Nez Perce Tribe
Water Resources Monitoring Strategy Developed for the Water Pollution Control Grant: CWA Section 106 from Region 10 EPA: CFDA 66.419

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Table of Contents

Nez Perce Tribe
Clean Water Act Section 106 Grant
Monitoring Strategy for FY 2007-2011 (Oct 1, 2007-September 30, 20012)

Introduction

The Nez Perce Tribe (Tribe) is a federally recognized Indian Tribe with an aboriginal territory of more than 13 million acres extending from northeastern Oregon and southeastern Washington, through north-central Idaho, to southwestern Montana. The Tribe's 1855 treaty with the United States acknowledged and guaranteed a variety of retained off-reservation fishing, hunting, and gathering rights. The Tribe has continually practiced a subsistence-based lifestyle and values water for its cultural, spiritual, and economic uses. For these reasons, the Tribe has a vested interest in protecting the water quality of the present day reservation and in the Clearwater, Snake, and Columbia River Basins (Figure 1).

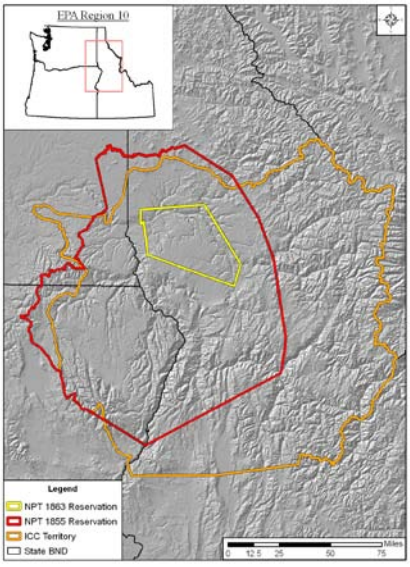

Figure 1. Map of Nez Perce Tribe aboriginal territory and reservation boundaries.

The Tribe applied for Treatment in the Same Manner as a State (TAS) in the early 1990's and has been actively developing and administering water quality programs since 1993. Currently, the Tribe has a Water Resources Division (WRD) of fifteen environmental professionals, has a strong relationship with the United States Environmental Protection Agency (EPA) and plays a key role in water resource management in the northwest.

The purpose of this monitoring strategy is to describe methods and activities necessary to define, assess and protect the water resources of the Tribe in a manner that complies with EPA *Final Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act, for Fiscal Years 2007 and Beyond* (2006). This strategy will also assist EPA in achieving strategic goals of "Clean and Safe Water", "Healthy Communities and Ecosystems" and "Compliance and Environmental Stewardship", through providing quality science and research, reporting valid data, assessing water resources and

implementing restoration and source protection projects to protect human health and water quality.

Background

The present day Nez Perce Tribe Reservation (reservation) is located in the Lower Clearwater River Basin in north central Idaho and totals 770,469 acres, of which 14% is tribal allotment, fee, or trust land. The remaining land is privately held with some land managed by the United States and the State of Idaho.

The Tribe has traditionally relied on surface water and springs to provide water for domestic, cultural and economic needs. These resources have been impacted by modern agricultural, industrial, silvicultural, hydropower, and municipal practices. At least some portion of every water resource within the reservation boundary is water quality impaired and there are indications that global climate change is shifting the hydrologic cycle of the region from a spring snowmelt dominated cycle to a fall/winter rainfall dominated cycle. The five dominant landuses on the reservation are cultivated agriculture, shrubland, grassland, evergreen forest, and bare soil. Most of the uncultivated lands are grazed by domestic livestock and there are 87 known locations where hazardous materials are stored or used (FEMA, 2006).

The primary water features on the reservation are aquifers, springs, streams, and rivers, with groundwater serving as the primary source of drinking water for the reservation population. In an effort to identify and quantify the water resources within the present day reservation boundary the U. S. Bureau of Indian Affairs (BIA) sponsored a comprehensive inventory of reservation waters in 1977 (Morrison-Maierle, Inc.). The inventory included data compilation of existing groundwater information and monthly water quality data collected from surface waters in 18 waterhseds. This inventory indicated that surface waters throughout the reservation were impaired by fecal coliform, high summer temperatures, sediment, and localized high (1,120 g/l) iron concentrations (Morrison-Maierle, 1980).

Comprehensive reservation water requirements and water resources alternatives studies were conducted in 1979 and 1980, (Morrison-Maierle, Inc.) and a biological and physical inventory of streams on the reservation was sponsored by the Bonneville Power Administration in 1983, (Kucera, et al). In 1990 the EPA funded a groundwater pollution prevention project to assess vulnerability and contaminant loading capacity of the resource using the DRASTIC model (Nez Perce Tribe, 1992). The Tribe also participated in EPA's Clean Lakes Initiative and conducted a phase I study of one reservation impoundment, Mud Springs, in 1992.

Hydrologic Background

There are 1,587 miles of streams and rivers in 19 sub-basins within or intersecting the reservation boundary that drain almost exclusively to the Clearwater River. The total drainage area of these basins is 9,500 square miles with the most productive basins being the North Fork Clearwater, the Lochsa, and the Selway; which collectively produce up to 81% of the flow of the Clearwater River (Morrison-Maierle, Inc., 1977). There are 13

Level IV ecoregions within the reservation (EPA, 2003). Lakes in the form of manmade impoundments on the reservation account for approximately 2,880 acres, which includes the portion of Dwarshak reservoir, managed by the Army Corps of Engineers (ACOE), within the reservation boundary. The Nez Perce Tribe Executive Council (NPTEC) passed a resolution, NP 03-136, in 2002 designating all water bodies of the reservation for the beneficial use of primary contact.

There are numerous wetlands on the reservation and the WRD has an active wetland assessment program through which 441.13 acres of tribally owned wetlands in nine basins have been mapped and inventoried. The tribal wetlands assessed to date range in size from less than one acre to 49.69 acres.

Within the reservation, springs and seeps are common and there are historical accounts of cold-water "fountains" and artesian wells throughout the basin. These resources are not well documented or assessed but have been used by the tribal community for domestic, cultural and spiritual purposes from time immemorial.

Between 1956 and 1990 IDWR approved the development of 1,058 ground water wells within the reservation and the IHS contracted to drill at least 270 through 1982. A 1990 study of existing data for water wells on the reservation attempted to create a risk potential map of reservation aquifers but resulted in a generalized hierarchy of relative risk for all reservation aquifers. The Lewiston Basin Aquifer and the Clearwater Uplands Plateau are the primary aquifers on the reservation with carbon-14 and oxygen and hydrogen isotope data indicating the residence time of water in the Lewiston Aquifer is between 2,830 and 34,670 years (IDEQ, 2005). The Lewiston Basin Aquifer was designated by EPA as a sole source aquifer in 1988.

The State of Idaho has an active groundwater quality monitoring program administered by the Department of Water Resources (IDWR) that includes 60 wells within the reservation boundary. Data collected form wells within the reservation (IDWR, 1976, 2003) suggest that some shallow aquifers on the reservation are water quality impaired by agricultural, industrial and domestic practices to an extent that renders the resource unsafe to drink.

Project Background

The Nez Perce Tribe WRD began participating in watershed assessments on the reservation in the early 1990's and has played a key role in developing Total Maximum Daily Loads (TMDLs) and implementing restoration plans in the region. In 2002, WRD was awarded special EPA grant funds to develop TMDLs for sub-basins in the Lower Clearwater River Basin on the reservation. To maximize and integrate data collection efforts and products in cooperation with county and state agencies, WRD allocated all CWA Section 106 grant funds from 2002 through 2006 to the TMDL project (Figure 2).

As the lead agency for the Lower Clearwater River TMDL project, WRD developed an EPA-approved Quality Assurance Project Plan (QAPP), Standard Operating Procedures (SOPs), held public meetings and contracted with private business to produce remotely

sensed temperature and streambank stability data for reservation sub-basins and write the TMDL report. This TMDL is presently in publication.

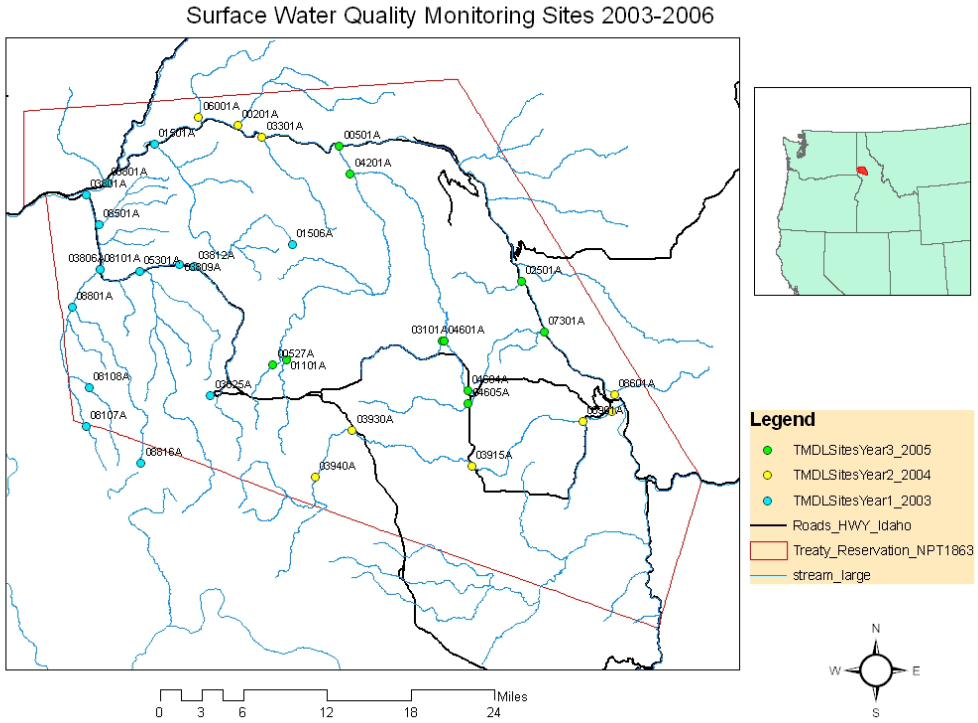

Figure 2. Lower Clearwater River Basin TMDL data collection sites.

In addition to developing and administering water resource monitoring programs on the reservation, WRD staff serve on regional Technical, Watershed, and Basin Advisory Groups (TAGs, WAGs, BAGs), serve on technical review teams and committees, review and comment on permit applications, assist other tribes with water resource programs and publications, identify and prioritize watershed restoration needs, provide education and outreach to local communities and investigate complaints from local citizens. The WRD is also in the process of developing Tribal ground water standards. The initial draft of tribal water quality standards was prepared in 1995 but can not be implemented until approved by the Secretary of the Department of Interior (DOI) and EPA.

Several factors influence the ability of the Tribe to establish and enforce water quality standards on the reservation. The most problematic factors were created by the impacts of the Dawes Act of 1887 and historical and present rulings of judicial officials. which encumber or prevent the Tribe from exercising authority within its homeland while regulations developed through legislative actions of the federal government require the Tribe to exercise authority over the natural resources within the reservation. The Tribe is responsible for water quality over almost 800,000 acres of land and receives approximately $0.16 per acre to assess, monitor, analyze, prioritize, enforce and restore

the water resources under the 106 program. At this time, the Tribe has ownership of 14% of lands within the reservation and 88% of the population is non-tribal (CERF, 2007).

In order to accomplish the water quality standards portion of the 106 program, WRD will continue to use a cooperative approach based on relationships with other tribal departments, local, state and federal agencies. During the past 14 years, the Tribe has developed a mature water resource program and will continue to work with DOI and EPA toward modifying and/or approving the Tribal water quality standards developed in 1995 and reach an agreement regarding enforcement responsibilities.

Monitoring Objectives

WRD will develop new work plans and strategies to meet EPA's recently revised goals for the 106 program. All previous inventories and assessments document the need for comprehensive baseline water quality and quantity data within the reservation. There are several agencies which have intermittently collected data from water resources within the reservation at various times within the past 100 years. This data is not readily available, but is useful and necessary in order to assess trends in water quantity and quality. The most important task in developing a comprehensive water resource program is to recover historical water resource information and transfer that information to a digital format for future access and analysis. This would require at least one year of professional staff time. Incorporating data for each resource type into an interactive mapping/database application is an important part of data analysis and reporting. These products would require additional resources to establish a framework, but maintenance of the data would be minimal once the framework is in place.

WRD has collected recent water quality data for non-point source projects, Tribal Fisheries Watershed, TMDLs, Tribal Trout Ponds, Tribal Utilities, and a Bureau of Reclamation project. This data includes benthic macro-invertebrates, remotely sensed stream temperature data, remotely-sensed riparian zone shade and bank stability data, water chemistry and physical assessment data. Historical and collateral project data may be the only data collected and reported which meets 106 program requirements. Assessing the quantity and quality of surface and ground water on the reservation, monitoring trends of identified pollutants (based on the 1996 State of Idaho impaired waters list and land use practices), identifying emerging pollutants, protecting source areas and quantifying poorly understood contaminants remain priority goals for the Tribe. In order to accomplish these goals and meet objectives of the 106 program, funding from other sources will be pursued and data collected through other programs will be reported to meet the 106 program requirements. The new Plan2Fund software may be a useful tool for the Tribe in the analysis and project planning stage and should be explored during the workplan development phase of the 106 program.

During the timeframe covered by this document WRD will continue to provide technical assistance to the Tribe, develop new resource management strategies, collect water quality data—directly or by data request from other departments and agencies as funds are available, and pursue funding opportunities to support water resource management

objectives. Data collected will be analyzed to determine whether or not water quality meets federal criteria for designated uses until Tribal standards are in place.

Streams and Rivers

The surface water resource objectives of the Nez Perce Tribe include implementing plans to limit or reverse the dewatering of tributaries to the Clearwater River and reduce the delivery of pollutants to tribal waters through non-point and point sources. The Tribe recently finalized an interagency agreement with the federal government and Idaho regarding the adjudication of Tribal waters. The agreement includes a list (A and B) of 190 streams with defined minimum stream flows on the reservation and within the Tribes usual and accustomed territory. Monitoring the flow in these streams is essential to establishing the current condition of these waters and ensuring the agreement the Tribe is a party to is fulfilled. This project would initially require four FTE for four years and could then be managed with two or three FTE for as long as the Tribe elected to monitor surface water discharge.

The Tribe has designated all waters of the reservation for the beneficial use of primary contact recreation and other beneficial uses may need to be designated to specific segments of Tribal streams. This is a labor intensive effort requiring personnel with specialized skill sets and could be accomplished by 2 FTE over 12 to 18 months and would include public outreach and education and publication of results.

After beneficial uses for reservation waters are designated, the water quality standards first developed by the Tribe in 1995 can be revised to incorporate all designated uses, recently revised EPA ecoregion designations and updated criteria guidance. This process could be accomplished by .5 FTE over 12 to 18 months and .5 FTE would be necessary for 6 months to review and revise standards every 3 years.

The Tribe has participated in all TMDLs conducted within the reservation and in sub-basins adjoining the reservation. The TMDL for the Lower Clearwater River is in publication and includes all sub-basins on the reservation. The Tribe invested in remote sensing technology, provided by a contractor, to collect data for the two most pervasive pollutants of reservation waters, temperature and sediment. These data sets provide information for additional resource management applications and can be used to identify source water protection zones, areas especially sensitive to development or specific land use, and to monitor trends and responses to climate change or population density changes. As TMDL plans are implemented monitoring will be incorporated to assess effectiveness and determine trends in surface water quantity and quality on the reservation. This is a dynamic and collaborative process and will be developed in partnership with other stakeholders in the area.

Ground Water

The Tribe is currently promulgating a Ground Water Protection Code with ground water quality standards. This code is designed to be similar to existing policies of the state of Idaho for the purpose of protecting this resource for the Tribe and the non-tribal population which depends on ground water for almost all domestic supply. The Tribe

could also develop drinking water standards, well drilling regulations and a process for permitting ground water use within the reservation. A long-term water level and water quality data collection program are necessary to establish current conditions of tribal aquifers and monitor trends in ground water quality and quantity. This program would require at least 2 FTE in a permanent capacity.

The state of Idaho has two ground water quality monitoring programs. One is administered through the Department of Agriculture and the other is administered through the Department of Water Resources (IDWR). The Indian Health Service (IHS) and state health departments also collect ground water quality data on an occasional basis. Data from these sources needs to be retrieved and entered into the Tribe's water quality database for future access and analysis. The data would be more useful if ground water well locations were also plotted on an interactive map and the data (drill log, construction diagrams, analysis reports) linked to each location and accessible through the Tribe's intranet to program and resource managers. The data should be analyzed for identification and delineation of aquifers-- with chemical signatures identified for each aquifer if possible, assessment of compliance with national primary and secondary drinking water standards and development of potentiometric surface maps for each aquifer. It is possible that enough data exist in some regions of the reservation to develop risk potential maps for constituents of concern; nitrate, pesticides and *E. coli*., and groundwater management areas identified. The Tribe will continue to seek funding to develop and implement a comprehensive study of ground water quality for long- term monitoring and trend assessment.

IHS is the agency designated with the responsibility of assisting the Tribe with domestic water supplies and has contracted with local or regional firms to drill and develop individual and community supply ground water wells and septic systems. From 1961 through 1980 IHS contracted to drill and develop at least 270 ground water wells on the reservation. Basic water chemistry data was collected from some of these wells when they were drilled, but most have no baseline geochemical data. An interactive map with locations of all IHS projects plotted on the map and linked to copies of all information (drillers logs, construction diagrams, water quality analysis, etc.) for each location would help the Tribe provide important information to tribal members, manage infrastructure maintenance issues and plan for future replacement costs. This would require one FTE for 12 to 18 months and .25 FTE to maintain the database and interactive map

Wetlands

The water quality of tribal wetlands is unknown but recent botanical inventories conducted by the Tribe, with funding from EPA, indicate widespread degradation of the resource by current land use practices. Approximately 67% of tribally owned wetlands on the reservation have been inventoried and mapped during the past two years and this effort is expected to be complete within the next fiscal year. Wetlands of interest for future acquisition have also been identified in hopes of preserving and restoring this resource for the Tribe. Chemical analysis of water quality samples collected from each wetland is needed and would included metals, common ions, nutrients and pesticides.

Analysis of results would identify the most severely impaired wetlands and assist in prioritizing areas for restoration and land use modification.

Thermal infrared data collected every 5 to 7 years can also provide wetland size and water temperature data necessary to monitor trends in wetlands which can then be correlated with population density, changes in land use, climate change, etc. It may also be possible to monitor trends in wetlands using remotely sensed spectrographic data collected in partnership with the University of Illinois. Spectrographic data can be used to identify vegetation changes without physical field visits, which may not be visible or noticeable on the ground, which improves data accuracy and saves time. These projects would require 1.5 FTE on an ongoing basis.

Springs

There are many springs on the reservation and as this resource has traditionally provided for most of the Tribes domestic, cultural, and ceremonial needs the quality of these waters is important. In 1976, the IDWR documented 120 springs on the Clearwater Plateau but did not collect water quality data. Like many creeks and streams on the reservation, springs have been affected by land use practices, and possibly climate change, and show evidence of diminished flow and impairment from bacteria and nutrients. WRD is cooperating with other agencies to collect baseline physical and geochemical baseline information from this resource and will need to secure a source of long-term funding for continued analysis and assessment of Tribal springs. A multi-agency search for historical water quality data may result in historical baseline information of Tribal springs which could be entered into the Tribe's water quality database for use in future analysis and trend determination.

Thermal infrared data collected every 5 to 7 years can also provide location, change in saturation area and water temperature data necessary to monitor trends in springs which can then be correlated with population density, changes in land use, climate change, etc. It may also be possible to monitor trends in springs using remotely sensed spectrographic data collected in partnership with the University of Illinois. Spectrographic data can be used to identify vegetation changes without physical field visits, which may not be visible or noticeable on the ground, which improves data accuracy and saves time. These projects would require 1 FTE on an ongoing basis.

Lakes and Reservoirs

There are five large impoundments on the reservation, all of which are man-made: Dwarshak Reservoir, Mann Lake, Winchester Lake, Mud Springs and Talmaks Reservoir. Because these are relatively recent water bodies, historical data is limited to the past 50 or 60 years and usually provides information only on basic physical parameters. Observations of impaired water quality have been recorded from the early 1990's to the present in all reservation impoundments. With the exception of Dwarshak Reservoir nutrient loading from agricultural activities and elevated temperatures create hypoxic conditions in the impoundments and contribute to the degradation of water quality in streams and rivers. Dwarshak Reservoir is nutrient poor and dam releases have thermally altered the Clearwater River downstream of the dam to a cold water regime

during the summer months. These waterbodies play a key role in the water quality of streams and rivers they drain into and merit more rigorous study. Mud Springs and Winchester Lake are the only impoundments the Tribe has collected water quality data from and there are data gaps in baseline geochemistry, aquatic biota, sediment chemistry and physical parameters for all impoundments on the reservation.

It may be possible to develop a water quality data collection program in cooperation with other agencies so that the Tribe would not need to make large equipment purchases necessary to collect the data, but unless those programs are based on long-term commitments, equipment costs are a limiting factor to data collection from this resource type. Contacting various federal and state agencies with a request for historical water quality data from these impoundments may provide some baseline information, but results of an inquiry are uncertain. Constituents of concern in these water bodies are invasive species, nuisance algae, temperature, sediment, nutrients, bacteria, pesticides and dissolved oxygen.

106 Program Monitoring Design

The 106 program is one component of the WRD water quality program. Funding from this program enables the Tribe to participate in numerous local and regional water resource management activities, some of which are water quality data collection, analysis, and assessment of tribal waters. Modifications in EPA's administration of the 106 program and distribution of funds will determine the scope and frequency of future monitoring activities. The following table (Table 1) summarizes a comprehensive ambient and synoptic monitoring strategy for waters of the reservation.

The EMAP methodology was considered as a monitoring methodology, but based on the stream order designation used in the EMAP model, a significant number of reservation streams would be excluded from the monitoring design, but would still require monitoring to determine compliance with the SRBA minimum stream flows or to determine attainment of designated beneficial uses. Additionally, because funding methods for monitoring programs are short term and competitive, WRD will rely on multiple sources for data and will not generally be the determining agency for selection of sites, parameters, frequency, or analytical method and will evaluate each dataset submitted for inclusion or exclusion of assessment or analysis. For these reasons probability-based design is not realistic for the 106 program.

A stratified random design, prioritized by potential for long term access and integration of key spatial features, will be used to determine representative sample locations for long term monitoring by WRD. As the primary goals of the 106 program are to assess the quality of Tribal waters with regard to supporting designated beneficial use (drinking, swimming, fishing, etc.) and monitor trends in water quality over time, a random design can accomplish both of those goals and provide defensible conclusions. Statistical analysis can yield quantifiable results with a defined confidence interval for representative samples collected using this design. The Visual Sampling Plan (VSP) software could be used to facilitate the sample location selection process, but would need

to be revised every time a new dataset was received and/or contemplated by cooperating agencies and may not be the best use of planning time.

Table 1. Description of monitoring strategy for WY 2008-2018 by water resource type.

Resource Type	Monitoring Design WY 2008-2018
Streams and Rivers	1. Identify stream segments at risk from point source discharges and list the constituents of concern from each point source. Create an interactive point coverage (map) linked to a point source database and maintain an accurate facilities/constituents database and point coverage for new sources and identify retired sources. 2. Create a digital coverage of land use within certain distances of streams of the reservation and monitor the change in land use near stream corridors each decade. 3. Periodically (monthly for one year on a 4 or 5 year rotation) measure instantaneous discharge at A and B list streams (Appendix A) identified in the Snake River Basin Adjudication (SRBA) settlement. 4. Continuously (every 30 minutes for an entire water year, every 3 years) record instrumented water level measurements at key tributary locations in 19 sub-basins in the Clearwater River Basin. 5. Periodically (once every 3 to 5 years during low water in winter or summer conditions) assess and collect benthic macroinvertebrate samples and record riparian zone habitat conditions at key tributary locations in all 19 sub-basins in the Clearwater River Basin. Include constituents of concern for specific stream segments from point sources identified in step 1. 6. Periodically (monthly for one water year, every 3 to 5 years) collect physical data and samples for analysis of basic chemical parameters (metals, nutrients, ions, etc.) and constituents of concern (pesticides, bacteria, emerging contaminants, etc.) from key tributary locations in all 19 sub-basins in the Clearwater River Basin. Include constituents of concern for specific stream segments from point sources identified in step 1. 7. Collect the same data described in item 4 during 2 storm events. 8. Use remote sensing to periodically (every 3 to 5 years) measure stream width, gaining and losing reaches and temperature.
Ground Water	1. Identify all ground water wells within the reservation and locate all active water wells on tribal land. 2. Identify aquifers at risk from point source discharges and list the constituents of concern from each point source. Create an interactive spatial point coverage linked to a point source database and maintain an accurate facilities/constituents database and point coverage for new sources and identify retired sources. 3. Measure the water level in all active water wells on a regular basis (quarterly for one year, every 5 to 7 years). 4. Periodically (bi-annually every 3 to 5 years) collect physical water property data and water samples for chemical analysis of basic

	water quality parameters (metals, ions, etc.) and constituents of concern (pesticides, nutrients, bacteria, emerging contaminants, etc.) from tribal wells. Include constituents of concern for specific ground water zones/aquifers from point sources identified in step 2. 5. Continuously (every 30 minutes, year-round) collect instrumented water level of ground water wells identified as potentially sensitive to seismic events, climate change, or surface activities. 6. Continuously (quarterly, year-round) collect physical property data and samples for water chemistry analysis of ground water wells identified as potentially sensitive to climate change or surface activities.
Springs	1. Locate all springs on the reservation and identify the springs on tribal land. 2. Identify springs at risk from point source discharges and list the constituents of concern from each point source. Create an interactive spatial point coverage linked to a point source database and maintain an accurate facilities/constituents database and point coverage for new sources and identify retired sources. 3. Use remote sensing to periodically (every 3 to 5 years) monitor the general size and temperature of springs. 4. Periodically (quarterly, every 3 to 5 years) collect physical information and samples for chemical analysis of basic parameters (metals, ions, etc.) and constituents of concern (pesticides, nutrients, bacteria, emerging contaminants, etc.) from tribal springs. Include constituents of concern for specific springs from point sources identified in step 2.
Wetlands	1. Locate all wetlands on the reservation and identify those on tribal land. 2. Identify wetlands at risk from point source discharges and list the constituents of concern from each point source. Create an interactive spatial point coverage linked to a point source database and maintain an accurate facilities/constituents database and point coverage for new sources and identify retired sources. 3. Use remote sensing to periodically (every 3 to 5 years) monitor the general size and temperature of wetlands. 4. Periodically (quarterly, every 3 to 5 years) collect physical information and samples for chemical analysis of basic parameters (metals, ions, etc.) and constituents of concern (pesticides, nutrients, bacteria, emerging contaminants, etc.) from tribal springs. 5. Partner with the University of Illinois to collect spectrographic data of wetlands on the reservation.
Lakes and Reservoirs	1. Locate all surface water impoundments on the reservation and identify the impoundments on tribal land. 2. Identify impoundments at risk from point source discharges and

	list the constituents of concern from each point source. Create an interactive spatial point coverage linked to a point source database and maintain an accurate facilities/constituents database and point coverage for new sources and identify retired sources. 3. Use remote sensing to periodically (every 3 to 5 years, summer conditions) monitor the general size and temperature of all impoundments on the reservation. 4. Periodically (bi-annually every 3 to 5 years) collect physical information and samples for chemical analysis of basic parameters (metals, ions, etc.) and constituents of concern (pesticides, nutrients, bacteria, emerging contaminants, etc.).

The monitoring design for the reservation is based on the 10 elements for monitoring and assessment recommended by EPA to states (2003). This strategy describes the activities and methods that are useful and necessary but does not commit the Tribe to performing those activities or using the methods as there is no process to guarantee or provide funding for assessment or monitoring of the Tribes water resources. The Tribe competes for 106 program funding on a yearly basis and has not received funds to assess or monitor water resources in a systematic or sustained manner or on a scale as comprehensive as that required for the 106 program.

The monitoring design for each water resource type (surface, ground, wetland, etc.) is an integrated design which incorporates what is known about a resource within an area to develop cooperative programs with other agencies to determine data collection locations and parameters. Some monitoring programs will use a targeted approach and others will use a random approach. In general, the stratified random approach is more useful for programs without historical, baseline, or detailed existing data and will dominate the 106 monitoring strategy.

Water Quality Indicators

Because the Tribe is in the process of developing water quality standards, existing federal standards and criteria are used to determine the impairment status of water resources on the reservation. Surface water impairment is determined by whether or not a waterbody is supporting the designated beneficial use (based on Tribal resolution NP-03-136) and ground water impairment is determined by whether or not a ground water resource is safe to drink in accordance with national primary and secondary drinking water standards.

The 106 program requires that waters be monitored for nine key parameters: dissolved oxygen (DO), water temperature, pH, turbidity, nutrients—total phosphorus and total nitrogen, habitat, benthic macroinvertebrates and pathogens. Because a review and analysis of historical data has not been conducted baseline conditions of reservation waters is unknown for these parameters. Recent assessments and TMDLs have identified segments of reservation surface waters impaired for flow alteration, water temperature, nutrients, habitat, bacteria and sediment and implementation plans are being developed to address impairments. Future surface water quality monitoring will focus on trends in listed impairments, pesticides and emerging contaminants.

The process for determining the frequency of data collection and the scope of analysis for each resource area or type will be determined during the workplan development stage based on the results of activities completed as outlined in the "Monitoring Design" section. In general, a workplan for a specific year or project will identify the issue of concern for a watershed or a resource type, define the scope of historical data review and analysis, explain the key constituents to be evaluated and describe the method of data collection, analysis and reporting. These workplans are developed in preparation for specific projects on an ongoing basis and implemented when funding is received.

Quality Assurance

The Tribe has developed several SOPs and quality assurance documents and requests similar documents from other Tribal departments and agencies as cooperative projects are developed or data is shared. These documents are used to populate metadata sources and as reference material to develop future programs. Recent QAPPs developed for water resource programs are "Quality Assurance Project Plan for the Lower Clearwater River TMDL", 2003; "Quality Assurance Project Plan for the Lapwai Valley Source Water Protection Project", 2005; and "Quality Assurance Project Plan for Water Quality Monitoring of Springs of the Nez Perce Reservation", 2006. The SOPs for activities conducted by WRD personnel are developed for each data collection and processing activity and very similar to the procedures used by the US Geological Survey described in "*National field manual for the collection of water-quality data:* TWRI, Book 9". QAPPs and SOPs are continually revised to reflect corrections in previous revisions, updated methods, or acquisition of new instrumentation and equipment. Every 3 to 5 years, a third-party audit of all aspects of the water quality program should be conducted to facilitate implementation of new technologies, share concerns and refine methods and techniques.

Data Management

The Tribe manages data cooperatively and collaboratively within the Tribe and with other agencies. The Tribe has sponsored and authored numerous reports and investigations of natural resources within the reservation and the Tribe's indigenous territory but does not have an indexing method, library, or designated archive space to house these documents and products. Maintaining an index of completed work and existing references and resources is fundamental to the successful development of a resource management program and is a necessary component of the monitoring strategy. Locating completed work, transferring documents to digital media and creating a searchable index of the documents would require 2 FTE over a period of 12 to 24 months and designated physical space in a temperature controlled location and approximately .25 FTE to maintain the directory and repository.

The Tribe's Land Services Division is responsible for maintaining the framework for all mapping applications and establishing protocol for GIS applications. The WRD works with Land Services or other contractors to produce thematic maps for specific projects and uses the National Hydrographic Dataset to define assessment units and data collection locations.

The Tribe uses MicroSoft™ software applications to manage data and has recently (2005) developed a data management SOP to safeguard original data, transfer recorded data to digital media, edit and validate electronically recorded data. Because some data managed by WRD is proprietary to the Tribe, the Tribe is developing a stand-alone STORET database to comply with revised 106 program guidance. A SOP for processing and managing data in this database is being created as the data transfer and storage process is being developed. Original project data is housed in the WRD office.

Data Analysis/Assessment

The Tribe uses general commercial software for all data management, analysis and assessment projects. Data from all available sources is solicited and evaluated for usefulness in resource management activities. Data with QAPPs, SOPs, and established validity is scarce within the reservation and as agencies experience funding shortfalls, waters of the reservation receive less attention. The Assessment DataBase software tool may be helpful to the Tribe in creating an initial 305(b) report and updating future reports.

After data is reviewed, edited and validated to determine a confidence interval for accuracy, results are compared to applicable water quality standards (based on water type) and variance from standards are identified. Data are often integrated spatially with resource data from other sources, landuse, point sources, BMPs, etc. to determine potential sources or contributions to identified impairments. The sample locations which report sample results indicating exceedance of standards will be identified, and correlated with results of spatial analysis to identify and prioritize future program development. The Tribe has not developed a response protocol, standards, or guidelines which establish a process for resolving non-attainment of standards or criteria issues.

The importance of allocating time to analysis of data is often overlooked in project descriptions and budgets. Specialized software applications, i.e. Aquarius™, would make the analysis and assessment process more efficient and accurate but additional funding for personnel and training is also necessary to effectively manage and analyze data.

Reporting Schedule and Performance Evaluation Process

The current 106 program requires the Tribe to submit quarterly reports of activities to EPA. Approximately 8 FTE days per quarter are necessary to produce required reports. The new reporting requirements for the 106 program will require substantially more time and effort to produce, in part because some of the required products have never been created and the data is housed in several different federal, state and local agencies. The following table (Table 2) provides an estimation of effort to meet the new reporting requirements. With the exception of the atlas and the annual data report, the Tribe is already producing these reports as part of the normal work for all projects. The total hours estimated to meet the reporting requirements for the 106 program are 2,194 or just over 1 FTE per year.

Table 2. Estimation of personnel and timeline to produce required 106 reports.

Report	**Personnel**	**Estimated Time Required-(in FTE)**	**Frequency**
Atlas	Land Services, Indian Health Services, Wetlands Planner, Idaho Dept. Water Resources, GIS Analyst	30 days	Annually
QAPPs (Monitoring Plan—project specific/resource type)	Water Quality Specialist, GIS Analyst, Quality Assurance Coordinator	18 -30 days	Annually
SOPs	Water Quality Specialist, Quality Assurance Coordinator, Hydrologic Technician	3-5 days each	Ongoing
Integrated Report: 1. Annual data report 2. 305(b)/303(d) report 3. Assessment of Tribal Water Resources	Water Quality Specialist, Hydrologic Technician, Quality Assurance Coordinator, GIS Analyst	5-15 hours per site, project specific; 80 hours per sub-basin (19 on reservation)	Annually
Evaluation Report	Water Quality Specialist	50 hours	Semi-Annually

The atlas will take slightly less time to maintain once created, but requesting data needed from other agencies and then verifying data accuracy requires substantial effort. The same is true of the integrated report. Data will be requested from other agencies and Tribal departments, reviewed for accuracy, QAPPs, SOPs, comparability and representativeness. The reported results will then be compared to water quality standards criteria based on water resource type and designated beneficial use. Historical and current data form locations, stream segments, aquifers, waterbodies, climatological sites and watersheds will be analyzed to determine trends and identify emerging public health or resource concerns. The results of the analyses will be summarized in the report and a list of waters (indexed by resource type) will be compiled and divided into "meets criteria" and "does not meet criteria" sections. A spatial representation of the lists will be created to provide a visual representation of the lists in a two-dimensional format. The most recent 305(b)/303(d) report from the state of Idaho excludes waters of the reservation and is 2002 information, published in 2005.

The Tribe is in the final publication phases of the Lower Clearwater River TMDL report and will be preparing an implementation plan for all 19 sub-basins on the reservation. This report is the culmination of 3 years of funding and 5 years of effort by multiple agencies and addresses listed surface water impairments from the 1996 state of Idaho list, except for synthetics, petroleum products and pesticides.

Programmatic Evaluation

The Tribe has several processes and methods for evaluating existing monitoring programs. These methods have been developed to fulfill funding agency requirements and resource management needs and range in frequency from quarterly to triennially. If the 106 program was designed to provide the foundation for a permanent long term water resource monitoring program, an evaluation of data collected, trends, methods and results would be conducted every 5th year of the program and adjustments to data collection plans made for years six through nine, then year 10 would be spent evaluating the program, etc. Because the 106 program is a short term competitively funded program, it will be evaluated as required by 40 CFR 35.515, but on a semi-annual basis:

> "(a) *Joint evaluation process.* The applicant and the Regional Administrator will develop a process for jointly evaluating and reporting progress and accomplishments under the work plan (see section 35.507(b)(2)(iv)). A description of the evaluation process and reporting schedule must be included in the work plan. The schedule must require the recipient to report at least annually and must satisfy the requirements for progress reporting under 40 CFR 31.40(b).
> (b) *Elements of the evaluation process.* The evaluation process must provide for:
> (1) A discussion of accomplishments as measured against work plan commitments;
> (2) A discussion of the cumulative effectiveness of the work performed under all work plan components;
> (3) A discussion of existing and potential problem areas; and
> (4) Suggestions for improvement, including, where feasible, schedules for making improvements.
> (c) *Resolution of issues.* If the joint evaluation reveals that the recipient has not made sufficient progress under the work plan, the Regional Administrator and the recipient will negotiate a resolution that addresses the issues. If the issues cannot be resolved through negotiation, the Regional Administrator may take appropriate measures under 40 CFR 31.43. The recipient may request review of the Regional Administrator's decision under the dispute processes in 40 CFR 31.70.
> (d) *Evaluation reports.* The Regional Administrator will ensure that the required evaluations are performed according to the negotiated schedule and that copies of evaluation reports are placed in the official files and provided to the recipient. "

General Support and Infrastructure

The Tribe has been able to develop and conduct monitoring programs for each water resource type in all sub-basins on the reservation by developing cooperative agreements and collaborative relationships with other Tribal departments, local, state and federal agencies, but lacks the funding to collect or analyze historical and baseline data of water resources on the reservation. For previous programs the Tribe developed a cooperative agreement with other agencies or used contract lab services. This provided the Tribe with useful data for several programs, but the expense of shipping samples ($90.00 per field day), logistical limitations for holding times, sample contamination through field preserving in uncontrolled conditions, personnel and environmental exposure to concentrated chemical reagents, frequent lab mistakes and instrument failures, increased

vehicle expenses for short field days, etc. increase the expenses of the program while reducing the merit of the data used to assess and monitor water resources.

In order to adequately assess and monitor Tribal water resources and produce the data and reports required under the revised 106 program guidance the Tribe needs to acquire portable analytical instruments, purchase hydrology-specific software, provide continued professional development for staff and purchase continuous recording instruments. In order to implement this monitoring strategy, in addition to the needs listed above, the Tribe will also require long term funding for water quality programs, a plan to recruit and retain 12 to 15 qualified personnel, a camper shell equipped to conduct simple analysis in the field and office space and infrastructure for additional staff and sample preparation.

Table 3. Summary of existing and anticipated 106 program resource needs.

Program Objectives	**Personnel (FTE)**	**Equipment**	**Contract Services**	**Capital Resources**
Current	1.5—Scientist/PM, Hydrologic Technician	IDEXX microbial pathogen quantification, continuous data recording instruments, vehicles	Remote sensing, laboratory analysis, training	Office space, storage shed
Planned	Scientist/PM (2), GIS Analyst (.5), Quality Assurance /Report preparation (2.5), Hydrographer, Hydrologic Technicians (7)	Vehicles, mobile labs, portable analytical instruments, continuous data recording instruments	Remote Sensing, data collection, report preparation, training	Office space, storage shed, sample preparation area

In terms of general support, funding consistency and assurance is the most important issue for the 106 program. The Tribe is in an EPA region which includes 43% of the Native American Tribes in the US which compete for 13% of national 106 program funds. The Tribe supports EPA in its desire to achieve strategic goals and suggests that a more equitable distribution of 106 funds be considered as one method to achieve those goals. The current style of program funding contributes to existing difficulties in recruiting and retaining qualified personnel at all levels of resource management and the Tribe is frequently obligated to allocate resources to acquire and train staff after workplans, budgets and resources have been approved or allocated for other purposes.

Appendices

Appendix A

A and B List Streams from the Snake River Basin Adjudication (SRBA) Agreement.

Attachment 1- List A Minimum Stream Flows

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Federal Wilderness 30% Recommended Exceedence and 5% Future Non-DCMI, Subordinated to all future DCMI.														
426	Bargamin Creek	Salmon River	32	27	32	172	741	637	147	49	41	42	40	34
341	Bear Creek	Selway River	161	185	317	1010	2708	1878	404	136	97	147	195	220
967	Bear Valley Creek	Middle Fork Salmon River	109	105	119	343	1434	1249	350	164	136	143	142	120
655	Big Creek	Middle Fork Salmon River	317	289	324	767	2510	3496	1242	527	398	363	371	327
697	Big Creek	Middle Fork Salmon River	12	11	12	44	191	212	53	18	12	13	13	13
208	Big Flat Creek	White Sand Creek	19	24	26	67	188	200	41	16	15	14	17	15
206	Big Sand Creek	White Sand Creek	97	127	129	345	954	1052	213	80	79	70	90	77
237	Boulder Creek	Lochsa River	38	59	72	259	389	213	38	17	16	26	44	51
751	Brush Creek	Middle Fork Salmon River	14	13	13	33	155	187	55	26	19	19	16	16
124	Brushy Fork	Crooked Fork	111	139	153	382	1072	1189	236	90	89	79	101	86
366	Buck Lake Creek	Meadow Creek	23	29	32	81	236	250	50	19	19	17	22	18
782	Camas Creek	Middle Fork Salmon River	229	203	238	550	1793	2497	869	375	284	253	273	229
540	Chamberlain Creek	Salmon River	131	107	130	298	992	1374	474	211	159	143	142	131
311	Clear Creek	Middle Fork Clearwater River	37	57	68	246	377	200	36	16	16	25	42	49
139	Crooked Fork	Lochsa River	181	220	365	1146	3062	2128	460	148	108	168	217	250
351	Cub Creek	Bear Creek	101	127	141	370	1025	1139	224	85	84	76	96	82
433	Deep Creek	Selway River	38	49	53	136	377	426	83	32	31	28	36	31
791	Dynamite Creek	Marble Creek	9	8	9	27	109	101	27	13	11	11	11	10
258	E. Fork Moose Cr.	Moose Creek	231	301	329	838	2355	2629	516	193	195	168	217	190
972	Elk Creek	Bear Valley Creek	46	43	46	137	562	524	147	68	56	58	57	51
201	Fish Creek	Lochsa River	111	174	200	727	1119	601	109	49	47	76	130	150
320	Gedney Creek	Selway River	36	56	68	246	365	200	36	16	15	25	42	49
370	Goat Creek	Selway River	20	25	27	71	200	225	44	17	16	15	18	16
345	Hamby Fork of O'Hara Creek	O'Hara Creek	8	13	15	53	80	44	8	4	3	5	9	11
554	Horse Creek	Salmon River	83	80	107	321	801	712	192	95	84	92	97	88
198	Hungery Creek	Fish Creek	41	64	78	271	412	225	41	18	17	28	48	55
412	Indian Creek	Selway River	40	51	55	136	400	438	87	33	32	29	37	32
795	Indian Creek	Middle Fork Salmon River	45	42	45	137	550	499	135	66	53	56	55	49
419	Johns Creek	South Fork Clearwater River	34	44	72	283	459	250	56	23	19	25	34	34
675	Logan Creek	Big Creek	10	9	10	35	155	175	44	14	10	11	11	10
824	Loon Creek	Middle Fork Salmon River	208	182	216	492	1673	2248	790	340	261	231	240	207
278	Maggie Creek	Middle Fork Clearwater River	9	23	38	55	49	31	8	3	4	4	8	8
805	Marble Creek	Middle Fork Salmon River	67	62	68	206	825	762	203	98	81	85	82	74
971	Marsh Creek	Middle Fork Salmon River	90	82	83	218	1040	1249	361	164	125	121	108	103
321	Marten Creek	Selway River	21	28	29	76	212	238	47	18	17	16	21	17
347	Meadow Creek	Selway River	181	220	247	628	1766	2003	381	148	141	126	163	140
322	Mink Creek	Selway River	9	11	13	32	89	99	20	7	7	7	8	7

Attachment 1- List A Minimum Stream Flows

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
671	Monumental Creek	Big Creek	50	47	53	183	801	924	226	74	53	57	58	53
292	Moose Creek	Selway River	302	359	600	1848	5181	3505	774	250	184	283	358	411
272	N. Fork Moose Cr.	Moose Creek	131	150	259	826	2237	1502	336	108	79	126	152	180
325	O'Hara Creek	Selway River	30	46	56	197	306	163	30	14	13	21	35	41
346	O'Hara Creek	Selway River	14	22	27	96	141	79	15	6	6	10	16	19
261	Old Man Creek	Lochsa River	34	52	63	222	342	188	34	15	15	23	39	46
133	Papoose Creek	Lochsa River	19	24	26	67	188	213	41	16	15	14	17	15
273	Pete King Creek	Lochsa River	13	20	24	84	130	70	12	6	5	9	14	17
291	Pettibone Creek	Selway River	30	38	41	107	306	338	66	25	25	22	28	24
855	Pistol Creek	Middle Fork Salmon River	62	58	63	195	765	699	192	91	75	78	75	69
874	Rapid River	Middle Fork Salmon River	62	57	58	149	717	874	248	115	89	84	75	72
1036	Redfish Lake Creek	Salmon River	17	17	30	108	275	287	76	29	22	21	21	19
270	Rhoda Creek	Selway River	57	73	79	197	565	626	123	48	47	42	53	46
386	Running Creek	Selway River	78	100	107	283	777	864	168	65	64	58	73	63
706	Rush Creek	Big Creek	37	34	39	137	586	687	169	55	40	42	43	39
464	Sheep Creek	Salmon River	21	18	19	72	335	350	107	35	26	32	31	24
775	Sheep Creek	Middle Fork Salmon River	13	12	12	32	155	187	53	25	18	18	16	15
773	Silver Creek	Camas Creek	26	25	25	64	311	375	106	49	37	36	32	31
639	Smith Creek	Big Creek	9	9	10	34	143	175	41	14	10	10	11	10
126	Spruce Creek	Brushy Creek	35	44	48	123	353	388	76	30	29	26	33	28
135	Squaw Creek	Lochsa River	24	30	33	84	236	263	52	19	19	18	22	19
918	Sulphur Creek	Middle Fork Salmon River	28	27	29	87	347	325	88	42	34	36	35	32
425	Tenmile Creek	South Fork Clearwater River	18	23	38	148	247	138	30	11	11	14	18	18
414	Three Prong Creek	Meadow Creek	10	13	13	35	95	105	21	8	8	7	9	8
526	W. Fork Chamberlain	Chamberlain Creek	7	6	7	41	167	150	35	11	9	10	9	8
174	Walton Creek	Lochsa River	10	13	14	36	101	111	22	8	8	7	9	8
187	Warm Springs Creek	Lochsa River	82	104	113	296	824	901	179	68	67	60	77	66
227	West Moose Cr.	North Fork Moose Creek	31	39	42	111	306	338	68	26	26	23	29	25
388	White Cap Creek	Selway River	151	197	212	542	1531	1627	336	125	130	115	141	120
154	White Sand Creek	Lochsa River	241	289	482	1479	4122	2879	617	205	152	231	293	331
460	Wilkerson Creek	Selway River	28	36	39	100	283	313	62	24	23	21	26	22
519	Wind River	Salmon River	23	21	22	82	382	400	124	40	30	36	34	27
250	Wounded Doe Cr.	Rhoda Creek	17	22	24	60	165	188	37	14	14	13	16	14
1066	Yellow Belly Lake Cr.	Alturas Lake Creek	5	5	8	29	73	75	20	8	6	5	6	5

Attachment 1- List A Minimum Stream Flows

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Federal Non-Wilderness 40% Recommended Exceedence and 10% Future Non-DCMI, Subordinated to all future DCMI.														
75	Elk Creek	North Fork Clearwater River	119	193	229	482	260	90	27	19	24	32	58	77
1078	Alturas Lake Creek	Salmon River	21	21	37	115	305	313	82	35	26	24	25	23
389	American River	South Fork Clearwater River	29	38	66	262	447	227	51	22	19	22	30	28
382	Big Elk Creek	American River	7	8	15	58	98	51	11	5	4	5	7	6
4	Canyon Creek	Little N.F. Clearwater River	45	78	169	293	198	114	51	46	42	40	62	36
94	Cayuse Creek	Kelly Creek	159	248	318	1152	1767	919	168	81	78	112	186	209
14	Collins Creek	Skull Creek	23	35	46	168	260	134	24	11	11	16	27	30
396	Cougar Creek	South Fork Clearwater River	2	3	5	19	31	17	4	2	1	2	2	2
420	Crooked River	South Fork Clearwater River	19	25	44	168	291	145	34	14	13	15	19	19
1018	East Fork Salmon River	Salmon River	91	92	100	166	437	1014	462	198	144	139	125	100
1052	East Fork Salmon River	Salmon River	37	35	35	51	196	528	351	135	74	63	52	42
1053	East Pass Creek	Herd Creek	9	8	8	11	40	91	39	20	13	11	10	9
962	Eightmile Creek	Yankee Fork	3.8	3.7	6.4	21	54	56	14	6.1	4.6	4.3	4.5	4.0
216	Eldorado Creek	Lolo Creek	22	56	98	147	135	80	21	10	11	10	19	19
9	Foehl Creek	Little N.F. Clearwater River	25	43	94	157	114	60	28	26	23	22	35	20
102	Fourth of July Creek	North Fork Clearwater River	27	41	54	188	301	155	28	13	13	19	32	35
556	French Creek	Salmon River	26	24	25	85	396	421	122	45	34	41	39	30
1060	Germania Creek	East Fork Salmon River	16	15	17	23	88	238	157	62	34	29	24	19
826	Hat Creek	Salmon River	10	9	9	12	53	108	45	22	16	12	12	10
1042	Herd Creek	East Fork Salmon River	22	20	19	28	98	217	92	47	34	27	26	23
23	Isabella Creek	North Fork Clearwater River	19	33	71	126	84	45	21	19	17	16	26	15
81	Kelly Creek	North Fork Clearwater River	317	404	706	2827	4782	2479	550	236	204	241	319	301
40	Lake Creek	North Fork Clearwater River	33	51	68	241	385	196	35	17	16	24	40	44
964	Lightning Creek	Yankee Fork	4.1	4.0	6.9	22	57	59	15	6.6	5.0	4.6	4.8	4.2
24	Little N.F. Clearwater	North Fork Clearwater River	286	487	1094	1780	1248	682	326	287	262	250	389	232
466	Little Slate Creek	Slate Creek	29	41	53	186	371	244	33	12	11	17	24	22
373	Meadow Creek	South Fork Clearwater River	7	9	17	66	114	57	13	6	5	6	8	7
10042	Meadow Creek	Valley Creek	4.1	4.1	6.8	22	57	59	15	6.6	5.0	4.6	4.8	4.3
417	Mill Creek	South Fork Clearwater River	7	9	16	61	104	54	12	5	5	5	7	7
358	Newsome Creek	South Fork Clearwater River	18	23	41	168	281	145	32	13	12	14	19	18
533	North Fork Salmon River	Salmon River	42	41	53	144	366	335	86	47	42	46	49	44
600	Panther Creek	Salmon River	132	111	130	269	925	1297	431	201	158	143	153	131
735	Panther Creek	Salmon River	22	22	28	77	193	173	45	24	22	24	25	23
385	Peasley Creek	South Fork Clearwater River	3	4	7	27	47	24	5	2.3	2.0	2.3	3.1	2.9
586	Pine Creek	Salmon River	6	6	8	21	54	49	12	7	6	7	7	6
422	Red River	South Fork Clearwater River	56	71	129	492	842	434	93	41	37	43	57	53
344	S. Fork Clear Creek	Clear Creek	7	11	15	52	82	42	8	4	3	5	9	9

Attachment 1- List A Minimum Stream Flows

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
444	S. Fork Red River	Red River	11	15	25	98	166	86	20	8	7	9	12	11
379	Silver Creek	South Fork Clearwater River	7	8	15	59	99	51	11	5	4	5	7	6
437	Skookumchuck Creek	Salmon River	12	17	22	79	159	102	13	5	5	7	10	9
41	Skull Creek	North Fork Clearwater River	63	101	129	450	717	362	66	32	31	45	75	85
453	Slate Creek	Salmon River	53	76	94	341	689	444	60	23	22	32	43	40
306	South Fork Clearwater	Clearwater River	452	597	995	2198	3639	2789	783	308	262	259	319	371
411	South Fork Clearwater	Clearwater River	167	211	408	1466	2391	1653	438	164	136	164	204	178
1021	Stanley Lake Creek	Salmon River	6	6	10	33	84	88	22	10	7	7	7	6
105	Toboggan Creek	Cayuse Creek	13	21	27	97	156	79	14	7	7	9	16	18
10043	Trap Creek	Valley Creek	2.2	2.2	3.7	12	31	32	8	3.6	2.7	2.5	2.6	2.4
1008	Valley Creek	Salmon River	49	48	85	298	765	787	215	83	61	57	59	52
20	Vanderbilt Gulch Creek	North Fork Clearwater River	14	22	29	104	166	84	15	7	7	10	17	19
125	Weitas Creek	North Fork Clearwater River	151	230	298	1047	1663	868	158	76	73	103	177	193
157	Weitas Creek	North Fork Clearwater River	76	119	149	544	863	434	79	39	37	54	89	100
407	White Bird Creek	Salmon River	36	51	66	228	466	300	40	15	14	22	29	27
267	Yakus Creek	Lolo Creek	5	12	21	30	28	17	4	2	2	2	4	4
1001	Yankee Fork	Salmon River	40	37	46	173	640	702	169	83	62	56	52	45

Attachment 1- List A Minimum Stream Flows

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
State and Private 50% Recommended Exceedence and 25% Future Non-DCMI, Subordinated to all future DCMI.														
175	Big Canyon Creek	Clearwater River	34	84	148	130	107	39	17	8	12	18	25	35
91105	Billy Creek	Snake River	0.3	0.8	1.8	2.2	2.4	1.6	0.4	0.2	0.2	0.2	0.2	0.3
1107	Captain John Creek	Snake River	1.1	2.8	8.0	12.5	12.9	8.3	1.9	1.1	0.9	0.9	1.0	1.1
110	Cedar Creek	Potlatch River	8.7	19.1	34.7	76.6	32.3	10.0	4.4	2.9	3.5	4.6	5.3	7.2
170	Cottonwood creek	Clearwater River	7.0	17.4	30.7	26.9	22.8	8.4	3.6	1.8	2.4	3.6	5.2	7.2
254	Effie Creek	Sixmile Creek	0.5	1.6	2.7	3.0	4.0	2.1	0.9	0.3	0.4	0.5	0.9	0.5
231	Fivemile Creek	Clearwater River	0.9	2.9	5.0	5.8	7.4	4.0	1.6	0.7	0.8	1.0	1.7	1.0
245	Holes Creek	Little Canyon Creek	2.5	6.2	11.2	9.6	8.0	2.9	1.3	0.6	0.8	1.3	1.8	2.6
171	Jacks Creek	Clearwater River	2.2	5.3	9.4	8.2	6.7	2.5	1.1	0.5	0.7	1.1	1.6	2.3
184	Jim Ford Creek	Clearwater River	28	68	119	176	175	98	26	13	15	14	23	23
180	Little Canyon Creek	Big Canyon Creek	13	32	56	48	42	15	7	3	4	7	10	13
548	Little Salmon River	Salmon River	234	285	528	1254	2542	2679	981	472	314	211	230	225
693	Little Salmon River	Salmon River	46	67	151	504	832	573	369	171	85	28	35	43
241	Long Hollow Creek	Little Canyon Creek	3.9	9.5	17.1	14.9	12.7	4.4	2.0	0.9	1.3	2.0	2.9	4.0
190	Musselshell Creek	Lolo Creek	22	53	94	141	138	78	20	10	11	11	18	18
172	Orofino Creek	Clearwater River	61	150	272	387	377	223	56	28	31	31	50	50
129	Pine Creek	Clearwater River	2.0	4.4	7.7	17.4	7.3	2.2	1.0	0.6	0.8	1.0	1.2	1.6
234	Post Hole Creek	Big Canyon Creek	0.9	2.1	3.7	3.2	2.7	1.0	0.4	0.2	0.3	0.4	0.6	0.9
159	Potlatch River	Clearwater River	146	397	1078	1305	587	207	86	43	56	72	70	152
332	Rabbit Creek	South Fork Clearwater River	5.9	5.6	14.5	11.4	4.2	1.4	0.4	0.2	0.3	0.5	0.9	1.4
387	Rice Creek	Salmon River	3.9	4.5	23.2	195.8	165.6	66.5	13.5	4.1	2.7	3.4	5.3	6.8
372	Rock Creek	Salmon River	7	8	43	356	313	124	24	8	5	6	10	12
340	Sally Ann Creek	South Fork Clearwater River	5.4	11.2	22.0	52.2	23.7	3.7	1.1	1.6	1.5	1.9	2.4	3.0
253	Sixmile Creek	Clearwater River	1.8	5.6	9.4	11.0	14.1	7.8	3.1	1.3	1.5	1.8	3.1	1.9
338	Threemile Creek	South Fork Clearwater River	19.7	18.8	47.6	38.7	13.8	4.6	1.2	0.7	1.0	1.6	3.1	4.6
257	Tom Taha Creek	Clearwater River	3.7	9.0	16.2	23.8	23.0	13.4	3.4	1.7	1.9	1.9	3.1	3.1
235	Unnamed	Big Canyon Creek	1.0	2.5	4.3	3.7	3.2	1.1	0.5	0.3	0.3	0.5	0.7	1.0
243	Unnamed Stream	Clearwater River	2.1	5.0	9.4	13.2	12.9	7.6	2.0	0.9	1.0	1.1	1.7	1.7
134	Whiskey Creek	Orofino Creek	10.2	25.5	45.9	66.9	65.3	37.4	9.4	4.7	5.4	5.3	8.5	8.3
9186	Yoosa Creek	Lolo Creek	23.1	56.3	102.0	149.6	147.2	83.7	21.1	10.1	12.2	11.7	19.2	19.2

Attachment 1- List A Minimum Stream Flows

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Special No Recommended Exceedences														
664	Salmon River	Snake River	948	981	1030	1134/1655	3850	5700	2630	899	871	1120	1200	1050
853	Salmon River	Snake River	566	578	598	975/1263	3460	4910	2100	703	625	706	669	601
1015	Salmon River	Snake River	364	369	396	712/953	2530	3310	1320	453	405	447	436	391
397	Salmon River	Snake River	4000	4000	4000	9200	31000	31000	10400	4000	4000	4000	4000	4000
			Consistent with the Wild and Scenic Flows from the North Fork Salmon to Long Tom Bar. These rights are subordinated to the extent necessary to permit full utilization of the future water development preserved by the subordinations contained within the description of the Wild and Scenic River water right for the Salmon River, numbers 75-13316 and 77-11941.											
Special 40% Recommended Exceedence and 5% Future Non-DCMI, Subordinated to all future DCMI.														
813	Blackmare Creek	South Fork Salmon River	8	8	9	27	122	140	33	12	9	9	9	9
766	Buckhorn Creek	South Fork Salmon River	21	20	23	72	315	367	87	31	23	24	25	23
835	Burntlog Creek	Johnson Creek	15	15	16	52	224	270	62	22	17	17	18	16
745	E. Fork S. Fork Salmon	South Fork Salmon River	254	232	291	625	1829	2269	590	223	179	173	214	222
734	Fitzum Creek	South Fork Salmon River	10	10	10	34	152	162	50	18	14	16	15	12
765	Johnson Creek	E. Fork S. Fork Salmon River	90	87	95	308	1321	1513	365	127	97	102	102	97
9588	Lake Creek	Secesh River	10	10	10	34	154	164	49	18	13	16	15	12
700	Lick Creek	Secesh River	13	12	12	40	193	195	59	21	16	19	18	15
610	Porphyry Creek	South Fork Salmon River	12	12	13	42	183	216	51	18	14	14	14	13
723	Profile Creek	E. Fork S. Fork Salmon River	8	7	8	26	112	140	32	12	8	9	9	8
720	Quartz Creek	E. Fork S. Fork Salmon River	8	7	8	26	112	130	32	12	8	9	9	8
588	Secesh River	South Fork Salmon River	54	50	50	173	793	843	253	90	69	84	80	63
686	Secesh River	South Fork Salmon River	93	86	87	298	1423	1513	440	159	116	143	143	111
583	South Fork Salmon River	Salmon River	477	465	672	2306	5691	5620	1498	594	443	469	540	575
752	South Fork Salmon River	Salmon River	244	232	291	615	1829	2161	590	212	169	163	214	222
757	Sugar Creek	E. Fork S. Fork Salmon River	8	7	8	26	112	130	31	12	8	9	9	8
736	Tamarack Creek	E. Fork S. Fork Salmon River	8	7	8	25	112	130	31	11	8	9	9	8
861	Warm Lake Creek	South Fork Salmon River	10	10	10	34	142	173	40	15	11	11	11	11
Special 40% Recommended Exceedence and 10% Future Non-DCMI, Subordinated to all future DCMI.														
131	Bedrock Creek	Clearwater River	8	16	23	48	21	7	3	2	2	3	4	6
25	Breakfast Creek	North Fork Clearwater River	119	156	259	576	946	733	205	79	68	67	83	93
210	Lolo Creek	Clearwater River	135	340	587	869	811	475	131	57	66	64	115	116
39	North Fork Clearwater	Clearwater River	167	211	378	1466	2495	1343	289	123	107	129	168	162
719	Sheep Creek	South Fork Salmon River	9	9	9	26	122	138	32	12	10	11	11	9

Attachment 2- List B Minimum Stream Flows - Subordinated to all future DCMI.

Quantification Location	Stream Name	Tributary to	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
638	Boulder Creek	Little Salmon River	13	16	25	81	127	70	21	8	7	9	11	14
307	Cottonwood Creek	South Fork Clearwater River	122	113	289	238	87	21	7	4	6	10	19	28
264	E. Fork Sweetwater	Sweetwater Creek	1.4	3.6	6.5	5.8	4.7	1.7	0.8	0.3	0.5	0.8	1.0	1.5
605	Elk Creek	Little Salmon River	3.3	4.1	6.0	23.2	29.4	17.6	5.9	2.1	2.0	2.7	3.3	4.0
10041	Elk Creek	Valley Creek	11.7	11.5	11	21	118	119	34.3	14.1	12.4	12.5	12.8	12.8
10082	Goat Creek	Valley Creek	2.3	2.1	2.2	3.8	7.4	10.5	4.5	3.0	3.0	2.8	2.8	2.7
620	Hazard Creek	Little Salmon River	11	13	19	61	116	110	35	9	8	10	12	14
647	Hazard Creek	Little Salmon River	23	27	39	120	201	179	55	17	15	20	24	29
10083	Iron Creek	Valley Creek	4.1	3.8	3.9	6.8	15.1	22.5	8.2	5.0	5.0	5.1	4.9	4.9
196	Lapwai Creek	Clearwater River	41	74	170	209	137	61	30	19	18	22	28	35
275	Lawyer Creek	Clearwater River	90	112	260	168	80	21	9	5	7	14	30	27
10081	Meadow Creek	Goat Creek	4.4	4.2	4.3	7.4	18.8	24.5	8.9	5.4	5.2	5.5	5.4	5.3
293	Meadow Creek	Lawyer Creek	4.7	5.6	13	8.6	4.2	1.3	0.5	0.3	0.4	0.7	1.5	1.4
220	Mission Creek	Lapwai Creek	9.0	22.4	38.9	34.1	28.8	8.7	3.9	1.8	3.1	4.7	6.7	9.1
295	Red Rock Creek	Cottonwood Creek	18.4	17.3	43.4	36.1	12.9	4.3	1.2	0.6	0.9	1.5	2.8	4.2
225	Rock Creek	Mission Creek	1.6	3.9	7.1	6.2	5.2	1.9	0.9	0.4	0.6	0.8	1.2	1.6
283	Sevenmile Creek	Lawyer Creek	4.7	6.2	14.2	9.1	4.4	1.3	0.6	0.3	0.4	0.8	1.7	1.5
214	Sweetwater Creek	Lapwai Creek	9	22.4	36.5	34.6	29.5	10.2	4.7	4.7	4.7	4.7	6.7	9.6
177	Tom Beall Creek	Lapwai Creek	1.3	3.2	5.7	4.8	4.2	1.5	0.7	0.3	0.4	0.7	1.0	1.3
302	Unnamed	Lawyer Creek	3.6	4.5	11.0	6.7	3.3	1.0	0.4	0.3	0.3	0.6	1.2	1.1
265	W. Fork Sweetwater	Sweetwater Creek	1.4	3.3	5.8	5.3	4.4	1.6	0.7	0.3	0.5	0.7	1	1.4
238	Webb Creek	Sweetwater Creek	3.2	7.8	14.2	12	10.1	3.7	1.6	0.8	1.1	1.7	2.3	3.3
294	Willow Creek	Lawyer Creek	7.8	10	23	15	7.4	2.2	0.9	0.5	0.7	1.2	2.7	2.4

Appendix B

Ground Water Wells Evaluated for Lapwai Valley Source Water Protection Project, 2005

Subarea	Sample ID	Date	NO3/N mg/L	ortho-P mg/L	Fe mg/L	TDS mg/L	NH3/N mg/L	E. coli cfu
Spalding	NHP-UPPER	9/8/05	0.02	0.07	0.28	260		
	NHP-LOWER	9/8/05	0.08	0.03	0.42	293		
	N LAPWAI #1	9/20/05	2.54	0.05	0	213	ND	0
	N LAPWAI #2	9/20/05	2.70	0.05	0	247	ND	0
	D. JOHNSON	9/14/05	4.41	0.07	0.29	272		0
	CLEARWATER - SPALDING	9/8/05	0.01	0.02	0.04	27		
	LAPWAI @ T-HILL	9/8/05	0.61	0.10	0.02	189		
	N LAPWAI CK @ FISH	9/12/05	0.41	0.07	0.01	210		
	L-SMITH-SPG	9/29/05	10.80	0.04	0	301		
	F RICKMAN WELL	9/21/05	1.54	0.06	0	243	ND	0
	D CALKINS - WELL	9/27/05	1.12	0.06	0	177	ND	0
	26058 MCATTY RD	9/15/05	0.76	0.06	0	160	ND	0
	A CALKINS	9/22/05	8.33	0.05	0	277	ND	0
	L CALKINS	9/15/05	3.15	0.07	0	234	ND	0
	B WHITE - OLD	9/15/05	3.84	0.07	0	221	ND	
	B WHITE - 2001	9/15/05	3.29	0.05	0	201	ND	0
	J POWELL	9/15/05	4.12	0.07	0	239	ND	0
	SOLDIERS CK	9/27/05	1.19	0.18	0.04	256	ND	
	D CALKINS - SPG	9/27/05	1.29	0.16	0.04	337	0.2	179
	F RICKMAN SPG	9/21/05	0.20	0.02	8.2	495	10.1	387
	TOM BEAL	9/14/05	1.83	0.07	0.02	226		
Lapwai	BIA #1	9/14/05	2.05	0.04	0	209	ND	0
	S LAPWAI #1	9/14/05	1.03	0.03	0	189	ND	0
	LAPWAI JD	9/21/05	1.30	0.05	0	187	ND	0
	LAPWAI #5	9/21/05	2.32	0.05	0	232		
	LAPWAI SD-TRACK	9/28/05	2.33	0.07	0	190		0
	BIOCONTROL	9/14/05	3.33	0.04	0	259		
	BEAVER CK SPG	9/12/05	6.09	0.12	0	301		
Sweetwater	L. DUGGER	9/13/05	2.93	0.07	0	205	ND	201
	F. PAISANO	9/13/05	6.98	0.04	0	252	ND	0
	M. STARKEY	9/13/05	2.87	0.05	0	248	ND	2
	NPT-HORSE SHOP	9/20/05	2.49	0.08	0	233	ND	1
	NPT-HORSE FAC	9/20/05	0.44	0.05	0	164	ND	
	H WILKINS	9/19/05	1.26	0.1	0	186	ND	1
	NPT-WATERSHED	9/19/05	0.04	0.04	0.03	184	ND	0
	SW-AQUA #2	9/21/05	0.99	0.03	0	210		
	SW-AQUA-3-SHALLOW	9/22/05	0.00	0.02	0.03	191		
	SW-AQUA-3-DEEP	9/22/05	0.00	0.01	0.07	198		
	SCHWAB MACHINE	9/27/05	0.02	0.03	0.01	163	ND	0
	G SCHWAB	9/21/05	0.00	0.04	0.11	204		
	SW-AQUA SPRING TILE	9/22/05	2.86	0.04	0	242		
	CANNON SPG.	9/19/05	1.97	0.05	0	222		
	SPRING CK-SPG	9/12/05	2.72	0.1	0	212		
	GARDEN GULCH CK	9/12/05	0.66	0.08	0.02	165		
	SWEETWATER CR	9/19/05	0.64	0.06	0.02	187		
	3158 LUPINE LN	9/22/05	13.00	0.03	0	356		34
Mission Creek	CULDESAC #1	9/27/05	3.45	0.03	0	183	ND	0
	CULDESAC #2	9/27/05	1.90	0.03	0	188	ND	0
	J-RIGGS-WELL	9/29/05	0.84	0.19	0	139	ND	0
	B-EWING - WELL	9/29/05	1.67	0.06	0	191	ND	0
	LAPWAI-CK @ J RIGGS	9/29/05	0.74	0.14	0.02	166		
	LAPWAI-CK @ ELK HORN RD	9/29/05	0.79	0.1	0.01	160		
	MISSION CREEK	9/20/05	0.47	0.07	0.02	173		

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