04	5.95			20	7.06
295	22-Oct-01	6.44	5.66	6.07			20	6.95
296	23-Oct-01	6.44	5.66	5.94			20	6.95

Print Date: 5/19/2004

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd J juvnl	S-spawn	Nbr of Msr mts per day	7-Day Average of High
297	24-Oct-01	5.35	4.26	4.67			20	6.66
298	25-Oct-01	4.73	3.63	4.06			20	6.39
299	26-Oct-01	3.79	2.37	2.99			20	5.95
300	27-Oct-01	3.63	1.90	2.84			20	5.37
301	28-Oct-01	5.97	3.79	4.99			21	5.19
302	29-Oct-01	6.44	5.51	5.94			20	5.19
303	30-Oct-01	6.91	6.28	6.57			20	5.26
304	31-Oct-01	7.21	6.44	6.87			20	5.53
305	1-Nov-01	6.75	5.82	6.32			20	5.81
306	2-Nov-01	6.91	5.82	6.32			20	6.26
307	3-Nov-01	6.28	5.04	5.49			20	6.64
308	4-Nov-01	4.73	3.16	3.65			20	6.46
309	5-Nov-01	4.41	2.53	3.22			20	6.17
310	6-Nov-01	5.35	3.79	4.56			20	5.95
311	7-Nov-01	5.04	3.16	4.12			20	5.64
312	8-Nov-01	2.85	1.10	1.59			20	5.08
313	9-Nov-01	1.10	0.14	0.48			20	4.25
314	10-Nov-01	0.62	-0.02	0.15			20	3.44
315	11-Nov-01	0.78	-0.02	0.22			20	2.88
316	12-Nov-01	1.74	0.62	1.08			20	2.50
317	13-Nov-01	2.69	1.42	2.00			20	2.12
318	14-Nov-01	3.63	2.53	3.02			20	1.92
319	15-Nov-01	3.32	2.53	2.97			20	1.98
320	16-Nov-01	3.95	2.69	3.35			20	2.39
321	17-Nov-01	4.26	3.63	3.93			20	2.91
322	18-Nov-01	4.73	4.10	4.34			20	3.47
323	19-Nov-01	3.95	2.69	3.18			20	3.79
324	20-Nov-01	3.95	2.85	3.34			20	3.97
325	21-Nov-01	4.88	3.95	4.32			20	4.15
326	22-Nov-01	4.57	3.95	4.27			20	4.33
327	23-Nov-01	4.41	3.95	4.22			20	4.39
328	24-Nov-01	3.79	2.22	2.81			20	4.33
329	25-Nov-01	2.22	1.58	1.97			20	3.97
330	26-Nov-01	2.06	1.58	1.83			20	3.70
331	27-Nov-01	1.90	0.78	1.41			20	3.40
332	28-Nov-01	0.62	-0.02	0.03			20	2.80
333	29-Nov-01	0.14	-0.02	0.00			20	2.16
334	30-Nov-01	0.46	-0.02	0.15			20	1.60
335	1-Dec-01	0.78	0.14	0.45			20	1.17
336	2-Dec-01	0.78	-0.02	0.45			20	0.96
337	3-Dec-01	1.10	0.30	0.74			20	0.83
338	4-Dec-01	0.78	-0.02	0.13			20	0.67
339	5-Dec-01	-0.02	-0.02	-0.02			20	0.57
340	6-Dec-01	-0.02	-0.02	-0.02			20	0.55
341	7-Dec-01	0.30	-0.02	0.02			20	0.53
342	8-Dec-01	-0.02	-0.02	-0.02			20	0.41
343	9-Dec-01	-0.02	-0.02	-0.02			20	0.30
344	10-Dec-01	-0.02	-0.02	-0.02			20	0.14
345	11-Dec-01	-0.02	-0.02	-0.02			20	0.03
346	12-Dec-01	-0.02	-0.02	-0.02			20	0.03
347	13-Dec-01	-0.02	-0.02	-0.02			20	0.03

DEQ Summary of Temperature Data

Data Source: DEQ
Water Body: Selway River abv Running Cr.
Data Collection Site: upstream end of reach
Data Period: 1/1/01 - 12/31/01

HUC4 Number: 17060301
HUC4 Name: Upper Selway
North of the Salmon Clearwater Divide
Idaho Bull Trout Elevation: 849 M
Waterbody ID Number: 4

Import File : ... Selway 2001\Selway abv Running Cr 2001.txt
Calibration Factor : 0.06

Dbase Day Count	Date of Measurement	High Temp	Low Temp	Average Temp	BullExcd juvnl	J S-spawn	Nbr of Msrmts per day	7-Day Average of High
348	14-Dec-01	-0.02	-0.02	-0.02			20	-0.02
349	15-Dec-01	-0.02	-0.02	-0.02			20	-0.02
350	16-Dec-01	-0.02	-0.02	-0.02			20	-0.02
351	17-Dec-01	-0.02	-0.02	-0.02			20	-0.02
352	18-Dec-01	-0.02	-0.02	-0.02			20	-0.02
353	19-Dec-01	-0.02	-0.02	-0.02			20	-0.02
354	20-Dec-01	-0.02	-0.02	-0.02			20	-0.02
355	21-Dec-01	-0.02	-0.02	-0.02			20	-0.02
356	22-Dec-01	-0.02	-0.02	-0.02			20	-0.02
357	23-Dec-01	-0.02	-0.02	-0.02			20	-0.02
358	24-Dec-01	-0.02	-0.02	-0.02			20	-0.02
359	25-Dec-01	-0.02	-0.02	-0.02			20	-0.02
360	26-Dec-01	0.14	-0.02	0.01			20	0.00
361	27-Dec-01	-0.02	-0.02	-0.02			20	0.00
362	28-Dec-01	-0.02	-0.02	-0.02			20	0.00
363	29-Dec-01	-0.02	-0.02	-0.02			20	0.00
364	30-Dec-01	-0.02	-0.02	-0.02			20	0.00
365	31-Dec-01	-0.02	-0.02	-0.02			20	0.00