

Columbia River System Operation Review Final Environmental Impact Statement

Appendix D Exhibits



US Army Corps
of Engineers
North Pacific Division



PUBLIC INVOLVEMENT IN THE SOR PROCESS

The Bureau of Reclamation, Corps of Engineers, and Bonneville Power Administration wish to thank those who reviewed the Columbia River System Operation Review (SOR) Draft EIS and appendices for their comments. Your comments have provided valuable public, agency, and tribal input to the SOR NEPA process. Throughout the SOR, we have made a continuing effort to keep the public informed and involved.

Fourteen public scoping meetings were held in 1990. A series of public roundtables was conducted in November 1991 to provide an update on the status of SOR studies. The lead agencies went back to most of the 14 communities in 1992 with 10 initial system operating strategies developed from the screening process. From those meetings and other consultations, seven SOS alternatives (with options) were developed and subjected to full-scale analysis. The analysis results were presented in the Draft EIS released in July 1994. The lead agencies also developed alternatives for the other proposed SOR actions, including a Columbia River Regional Forum for assisting in the determination of future SOSs, Pacific Northwest Coordination Agreement alternatives for power coordination, and Canadian Entitlement Allocation Agreements alternatives. A series of nine public meetings was held in September and October 1994 to present the Draft EIS and appendices and solicit public input on the SOR. The lead agencies received 282 formal written comments. Your comments have been used to revise and shape the alternatives presented in the Final EIS.

Regular newsletters on the progress of the SOR have been issued. Since 1990, 20 issues of *Streamline* have been sent to individuals, agencies, organizations, and tribes in the region on a mailing list of over 5,000. Several special publications explaining various aspects of the study have also been prepared and mailed to those on the mailing list. Those include:

- The Columbia River: A System Under Stress
- The Columbia River System: The Inside Story
- Screening Analysis: A Summary
- Screening Analysis: Volumes 1 and 2
- Power System Coordination: A Guide to the Pacific Northwest Coordination Agreement
- Modeling the System: How Computers are Used in Columbia River Planning
- Daily/Hourly Hydrosystem Operation: How the Columbia River System Responds to Short-Term Needs

Copies of these documents, the Final EIS, and other appendices can be obtained from any of the lead agencies, or from libraries in your area.

Your questions and comments on these documents should be addressed to:

SOR Interagency Team
P.O. Box 2988
Portland, OR 97208-2988

TECHNICAL EXHIBITS

EXHIBIT A

**DEVELOPMENT OF GEOMORPHOLOGY BASED FRAMEWORK FOR CULTURAL
RESOURCES MANAGEMENT, DWORSHAK RESERVOIR, IDAHO**

<TITLE PAGE>

DRAFT

DRAFT

**DEVELOPMENT OF A GEOMORPHOLOGY BASED FRAMEWORK
FOR CULTURAL RESOURCES MANAGEMENT,
DWORSHAK RESERVOIR, IDAHO**

**By Maureen K. Corcoran and Lawson M. Smith
Geotechnical Laboratory**

**Paul R. Nickens
(formerly of the) Environmental Laboratory**

Prepared for the U.S. Army Engineer Districts, Walla Walla and Portland

DRAFT

DRAFT

Contents

Preface	vi
1—Introduction	1
Background	1
Purpose and Objectives	3
Organization of the Report	5
2—Reservoir Operations and Impacts to Cultural Resources	6
General	6
Reservoir Impacts on Cultural Resources	7
Impacts on Cultural Resources in the Fluctuation Zone	8
Reservoir Shoreline Impacts to Cultural Resources in the Lower Columbia Basin	10
Summary	12
3—Geomorphic and Cultural Settings of the Study Areas	14
Major Geologic Controls of the Columbia River Basin	14
Dworshak Reservoir	15
Geomorphic setting	15
Cultural setting	18
John Day Reservoir	18
Geomorphic setting	18
Cultural setting	19
4—Geomorphic Procedure for Cultural Resources in Reservoir Areas ...	21
Geomorphic Impacts on Cultural Resources in Reservoir Areas	21
Factors influencing geomorphic impacts	22
Impacts of erosional processes	22
Impacts of depositional processes	23
Impacts of weathering and soil disturbance processes	26
Development of an Analytical Procedure	26
Geomorphological information for cultural resource management	27
Development of geomorphological information	27
Use of geographic information systems in impact analysis	30
Development of Data Bases	31
Data requirements for the analytical geomorphic procedure	31

Identification of Geomorphic Processes	32
Active geomorphic processes in the Columbia River system	32
Identification procedure	32
Delineation of process areas	33
Predicting Geomorphic Processes and Impacts	33
Development of a matrix of site conditions	33
Prediction of geomorphic processes	33
Prediction of impacts on cultural resources	34
Use of the analytical procedure in other Columbia River reservoirs	34
5—Monitoring Procedure for Cultural Resources Management in the Columbia River System	35
Monitoring of Impacts on Cultural Resources	35
Objectives of the Cultural Resources Monitoring Procedure for the Columbia River System	37
Conceptual Overview of the Columbia Basin Cultural Resources Monitoring Procedure	38
Documentation for the Monitoring Procedure	41
Development of a Monitoring Plan for John Day Reservoir	42
Background	42
Evaluation of the Cultural Resources Management Plan and the 1992 Monitoring Project	44
Recommendations for Development of a John Day Site Monitoring Program	45
6—Development of a Cultural Resources Protection Plan	47
Introduction	47
The Cultural Resource Protection Plan	47
Initial development of a site protection plan for Dworshak Reservoir	50
Use of site protection procedure at other reservoirs in the Columbia Basin	53
7—Summary, Conclusions, and Recommendations	54
Summary	54
Conclusions	55
Recommendations	55
References	56
SF 298	

List of Figures

Figure 1. Technical framework of the management process	4
Figure 2. Area map of Dworshak and John Day Reservoirs	16
Figure 3. Location of Dworshak Reservoir, North Fork Clearwater River, Idaho	17

Figure 4. Location of John Day Reservoir, Columbia River 20

Figure 5. Example of wave impact along the shoreline, Dworshak Reservoir, Idaho 24

Figure 6. Mass failure in the high impact zone, Dworshak Reservoir, Idaho 24

Figure 7. Downward movement of material (soil and vegetation) along failure plane, Dworshak Reservoir, Idaho 25

Figure 8. Logging in low impact zone, Dworshak Reservoir, Idaho 25

Figure 9. Sequential steps of an analytical geomorphic model 28

Figure 10. Division of study area into direct and indirect impact zones 29

Figure 11. Developmental sequence for cultural resources monitoring plan 39

Figure 12. Developmental sequence for a resource protection plan 49

Preface

This work was performed during the period July 1993 through March 1995 at the U.S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi for the U.S. Army Engineer Districts, Walla Walla (NPW), and Portland (NPP). The project was conducted in support of the Columbia River Systems Operation Review (SOR).

The project research and development and report preparation were performed by Dr. Paul R. Nickens, Resource Analysis Branch (RAB), Natural Resources Division (NRD), Environmental Laboratory (EL), and Ms. Maureen K. Corcoran and Dr. Lawson M. Smith, Engineering Geology Branch (EGB), Earthquake Engineering and Geosciences Division (EEGD), Geotechnical Laboratory (GL). General supervision was supplied by Mr. Roger Hamilton, Chief, RAB, Dr. Robert M. Engler, Chief, NRD, Dr. John W. Keeley, Acting Director, EL, Mr. Joe Gatz, Chief, EGB, Dr. Arley G. Franklin, Chief, EEGD, and Dr. William F. Marcuson III, Director, GL.

Mr. John Leier, NPW, and Ms. Lynda Walker and Mr. Jay Sturgill, NPP, were the technical monitors for the project. Additional direction and guidance was provided by Mr. William Willingham, NPD, and Dr. David Rice, NPS.

During the publication of this report, Dr. Robert W. Whalin was the Director of WES. COL Bruce K. Howard, EN, was the Commander.

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

1 Introduction

Background

The Columbia River and its tributaries are the primary water system in the Pacific Northwest, draining some 219,000 square miles in seven states and another 39,500 square miles in British Columbia. Beginning in the 1930's, the Columbia River has been significantly modified by construction of 30 major dams on the river and its tributaries, along with dozens of non-Federal projects. Construction and subsequent operation of these water development projects have contributed to eight primary uses of the river system, including navigation, flood control, irrigation, electric power generation, fish migration, fish and wildlife habitat, recreation, and water supply and quality considerations.

Increasing stress on the water development of the Columbia River and its tributaries has led primary Federal agencies to undertake intensive analysis and evaluation of the operation of these projects. These agencies are the U.S. Army Corps of Engineers and the Bureau of Reclamation, who operate the large Federal dams on the river, and the Bonneville Power Administration who sells the power generated at the dams. This review, termed the System Operation Review (SOR), has as its ultimate goal to define a strategy for future operation of the major Columbia River projects which effectively considers the needs of all river uses.

The SOR analysis is concentrating 14 dams and hydro-electric projects that play a key role in the multi-purpose use of the river system. These dams include five Federal Columbia River System storage dams: Hungry Horse, Libby, Albeni Falls, Grand Coulee, and Dworshak, and nine downstream run-of-river projects: Chief Joseph, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles, and Bonneville. Together, these projects include a variety of dams and reservoirs, navigation channels and locks, hydro-electric power plants, high-voltage power lines and substations, fish ladders and bypass facilities, irrigation diversions and pumps, parks and recreation facilities, boat launches, administrative lands, and areas set aside to replace wildlife habitat.

As indicated above, the projects under review fall into two distinct categories: storage and run-of-river. The difference between the two types is

important for the analysis undertaken in this report, particularly in terms of operating water level fluctuations.

Storage reservoirs adjust the river's natural flow patterns to fit more closely with water uses. Since precipitation is unevenly distributed throughout the year, these reservoirs capture runoff when it is heavier and store it for use during periods of lesser runoff. Generally, this means that plentiful spring runoff is captured and then released for multiple uses in the late summer, fall, and winter. Some of the Columbia Basin dams have large capacities for capturing runoff and storage, meaning that sometimes significant variations occur in the operating water levels. For example, Hungry Horse operates over a range of 224 ft; Libby, 172 ft; Dworshak, 155 ft; and Grand Coulee, 82 ft.

In contrast, run-of-river projects have limited storage capabilities, having been constructed primarily for navigation needs and power generation. Reservoir levels at these projects usually only vary three to five feet during normal operations.

The SOR analysis involves a number of uses and resources that need to be considered, particularly under options that may change the operation of projects in the system. One category of resources that may be affected by changing operation activities is cultural resources. The river banks and shorelines in the Columbia River system contain many hundreds of significant archaeological and historical sites that form a record of past human occupation and use of the region extending back some 10,000 years. Often, these fragile resources represent our only clues to many aspects of this long cultural heritage.

Even under normal project operating conditions, these sites have historically been subjected to reservoir-related impacts such as physical and chemical impacts related to lowering and filling of lake levels, wind and wave erosion causing bankline recession. In addition, secondary impacts accrue from recreation and other land use activities, as well as the ever present threat of vandalism and looting of sites.

Some options being explored in the SOR analysis for the Columbia River system will likely lead to increased potential for additional reservoir-related impacts to cultural resource sites as they are further physically modified by either erosional or depositional geomorphic processes brought about by additional drawdown and filling activities at the projects. Moreover, increased exposure of sometimes or previously inundated cultural sites and artifacts will probably cause an increase in incidences of site vandalism and artifact collecting.

In order to provide necessary information for the SOR analysis, as well as fulfill the legal responsibility of Federal agencies to protect and preserve significant cultural resources at the projects under review, it is essential that a comprehensive strategy or framework be developed for addressing ongoing and subsequent impacts to these resources. To meet this need, the SOR

Cultural Resources Study Group, working through the Portland and Walla Walla Districts, requested the U.S. Army Engineer Waterways Experiment Station develop working procedures that would constitute an overall approach for assessing potential impacts to cultural resources from changing operating conditions, monitoring the effects of those impacts, and evaluating and selecting efficient and cost-effective long-term protective measures.

Purpose and Objectives

The overall purpose of this study is to develop a "technical framework" that includes those aspects of the management process for identifying, evaluating and mitigating physical impacts to cultural resource sites affected by reservoir operation activities in the Columbia River system. The framework has been defined to consist of three procedures (Figure 1). These include: (1) an analytical geomorphic procedure that can be used to identify both the types of ongoing erosional processes and how these might change under various SOR options, (2) a resource monitoring procedure for collecting critical long-term data on changing conditions in resource integrity; and (3) a site protection procedure that can be used to evaluate and identify appropriate long-term preservation strategies.

The procedures developed for this framework must be somewhat generic in scope to account for the geomorphic and cultural variability that may be expected to occur throughout the entire Columbia Basin. Furthermore, the procedures need to be flexible enough to be applicable to both storage and run-of-river reservoirs. On the other hand, it was felt that development of the procedures could best be undertaken in relation to specific field settings. Two reservoirs, Dworshak on the Clearwater River in Idaho (a storage type), and John Day, a run-of-river reservoir on the lower Columbia River between Washington and Oregon, were selected as case studies for the prototype procedures. Both are Corps of Engineers projects.

Originally, separate study tasks were outlined for both Dworshak and John Day. It soon became apparent, however, that there was considerable overlap in developing procedures for the two projects, and that some combination of effort was necessary. Thus, several more specific objectives are the focus of the following analysis. These include:

- a. An analytical geomorphic procedure for use in management of cultural resources in the Columbia River system will be proposed. The primary function of the procedure and its application is to provide the necessary information for developing site monitoring and protection plans for cultural resources in impact zones of reservoirs throughout the basin.

The conceptual geomorphic procedure will be based on a review of geologic and geomorphic conditions at both Dworshak and John Day Reservoirs, although the data for Dworshak will be utilized to prepare a project-specific analysis of the effects of reservoir operations on extant

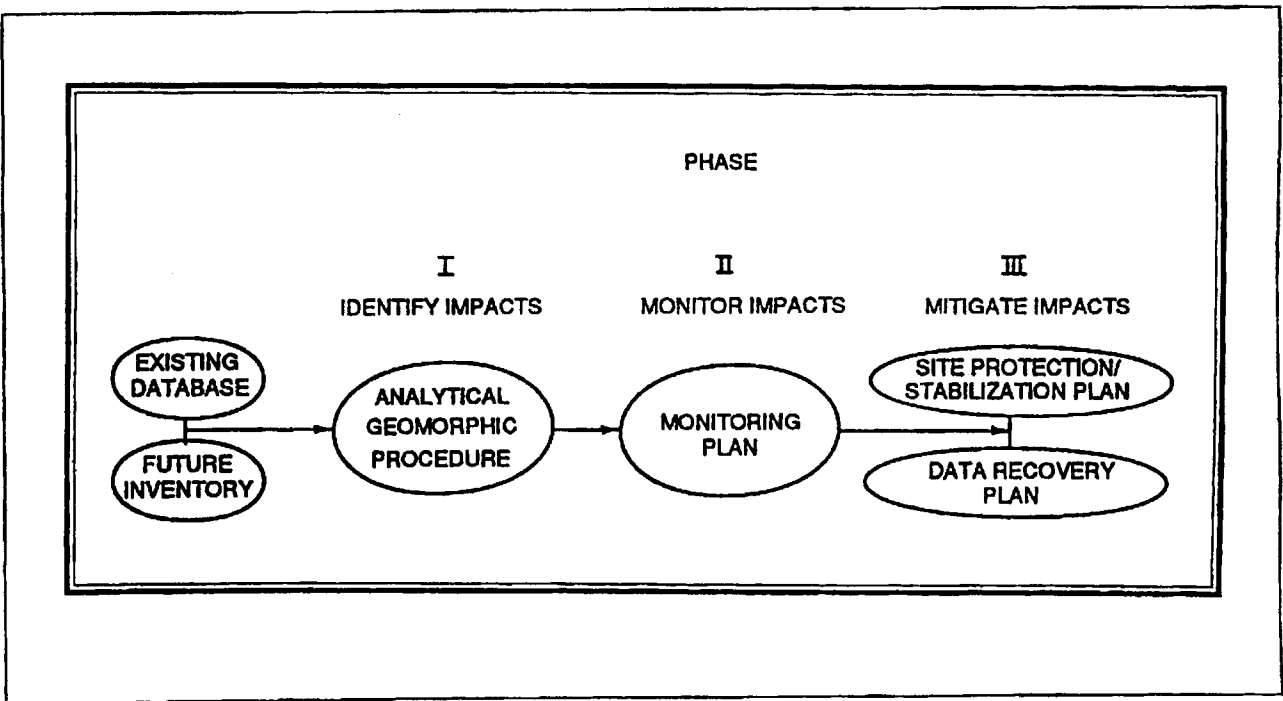


Figure 1. Technical framework of the management process

cultural sites. The procedure will be developed such that it may be exported to other reservoirs in the Columbia River System.

- b. A site monitoring procedure, which is also generic in scope, will be offered that incorporates these aspects:
- (1) Development of objectives for a cultural site monitoring program with emphasis on monitoring impacts in the fluctuating water zones at reservoirs.
 - (2) Identification of critical attributes to be monitored in order to meet the objectives.
 - (3) Development of a general methodology and array of techniques for monitoring these attributes.
 - (4) Provide specifications for implementing the monitoring program, along with a format for storing, analyzing, and reporting the results.

The existing cultural resource data base for John Day Project will be used to formulate a pilot monitoring scheme.

- c. A proposed procedure for evaluating alternatives for cultural site protection and long term preservation will be presented. The site protection procedure will focus on cultural sites at Dworshak Lake where the geomorphic procedure has also been developed using those field data.
- d. As discussed above, the final objective of this effort is to ensure that the procedures for addressing reservoir operation-related impacts to cultural resources are applicable in the broader regions. The procedures have been developed for two substantially different reservoir settings in Dworshak and John Day and therefore are designed to deal with a variety of landscapes and cultural site conditions. For these reasons, the procedures should be readily transportable to other reservoirs in the Columbia River system when local conditions are considered.

Organization of the Report

Following the introductory comments, Chapter 2 provides a general review of management concerns associated with reservoir-related impacts to cultural resource sites, with particular emphasis on those situated along the shoreline. Chapter 3 serves to establish the geomorphic and cultural settings for the procedures comprising the technical framework. In Chapters 4 through 6 the geomorphic, monitoring, and site protection procedures are presented, respectively, using the Dworshak and John Day project data as examples.

2 Reservoir Operations and Impacts to Cultural Resources

General

Construction and operation of reservoirs by various federal and state agencies and other proponents have created significant adverse impacts for archeological and historical resource properties. Initially, these impacts primarily involve those associated with construction activities, filling, and subsequent inundation. Following reservoir filling, impacts to cultural resources come from various sources associated with physical processes and use of the adjacent land.

Adequate mitigation of impacts to cultural resources located along the shorelines at reservoir projects over the years has ranged from none at all for some older projects to only partial mitigative efforts at others. Various factors have limited the effectiveness of mitigation efforts, including a lack of adequate protective legislation at the time of project authorization and construction, or simply insufficient funding and time for satisfactory resource identification, evaluation, and data recovery undertakings. Additionally, the nature of the resource base itself can be a hinderance (significant portions of the earlier prehistoric/historic record may be buried and therefore not easily observed) and important improvements in the methods and techniques for identifying and studying cultural resources have occurred over the past several decades. Significant changes in approaches for managing and protecting such resources have also taken place in recent years.

The consequence of this situation for today's resource managers is that significant portions of the once extensive cultural resource record still remain at many, if not most, operating reservoir projects. Management and protection of this resource remains an important responsibility. Among the various ongoing impacts that threaten sites at these projects, those associated with physical processes, such as shoreline erosion and bankline recession, are easily the most prevalent and most damaging to the resource base.

To provide a background for the technical framework presented in the following chapters, this section provides a brief overview of reservoir-related impacts to cultural resources, with emphasis on those impacts that occur in the fluctuation zone. Some relevant information from earlier studies in the general study area is also summarized. A more detailed examination of geomorphic impacts on cultural resources will be presented in Chapter 4.

Reservoir Impacts on Cultural Resources

As noted, the construction and operation of reservoirs include a wide range of potential impacts to cultural resource sites, ranging from full inundation (and possible long-term preservation) to others of a more devastating nature. In order to investigate the character of these impacts, a multi-agency (National Park Service, Bureau of Reclamation, and Corps of Engineers) 5-year research effort was completed in 1980 (Lenihan, et al. 1981). This project, known as the National Reservoir Inundation Study (NRIS), examined reservoir-related impacts on cultural resources from several angles. Much of the following discussion is taken from the original NRIS study and a recent summarization of the overall effort (Ware 1989).

To facilitate analysis of the various reservoir-related impacts which might affect cultural resource sites, the NRIS subdivided a typical reservoir impoundment into five impact zones, the most critical of which are the conservation pool, the fluctuation or drawdown zone, and the backshore zone. For the purposes of this report, we will concentrate on the area comprising the fluctuation zone.

The NRIS also identified three categories of processes that affect the preservation of cultural resources in reservoirs and waterways: (1) mechanical or physical; (2) biochemical; and (3) human and other processes. Mechanical processes include the physical erosion and deposition processes associated with a large body of water. In reservoirs, wave action was found to be the most important mechanical impact on cultural sites. Wind-generated waves are the most common, but destructive waves can also be generated by power boat wakes and tectonic disturbances.

On run-of-river pools, navigation-related impacts have also been shown to have great potential for creating considerable erosion of cultural resources located on the banks (Gramann 1981). Here, several types of impact have been identified that contribute to bank erosion and potential loss of resources, including barge traffic, pool manipulation, recreational use, structural features such as wing dams and levees, and mooring of barges near shorelines.

The chemical and biological environment of a reservoir is of primary concern for the differential preservation and destruction of inundated cultural materials. These processes are particularly critical in the fluctuation zone. Changes at rock art sites located on geologic strata near the waterline serve as a good example of these processes. In this case, such impacts can include

chemical changes leading to deterioration of the stone matrix, growth of algae, deposition of resource-obscuring silt or calcium deposits (the ubiquitous reservoir "bathtub ring"), or simply deterioration of pigments used to create the aboriginal artwork.

The final category of impacting processes, human and other, includes the myriad consequences of human activities, ranging from dam construction to cultural site vandalism and looting, and impacts associated with changes in land use following dam construction and reservoir impoundment. While most of these impacts may occur primarily in the backshore zone, many such activities take place near the waterline and increase the possibility for erosion or destruction of cultural resources. An example is the opportunity for easy access to archeological sites via boat, when such access had been difficult prior to reservoir filling. Where fluctuating waterlines exist, many of these activities have a tendency to follow the waterline, thereby creating hazards for freshly exposed sites.

Another way to characterize reservoir shoreline impacts to cultural resources is in terms of primary and secondary impacts. Put another way, there are a number of secondary impacts that are created or made possible by the presence of a primary impact such as shoreline erosion and bankline erosion. In most cases, these secondary impacts exacerbate the situation and hasten the loss of both the substrate and the resource sites. Some of these secondary impacts include burrowing of animals and birds in exposed cut-banks which further contributes to bank instability, undercutting and subsequent falling of large trees, vandalism of previously hidden cultural artifacts and features, and wind or solar erosion of exposed artifacts, particularly items of bone.

Impacts on Cultural Resources in the Fluctuation Zone

In searching for evidence of damage or destruction to cultural resources located along the shorelines of reservoirs, it is necessary to go beyond examination of only the erosion occurring at the waterlines and look, rather, at the total fluctuation zone. In some cases, this may only be a 1- or 2-ft zone; in other instances, the fluctuation zone may be upwards of 200 ft.

Normally, the fluctuation zone is determined by operational considerations and is somewhat standardized annually, although special circumstances can greatly alter the situation. Recent examples of significant changes in normal operating drawdown procedures include the drought-caused drawdowns along the Middle Missouri River and intentional test drawdowns along the Snake River in 1992. Other special drawdowns have occurred in conjunction with compliance with the Dam Safety Act, or other modifications of dam structures. Alternatively, some conservation pools may actually be raised in the future. Such might be the case, for example, where generating units are

added at dams where the original construction plans included blockouts for additional units.

One of the most critical data gaps for cultural resource managers at reservoirs is associated with identifying, evaluating, and preventing erosion to sites situated in the drawdown zone. Loss of sites and cultural materials due to mass failures along a cutbank is easily recognized and measured. Slower, more gradual loss of cultural sites due to fluctuating water levels is much more difficult to visualize and record, although form of erosion may be even more damaging since it affects a larger area of a site's surface. On a smaller scale, there are very few detailed studies of hydrologic artifact dispersals, such as erosion, transport of materials, and redeposition, and other nonhuman transposition processes. [A recent example of the importance of the need for careful consideration of the effects hydrological artifact dispersal and sorting on site patterns is found in Reinhardt (1993)].

Within the shoreline fluctuation zone of most reservoirs, virtually all categories of the impacts discussed above are intensified, with mechanical hydrological impacts constituting the greatest threat to cultural resources. The aforementioned NRIS concluded that wave action in this zone created the most serious impacts to cultural sites. The nature and extent of these erosional and depositional impacts is influenced by four variable conditions:

- a. Reservoir size, depth, and orientation, hydrological characteristics of the watershed, local climatic regime, and the operating characteristics of the reservoir.
- b. Location of the cultural resource site relative to reservoir fetch and prevailing wind patterns.
- c. The geological and environmental context at the site (especially the slope and erosion resistance of the geomorphological substrate).
- d. The character and erosion resistance of the cultural deposits themselves.

In addition to the high-energy impacts of waves in the fluctuation zone, frequent wetting and drying of cultural deposits on the shoreline poses a significant threat to a wide variety of cultural materials (e.g., bone, pollen, and other organic items).

Although mechanical impacts are most prevalent in the fluctuation zone, the potential for biochemical impacts is also greater than in any other reservoir zone. Biochemical activity is accelerated in the shallow waters of the reservoir littoral zone because of higher light, dissolved oxygen levels, and ambient temperatures. These conditions will support more organisms that may cause deterioration of perishable cultural materials. Moreover, the potential for human and faunal impacts is greatest in the fluctuation zone because of increased activity along the reservoir waterline.

Reservoir Shoreline Impacts to Cultural Resources in the Lower Columbia Basin

For purposes of this discussion, the Lower Columbia Basin is defined to include reservoir projects on the Columbia River and its tributaries located in the Corps of Engineers Portland and Walla Walla Districts. More specifically, the projects are found on the Lower Snake River and its tributary the Clearwater River, in addition to the Columbia itself. There have been, over the past 20 years or so, several field studies that serve to call attention to the impacts that reservoir operation create for cultural resources that located along lake shorelines in this region. Some of the more important of these investigations are briefly reviewed below to highlight the extent of the problem and to indicate the need for additional attention on the part of resource managers.

Valuable field information on reservoir-related impacts to prehistoric and historic sites in the Lower Columbia Basin began to accumulate about twenty years ago along the Snake River below Lewiston, Idaho, where construction and filling of the Lower Granite project was preceded by a considerable amount of cultural resources work. In addition to the standard resource identification, evaluation, and mitigation efforts, some pioneering research was conducted in two areas of interest to the present study. The first was an intensive analysis of the geomorphic setting of the impending reservoir area, with special reference to its relationship to archeological chronology and site location (Hallett 1976). Hallett's study provides an excellent pre-dam description of the correlation between geomorphic and human settlement patterns that today exist in an altered state below the reservoir waterline. This kind of baseline information is unique and not found at the other reservoir projects in the region.

The second set of useful observations was made by David Brauner and others (1975) as the Lower Granite Dam pool was raised in early 1975. This study undertook three important tasks, including final observations of remaining cultural site conditions after dam construction but before inundation, field observations of the immediate impact of the reservoir filling on the sites, and, finally, using these findings to provide recommendations for site preservation in future cases of a similar nature.

Prior to inundation, Brauner and his co-workers visited remaining sites to take photographs and make observations on vegetative cover, sediment types, slope, and previous forms of disturbances on or near the sites. Also, 50-centimeter interval stake lines were implanted on the sites to document the amount of slumpage caused by the rising water. The reservoir filling took four days to reach operating pool level. During this period, the researchers made daily monitoring trips by boat to the sites to record current conditions.

Based on this work, Brauner et al. were able to provide general observations on the effects of rising water on different types of sediments and landforms, as well as more site-specific remarks on selected cultural resource properties. The most serious impacts to sites observed was caused by water

saturation and wave action on the talus slopes, alluvial fan gravels, high angle gravel deposits, truncated portions of gravel bars. In this case, however, the investigators noted that damage to remaining sites from reservoir filling was far less than damage from construction activities such as quarrying and clearing.

The authors suggested that future pre-inundation cultural resource studies should include predictive analyses about the post-inundation condition of archeological sites. The predictive approach should take into account local site-related factors such as topographic position, sediment types, vegetation cover, and previous disturbance coupled with estimated angle of repose data.

In recent years, cultural resources investigations associated with draw-downs at some reservoirs have combined to contribute good information on past and ongoing impacts and site condition in fluctuation zones. The most important of these efforts are two conducted by the Center for Northwest Anthropology at Washington State University (Draper 1990, Center for Northwest Anthropology 1992). The reports of these two projects contain much useful data on impacts to cultural sites in both inundated conditions and zones of fluctuating water levels. Only a brief discussion of the findings is given here; interested readers should consult the reports for additional information.

In 1989, a maximum 150-ft drawdown of Dworshak Lake occurred, allowing an opportunity to conduct field investigations of the area affected by reservoir operations. Coverage of about two-thirds of the exposed reservoir drawdown zone resulted in the recording of 166 archeological sites (Draper 1990). These sites were previously unknown, but had been impacted by reservoir operation activities since 1971. Although assessment and geomorphic evaluation of reservoir impacts to cultural resource sites was not included in the project research design (Draper 1990:45-51), standard field observations of site condition allowed some general conclusions regarding impacts to sites from reservoir operations, based on surficial examination only. (A planned testing phase that would have added critical data on site condition and level of destruction was not completed due to weather and logistical problems).

Based on the surface indications, Draper believes that about 25 percent of the 166 sites have been completely eroded by reservoir operations, another 50 percent have been substantially eroded (i.e. more than 50 percent destroyed), and about 39 percent fall into a partially eroded category (i.e. less than 50 percent eroded). The remainder (11 percent) of the total number are newly exposed sites occurring near the high waterline. He does caution, however, that many of the substantially and partially eroded sites may have undisturbed but obscured cultural deposits lying above the high waterline.

While field survey of drawdown zones will always record some level of damage to archeological sites, Draper does note a positive aspect in that the visibility of the ground surface and the sites is significantly enhanced by reservoir operation. In fact, he observes that the exceptional visibility undoubtedly yielded a more representative sample of sites that would have been possible

under pre-inundation intensive survey procedures. This logical finding can be used to argue that managers' site identification and evaluation responsibilities should not end with pre-construction surveys and mitigation actions. Access to drawdown zones and banklines in recession should be viewed as an opportunity for acquiring additional primary cultural resource data on a continual basis during reservoir operation.

The second effort was also directed by John Draper (Center for Northwest Anthropology 1992) and involved field assessments of several previously inundated prehistoric and historic sites during a test drawdown of Lower Granite and Little Goose Reservoirs on the Snake River. The drawdowns took place during a one month period in 1992. The field effort also included inspections of a number of sites along the John Day Reservoir shoreline, although there was no drawdown at this project.

The scheduling of the test drawdowns of the Snake River reservoirs created logistical problems for the field effort since the drawdown began on March 1, 1992, reaching minimum pool level at the middle of the month, followed by refilling so that the pools were refilled by the end of the month. Thus, the exposure of inundated sites was relatively brief, and uncovered sediments had little time to dry out.

The opportunity to examine sites both in the normal fluctuation zone and the usually inaccessible conservation pool provided a unique opportunity to acquire information on not only site conditions but reservoir lowering and filling impacts as well. It also allowed for new or altered significance evaluations in terms of National Register of Historic Places eligibility criteria and the formulation of recommendations for future management of the sites.

Although limited in scope because of time and funding constraints, the findings of this effort are extremely useful because they represent the only such information available on the physical effects of larger than normal drawdowns. Critical baseline data (topographic maps, photographs, and other observations) were also collected for those sites examined during the drawdowns at Little Goose and Lower Granite Reservoirs. The field inspections of 31 archeological sites at John Day Reservoir resulted in only brief descriptions of the current conditions of the sites.

Summary

Adverse effects to archaeological sites from operation of reservoirs are both episodic and cumulative. Because such impacts occur throughout the operation cycle, including daily, monthly, and annually, as well as throughout the overall life of the reservoir, it is hard to achieve complete understanding of the processes involved or the duration and magnitude of the loss. Critical observations pertaining to rate of loss at individual archaeological sites are difficult to make on a reservoir-wide basis because of logistical and funding constraints. Partial and incomplete snapshots are sometimes achieved, such as

those discussed above for the Snake and Lower Columbia River projects; however, comprehensive long-term management strategies for understanding the problem and acquiring much-needed data on processes and loss of cultural information and sites are not currently available to resource managers. The ensuing chapters describe recommended procedures for meeting long-term management needs to reduce reservoir impacts on cultural sites.

3 Geomorphic and Cultural Settings of the Study Areas

This chapter provides a setting for the geologic and cultural features of the general region and the two Corps of Engineers reservoir projects that have been selected for analysis.

Major Geologic Controls of the Columbia River Basin

The Columbia River drains 259,000 square miles of the Pacific Northwest and is bounded by the Rocky Mountain system on the east and the north, the Cascade Range on the west, and the Great Basin on the south. The geologic history of the Columbia River and its tributaries represents a series of complex events. In early Oligocene and Eocene, a terrestrial formation eroded to a stable, mature surface. Successive eruptive episodes during the Miocene resulted in the formation of basalt at an average depth of 3,000 ft (Hodge 1938) and covered a large physiographic province referred to as the Columbia River Plateau. Sufficient time separated these eruptive episodes thereby providing enough time for the interbedded ash to be weathered to a fertile soil. Volcanic material erupted during the close of the volcanic stage (Upper Miocene) covering much of the basalt. Faulting, on both small and large scales, fractured the basalt and influenced the course of the Columbia River. The Columbia River flowed over the basalt along faults and weak zones cutting V-shaped valleys along its path. Volcanic activity continued during the middle Pliocene restricting stream activity but not entirely diverting the ancestral Columbia River. Successive lava flows did dam the river many times producing lakes and lake beds. During and after the volcanic periods (Miocene and Pliocene), the earth's crust was in a state of unstable equilibrium. Upheaval and downwarping of the basalt persisted, accelerating erosion and influencing the distinctive grid pattern of the streams. The lava was deposited over a terrain of considerable relief resulting in elevation variations of the lava from place to place. These Miocene and Pliocene basalt deposits are collectively referred to as the Columbia River Basalts.

The Columbia River has maintained basically the same course since its origin. Catastrophic flooding, referred to as the Spokane floods, occurred during the Late Pleistocene after a ice dam at glacial Lake Missoula in Montana burst and released water downstream influencing the appearance of the Columbia River and its tributaries. The last series of these catastrophic floods occurred about 15,000 to 12,800 years ago but its effect on the topography has been profound.

Glacial activity throughout the Pleistocene produced much of the rugged topography of north and central Idaho. Some streams deepened their channels thousands of feet during this time. A seaward tilting of the entire western Oregon-Washington area during a glacial epoch drowned the mouth of the Columbia River. This submergence produced a series of landslides along the walls of the gorge bordering the river.

The geologic history of the Columbia River Basin has produced a variety of geomorphic settings in the Columbia River System area. Like most large river systems, the Columbia System begins as relatively steep tributaries in narrow valleys and grade down valley into larger streams of lower gradients in large alluvial valleys. However, unlike most streams, the lower Columbia River Valley is largely a relic of catastrophic events which in no way reflect modern conditions and processes in the Columbia River Valley. Consequently, the geomorphic settings of Dworshak and John Day Reservoirs are substantially different, the former on a major tributary, the latter in the lower Columbia River Valley (Figure 2).

Dworshak Reservoir

Geomorphic setting

Dworshak Reservoir is located on the North Fork Clearwater River, a tributary of the Clearwater River, in the Lower Snake River Basin (Figure 3). The river and its tributaries drain approximately 2,440 miles over the geomorphic provinces of the Northern Rocky Mountain and the Columbia Intermontane Basin (Draper 1990). Hubbard (1956) referred to a local physiographic unit trending parallel to the Clearwater River as the Clearwater Escarpment, a structural downwarping of the basalts and interbedded sediments at angles of as much as 60 deg on the face of the slope.

Impounded in a relatively narrow and steep valley, fluctuation of the reservoir level by as much as 150 ft over moderately steep mountain sides provides many opportunities for substantial erosion and deposition of surficial soils and sediments by geomorphic processes. Reconnaissance of the Dworshak shoreline reveals many areas where geomorphic processes are rapidly removing the native soils or, in some cases, depositing eroded soils on lower slopes. Periodic inundation, saturation, and subsequent exposure and drainage of the soils along a fluctuating reservoir shoreline has already had a profound impact on the integrity of cultural resources in the Dworshak Reservoir area.

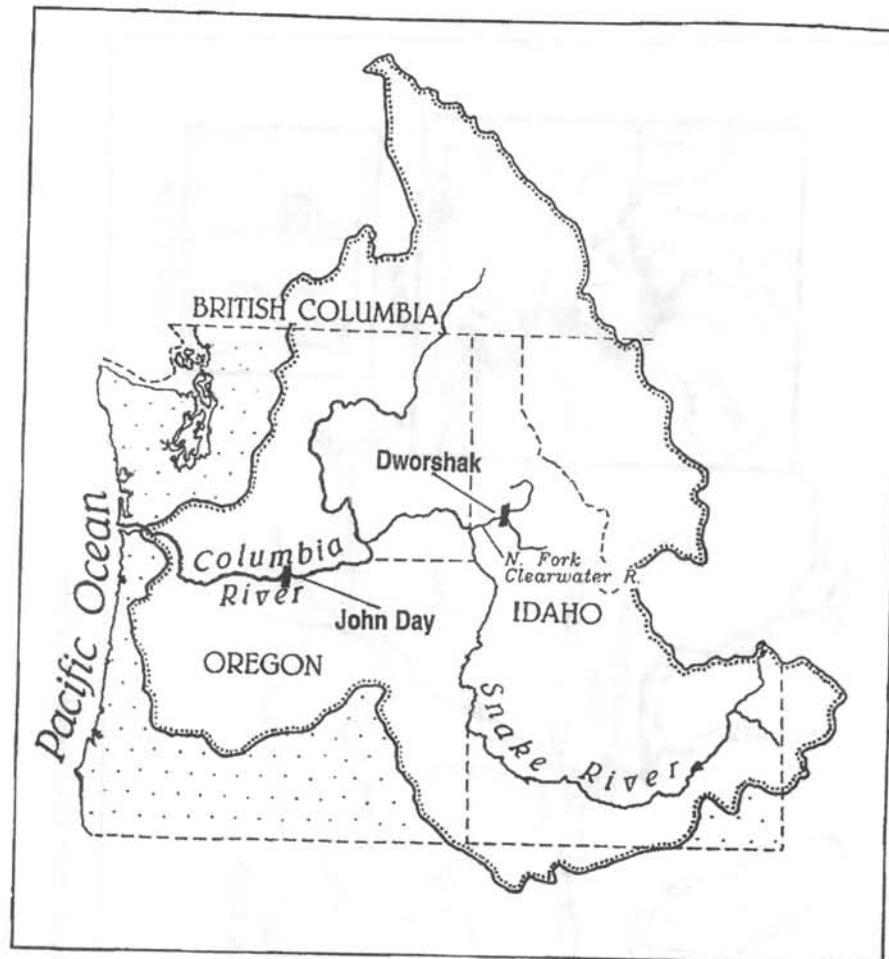


Figure 2. Area map of Dworshak and John Day Reservoirs

Prior to the impoundment of Dworshak Reservoir, a profile of the Clearwater Valley consisted of steep mountain and hill sides grading down to one or more river terraces at various elevations above a narrow floodplain in the base of the valley. Near Dworshak Dam, fluctuation of the reservoir results in transgression of the shoreline across steep mountain and hill sides. With increasing distance up the reservoir, the prism of reservoir fluctuation intercepts lower mountain and hillsides, river terraces, and eventually the floodplain.

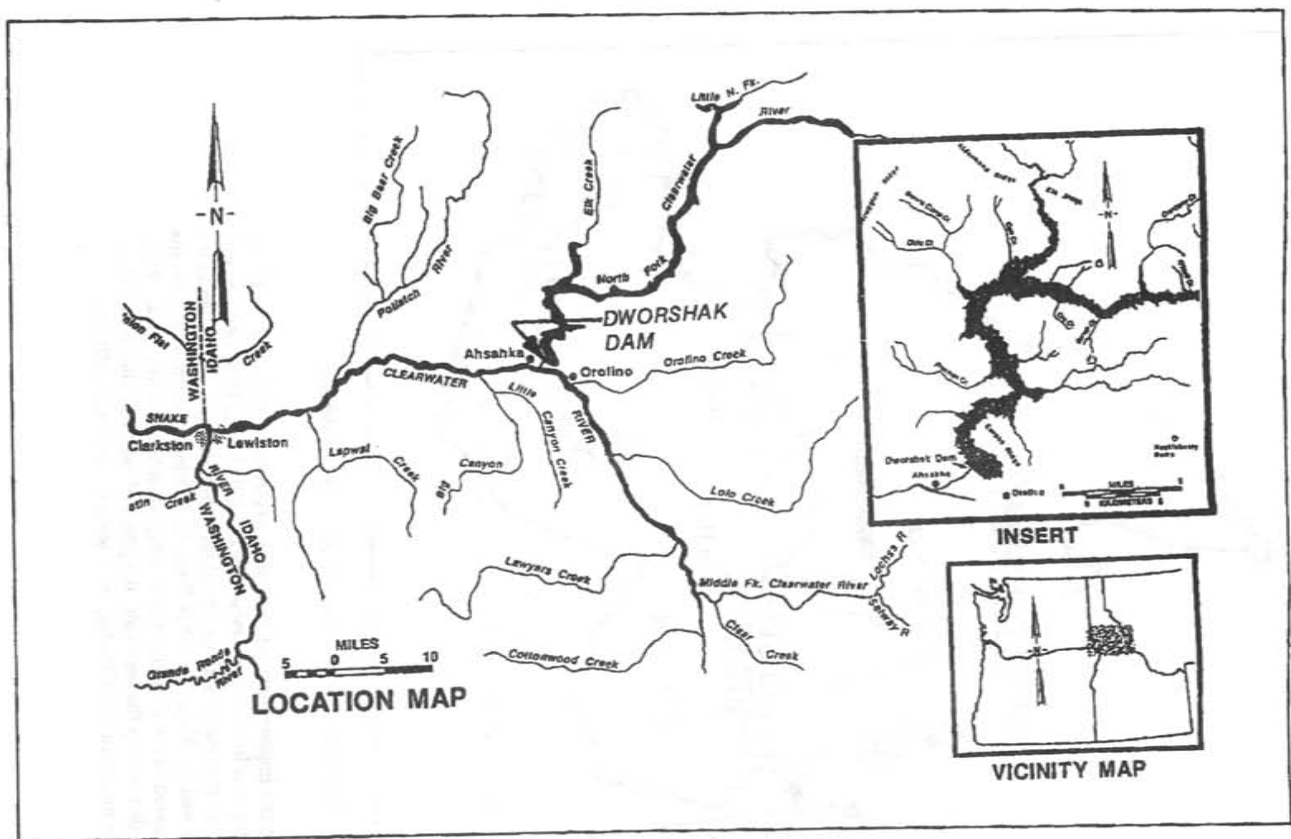


Figure 3. Location of Dworshak Reservoir, North Fork Clearwater river Idaho

Cultural setting

A number of cultural resource investigations have been conducted at Dworshak Reservoir, beginning in 1961 and continuing to the present. The individual project focus and results of these past efforts, as well as delineation of the area's cultural history, have been recounted previously in the literature (e.g. Mattson 1983; Draper 1992: 3.22-3.24; and Draper 1993: 3.10-3.22) and need not be repeated here. Today, there are 215 archaeological sites that have been identified in the reservoir and adjacent Corps lands. Results of these projects and interpretations of the data indicate a long Native American utilization of the valley, perhaps extending to 10,000 years ago, including intensive use of the region by the historic Nez Perce, and the most recent Euroamerican occupation of the valley until inundation.

During the most recent cultural resources survey of the reservoir fluctuation zone in 1989 (Draper 1993), some 170 archaeological sites were identified and recorded, 166 of which have not been previously recognized. Of this total, 160 sites are Native American in origin, another six have both aboriginal and historic Euroamerican components, and four have only Euroamerican occupation debris. This survey did not include Corps' administrative lands above the high water elevation (1,600 ft) and a total of 21 miles of fluctuation zone in the upper reaches of the reservoir was not covered. Of interest, nearly half (72) of the sites have newly exposed or intact, buried deposits that clearly extend above the 1,600 ft elevation. The Draper survey methodology collected important information on past effects of reservoir raising and lowering of the pool level on archaeological sites, and provided recommendations for future management of these endangered resources.

John Day Reservoir

Geomorphic setting

John Day Reservoir is located in the wide gorge of the lower Columbia River (Figure 4). Unlike many steep sided river valleys that have been eroded over many thousands of years, the Columbia River Gorge was apparently excavated by a series of cataclysmic floods following the draining of large glacial lakes in Washington, Oregon, and Montana during at least one comparatively short period of several thousand years. The last series of these catastrophic floods occurred about 15,000 to 12,800 years ago. In the ensuing period, the lower Columbia River has developed a broad floodplain in the floor of the gorge and large alluvial and colluvial fans have prograded down the sides of the gorge and onto the floodplain.

Reservoir level fluctuations of six to eight feet in John Day Reservoir have focused their impact on a narrow band on the shoreline unlike the broad zone produced by 150 ft of pool level in Dworshak Reservoir. The shoreline fluctuation zone in John Day Reservoir crosses the base of the valley sides

near the dam and moves progressively lower in the landscape across low terraces and the floodplain as the pool extends upstream.

Cultural setting

The John Day Reservoir includes some 209 known archaeological sites, including many large important occupations along the Columbia River. The reservoir also has a long record of archaeological investigations, extending back to 1938. The history of archaeological work at John Day has recently been summarized by Draper (1992: 3.7-3.10)

Although the reservoir fluctuation zone is small (ca. 4 ft) compared to that at Dworshak, severe shoreline impacts to archaeological sites have been noted by many of the previous investigations. Along with erosion attributable to reservoir operation, loss of cultural artifacts and deposits due to site vandalism and collecting has been significant. Recent inspection of 30 sites in the reservoir (Center for Northwest Anthropology 1992) confirmed that shoreline erosion continues to be a major contributor to loss of cultural deposits at John Day Reservoir.

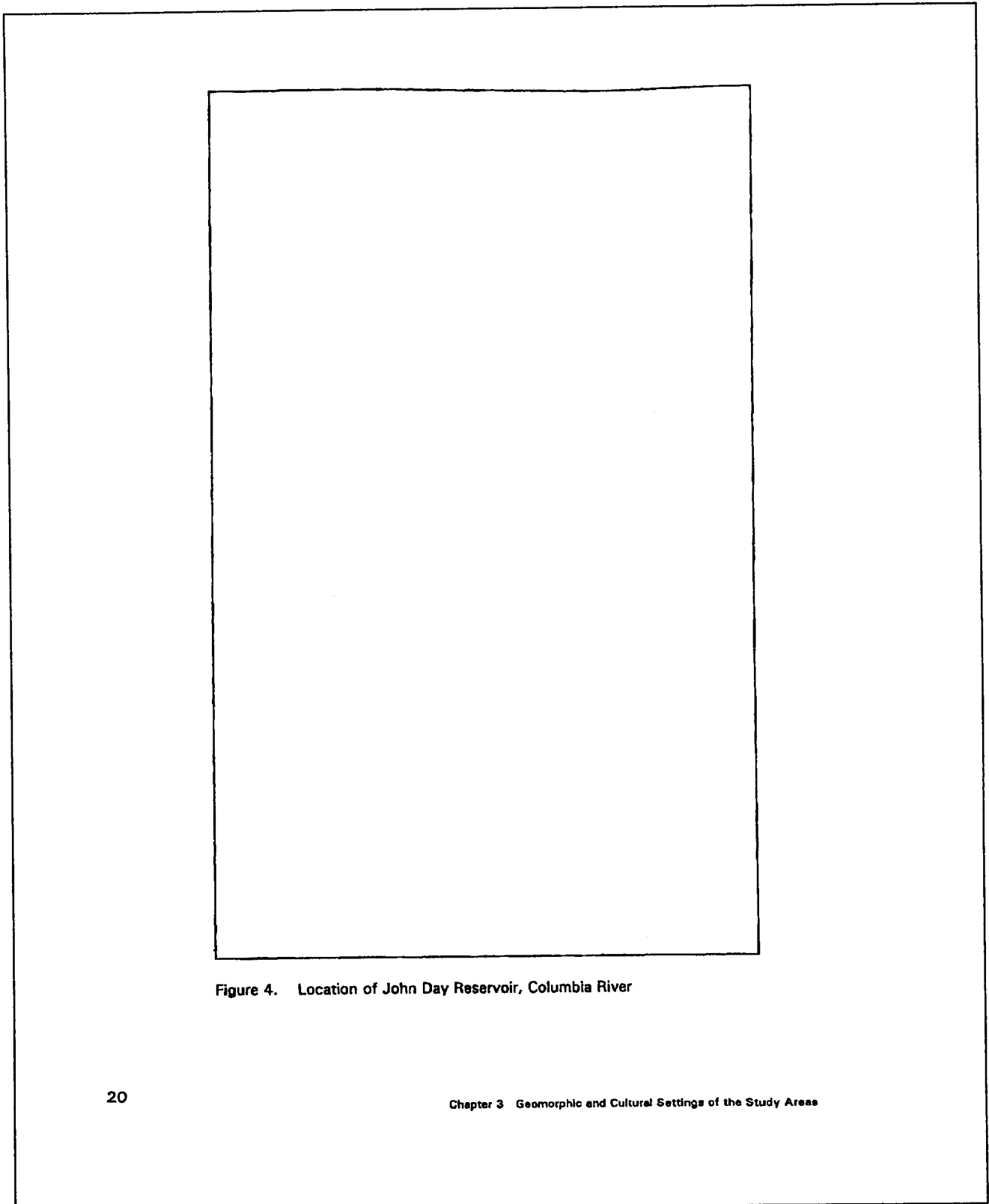


Figure 4. Location of John Day Reservoir, Columbia River

4 Geomorphic Procedure for Cultural Resources in Reservoir Areas

Geomorphic Impacts on Cultural Resources in Reservoir Areas

Geomorphology is important to all aspects of cultural resource management including resource identification, evaluation, and management. The science of geomorphology includes the identification and delineation of landforms and landforming (geomorphic) processes, analysis of geomorphic processes, and the history of the development of the landscape. Identification of landforms is important in cultural resources management because the location of the archeological record is clearly related to the occurrence and distribution of landforms. Knowledge of the occurrence and distribution of geomorphic processes provides critical information for the subsequent analysis of the impact of these processes on the archeological record. Information on the history of the development of the landscape is the environmental basis for the evaluation of cultural resources.

The various geomorphic processes of erosion and deposition may have profound impacts on the cultural resources which occur in the areas in which these processes are active. The occurrence of geomorphic processes is a product of the interaction of environmental conditions and processes. A large number of site factors influence the occurrence of geomorphic processes at any location. However, the local geologic, soils, topographic, vegetative, climatologic, and hydrologic conditions are the principle factors which must be considered in identifying, analyzing, and managing these potentially devastating phenomena.

In the identification, analysis, and management of the geomorphic processes that may impact cultural resources, it is important to recognize all of the processes which may occur, not simply areas of erosion and areas of deposition. Field examination of erosion processes in the two reservoirs indicate that at least five separate processes are active, each with different types of impacts, controlled by different factors, and requiring different

management approaches. Similarly, at least three major types of depositional processes are active in the two reservoirs.

Development of monitoring and protection plans for cultural resources should be based on the understanding of the distribution and characteristics of the geomorphic processes which may impact the resources. As stated previously, the primary goal of the development of the analytical geomorphic procedure is to provide the geomorphic information critical to the development of monitoring and protection programs for cultural resources in Dworshak and John Day Reservoirs.

Factors influencing geomorphic impacts

The occurrence of geomorphic processes is a product of the interaction of environmental conditions and processes and is responsible for preservation or destruction of cultural resources. Various factors affect the rate and degree of geomorphic impacts. Geology is essential in analyzing parent material, type of fill material, and engineering properties. Soil is of interest in determining moisture content, mineral stability, structure, and permeability. Climate may affect soil and geologic properties. Any changes in local climate that increase the humidity accelerates the rate of decay of exposed cultural resources. On the other hand, a change to a drier climate will aid in preservation of resources. Any variation in climate due to elevation or exposure to weathering can cause significant differences in geomorphic processes. Topography or relief of an area will decrease or increase geological processes. The type of failure along the valley walls of the river are directly related to elevation. For instance, the impact of wave action is only visible at a lower elevation. At higher elevations, any ponding of water, whether man-made or natural, will affect the rate of geomorphic impacts. Geologic structure, such as bedding and faults, may impede movement of subsurface water as well as restrict development of a vegetative root system. The type and amount of vegetation and extension of the root system may alter the stability of the surface. Human activities have also been apparent in both impact zones. Delineation of impact zones will be discussed in Identification of Geomorphic Processes. Campgrounds and recreation sites have sometimes been constructed over archeological sites. Human influences, including steepening of the slopes through excavation, water diversion onto the slopes, and the placing of fill on the slopes, affect both the spatial and temporal distribution of mass movement.

Impacts of erosional processes

Erosion, usually resulting from fluvial degradation or excessive precipitation in this area, is a continuous process and may destroy or alter archeological sites. Even if resources are not destroyed, exposure of archeological sites increases illegal artifact collection. Reservoirs create a unique erosional situation in that their impoundments create erosional shores on slopes previously unaffected by lacustrine processes, causing immediate and accelerated erosion

and sedimentation (Lawson 1985). Bank erosion results in the loss of vegetation which serves as a protective cover over soil and sediment.

Although numerous factors influence the rate and occurrence of erosion, the primary cause of bank erosion is wave action (modified after Ebert 1989). During this study, wave action was found to be the dominant process not only in occurrence but in extent of destruction as well (Figure 5). Wave action can be generated from wind, tectonism, and pool level fluctuation. Erodibility index of the soil and the slope of the surface also needs to be considered. Erosion exists in both zones of impact although reservoir fluctuations do not directly affect erosional processes or depositional processes of the indirect impact zone. Since most of the indirect impact zone is heavily forested, few geomorphological processes could be identified.

Surficial geomorphic processes include mass wasting of soil and rock from slopes, overland flow of runoff as "sheetwash" on hillslopes and other sloped surfaces, concentrated water flow in channels of gullies and small streams, wave attack along reservoir shorelines, and dispersion of saturated soil. In part, bank stability varies with fluctuation levels. Mass wasting is produced by various processes, including fluvial and aeolian, and results in downward movement of surficial material (Figures 6 and 7). Sites may be buried, if the site is located at the base of the failure, or may be completely destroyed, if the site is located along the slope. As material is moved to a lower elevation, the stratigraphic record and environmental context of the archeological record is altered. Locations of sites on the landscape may also be altered by mass wasting. Forest practices, especially those associated with timber harvest and road construction, have increased mass wasting on already unstable slopes (Figure 8). Overland flow, identified as sheetwash in the Geographic Information System (GIS), occurs on hillsides during a rainstorm when surface depression storage and either, in the case of prolonged rain, soil moisture storage or, with intense rain, the infiltration capacity of the soil are exceeded (modified after Morgan 1986). Soil loss from sheetwash varies according to velocity and turbulence of the flow and is more prevalent in areas with little or no vegetation. Gully erosion is another major geomorphic process affecting archeological sites. Gullies are steep-sided stream courses which experience ephemeral flows during rainstorms. The width and depth of the gullies vary. Due to their erratic behavior, a relationship between sediment discharge and runoff is difficult to establish. Existence of gullies is mainly attributed to excessive rainfall or extensive clearing of vegetation.

Erosion in this area was identified using aerial photography and conducting field investigations. In order to establish the rate of bank recession, historic photography needs to be acquired and compared with recent photography.

Impacts of depositional processes

The degree and type of deposition over an archeological site will determine preservation or degradation of cultural resources. In most instances,

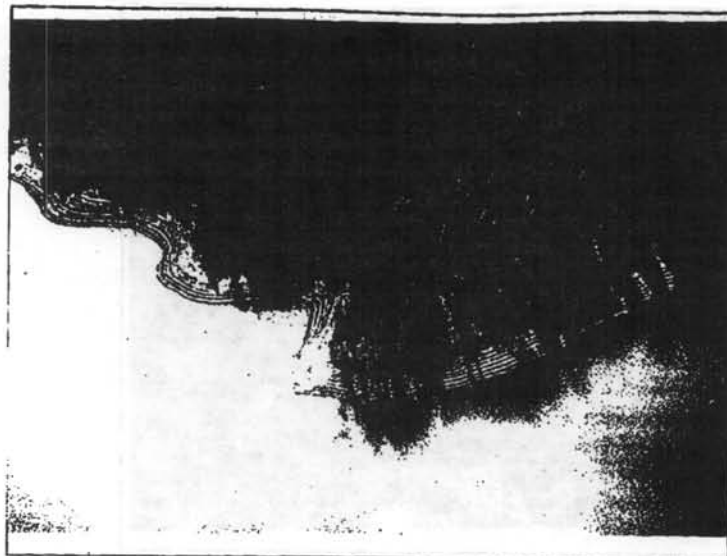


Figure 5. Example of wave impact along the shoreline, Dworshak Reservoir, Idaho

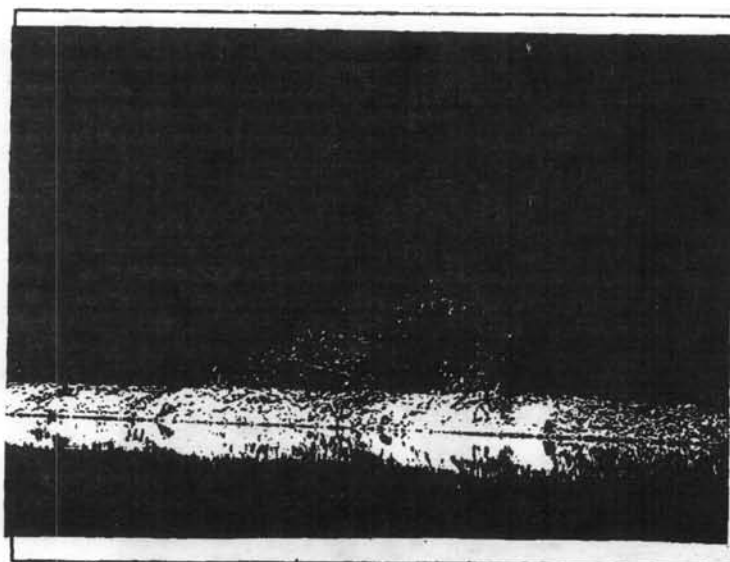


Figure 6. Mass failure in the high impact zone, Dworshak Reservoir, Idaho

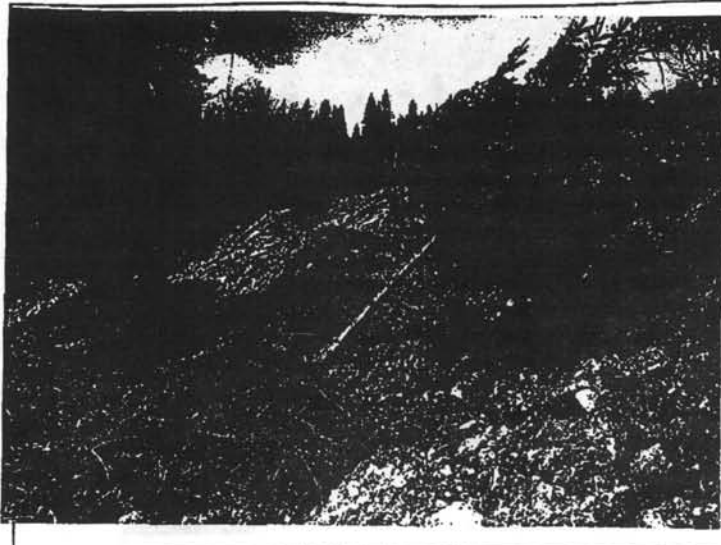


Figure 7. Downward movement of material (soil and vegetation) along the failure plane, Dworshak Reservoir, Idaho

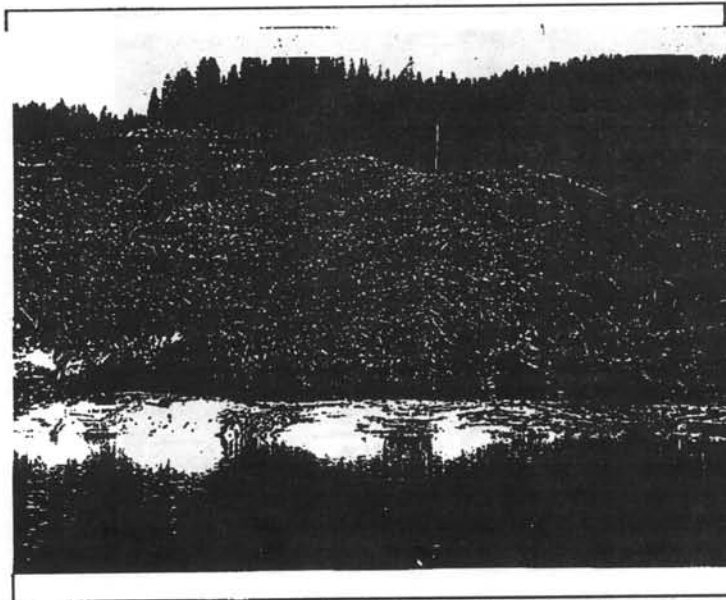


Figure 8. Logging in low impact zone, Dworshak Reservoir, Idaho

deposition of sediment will aid in preservation of the archeological record by forming a barrier between sites and destructive processes. Unfortunately, sedimentation may also shield sites from shallow investigations and destroy fragile cultural resources. An understanding of sedimentation rate and sediment type and amount is important in evaluation of site preservation. To better understand these components of sedimentation further studies, including radiocarbon dating and stratigraphic analysis, need to be conducted.

Three general types of deposition that occur in the two reservoirs are colluviation of mass wasting and soil dispersion deposits at the base of the slopes, fluvial deposition of sediments from sheetwash and channels, and lacustrine deposition of wave eroded materials. Although deposition is an important process, erosion is more prevalent nearshore. Depositional and erosional processes exist nearshore but are also present in deeper waters. Initial dam construction and removal of sediment due to natural or man-made activities may alter the influx of sediment in the reservoir. Alteration of basin morphology due to sedimentation processes must also be considered.

Impacts of weathering and soil disturbance processes

Soils in the North Fork drainage area have been described as brown podsollic soils comprised of light to dark brown humid and subhumid soils (Draper 1990). The process of soil dispersion consists of the mechanisms of soil infiltration and saturation, ionic exchange between soil and soil water to break soil bonding, and concentrated flow of the unbonded soil along concentrated soil moisture flow paths. Surface alteration due to weathering is apparent in aerial photographs and field investigations, however, soil disturbance can also result from subsurface water. Subsurface movement of water reduces the strength of soils and affects the soil characteristics. Weathering alters the physical and chemical characteristics of rock and soil at or near the surface. Movement of material by erosion accelerates the physical weathering process and is prevalent throughout Dworshak Reservoir. Freeze-thaw is another type of physical weathering apparent in this area although the effects are uncertain. Chemical weathering is dependent on the soil environment and chemistry of water moving through the soil. Alteration of mineralogical composition due to chemical weathering is usually identifiable based on color change of the parent material to the weathered material. The extent and type of weathering can be better evaluated with more extensive field investigations and laboratory tests.

Development of an Analytical Procedure

In the following paragraphs, a brief description of the development of an analytical geomorphic procedure for use in management of cultural resources in the Columbia River System is given. The procedure is designed specifically with several objectives in mind. The principle use of the procedure is to provide necessary geomorphic information for developing monitoring and

protection plans for cultural resources in impact zones of the reservoirs. The procedure must also be relatively simple and rational and be supported by readily available information combined with some detailed information interpretation and field examination and verification. Finally, the procedure should be developed such that it may be exported to other reservoirs in the Columbia River System. Construction of various data bases are required by the proposed procedure in addition to identification of known geomorphic processes. A predictive model can then be established by incorporating this data into a management information system. In the sections below, the development of the procedure is outlined through a review of the conceptual basis for the procedure, construction of the data bases required by the procedure, identification of geomorphic processes and process areas, compilation of a matrix of site conditions by geomorphic processes, and use of the procedure in other Columbia River reservoirs. The sequential steps of developing the procedure are illustrated in Figure 9.

Geomorphological information for cultural resource management

The analytical geomorphic model followed sequential steps in constructing a basic model that can be utilized in management of a reservoir (Figure 9). A data base of information pertaining to the geomorphology was first developed. Geomorphic processes were then identified from interpretation of existing maps, aerial photography, and video photography of the reservoirs at an altitude of less than 1,000 ft from a helicopter. The video photography served as an aid during field investigations of the more pronounced mass failures. Aerial photographs were later scanned and interpreted for use in a Geographic Information System (GIS). Unfortunately, photographs of Dworshak Reservoir were distorted and linkage between photographs was not possible. However, the photographs exist as a separate and important part of the geologic/geomorphic database. After identification and delineation of geomorphic processes active in the reservoir areas, the next step in development of the analytical procedure is development of a matrix of site conditions in the form of a geographic information system.

Development of geomorphological information

The classification used in identification of slope movement processes are relevant to type of material, geographic location, rate and type of movement, resulting deposit, degree of development, and stage of activity. Classification used in identification of mass failures along the Columbia River and its tributaries is based mainly on type of movement and resulting deposits. Procedure for this classification includes field investigations, aerial photographic interpretation, and geologic and soil analysis. The study area encompasses a direct impact zone and an indirect impact zone (Figure 10). The direct impact zone is further subdivided into three divisions based on type of failure and elevation or location of the movement. The area at the lowest level (Level 1) is affected by wave attack from fluctuations in the reservoir. Above this level (Level 2), the drawdown of the reservoir still affects slope stability. Mass failures such as flows, slips, creep, and piping are evident. At the highest

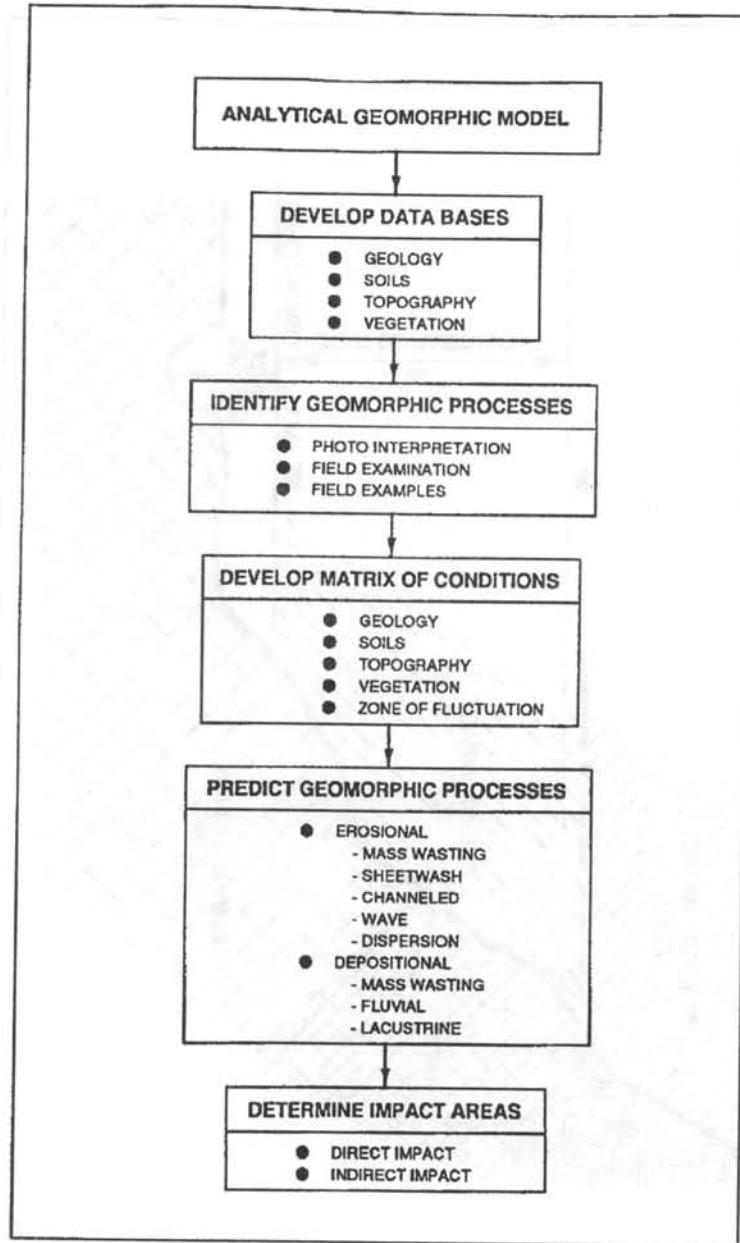


Figure 9. Sequential steps of an analytical geomorphic model

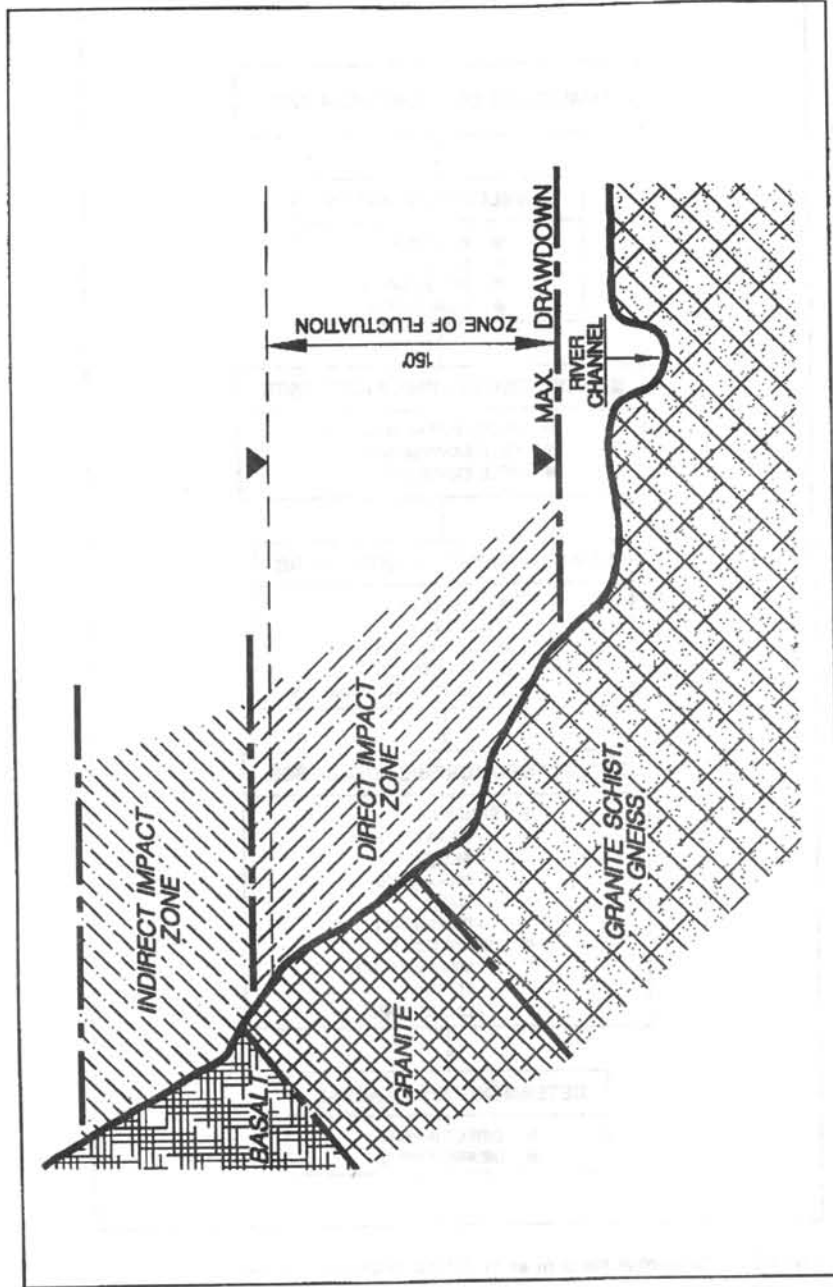


Figure 10. Division of study area into direct and indirect impact zones

level (Level 3), influence of the drawdown on movement of material has decreased. Mass failures on a larger scale, such as gullying, rotational slides, and falls, are usually present at this interval. Differentiation of these zones was difficult in most areas and would require further extensive field studies.

Use of geographic information systems in impact analysis

One of the most powerful tools for managing resources which are distributed spatially and are relatively static is the Geographic Information System (GIS). Using the relational data base capability of a robust GIS and a well conceived framework or model for simultaneous consideration of a number of environmental variables, the complex interactions of the factors which influence occurrence of geomorphic processes in the project areas may be analyzed and the distribution of the processes mapped. The environmental factors which make up the GIS data bases (geology, soils, topography, vegetation, etc.) may also be used for many other purposes in management and operation of the reservoirs. Although a GIS is not simply a database for constructing maps, it can create maps at different projections, scales, and colors.

The intent of the GIS is to provide support both in interpretation and maintenance of pertinent data concerning the reservoir environment. A Geographic Information System allows input, storage, manipulation, and analysis of spatially referenced data. The major analysis technique will be the combination or linkage of datalayers to analyze or display spatial queries. For example, archeological sites, mass failures, soils, and geology may all be combined to locate areas of high vulnerability for future failures. A buffer zone can be created to further section the high/medium/low failure sensitive areas.

The following is a list of digital databases assembled for the project:

a. Raster maps.

- (1) Topography.
- (2) Aerial photography.¹

b. Vector maps.

- (1) Soils.
- (2) Geology.

¹ After a significant attempt to rectify the aerial photography, it was determined that it was substantially distorted and could not be rectified because of the small number of known ground control points. Consequently, the aerial photography was not entered into the GIS for interpretation and use with the other data layers. However, the photography was scanned, geomorphically interpreted, and the interpretations entered into a database.

- (3) Archeological sites.
- (4) Slope failures.
- (5) Campsites.
- (6) Recreation areas.
- (7) Elevation.

Development of Data Bases

Data requirements for the analytical geomorphic procedure

As mentioned above, many environmental factors influence the occurrence of geomorphic processes. Unfortunately, the scope of this project dictates that the analyses be completed primarily from readily available data in map form and the interpretation of some data sources such as aerial photographs. For this reason and following an initial reconnaissance of Dworshak Reservoir, it was determined that the analytical geomorphic model would be based on existing geologic, soils, topographic, hydrologic, and vegetative information, interpretation of aerial photographs, and field observation and verification. In the following paragraphs, these data are discussed in terms of their source and characteristics.

Geologic data. Two sources of information are being used to develop the geologic data base. The most detailed existing geologic data for the two reservoir areas are U.S. Geological Survey geologic maps at the scale of 1:500,000. These maps show rock geologic units down to the formation level of differentiation. Definition of geologic conditions at sites in the two reservoir areas requires greater resolution than 1:500,000 necessitating a modest amount of field mapping of geologic formations in the two areas.

Soil data. Soil information was taken directly from existing 1:24,000 county soil maps generated by the U.S.D.A. Soil Conservation Service for both areas. Both reservoir areas are mapped in the "Seventh Approximation" classification of soils. Data associated with the soil unit delineations include soil type, texture, horizonation, engineering characteristics, and landuse capability.

Topographic data. The primary source of topographic information for the two reservoir areas are the 7.5 min (1:24,000) USGS topographic quadrangles. Complete 7.5 min coverage exists for each area including undated quadrangles showing the extent of the reservoirs.

Hydrologic data. Water is a principle agent for geomorphic processes as falls as precipitation, flows through the soil and underlying strata, fills interstitial pores in soils and sediments, increases the weight of the soil mass, runs

over the surface in concentrated and unconcentrated flow, and washes against shorelines as waves. Some types of hydrologic data such as soil moisture and local precipitation are difficult and consequently expensive to obtain. Other types of hydrologic data like the location of streams and shorelines may be taken directly from maps and aerial photographs. This study focuses on the identification of the latter and the indirect consideration of soil moisture from the combination of soil and topographic data.

Identification of Geomorphic Processes

Active geomorphic processes in the Columbia River System

As presented above, field observations and examination of aerial photographs indicate that at least five erosional and three depositional processes which may impact cultural resources are active in the two reservoirs. The erosional processes include mass wasting of soil and rock from slopes, overland flow of runoff as "sheetwash" on hillslopes and other sloped surfaces, concentrated water flow in channels of gullies and small streams, wave attack along reservoir shorelines, and dispersion of saturated soil. Each of these processes is actually a series of discrete mechanisms which are controlled by site factors and energy inputs and which are interconnected to comprise the geomorphic process. For instance, the process of soil dispersion consists of the mechanisms of soil infiltration and (typically) saturation, ionic exchange between the soil and soil water to break soil bonding, and concentrated flow of the unbonded soil along concentrated soil moisture flow paths.

Unlike erosional processes, depositional processes may have a favorable impact on cultural resources through burial and partial protection. Deposition follows the erosional and transport (considered as part of erosion for this project) parts of a dynamic continuum on land and subaqueous surfaces. The three general types of deposition that occur in the two reservoirs are colluviation of mass wasting and soil dispersion deposits at the base of slopes, fluvial deposition of sediments from sheetwash and channels, and lacustrine deposition of wave eroded materials.

Identification procedure

Identification of geomorphic processes in the reservoir areas follows a stepwise sequence. The initial step was identification and location of specific geomorphic processes in the field. During the reconnaissance of Dworshak and John Day Reservoirs, shorelines were viewed, photographed, and videotaped from relatively low altitude from helicopters. During these flyovers, locations of good examples of active geomorphic processes were identified for subsequent ground examination. Immediately following the flyovers, reservoir shorelines were examined from boats and over land where possible from road access. Particular attention was given to the positive identification and

photography of the specific processes, site factors which influence the processes, and estimation of the impact of processes on cultural resources.

Upon return to WES, the aerial photographs were examined and digitized for use in mapping the distribution of active geomorphic processes. Video-tapes made during the flyover were also viewed to complete identification and mapping of the processes.

Delineation of process areas

Upon completion of identification and mapping of geomorphic processes, distribution of various processes will be considered in the delineation of "process areas" where combinations of processes occur to comprise natural process areas. Delineation of these process areas will allow collapse of detailed shoreline geomorphology into discrete areas of the appropriate size for cultural resources management. The process areas will include differentiation of areas of direct impact (the maximum elevation of wave attack down to the minimum pool elevation) and indirect impact (a band of variable elevation extent, depending on site conditions) (Figure 10).

Predicting Geomorphic Processes and Impacts

Development of a matrix of site conditions

After identification and delineation of active geomorphic processes and process areas in the reservoir areas, the next step in the analytical procedure is the development of a matrix of site conditions in the form of a GIS data base of environmental factors. Comparison of geomorphic processes with site conditions through the use of the GIS resulted in the definition of site characteristics required to produce specific geomorphic processes in the form of a matrix of specific processes versus site characteristics. This matrix formed the foundation for extrapolation of the identification of processes (and consequently, impacts and management requirements) throughout the Columbia River System.

Prediction of geomorphic processes

The prediction of geomorphic processes involves evaluation of existing and past processes and the parameters, i.e. soil type, geologic formation, slope, etc., contributing to their occurrence. The geographic information system can be used to form a model by combining attributes of individual layers. For example, the GIS can be queried to list the known processes occurring at a certain slope, on a particular soil type, and/or geologic formation. The list can be varied depending on the type and number of attributes. A matrix of conditions is established to provide a basis for predictive interpretation. The

processes can then be categorized based on statistical probability. Although data will vary from each reservoir, the same procedure is applicable.

Prediction of impacts on cultural resources

Destruction of archeological sites by geomorphic processes can be best understood through development of a site model. Before a protection plan can be initiated, the type of geomorphic process, the degree and rate of destruction, and the archeological content itself must all be considered. Initially, site destruction in the Dworshak Reservoir can be divided into two categories; geomorphic processes occurring under natural conditions and geomorphic processes resulting from man-made actions. Establishing a matrix of site conditions from these considerations forms a model for identification of geomorphic processes. The GIS can easily locate areas of potential destruction once a matrix of site characteristics has been determined. By understanding the mechanisms behind these processes, future geomorphic impacts can be predicted and protection and/or stabilization methods can be implemented.

Use of the analytical procedure in other Columbia River reservoirs

The procedure described in the paragraphs above is based upon a generic approach to the identification and analysis of the distribution of geomorphic processes which may impact cultural resources. The procedure is also developed for two substantially different reservoir settings in Dworshak and John Day and therefore is designed to deal with a variety of landscapes and site conditions. For these reasons, the procedure should be readily transportable to other reservoirs in the Columbia River System when local conditions are considered.

5 Monitoring Procedure for Cultural Resources Management in the Columbia River System

Monitoring of Impacts on Cultural Resources

Monitoring of changing cultural resource site conditions that may occur following decisions from the SOR effort for the Columbia River system will be critical for future management and protection of significant cultural properties. Modifications of operational procedures at individual reservoirs will impact archeological and historical sites located in the zone of fluctuating water levels. As indicated in the previous chapter, geomorphic processes associated with reservoir operation already create serious problems for cultural resource integrity in these areas, and changing operational situations leading to increased drawdowns will exacerbate these impacts.

In addition to these physical processes, the potential for loss or damage of sites can be anticipated to multiply from increased human activities in the exposed areas. Some of these expected impacts will be inadvertent, such as those that may occur because of visitation or recreational endeavors occurring on fragile exposed archeological site surfaces. Others will result from intentional efforts such as vandalism or artifact collecting.

The brief test drawdown at Lower Granite Reservoir in March of 1992 gave a clear and alarming preview of what can be expected to occur during drawdowns. There, artifact collectors immediately covered newly exposed archeological sites to acquire artifacts, often in full view of Corps of Engineers and other personnel. As one result of their field assessment of sites during the drawdown at Lower Granite and Little Goose Reservoirs during that time, the Washington State University field crew noted that every archeological site located near access roads had evidence of pedestrian traffic preceding their visit (Center for Northwest Anthropology 1992:7.11). Boats were also used by artifact collectors to gain access to exposed sites. In addition to surface collecting activities, some vandals were observed using shovels and screens to retrieve artifacts before the sites were again inundated.

It is important to note that the archeological sites exposed during these test drawdowns had been under water for nearly 20 years and, yet, when briefly exposed, were immediately set upon by collectors. The rate of site vandalism and artifact collecting can be anticipated to increase dramatically if periodic additional drawdowns are implemented on any of the Columbia system reservoirs. Each drawdown will yield freshly exposed artifact inventories that will be quickly and regularly exploited by collectors.

While some impacts derived from both physical processes and human-induced actions can be anticipated to occur with drawdowns, there is little or no extant quantifiable information that tells us exactly what this will mean for the resource sites at any given reservoir nor how it relates to long-term management needs for these resources. Only systematic monitoring of impacts and resource conditions will give us these badly needed data.

The term "monitoring" is fashionable today in environmental sciences and yet means many things in different fields and contexts. As used herein, it refers to a methodology consisting of intermittent (regular or irregular) measurements or observations that, when analyzed and evaluated, offer a basis for making rational and sound management decisions for implementing proper and effective long-term preservation of the cultural resource record. Such a methodology is critical for identifying and understanding baseline resource conditions and protective needs under either changing or unknown circumstances, such as those represented by the combined effects of proposed drawdowns on archeological sites. Once the baseline conditions are established and the relationship between the rate and magnitude between the various impacts are understood, recommendations for mitigation of both natural and human-caused impacts can be formulated.

Cultural resource monitoring is most beneficial when it results in more effective management decisions—decisions that protect or preserve the archeological and historic resources which are considered important. Other uses of monitoring in this context include:

- a. Helping cultural resource managers determine compliance with Federal historic preservation laws and regulations and agency regulations.
- b. Constructing, adjusting, and verifying quantitative predictive impact models that can be the basic tool used in evaluating and selecting management resource protection strategies.
- c. Providing early warning of future resource protection problems when they can be resolved more easily and at lower cost than if left unattended. Unfortunate inadvertent loss of significant cultural resources data can also be prevented through an effective monitoring program.
- d. Enhancing knowledge of past cultural events and patterns, their variability, and the impacts accruing from reservoir operations on this fragile database.

The goal of this chapter is to offer a recommended cultural resources monitoring procedure that, when implemented on a reservoir by reservoir basis, will provide management of the information and framework to address potential loss of important cultural resources data associated with reservoir operation. Development of a strategy for cultural resource monitoring in the Columbia River system requires delineation of monitoring objectives and an overall approach. It also requires integration with the other two approaches outlined in this report, the analytical geomorphology and site protection procedures.

Objectives of the Cultural Resources Monitoring Procedure for the Columbia River System

As noted, new or modified operational procedures at Columbia River system reservoirs resulting in additional drawdowns will have adverse effects on cultural resource sites located in the zones of fluctuating water levels. Many of these resource properties are already being annually impacted by existing reservoir operation. Unfortunately, there is little or no precise information on these ongoing or potential impacts to sites, either at the general reservoir level or on a site specific basis. Moreover, there are few data that help us chart trends in resource loss nor the processes involved. There are no active cultural resource monitoring programs in place at any of the reservoirs that systematically collect, analyze and evaluate information on site impacts to aid in making long-term management decisions. In fact, what has been termed monitoring in the past (e.g. Center for Northwest Anthropology 1992) is not really monitoring but rather one-stop assessments to help establish resource conditions at a particular point in time. While such assessments are useful for identifying the then current site conditions, if the data are collected in a functional manner, they do not provide a full rationale for making long-term management decisions nor are they capable of producing information relating to changing condition and trends over time.

The objectives of the Columbia River system cultural resources monitoring procedure are designed to accommodate acquisition of necessary long-term data on the various impacts and changing site conditions. They are as follows:

- a. Establish baseline conditions for significant prehistoric and historic sites located within the agency-controlled lands adjacent to the reservoir shoreline, especially those located within the presently-defined or proposed drawdown zone.
- b. Develop and refine techniques to detect changes and to accurately quantify trends in cultural site conditions.
- c. Produce field validation for any modeling efforts associated with resource monitoring, such as prediction of certain impacts at given sites

due to ongoing or changing reservoir operation, or changes in the rate and magnitude of such impacts.

- d. Provide managers with necessary information on resource conditions so that the most effective resource protection management options can be implemented.
- e. Yield insights into the effectiveness of agency cultural resources management policies and actions.

Conceptual Overview of the Columbia Basin Cultural Resources Monitoring Procedure

The major components and their relationships necessary for developing a cultural resources monitoring program for a reservoir is shown in Figure 11. There are four basic levels of work involved in the monitoring procedure, including (1) compilation and evaluation of existing information; (2) design of an effective monitoring program based on the local natural and cultural setting; (3) implement monitoring; and (4) analyze and synthesize the incoming data. Each of these steps is briefly summarized below.

The initial step in the overall process is to evaluate existing cultural resource data base for the reservoir, including information such as site inventory records, available information on site condition, site evaluations, and adequacy of existing inventory coverage for the project. At Corps of Engineers lake projects, this information may be found in the project Historic Property Management Plan (HPMP), as well as supporting information contained in the cultural site files. Other sources of relevant information consulted should include available aerial photographs and maps, data concerning the natural environment, especially geological or geomorphological situations that have a bearing on cultural site protection, and a review of reservoir operating procedures as they relate to site protection.

Critical to this step is an honest and accurate assessment of the overall quality of existing information as it relates to the current condition and significance of sites, particularly those located in zones of fluctuating water levels that are receiving ongoing impacts. There are several questions that must be considered and answered to assess the quality of the data base. First, when and how were the original recordings done and what kinds of data were collected? In a majority of cases, the recorded data on file are not current nor complete enough to be able to state with certainty what is the present state of the resource. This is particularly a concern if the survey information is dated and a site has been subjected to ongoing impacts such as surface erosion, wave erosion, periodic inundation, or human-induced activities.

Another set of questions that require review concerns the adequacy of existing information as it relates to the need for making informed resource management decisions, particularly those involving resource protection and

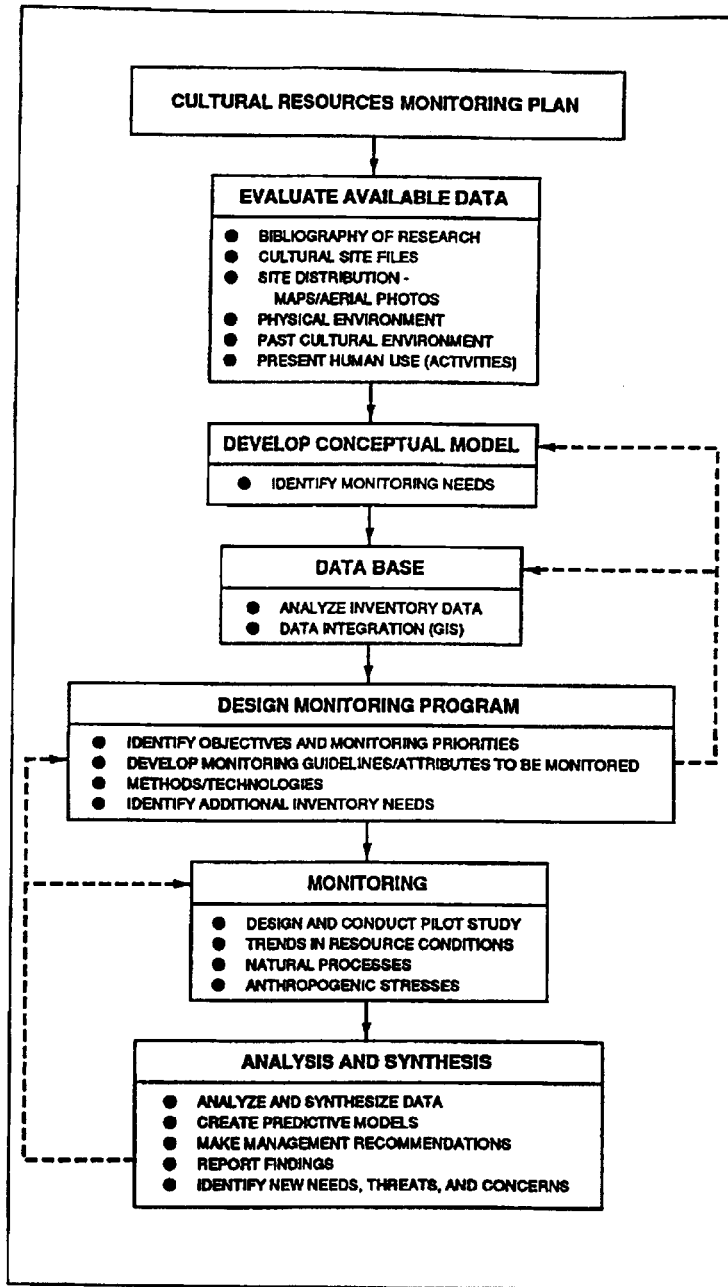


Figure 11. Developmental sequence for cultural resources monitoring plan

long-term preservation. In all likelihood, the original survey strategy did not include a full assessment of the agents impacting the site and it is not unusual to find that updated surveillance of the site's condition has not been undertaken, at least on a systematic or comprehensive basis. An additional problem occurs when impacts to a given site or group of sites have changed over the years because of factors the effects of reservoir operation, changes in land use patterns, or different access conditions. The necessity for making more detailed and current site assessments for site protection needs is more fully covered in the next chapter.

As part of this first step, general monitoring needs should be formulated, based both on the quality and timeliness of the existing data and the support for monitoring available within the organization. The support of the organization should be sought as early as possible in the plan formulation sequence. Failure to commit adequate resources of time, funding, and expertise to up-front design of the monitoring program and to the synthesis, interpretation, and reporting of information will result in probable failure of the entire effort. Moreover, this support needs to be established for the long-term so that the monitoring results contribute maximum benefit to the decision-making process.

A final factor that needs to be addressed early in the development of the monitoring program is integration of the data. At the project level, use of a geographic information system (GIS) is recommended, especially if the monitoring procedure is to be integrated with the analytical geomorphic procedure discussed in the preceding chapter. Additionally, integration of the project-specific monitoring plan and similar efforts at other projects in the district should be accomplished, again employing a GIS data base. Eventually, monitoring results at both projects and districts should be integrated and analyses comparatively at the division or river basin level. Integrative efforts will be enhanced if a standardized monitoring procedure is used as the basis for each project monitoring plan.

The second major step in the monitoring process is the design of the reservoir-specific monitoring plan. This step involves delineation of the detailed monitoring objectives and priorities for that particular project and its cultural resource data base. It also includes identification of the precise conditions or attributes to be monitored, consideration of the most appropriate methods and technologies to be employed, and scheduling. An important outcome of this step and the previous one is identification of additional inventory (or re-inventory) needs to complete the data base. Within the context of the SOR, inventory and site condition assessments will certainly be required for areas exposed by future drawdowns that have not been inspected for years because of inundation or have never been given intensive examination.

Implementation of the next step, the actual monitoring approach, should begin with a pilot study to test and evaluate the overall program design. Both the pilot monitoring effort and the full monitoring program are designed to examine trends in resource conditions related to both natural processes,

especially those related to reservoir operation, and anthropogenic stresses to cultural sites during exposure.

The fourth and final step in the monitoring procedure includes ongoing, periodic analysis and synthesis of the accumulated monitoring data. It is critical that the monitoring effort provide continual feedback to management of the resource base. Monitoring data can also be used to create predictive models for changing resource conditions that can be tested in subsequent years, along with identifying new needs, threats, and concerns that may not have been apparent earlier in the monitoring program.

Documentation for the Monitoring Procedure

Proper documentation of the monitoring procedure objectives and design are critical to the long-term success of the overall effort. This documentation serves to provide a protocol to guide the program and also institutionalizes the procedure by describing data collection and analysis techniques in detail. This allows many personnel to continue the monitoring process in future years and enables continuity and quality of subsequent data collection to be maintained.

Recommended documentation for the monitoring procedure occurs at three levels within the historic preservation program, the HPMP, a reservoir-specific monitoring plan, and a site-specific monitoring packet. Each of these levels is briefly described below.

The purpose of the HPMP document is to provide a comprehensive program to direct the historic preservation activities and objectives at each Corps operational project, and to effectively manage and protect each cultural resource site. As part of the HPMP, the general goals and background information for the monitoring program should be fully described, including the relationships between the monitoring effort and other cultural resource management thrusts and priorities. By regulation, information from the HPMP is also incorporated into a higher level of planning, the master planning process which is guided by the Master Plan and Operational Management Plan for a given project.

Below the HPMP level of documentation, but associated closely with it, is a recommended monitoring plan. A plan should be prepared for each reservoir project and, as noted above, serve to institutionalize the overall monitoring program for the long term. The last three steps of the monitoring process, the design of the monitoring program, implementation, and analysis and synthesis of the resultant data, form the basis for the monitoring plan. The conceptual framework of the monitoring procedure outlined in the reservoir monitoring plan should be viewed as being dynamic in nature, with continual feedback and re-evaluation of the goals and objectives as both monitoring and additional inventory data are accumulated and synthesized. As field methods are further tested and experience allows for new insights, the monitoring plan should be reviewed and revised.

The monitoring plan should include an inventory of those sites at the project selected for monitoring, along a list of intrasite areas or features to be inspected at each site. Justified scheduling of the monitoring needs for each site should also be included in the plan.

Integral to the overall monitoring plan is the site-specific monitoring packet. The individual site packet is designed to be used onsite in the field to acquire site-specific monitoring data and to assure that those data are collected in a comprehensive and consistent manner. The packet should consist of three parts. The first contains a brief text describing site location, major features, past monitoring or other investigative activities, and recommendations for future monitoring. The second part of the site packet contains illustrations showing the site location, necessary details of the site layout, and black-and-white or color photographs of the general site area and specific details that need to be inspected. These figures are used to help locate the site, indicate areas of special concern, and determine the amount of deterioration due to impacts since the last visit. The third part includes a format for collecting the necessary data that is used to collect monitoring information. A site monitoring form should be prepared that serves as a checklist to guarantee congruity and completeness in the data acquisition.

Development of a Monitoring Plan for John Day Reservoir

Development and implementation of a monitoring plan as described above requires a long-term management commitment to the resource base, and must be approached on a project by project basis. The level and adequacy of pre-existing information will be different for each reservoir in the Columbia River Basin and, as indicated in Chapter 4, the impacts of various geomorphic processes will differ greatly between projects. The intent of the following discussion is not to outline a complete monitoring plan. It is, instead, to look at the John Day cultural resource database and briefly identify the initial steps that would have to be considered given the present status of that information. The following discussion is illustrative in nature and is not intended to be critical of the extant data and management practices at this reservoir. The cultural resources files for John Day were examined in January 1993.

Background

Archaeological work along the reach of the Columbia River now included in the John Day Reservoir has a long history, beginning in the late 1930s. Work since that time has been sporadic, and since the dam was completed in 1971, often more project-specific than systematic. A total of 209 sites was recorded within the John Day project boundaries as of 1992 (Draper 1992). Of these, 194 sites were recorded by Corps of Engineers' cultural resources personnel in 1979-80, although a survey report was not completed. The fieldwork was conducted on the 77 mile-long Lake Umatilla, between John

Day and McNary Dams, and included the lower ten miles of the John Day River which enters the Columbia upstream from the John Day Dam.

Based primarily on the 1979-80 survey data, a cultural resource management plan (CRMP) was prepared in 1985, prior to guidance specified in Corps of Engineers Environmental Regulation 1130-2-438, "Project Construction and Operation, Historic Preservation Program," published in October 1987. This Regulation formally established a historic preservation program for Corps' activities associated with construction, operation and maintenance at Civil Works projects, including preparation of management plans for cultural resources at individual projects (called "Historic Property Management Plans" therein).

Although based on somewhat limited survey data that was dated in some cases (e.g. the then current condition of individual sites), the CRMP was advanced for its time with regard to consideration of the need for and identification of potential techniques for protecting archaeological sites and thereby providing long-term preservation of the resource properties. The plan incorporated an assessment of the known sites, taking into account information on features present, site condition and present use, accessibility, and impacts. It further stipulated a number of strategies/technologies that could be used to protect sites in specific instances. These approaches were wide-reaching and broken into two categories, as follows:

a. Physical protection measures.

- (1) Structural stabilization.
- (2) Streambank stabilization.
- (3) Vegetative propagation.
- (4) Buried obstructions (e.g. chain link fence).
- (5) Recovery of data.
- (6) Artifact affixing.
- (7) Electronic surveillance.
- (8) Patrolling.
- (9) Barriers.
- (10) Fire control.
- (11) Erosion control.
- (12) Signing.

(13) Trail modification.

(14) Monitoring

b. Administrative protection measures.

(1) Research.

(2) Public information.

(3) Consultation.

(4) Preparation of cultural resource reports.

(5) Curation of recovered materials.

(6) Scientific utilization.

(7) Withdrawal or use restriction.

(8) Adaptive reuse.

The above information was combined to yield evaluations of individual sites from which prioritized sites could be identified, along with recommendations for subsequent management of the resources.

Evaluation of the Cultural Resources Management Plan and the 1992 Monitoring Project

While it could be considered state-of-the-art at the time of its preparation, the John Day Reservoir CRMP has to be considered an example of an "inactive" management document, meaning that it serves no ongoing management function. The plan established a baseline in 1985, albeit using five-year-old and limited data at the time. It did not include provisions for acquiring additional or updated information from the sites, for monitoring site condition, or for updating the plan itself. National Register of Historic evaluations for the sites have not been completed, and information on the present condition most of the sites is not available. Consequently, as of 1993 little had been accomplished in meeting the management recommendations offered in the 1985 CRMP. One cultural property, Old Town Umatilla, a National Register prehistoric and historic site located just below McNary Dam in the upper reach of Lake Umatilla, has been afforded protection from wave action (riprap revetment) and from vandalism and artifact collecting (fencing, signing and patrolling).

None of the known archaeological sites at John Day has been systematically revisited since the original recording effort, with the exception of the 30 sites assessed by Draper (1992) as part of monitoring at Lower Granite,

Little Goose and John Day Reservoirs. While Draper's project was designated as a "monitoring" effort, it really served more to collect current baseline conditions for a limited number (less than 15 percent) of the reservoir project's total cultural resource site inventory. According to Draper (1992:3.4), selection of sites to be included in the field visitation phase of the work was based on several factors:

Our primary objective, therefore, was to gather as much information as possible from as many sites of differing function on both the Oregon and Washington side of the reservoir. Because of the size of the reservoir, however, site access was considered the primary limiting factor due to time and cost constraints. Once again, because sites accessible by foot or road would be less costly to locate, record, and monitor, priority was given to those sites with easy access in the selection process. Such sites might also be likely to attract vandals, and monitoring would perhaps identify illicit activities, or even discourage such activities from occurring.

Draper concluded that most of the sites his crews visited at John Day are undergoing extensive erosion as a result of wave action undercutting the soft, sandy banks. He also noted recent evidence of illicit digging and artifact collecting at several of the sites visited during his project, along with impacts from past construction activities and development of recreational facilities. Draper further provided National Register significance recommendations for 12 of the sites visited, and offered recommendations for preventing site vandalism and physical site protection measures. He also suggested that future similar investigations at each of the reservoirs include subsurface testing, cost effective site mapping techniques, and resurvey of selected areas at each reservoir.

Recommendations for Development of a John Day Site Monitoring Program

Increased emphasis for proper identification of ongoing impacts in the reservoir fluctuation zone at John Day Reservoir calls for an innovative and comprehensive management approach. A systematic and functional resource monitoring program, developed in concert with a geomorphically-based impacts analysis and an effective resource protection approach, will serve as a useful tool for properly identifying and quantifying continuing impacts to shoreline sites. These procedures will be especially worthwhile if regularly scheduled drawdowns become an ongoing operational procedure at the reservoir as a result of the SOR Study. The developmental format outlined in this chapter is the recommended approach to achieve the monitoring program.

The cultural resource database for John Day is a good candidate for development and implementation of a long-term monitoring program, although it will be necessary to start at the beginning of the process outlined earlier in

this chapter. For the purposes of future monitoring, little of the existing information on individual sites is current and is not overly useful in its present state. For example, since much of the information is 15 years old, it is not known how many of the previously recorded sites have been lost to erosion, destroyed by other activity(ies) in the intervening period. Additionally, significance evaluations have not been completed for virtually all of the sites.

Thus, compilation of existing information is necessary at first, coupled with acquisition of field data regarding current status and condition of each known site. Part of this effort should involve an analysis of the completeness and thoroughness of the previous inventory coverage, along with delineation of areas not adequately covered. Importantly, identification of the need for future inventory and assessment of site condition must include newly exposed areas that result from any drawdowns below the normal low pool level. For long-term management needs, it will be critical to gain information on unrecorded sites that have been inundated during the past 25 years and that may require ongoing monitoring during subsequent drawdowns. Another important early effort in this process would be an analysis of the John Day Reservoir shoreline in accordance with the recommended procedure outlined in Chapter 4 of this report. The geomorphic impact data, along with the baseline cultural site information, will provide a firm basis for developing the monitoring program.

6 Development of a Cultural Resources Protection Plan

Introduction

Most cultural resource sites located along reservoir shorelines in the Columbia River Basin have already experienced some adverse impacts from reservoir-related operations activities. These impacts include loss of sediments and cultural context at sites due to various forms of shoreline erosion as well as loss of artifacts and damage to cultural features that can be attributed to collecting and vandalism activities on the part of visitors.

In order to fulfill the requirements of Corps of Engineer historic preservation regulations, along with other pertinent Federal laws and regulations, mitigation of the effects of these impacts must be considered as they relate to reservoir operation. Loss of resources in this manner can be mitigated through one of two general approaches. These include (1) stabilization of the impacted resource to provide long-term in place protection, or (2) removal of endangered cultural sites and features via data recovery efforts. In some cases, the two mitigative measures may both be employed where a particularly vulnerable portion of a site may be excavated while the remainder is protected.

Actual protection of the site that affords long-term preservation of the cultural materials is the preferred option, when conditions permit. If a suitable, cost-effective protective technology can be implemented, this management strategy leads to better overall conservation of the resource. It also meets the intent of the applicable historic preservation legislation, especially the National Historic Preservation Act of 1966, which actually focuses on stewardship of the resources than directed use.

The Cultural Resource Protection Plan

The following paragraphs outline a procedure for developing a cultural resources protection plan. The proposed scheme is generic in nature and can be applied to any of the reservoirs in the Columbia River Basin. Moreover, it can be developed at the project level to include all endangered sites within the

entire drawdown zone at a given reservoir, or it can be applied to an individual site or small group of sites experiencing similar impacts.

The recommended approach for effective preservation of the resources is based on an integrated strategy that incorporates both the analytical geomorphic and the monitoring procedures discussed above. In the case of the site protection effort, a general cultural resources protection plan should be prepared for each reservoir, accompanied by individual more specific protection plans for each site either requiring physical protection or those that have been protected.

Similar to the analytical geomorphic and monitoring efforts, a recommended developmental sequence is provided for a resource protection plan (Figure 12). This sequence is briefly outlined below.

The first step in developing a functional resource protection plan involves evaluation of the existing data base. The key arriving at an accurate listing of cultural resource sites that require protective attention lies in the quality of the site inventory for the project. It is essential that current information be available for the significance of the individual resource properties, along with a general assessment of the likelihood that the site is endangered. Those sites that are eligible or potentially eligible for listing in the National Register of Historic Places face a likelihood of loss due to one or more impacting agents are candidates for the resource protection plan.

The second event in the process involves assessments of the individual sites in order to gain current and accurate information on the archeological content and condition of the site. This field phase is particularly important if the site was originally recorded several years prior. The field assessment should include an identification and evaluation of the kinds of impacts and their sources, as well as an estimate of the immediacy of the protection needs given the impacts noted. To arrive at a fully useful assessment, it may be necessary to conduct limited archeological testing to determine the extent and condition of the site's subsurface context and specialists, such as a geomorphologist or hydraulic engineer, may have to assist in the evaluation of impacts.

Once the assessments have been completed for those sites included in the resource protection effort, the next step is to determine the best and most cost-effective approach to mitigating the resource loss. As noted above, in place protection is preferred if feasible. In some cases, the nature of the impacts and the immediacy of loss may call for data recovery. In each case, however, both site protection and data recovery should be considered fully as alternatives and a fully supportable decision should be made for the mitigation approach at each site.

In the case of site protection, the next action involves a determination of the protection effort objectives, priorities, and management requirements. Included in this analysis is an evaluation of the potential site protection technologies available for use, based on the site conditions. A considerable

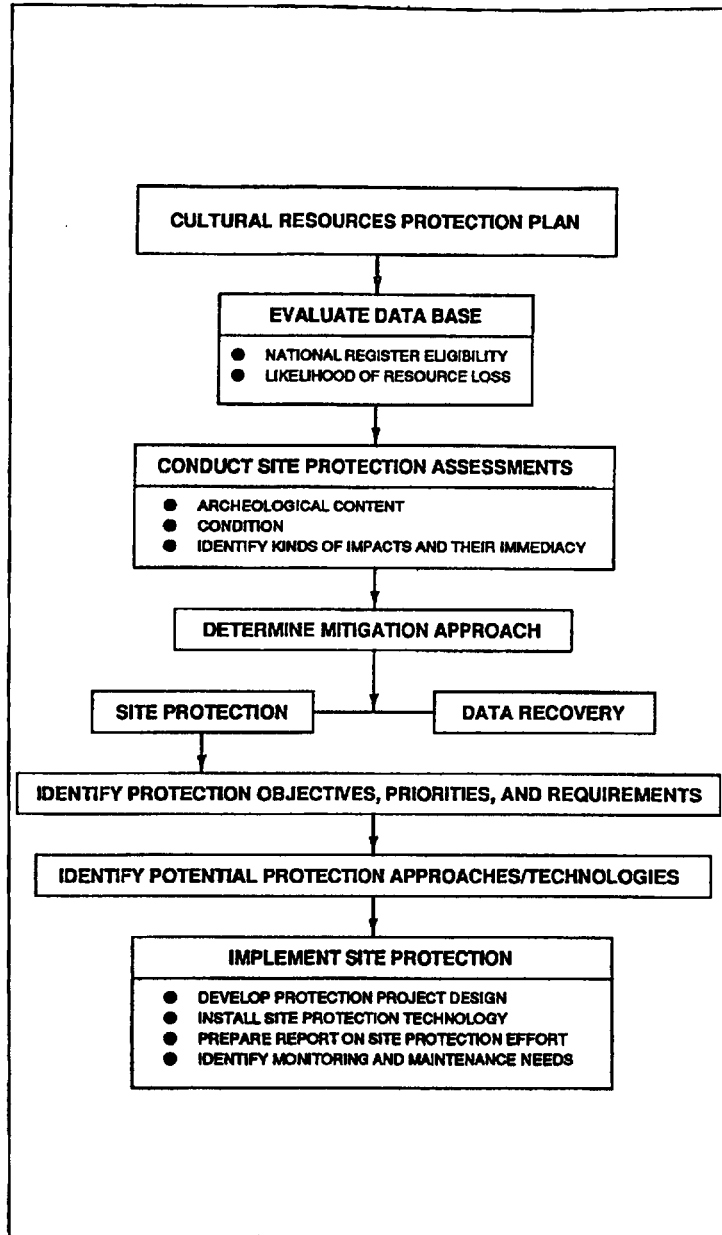


Figure 12. Developmental sequence for a resource protection plan

amount of information on these topics has been developed by the U.S. Army Engineer Waterways Experiment Station and is available to aid resource specialists and managers in identifying the most practical and cost-effective protection strategy.

The final step involves design and implementation of the selected site protection approach. It is imperative that the installation of the protective technology be intensively documented and reported. It is also critical that the monitoring and maintenance needs be identified during this phase and a long-term program for field checking of the protected site be outlined.

Initial development of a site protection plan for Dworshak Reservoir

A stated objective of this study was to examine the cultural resource site protection procedure outlined above by using the Dworshak Reservoir archaeological site database. The reasons that the Dworshak sites were employed for this analysis are the availability of results from a fairly recent intensive survey of more than half of the extensive zone at the reservoir and the fact that the geomorphic procedure discussed in Chapter 4 was developed primarily using Dworshak information. Thus, it is possible to begin an application of the procedures to these resources to indicate how the process would work, both in an expanded version at Dworshak and at other reservoirs in the Columbia Basin.

The 1989 field inventory of the drawdown zone at Dworshak (Draper 1993) covered about 65 percent of the total shoreline extending upstream from the dam to river mile 34. The fieldwork was restricted to the lower and upper levels of the operational pool, 1,450 ft and 1,600 ft, respectively. Thus, a significant portion of the total project area remains unsurveyed, including the entire area below 1,450 ft, the administrative lands above the high water line, and the drawdown zone in the upper one-third of the reservoir. The 1989 survey recorded 166 new archaeological sites in the zone of fluctuating water levels and revisited four previously known sites. It is important to observe that each of these sites has been impacted to a varying extent as a result of ongoing annual raising and lowering of the reservoir pool since construction of the dam in the early 1970s.

Although the archaeological site picture is fairly well known for a good part of the reservoir and the geomorphic procedure has been developed at the macro level of scale, using existing cartographic, geologic, and aerial photo data, the following analysis is saddled with some limiting factors. First, aside from some reconnaissance-level inspection, little archaeological site-specific ground truthing of either current condition assessments or on-site evaluation geomorphic processes and resultant impacts has been accomplished. Second, the key component of the site significance evaluation aspect has not been satisfactorily resolved. Draper (1993) utilized an innovative ranking methodology to arrive at a score for each site under evaluation that was achieved by examining a number of variables that had been assigned a weighting factor. Interested readers are referred to that report for a more thorough discussion of

the methodology and results for the Dworshak sites. Whether or not the ranking holds up under further scrutiny is not under question herein. Rather, it is necessary to simply note the results of this ranking scheme have been questioned and that National Register of Historic Places eligibility has not been entirely resolved for the Dworshak sites. The importance of this evaluative stage is that it must be settled before final decisions can be made regarding selection and prioritization of individual sites and subsequent implementation of protective features. Consequently, the following discussion should be taken as a somewhat generalized example of how the procedures can be combined to arrive at a point from which informed management decisions can be made rather than as a final analysis of the Dworshak data.

As outlined earlier in the report, development of the geomorphic procedure for Dworshak reservoir involved identification and prediction of geomorphic processes and impacts that might adversely effect archaeological sites. Part of that analysis combined a spatial identification of extant processes along with a spatial/vertical delineation of sensitivity zones. The former resulted in placement of active geomorphic processes on aerial photographs and the latter resulted in a GIS-based map of high, medium, and low sensitivity zones for the entire reservoir setting. Once archaeological site locations are plotted and combined with this information, it is possible to identify and evaluate the interaction between site characteristics, geomorphic processes, and impact sensitivity.

The results of this combination for the Dworshak data are reflected in Table 1 which lists those sites and their characteristics that are threatened by a predominate observable geomorphic process. Also noted is the impact sensitivity zone in each site lies within throughout the reservoir. Based on the level of analysis possible at this time, there are 22 archaeological sites identified that fall into this category. During earlier evaluation by Draper (1993), only three of these were considered to be of National Register quality, two of which are in the medium sensitivity zone and the remaining site located in the low sensitivity-zone. If, at this point, managers were confident in the cultural resources data and site evaluations, a short list of significant sites would be available that includes those most threatened. According to the procedure outlined in this chapter, the sites on this list would then be further evaluated through completion of on-site protection assessments that are designed to more precisely identify archaeological content, overall site condition, as well as better definition of the kinds of geomorphic processes affecting the remaining site integrity.

With all of this information in hand, managers would be prepared to make decisions concerning the most effective and cost efficient approach for mitigating loss of an important resource and its data. If in situ site protection and, hence, long term preservation is feasible, these data will be invaluable for identifying and selecting the best protective technology, given the severity specific impacts to the site under review.

At Dworshak, the sites in the previously inventoried areas have been adequately located and recorded, but the question of National Register eligibility

Table 1
Archaeological Sites at Dworshak Reservoir Affected by Geomorphi Processes

Site No.	Fluctuation Zone	Primary Process	National Register Eligibility (Draper 1993) ¹	Site Type	Elevation	
					Lower	Upper
10CW67	High	Debris slide/inundated	Not evaluated	Rockshelter/historic	1,400	-
10CW500	Medium	Wave action	Eligible (42)	Open camp	1,450	1,600
10CW503	Medium	Debris slide/Mass failure	Not eligible (39)	Open camp	1,490	1,600
10CW540	High	Sheet wash/Wave action	Not eligible (38)	Open camp/midden	1,520	1,600
10CW542	Medium	Sheet wash	Not eligible (31)	Open camp	1,500	1,600 +
10CW562	Low	Sheet wash	Eligible (42)	Open camp/midden	1,490	1,600
10CW565	Low	Mass failure	Not eligible (35)	Open camp	1,530	1,600 +
10CW571	Low	Sheet wash	Not eligible (31)	Open camp	1,530	1,600 +
10CW589	Low	Sheet wash	Not eligible (25)	Open camp	1,550	1,600 +
10CW596	Medium	Sheet wash	Eligible (42)	Open camp	1,450	1,600 +
10CW598	Medium	Gullyng	Not eligible (36)	Open camp/historic	1,450	1,550
10CW599	Medium	Mass failure/Gullyng	Not eligible (28)	Open camp/midden	1,500	1,570
10CW800	Low/medium	Debris slide/Gullyng	Not eligible (20)	Open camp	1,500	1,600 +
10CW601	Medium	Mass failure	Not eligible (28)	Open camp/midden/historic	1,450	1,600
10CW602	Medium	Wave action	Not eligible (21)	Open camp	1,520	1,600 +
10CW606	Medium	Debris slide	Not eligible (31)	Open camp	1,480	1,540
10CW608	Low	Wave action	Not eligible (36)	Historic	1,500	1,600
10CW609	Low	Mass failure	Not eligible (7)	Open camp	1,500	-
10CW610	Low	Debris slide	Not eligible (13)	Open camp	1,550	1,600
10CW621	Medium	Wave action	Not eligible (26)	Open camp	1,475	1,600 +
10CW642	Low	Gullyng	Not eligible (28)	Open camp	1,525	1,600 +
10CW647	Medium	Gullyng	Not eligible (29)	Open camp	1,500	1,600 +

¹ National Register evaluations from Draper (1993). Point totals result from analysis of several variables that yield ranked totals.

needs to be resolved. Based on this preliminary analysis, however, archaeological sites 10CW500, 10CW562, and 10CW595 have been identified as sites that appear to have the highest potential for being significant while, at the same time, have been assessed as receiving critical impacts from observable geomorphic processes. The validity of these observations requires field verification.

Use of the site protection procedure at other reservoirs in the Columbia Basin

By itself, the site protection procedure is exportable to other reservoir projects throughout the Columbia Basin and elsewhere. However, it is a more productive manager's tool for making informed decisions regarding archaeological site protection if employed in conjunction with the geomorphic and monitoring procedures outlined in this report. Whatever the situation, it is imperative that the cultural resources database for the given reservoir project be up to date and that information of the current condition of individual archaeological sites be part of the decision making process, as well as justified National Register evaluations.

7 Summary, Conclusions, and Recommendations

Summary

This report provides conceptual development of a technical framework for addressing management needs for cultural resource properties that may be adversely affected by operation of reservoirs in the Columbia River Basin. Specifically, the procedures outlined in this study are designed to aid resource managers and specialists faced with the possibility of changing operational conditions at reservoirs included within the SOR evaluation effort. Basically, these operational changes may include additional drawdowns of the pool levels and/or different scheduling of such events. The potential for an associated increase in impacts to archaeological sites located within the fluctuation zone ranges from exposure of sites that have long been inundated to repetitive raising and lowering of the pools across fragile archaeological contexts.

Three procedures have been developed as part of the present effort. These include an analytical geomorphic procedure designed to permit identification of both processes and resulting impacts to archaeological sites, a monitoring procedure that can be used to acquire critical data on long-term integrity of the sites, and a site protection procedure to aid in evaluating and identifying appropriate protective technologies and long-term preservation options. The procedures are expected to be used at both primary types of reservoirs found along the Columbia River and its tributaries. One of each type of reservoir, including John Day as a run of river pool and Dworshak as an example of a storage project, have been included in the analysis. The procedures are, however, designed so that they may be utilized at other reservoir projects in the Columbia River Basin, as well as other similar reservoir projects throughout the country. The technical procedures are also designed to be compatible with and to support the goals of the Historic Property Management Plans (HCRMP) required for each Corps of Engineers reservoir.

Conclusions

Addressing issues similar to those for which the geomorphological, monitoring, and archaeological site protection frameworks have been developed is a common and ongoing need a Corps of Engineers reservoir projects around the country. In the Columbia River Basin, the SOR analysis has brought the conflict between reservoir operation and cultural resource management into clear focus. Questions about what will happen to archaeological contexts with remaining physical integrity that happen to be located in zones affected by operational considerations involving episodic or special drawdowns are faced by reservoir managers and resource specialist on a continual basis. Oftentimes, the existing database for archaeological site inventory is only minimally adequate for making management decisions about long-term preservation of the resource base. Rarely, are there adequately collected data about the current condition of the resource, nor an awareness of the conditions and processes to which the sites are subjected to as a result of reservoir operation. Even rarer still are proactive attempts undertaken to preserve either the data contained in sites of the sites themselves.

Recommendations

Each Corps of Engineer District involved in the SOR analysis—Portland, Seattle, and Walla Walla—should evaluate the status of each reservoir project in view of implementing the procedures outlined in this report.

Each District should also examine the status of the required HCRMP for each reservoir and consider incorporation of the technical procedures outlined in this report.

Critical to implementation and incorporation of these procedures is completion of a critical review of the current cultural resource database for each reservoir, including an assessment of the inventory data needs for each project and a careful review of the knowledge regarding status of the current condition of each previously recorded archaeological site.

If successful protection of the cultural resource properties located in reservoir drawdown zones in the Columbia River Basin is to be attained, much additional information concerning the various processes affecting those sites will be required. While this effort has focused primarily on the physical impacts from naturally-occurring geomorphological processes and those created as a result of reservoir operation activities, other processes also need to be addressed. These include possible chemical and biological mechanisms that may interact to cause loss of significant cultural resource data along reservoir shorelines, especially under changing operational conditions.

References

- Brauner, David R. et al. (1975). "Lower granite dam pool raising: Impact on archaeological sites," Washington Archaeological Research Center, Washington State University, 25 p.
- Center for Northwest Anthropology. (1992). "The results of the 1992 draw-down monitoring project in Lower Granite, Little Goose, and John Day Reservoirs," Contributions in Cultural Resources Management, No. 40, Washington State University, 315 p.
- Draper, John A. (1992). "The 1992 options analysis study: cultural resources," Washington State University, Center for Northwest Anthropology, Contributions in Cultural Resource Management No. 38, Pullman, WA.
- Draper, John A. (1990 Second Edition). "An intensive cultural resources inventory survey of the Dworshak Reservoir drawdown zone, North Fork Clearwater River, West-Central Idaho," Washington State University, Center for Northwest Anthropology, Project Report No. 11, Pullman, WA.
- Gramann, James H. (1981). "Navigation-related impacts on cultural resources of the Upper Mississippi River system," Contract Abstracts and CRM Archaeology, Vol. 2, No. 3, pp. 11-16.
- Hammatt, Hallett H. (1976). "Late Quaternary stratigraphy and archaeological chronology in the Lower Granite Reservoir area, Lower Snake River, Washington," PhD Dissertation, Department of Anthropology, Washington State University, Pullman, WA.
- Hodge, Edwin T. (1938). Geology of the Lower Columbia River: Bulletin of the Geological Society of America, Volume 49, p. 831-930.
- Hubbard. (1956). Geology and mineral resources of Nez Perce County: Idaho Bureau of Mines and Geology County Report 1, 17 p.
- Lenihan, Daniel et al. (1981). The final report of the National Reservoir Inundation Study, U.S. Department of the Interior, National Park Service, Southwest Cultural Resources Center, Sante Fe, New Mexico.

Mattson, Daniel M. (1983). "Cultural resource investigation of the Dworshak Reservoir project, north fork Clearwater River, northern Idaho," University of Idaho Anthropological Research Manuscript Series No. 74, Moscow, ID.

Morgan, R. P. (1986). Soil Erosion and Conservation, John Wiley and Sons, Inc., New York, 298 p.

Reinhardt, Gregory A. (1993). "Hydrologic artifact dispersals at Pingasagruk, north coast, Alaska," *Geoarchaeology*, Vol. 8, pp. 493-513.

Ware, John A. (1989). "Archeological inundation studies: manual for managers," U.S. Army Engineer Waterways Experiment Station, Contract Report EL-89-4, Vicksburg, MS.

TECHNICAL EXHIBITS
EXHIBIT B
IMPACT PROFILES FOR THE SOR RESERVOIRS

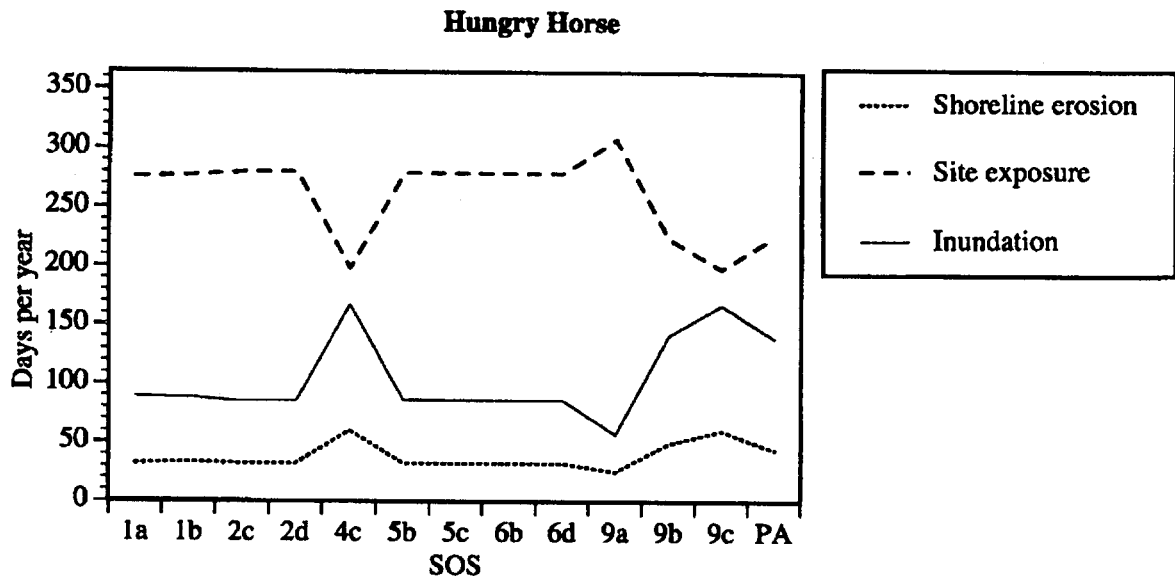


Figure B-1. Hungry Horse Reservoir Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

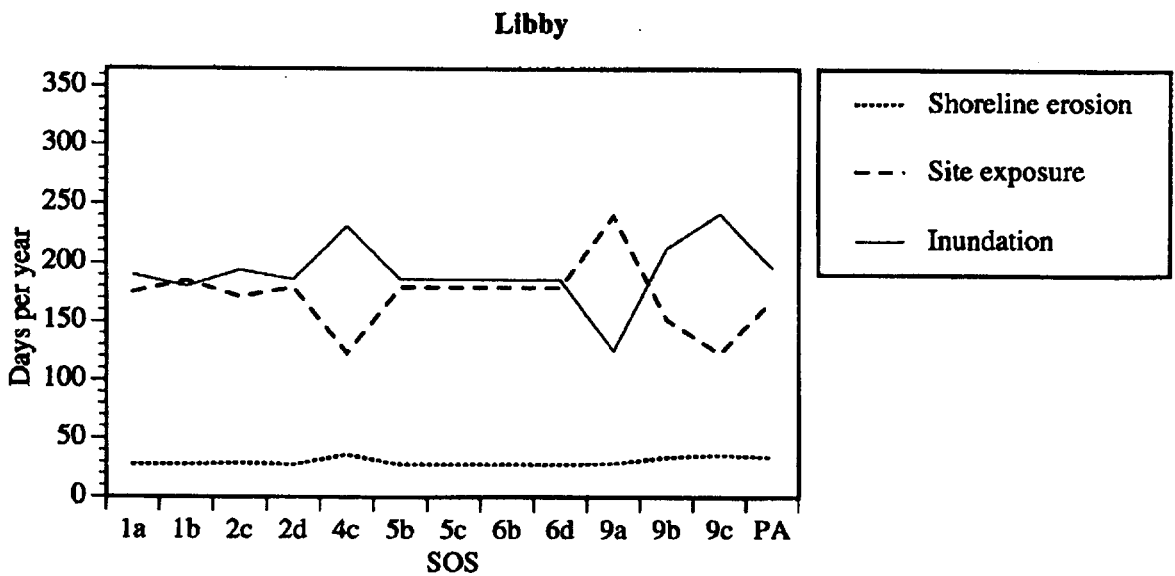


Figure B-2. Libby Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

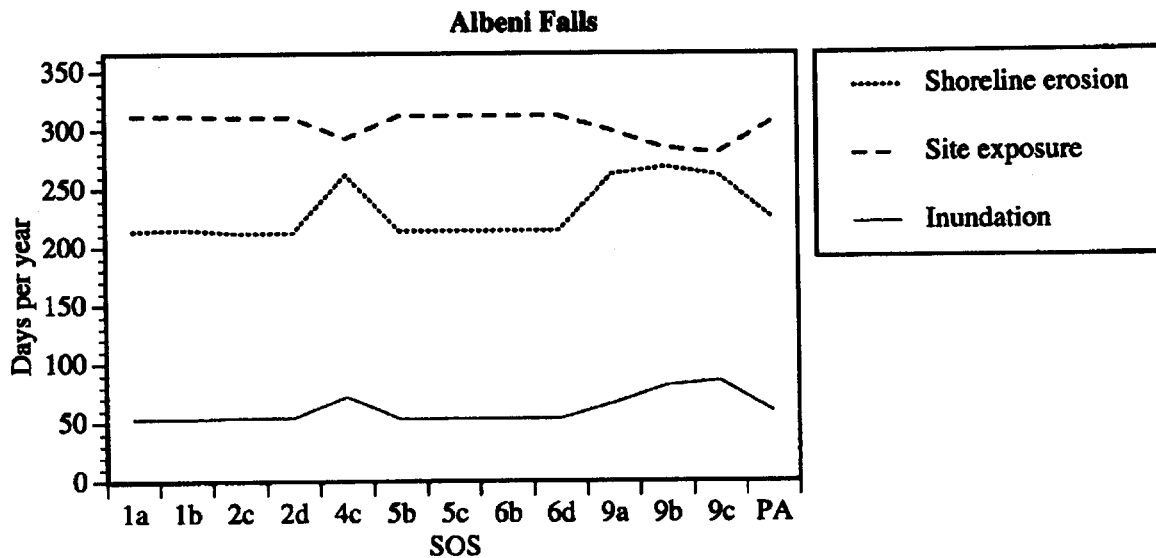


Figure B-3. Albeni Falls Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

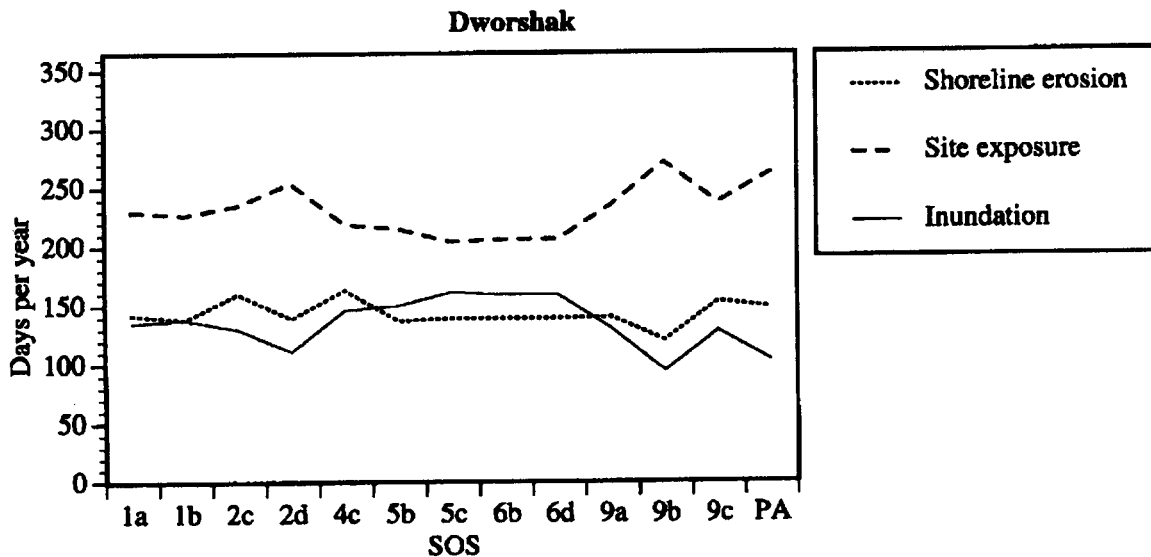


Figure B-4. Dworshak Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

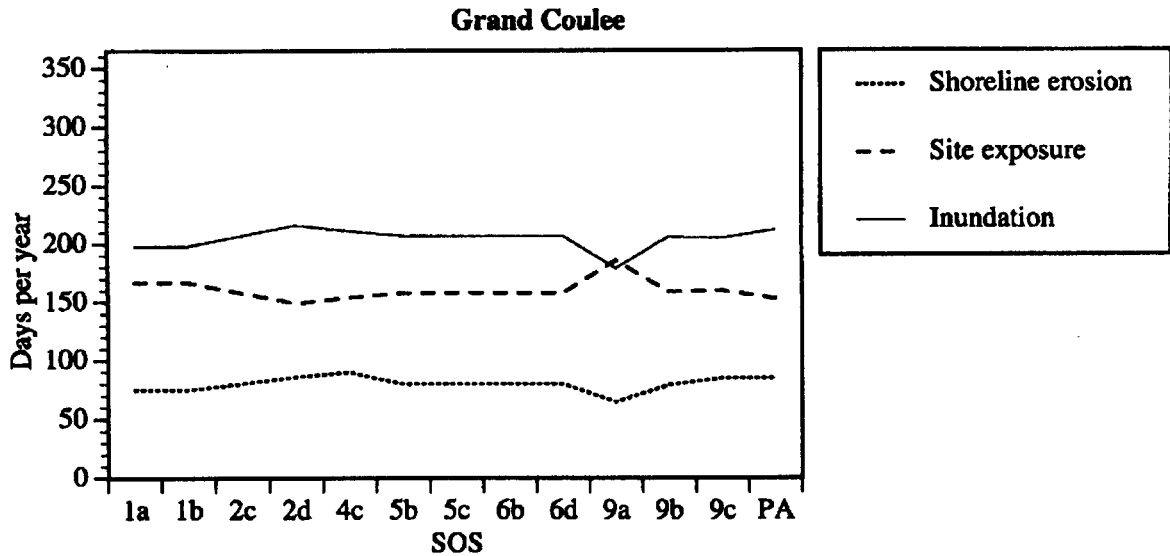


Figure B-5. Grand Coulee Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

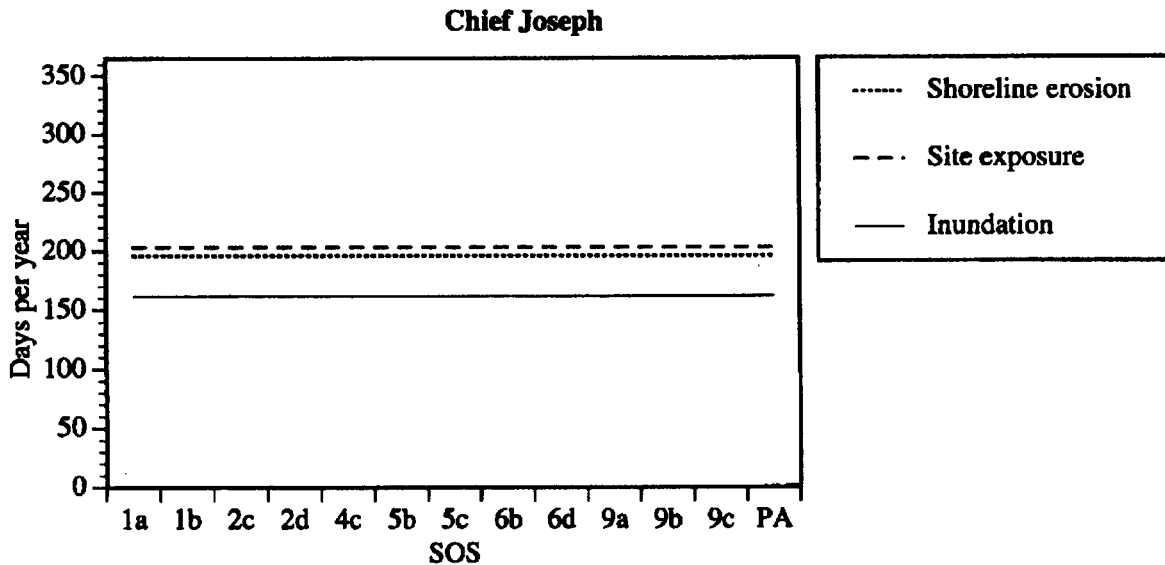


Figure B-6. Chief Joseph Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

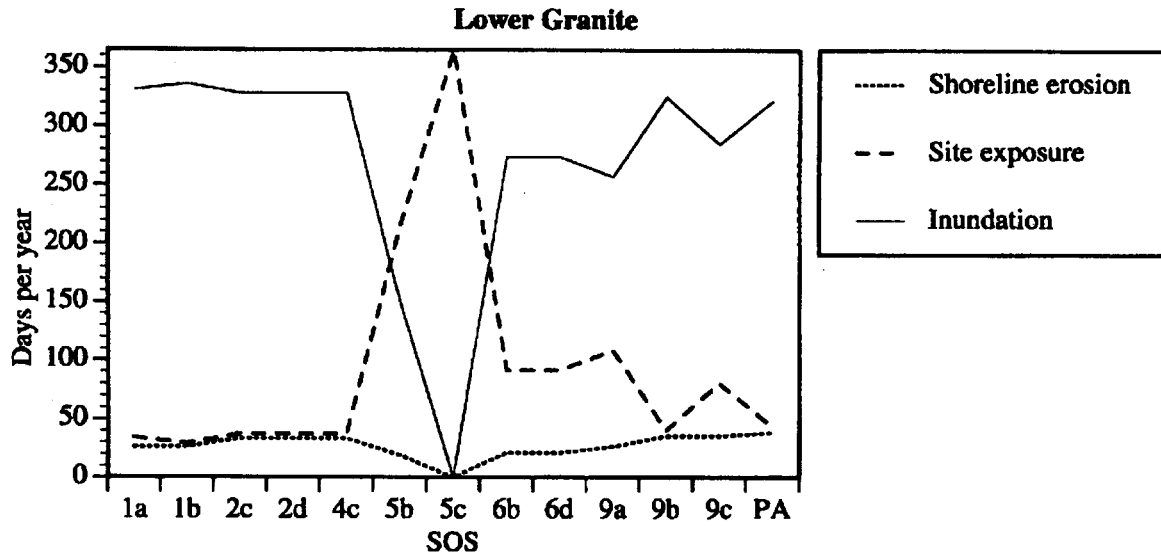


Figure B-7. Lower Granite Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

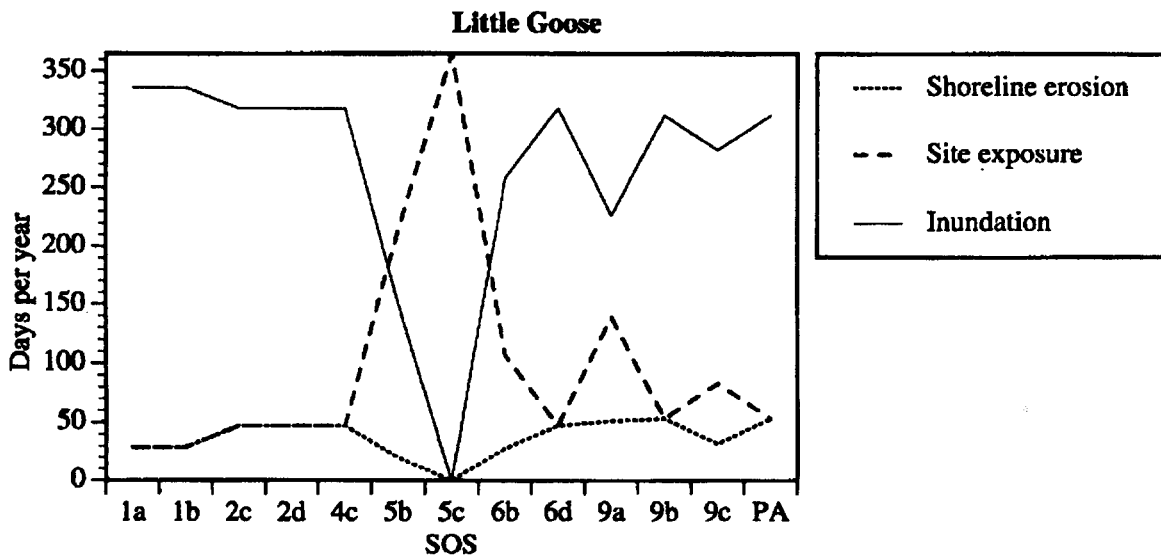


Figure B-8. Little Goose Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

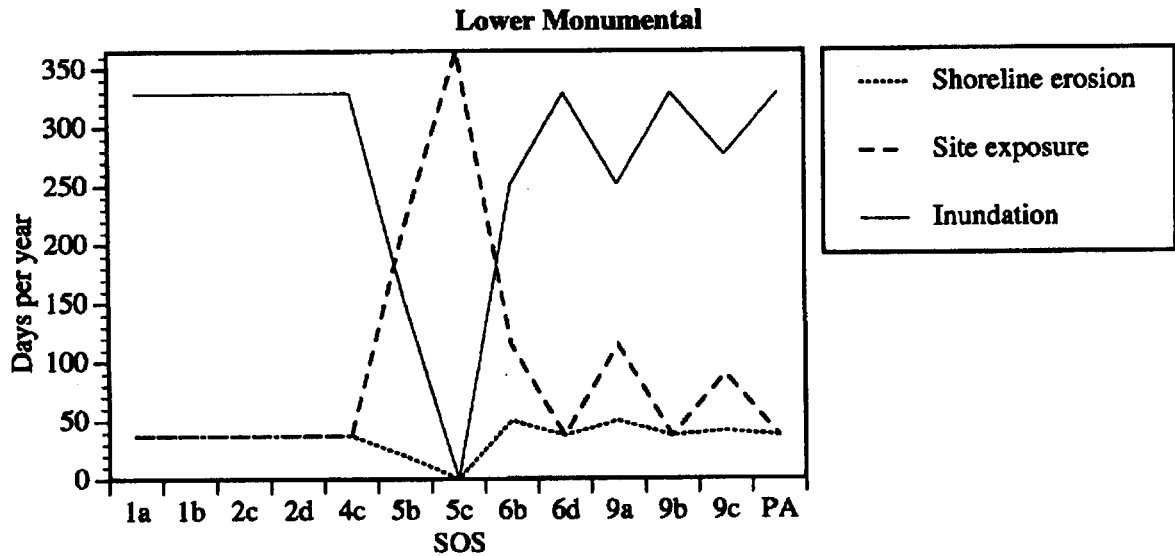


Figure B-9. Lower Monumental Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

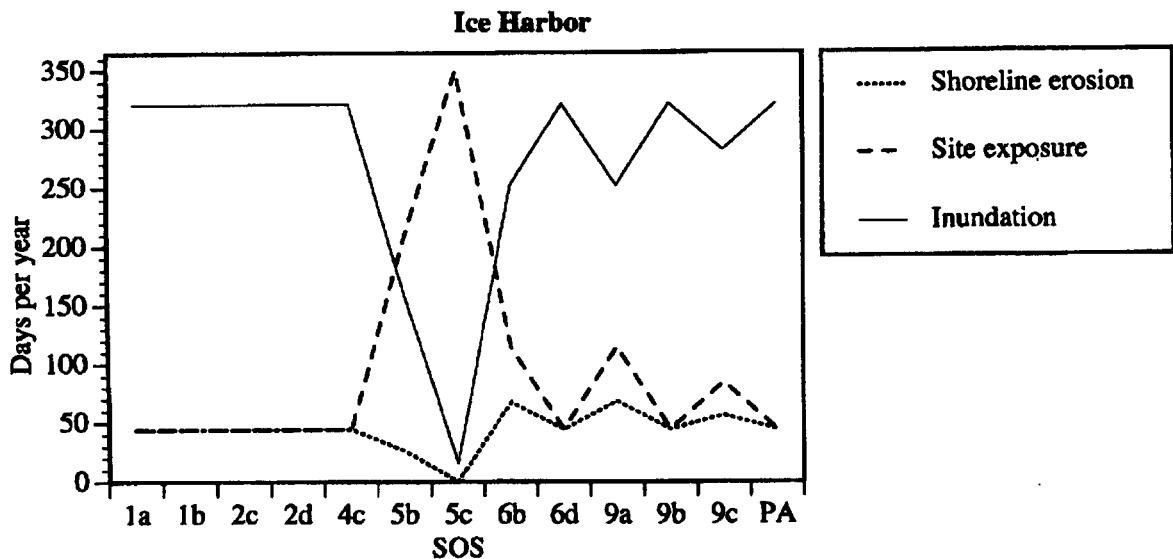


Figure B-10. Ice Harbor Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

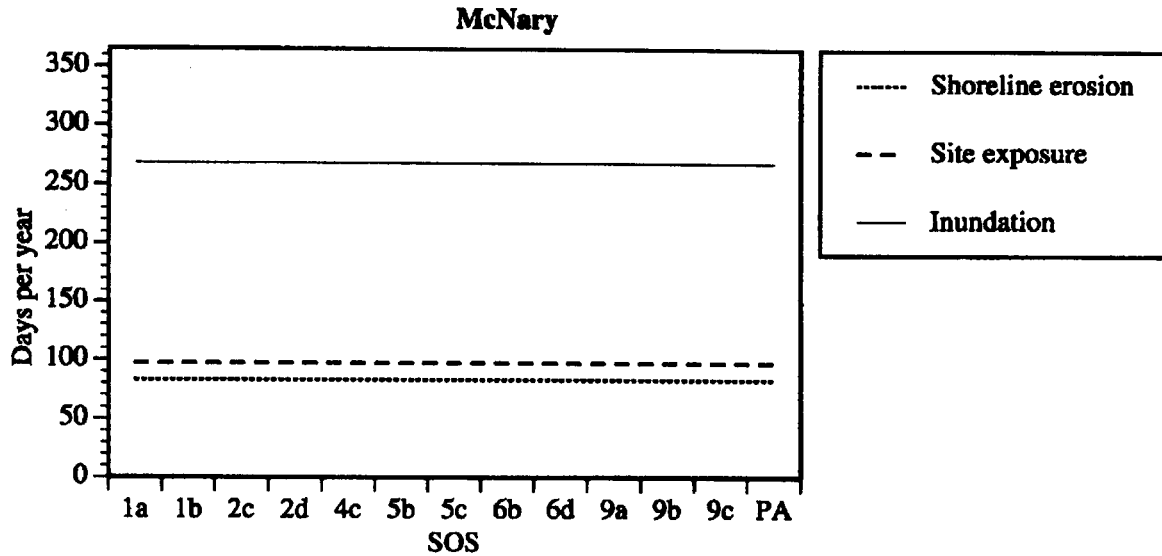


Figure B-11. McNary Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

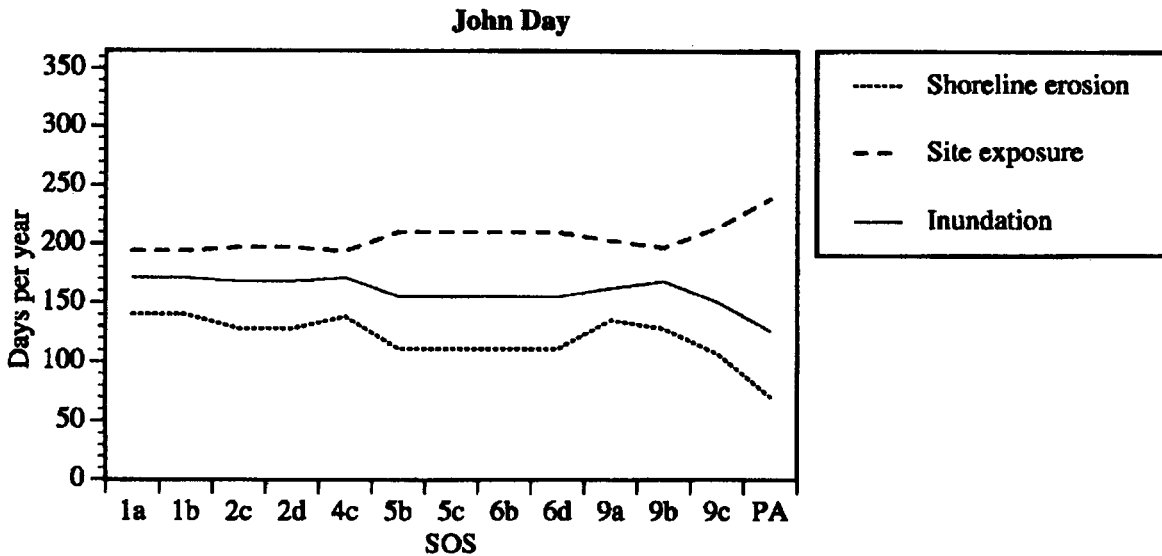


Figure B-12. John Day Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

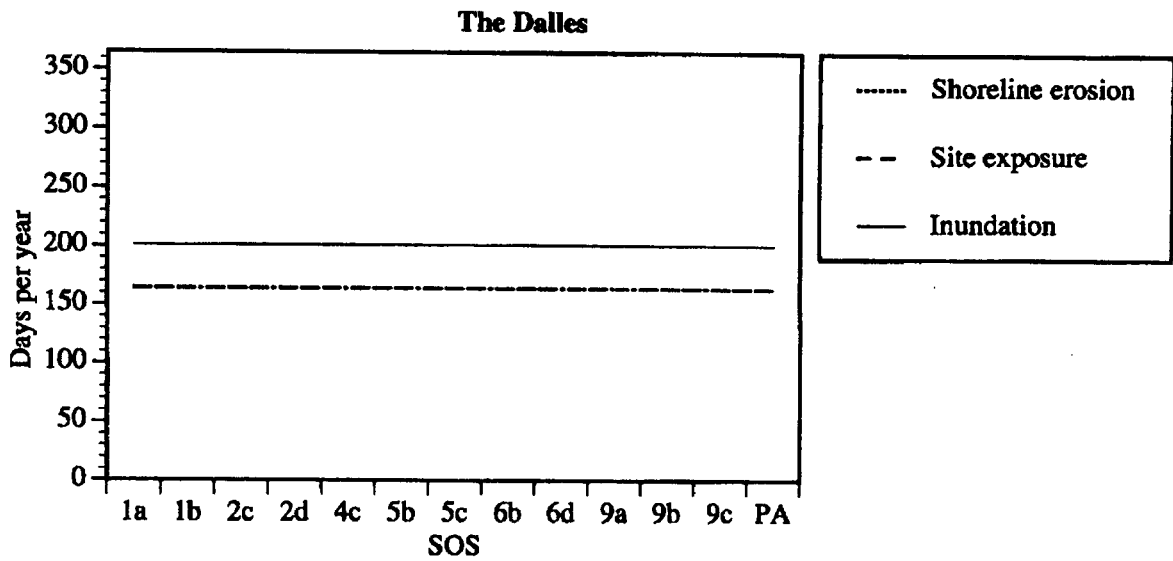


Figure B-13. The Dalles Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

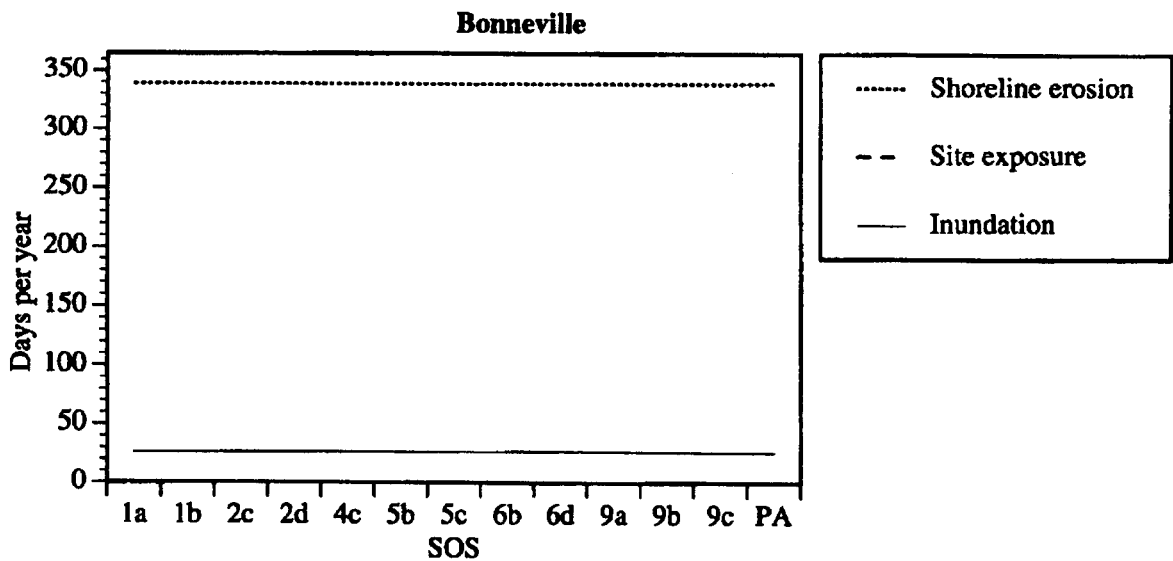


Figure B-14. Bonneville Project, Simulated Average Days per Year that Sites would Experience Shoreline Erosion, Exposure in a Drawdown Zone, and Inundation, for Each Alternative

TECHNICAL EXHIBITS

EXHIBIT C

BURNS PAIUTE TRIBE

March 27, 1994

Linda Burbach
Coordination and Review
Bonneville Power Administration
PO Box 3621
Portland, OR 97232

Dear Linda,

Enclosed is copy of revised report titled "Burns Paiute Tribal Cultural Resources". I hope that this clarifies any questions you or the archeologist have.

Please convey to Linda Walker, the archeologist, that if additional contracts are coming, I am available to do additional detail and supply further information. Let me know if I may be of further service.

For your information my mailing address June 9-Aug. 8 will be 700 N. E. 117th St., Sp. #9, Vancouver, WA 98685, (206) 574-6987.

Most sincerely,



Marilyn Couture
Cultural Anthropologist
291 Ehilani Street
Pukalani, Maui, HI 96768
(808) 572-3055

cc: Barbara Teeman
Burns Paiute Tribe

System Operation Review (SOR)

CULTURAL RESOURCES APPENDIX

Burns Paiute Tribal Cultural Resources
by
Marilyn Couture

Issues (Chapter 1)

The Burns Paiute Tribe is composed of people who are descendants of a Northern Paiute population which formerly occupied all of Southeastern Oregon, and are representative of the desert culture tradition that operated successfully in this area for nine thousand years. The cultural tradition and biological system were integrated, and became impaired and began to disintegrate with exploration and settlement by non-Indians. The system further disintegrated and was made worse by the construction of dams, diversions, and river operations on the Columbia River, John Day River, Snake River, Powder River, Burnt River, Owyhee River, and Malheur River.

The Burns Paiute Tribe has a vested interest in public land and resources managed by the Bureau of Land Management, United States Forest Service, and the National Park Service. It has trust lands in the Harney Valley and ancestral ties to major portions of the Burns District, Vale District, and other eastern Oregon districts. The Burns Paiute Tribe has no ceded lands since it lacks a ratified treaty.¹

1 On September 12, 1872, by executive order, President Grant established the 1.8 million-acre Malheur Reservation and most of the Paiutes were encouraged to move onto it.

The ancestral ties and traditional use areas extend to and include, but are not limited by, the Columbia River Basin. These areas include the following rivers and their tributaries: the John Day River, including the North Fork, the Middle Fork and the South Fork; the Powder River; the Burnt River; the Owyhee River; and, the Malheur River, including the North Fork, the Middle Fork, and the South Fork.

Burns Paiute traditional use areas and associated resources are defined on the basis of and supported by the ethnographic, ethnohistoric, biological, and archaeological records (Aikens and Couture, 1991; Couture, 1976; Fulton, 1968; Kroeber, 1939; Marsden, 1923; Steward, 1938; Stewart, 1941; and Whiting, 1950).

The Burns District BLM and other Federal agencies, including USFS and NPS, have a good working relationship with the Burns Paiute Tribe. They regularly consult and interact in heritage preservation and resource management matters.

The Tribe's concerns about lands and resources have often been heritage-related, such as the protection of Indian burial grounds and archaeological sites. They are

Although most Paiutes did not participate in the Bannock War of 1878, they suffered from it. They were removed to Fort Simcoe (Yakima, Washington), and in 1887 many returned to Harney County or elected to go onto other reservations such as Warm Springs, Fort McDermitt, and Owyhee in Nevada. In 1968 the Burns Paiutes finally were fully recognized by the BIA when they adopted the tribal constitution and bylaws. On October 13, 1972, the Tribe finally acquired title to its 771 acres and the reservation was created (Soucie, 1991).

particularly concerned with the preservation of culturally important landscapes and resources, especially where traditional salmon fishing and root gathering² was practiced. They are concerned with the loss of traditional cultural practices as a result of the depletion of certain species of fish and wildlife, including native plants and animals, as they relate to river operations. Tribal interest in public lands also includes issues that involve multi-resource management, land tenure adjustment, law enforcement, tribal economic development, and employment.

Affected Environment (Chapter 2)

Based upon professional judgment, personal experience or observation, and knowledge passed down through oral tradition, the Paiute report that certain impacts have resulted due to the operations of the hydro system. The system operations and impacts have indirectly affected the continued practice of certain aspects of tribal traditional culture.

The traditional practices of hunting, fishing, gathering and trading have been affected. The Burns Paiute have suffered losses in fish and wildlife species and populations. John Day fish runs have been severely depleted. The salmon, steelhead and smelt populations which used to migrate up the Powder, Burnt, Owyhee and

²Certain root gathering grounds have been set aside as the Biscuitroot Cultural Area of Critical Environmental Concern (CACEC - Burns District BLM).

Malheur Rivers via the Columbia and Snake Rivers are gone. The anadromous fish spawning grounds and habitats on the tributaries are gone. We do not have information whether these species populations are actually extinct. Where no fish passage facilities have been provided, hydroelectric dams totally block anadromous fish runs on these rivers. In addition, dams inundate spawning and rearing habitat. The eagle, duck and snow geese populations have decreased, and they do not appear to be coming back. As wetlands and riparian areas have been destroyed, changing shorelines have resulted among other things in a decrease of duck-geese nesting areas. Big game populations including deer, antelope and elk continue to decline. Plants, including camas, chokecherries, yampa (*Perideria bolanderi*), willows, tule and other moisture tolerant species, have been affected by fluctuating water levels as a result of dam operations. These general biological losses are apparent in the John Day River, Powder River, Burnt River, Owyhee River and Malheur River drainages and their tributaries. Due to lack of data it is difficult to assess causes and severity of impacts to these traditional resources. Studies should be done to learn more about these problems.

The indirect effects in the Malheur drainage area because of changes on the Columbia River and Snake River is due mostly to the dams. Other factors -- agriculture, logging, mining, grazing, water pollution, etc. have also contributed to the losses above described.

The Powder River was an excellent salmon stream before agricultural and mining development led to habitat damage in the early 1900s. Large-scale placer dredging operations, especially the Sumpter dredge, had a direct and devastating effect on salmon and steelhead habitat. The dredge destroyed riparian vegetation and produced a habitat unsuitable for fish. Large amounts of sediment settled out on gravel bars used by fish for spawning and feeding. Mining was also a factor in the decrease of salmon habitat on the Burnt, Malheur, Owyhee and John Day drainages from 1850s to early 1900.

Grazing and logging were additional factors which impacted the fish runs along the John Day, Powder, Burnt, Owyhee and Malheur drainages. They accelerated soil erosion; and, as the sedimentation increased, the water quality decreased, thereby reducing the amount of suitable fish spawning and feeding habitat.

However, salmon and steelhead runs might be capable of substantial or partial recovery if it were not for hydropower development and operation. Besides the direct instream impacts created by mining operations, grazing, logging, and other non-hydropower development effects which are largely reversible, water diversion dams without passage facilities completely blocked anadromous fish runs and precluded use of upstream spawning areas.

The loss of a major resource, notably salmon, and wildlife species and populations has impacted cultural,

subsistence, linguistic, religious/sacred, economic, trading, social, curing/medicinal, and material/resource procurement activities, and has resulted in the breakdown and loss of a vast amount of cultural knowledge and ritual for the Burns Paiute. While the impacts and cultural losses began with exploration and settlement by non-Indians, and continued by virtue of agriculture, logging, mining and grazing, they were then made worse by dam construction and operation.

Historically, from about 1885 - 1930, many of the Burns Paiute worked as ranch hands and washer women, and supplemented their income by continuing to fish, hunt and forage in their usual and accustomed habitats wherever possible. Large runs of chinook and steelhead formerly used extensive spawning areas along the Malheur. The fish runs along the Malheur were plentiful enough to draw the congregation of large numbers of native people from far away.

On the 29th of May, 1878, it was reported " Agent Reinhard had driven the Paiutes away from the Malheur agency; and, their people were all down the river, about twenty-five miles away from it. They are there trying to catch salmon to live upon, as they had nothing else to eat, and we can catch enough for all that are there. There are with us about fifteen families of Bannocks at the fishery. They came from Fort Hall" (S. Winnemucca, 1883).

Winter subsistence depended upon a variety of stored resources, including dried salmon.

Affected were many traditional sites, including burials; areas used for purification and ritual; fishing, hunting,

and subsistence collecting areas; camping sites; prehistoric habitation sites; and, Malheur Agency site.³

These sites and activities associated with them were essential to the fabric of this culture. The Paiute hold no great distinction between the secular and the religious. All tasks are done in the presence of the Great Spirit. When the biological cycle was interrupted the impact on the culture was grave. The seasonal round which served these people well for over nine thousand years was abruptly interrupted by exploration, non-Indian settlement, and military incursions. Finally with the demise of a major resource, the salmon, the entire economic-socio-cultural-religious system broke down.

According to Whiting (1950), the yearly economic cycle of the Wadadika, who were centered around Malheur and Harney lakes in eastern Oregon, began with root-digging in early May. While the women were still preparing roots for storage, the men moved to the Drewsey, a tributary of the Malheur River (middle fork of the Malheur), where they repaired and installed their fish traps in preparation for the spring salmon run. When the runs began, the women joined the men on the river to assist in drying salmon.

From the end of the spring salmon run until movement into

3Malheur Agency Site is located about 12 miles from Juntura on the North Fork of the Malheur River. It was the administrative site for the Malheur Indian Reservation 1872-1883, and was an important economic and social-cultural area for the Paiute. It is in association with Castle Rock which was a superior spiritual and ritual site. Beulah Dam and reservoir completed in 1935 flooded this area.

winter camps in November, individual families dispersed to hunt for game and collect wild seeds, roots, berries and crickets.

Salmon were routinely taken by spear, hooks and other devices. Couture discovered from the elders that women assisted in the gathering of salmon (Couture, 1991). A large conical shaped basket (similar to a burden basket) with an interior fish trap was manufactured. Women commonly straddled the basket, submerging it into the cold waters, and awaited the salmon to swim into the trap. Once the salmon was trapped, the woman reached in to retrieve the salmon, hit it over the head, and threw it upon the bank. Thereupon it was gutted and dried at the campsite; alternatively, it was put over the horse, and the horse was led home. Logan Valley on the Middle Fork of the Malheur River was one of the major salmon fishery sites for the Burns Paiute. It represented the scene of a prominent annual economic and social event centered on salmon.

Cato Teeman (born Dec. 6, 1916): One time we got together we was seining fish. Seining you get a net go across the river and kind of circle around and catch fish. This was when I was a boy. This was in the Middle Fork of the Malheur River that runs through Drewsey and up to Strawberry Mountain. Salmon used to come through there every spring, and steelhead too. We call them all salmon - all one fish. We camped anywhere up there along the willows, where there's fuel to make fire.

Indians used to go up Middle fork of the Malheur to Logan Valley. The Indians went where the little creek is at and catch salmon and steelhead up there.

When I was a boy of 5 or 6, my father was irrigating for a rancher up above Drewsey. After he turned the water off there was a big salmon flopping around out there in the field. I was about 5 or 6 and I would see one of those salmons flopping around. I would go tell my mother. My

mother would come out with a stick and hit it in the head and we would get it. We would have lots of salmon we would catch. My father used to have a pitchfork and he would catch them with a pitchfork. (Cato Teeman reported to Marilyn Couture, 1993.)

The adaptive strategy of the culture indicated a reliance on salmon and steelhead as well as other native plants and animals. While this reliance has not been determined with precision, there is no doubt that it was a dominant fact within the seasonal round of the Burns Paiute. The decline in numbers of fish on the John Day River, combined with the shift of fish from upper to lower basin has had a serious effect on the Burns Paiute.

It is clear from the ethnographic, ethnohistoric and archaeological records that the aboriginal and historical Burns Paiute were dependent upon the salmon and steelhead (Hopkins, 1883; Steward, 1938; Whiting, 1950; Fulton, 1968, 1970; Couture, 1976; Aikens and Couture, 1991).

Impacts (Chapter 4)

SOS 1 - Pre ESA operation would likely lead to further endangerment of anadromous fish and other natural resources in the basin.

Comparison of Alternatives and Mitigation Measures

(Chapter 5)

It appears that the preferred alternative option that might be best for cultural resources is some form of SOS 7 which addresses the issue of providing increased flows for

anadromous fish by establishing flow targets during migration period.

The worst strategy or option for cultural resources is the base case operations of SOS 1 - Pre-ESA operation. A conclusion has not been reached at this time about ranking the alternatives.

For the Burns Paiute Tribe mitigation should include a plan for restoration of native anadromous fish runs to the Malheur and Owyhee Rivers, as this portion of the Columbia River Basin is blocked completely. Furthermore, as wildlife species continue to decline, an effort should be made to enhance these populations, including migratory waterfowl and land mammals. The Burns Paiute have a vested interest and aboriginal rights with no ceded areas, and any mitigation should take their strong prehistoric and historic tradition of fishing, hunting, gathering, and trading in the Columbia River Basin into consideration.

Bibliography

- Aikens, C. M. and M. Couture. 1991. The Great Basin. In The First Oregonians, C. M. Buan and R. Lewis, eds. Oregon Council for the Humanities, Portland.
- Couture, M. D. 1976. Recent and Contemporary Foraging Practices of the Harney Valley Paiute. Portland State University M.A. Thesis, Portland.
- Fulton, L. A. 1968. Spawning areas and abundance of chinook salmon (*Oncorhynchus tshawytscha*) in the Columbia River Basin -- past and present. U. S. Fish and Wildlife Service Special Scientific Report: Fisheries, No. 571.
- _____. 1970. Spawning areas and abundance of steelhead trout and coho, sockeye, and chum salmon in the Columbia River Basin -- past and present. National Oceanic and Atmospheric Administration Special Scientific Report: Fisheries No. 618.
- Hopkins, S. Winnemucca. 1883. Life Among the Piutes: Their Wrongs and Claims. Reprinted 1969. Bishop.
- Kroeber, A.L. 1939. Cultural and natural areas of native North America. University of California Publications in American Archaeology and Ethnology. Vol. 38:1-242.
- Marsden, W. L. 1923. Northern Paiute Language of Oregon. UCP-AAE, Vol. 20, No. 11, pp. 175-94. Berkeley.
- Northwest Power Planning Council, 1986. Appendix D of the 1987 Columbia River Basin Fish and Wildlife Program. Portland.
- _____. Appendix E of the Columbia River Basin Fish and Wildlife Program. Portland.
- Soucie, M. T. 1991. The End of a Way of Life: The Burns Paiute Indian Tribe. In The First Oregonians, C. M. Buan and R. Lewis, eds. Oregon Council for the Humanities, Portland.
- Steward, J. H. 1938. Basin-Plateau Aboriginal Sociopolitical Groups. Bulletin 120, Smithsonian Institution BAE, U. S. Gov. Print Off., Washington, D. C.
- Stewart, O. C. 1941. Culture Element Distributions: XIV. Northern Paiute. UC-AR, Vol. 4, No. 3, pp. 361-446. Berkeley.
- Thompson, K. 1976. Columbia Basin fisheries, past, present, and future. Columbia River Fisheries Project Report. Pacific Northwest Regional Commission. 41pp.

Whiting, B. B. 1950. Paiute Sorcery. Viking Fund
Publications in Anthropology, No. 15, New York.

TECHNICAL EXHIBITS

EXHIBIT D

COLVILLE CONFEDERATED TRIBES

**COLVILLE CONFEDERATED TRIBES
COMMENTS ON THE
COLUMBIA RIVER SYSTEM OPERATION REVIEW
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

TABLE OF CONTENTS

<u>Page</u>	
1.	The CCT Position on the Treatment of Cultural Resources in the SOR DEIS
5.	Definition of the Term "Cultural Resources"
8.	System Operation and Banks Lake
10.	Non-Federal Dams and Reservoirs
18.	Nomination of Grand Coulee Dam and the Columbia Basin Project to the National Register of Historic Places
20.	The Removal of One or More Dams as an Alternative
22.	SOR and Canadian Dams and Reservoirs
24.	Assumptions and the Models
26.	Cultural Resources and the Alternatives
31.	Mitigation and Management

THE CCT POSITION ON THE TREATMENT OF CULTURAL RESOURCES
IN THE SOR DEIS

Along with the 13 other Tribes included in the SOR EIS, the CCT is concerned and offended that Native Americans were not meaningfully included in the early stages of the process. This does not show good faith on the part of the Federal government. The CCT feels that the Federal government established the boundaries of the "playing field", made the rules, and then reluctantly invited us into the game. This was not done in a spirit of cooperation.

As is usual in dealing with the Federal government, the CCT finds itself on the horns of a dilemma. In the realm of cultural resources and the DEIS, the Federal government is required to consult with the "affected Tribes", but is not required to go beyond consultation, and in most cases, Tribal governments are treated as "interested persons". Furthermore, it is apparent that if a Tribe responds to the Federal government's invitation to participate in a matter such as the SOR, their input can be ignored, yet consultation can be still said to have taken place. If the Tribe does not respond when invited to participate, then the Tribe is "non responsive" and can be ignored. In either case, the Tribe can be ignored.

The CCT is in a somewhat better position to be included in the portion of the EIS process that deals with cultural resources than are many of the Tribes because the Colville Reservation abuts upon much of the shoreline of Lake Rufus Woods and Lake Roosevelt. When Indian lands are involved, Indians become more than "interested persons" for consultation purposes. SOR Agency Officials are reminded that "when an undertaking will affect Indian lands, the Agency Official shall invite the governing body of the responsible tribe to be a consulting party and to concur on any agreement." [36 CFR Part 800, Sections 800.1(c)(2)(iii) and 800.5(e)(1)(ii)] However, when "Indian lands" are not involved, the CCT is reduced to the status of interested persons. It is understood that this is what the current regulations say, but the role of the Native American people in participating in decisions that will determine the fate of the remains of their ancestors, their sacred places, and their traditional homeland should be much greater than that assigned to "interested persons" in the regulations.

We have further major concerns regarding our questions about including Banks Lake and the non-Federal dams and reservoirs in the SOR EIS process, the question has been brought to the attention of the Federal agencies at meetings we have attended and is included in material submitted by the CCT which can be found on pages E-1 and E-5 of Appendix D in the DEIS. No answer to this question has ever been forthcoming. This is not a good

way to conduct consultation. Tell us whether or not, in your opinion, Banks Lake is part of Systems Operation! Tell us the reason for not including the non-Federal dams in the process when everything that we understand in the regulations under which you operate indicates that they must be considered! In the era of the Nixon Administration, a strategy that was employed when faced with unpleasant questions was termed "stonewalling". We have a bad feeling about your lack of response to our question. In the material following, Banks Lake and the non-Federal dams are brought up again. Please answer our questions in a straightforward, unequivocal manner or we will be forced into the position of viewing everything within the SOR EIS process with even greater suspicion and apprehension than we do at present.

The CCT is further concerned that its participation, even at this late date, implies endorsement of the past Federal actions that created the dams, the reservoirs, the irrigation systems and the power transmission systems. *This is not the case.* We did not want the dams and their associated features, nor were we meaningfully consulted or considered when decisions regarding the dams were made.

However, since the dams and their problems are a fact whether the Indian people like it or not, we have chosen to participate in the SOR in a spirit of cooperation and in an effort to identify and address mutual concerns. It is our hope that our concerns will be seriously considered and our efforts will be productive.

Our past experience in dealing with the Federal government has often resulted in pain and shame for our people. We have sadly learned that the Federal government is not to be trusted. In the past your word has meant nothing. In the past you have been without honor. Yet again we will try to work with you in the hope that our traditions, our ancestors, and the places that are important to our culture will be treated with respect and that nature and all of the people, Native American and others, will benefit from our participation in the SOR EIS process.

DEFINITION OF THE TERM "CULTURAL RESOURCES"

There is a problem in definition of the of the term "cultural resources" in the DEIS that may be producing a misunderstanding in communications between the Tribes and the Federal Agencies. The meaning of the term changes from place to place in the document. Page 14-4 of the Main Report contains a definition of "Cultural resources: The nonrenewable evidence of human occupation or activity as seen in any district, site, building, structure, artifact, ruin, object, work of art, architecture, or natural feature that was important in human history at the national, state, or local level." Page 2-1 of Appendix D, Cultural Resources Defined, includes "...a much broader range of features from the natural environment and the sacred world as cultural resources (see Exhibit G from Yakama Indian Nation). These are called traditional cultural properties and encompass such things as distinctive shapes in the natural landscape, named features in local geography, natural habitats for important subsistence or medicinal plants, traditional usual and accustomed fisheries, sacred religious sites and places of spritual renewal. Some tribes have even stated that the Columbia River itself is a traditional cultural property. Traditional cultural properties pertain to those cultural sites and natural features and resources that are important in contemporary traditional social and religious practices that tend to preserve cultural identity."

In the first definition of "cultural resources" above, physical evidence of human occupation or activity is the key element. The second definition is much broader and includes a class of properties for which physical evidence of human activity or occupation is not required.

The Main Report, pg 3-33, Section 3.3.10, Cultural Resources, says "Much of the existing information about the specific archaeological and historical sites found throughout the Columbia River Basin was gathered when the Federal dams were built." This is an example of a very restrictive use of the term. Page 1-1, of Appendix D, Cultural Resources says "This study attempts to determine and compare the impacts of the System Operating Strategy (SOS) alternatives on cultural resources. These impacts include effects on archaeological or historic properties meeting the criteria of the National Register of Historic Places and effects on traditional cultural values, properties or practices as identified by tribal governments." This is a broader application of the term. Page 2-21 of the Main Report, Section 2.2.1, Early Culture and Development says "There is, however, more than one view of what constitutes cultural resources. The academic and legal definitions tend to focus on tangible evidence such as sites and artifacts. Native Americans find these definition too narrow. They view their entire heritage, including beliefs, traditions, customs, and spiritual relationship to the earth and natural resources, as sacred

cultural resources." These are only examples. We do not propose to do the research necessary to examine every use of the term "cultural resources" in the document to see if it has consistent meaning. We feel that that is the task of the Federal agencies. As you know, "cultural resources" have been a major point of contention. If a consistent meaning can be developed for the term, we may be able to communicate more effectively.

SYSTEMS OPERATION AND BANKS LAKE

Banks Lake is not addressed in the DEIS. The question of whether Banks Lake will be affected by systems operation has been asked by the CCT a number of times. A satisfactory answer has never been forthcoming. The typical response that has been received to date is the acknowledgment "that is a good question". It is known to the CCT that Banks Lake, formerly called the Equalizing Reservoir, is a pumped storage reservoir. Water is pumped from Lake Roosevelt and stored for the Columbia Basin Project. It is assumed that water is also stored and released back into the Columbia River for systems operation purposes.

A communication from the CCT dated March 30, 1994 is included in the Technical Exhibits (Exhibit E, pg E-5) of Appendix D of the DEIS. It says in part "Banks Lake comes from the reservoir behind Grand Coulee Dam. For hundreds and thousands of years this land was used by our people. The Coulee walls have caves, rock shelters that haven't even been documented, recorded, investigated, or managed. The occupation sites located on the floor of the Coulee canyon have been inundated by Banks Lake along with their land use area. Sacred and ceremonial sites have

been made inaccessible to the Indian people because of the commercial use. Bureau of Reclamation lease land to other agencies, rather than considering any land use that may still be important to the Indian people.

There has never been a comprehensive cultural resources survey for the Banks Lake area, or a management, protection, preservation or monitoring plan to manage any of the resources mentioned. Additionally, a consultation process does not exist, and no communication with the Colville Tribe in reference to a proposed action plan is not in place." This section of the communication is quoted in its entirety rather than being referred to in hopes that Federal agency officials will read it and respond.

If this reservoir is in any way a part of systems operation, and in the absence of information to the contrary we must assume that it is, then it should be given as much consideration for cultural resources as any other reservoir in the Columbia River System. To exclude this reservoir from the EIS would be arbitrary and capricious.

NON-FEDERAL DAMS AND RESERVOIRS

Section 106 of the National Historic Preservation Act of 1966 (as amended)[16 U.S.C.§ 470 f] states "The head of any Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking".

Section 110(2) of the above act states that "Each Federal agency shall establish (unless exempted pursuant to section 214), in consultation with the Secretary, a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties. Such program shall ensure -- (C) that the preservation of properties not under the jurisdiction or control of the agency, but subject to be potentially affected by agency actions are given full consideration in planning". Section

110(d) of the above Act states "Consistent with the agency's mission and mandates, all Federal agencies shall carry out agency programs and projects (including those under which any Federal assistance is provided or any Federal license, permit or other approval is required) in accordance with the purposes of this Act and, give consideration to programs and projects which will further the purposes of this Act."

One of the main concerns of the CCT is that the Federal government recognize its responsibilities to cultural resources in the portions of the Columbia River Basin occupied by non-Federal dams, reservoirs and power distribution systems. The CCT is particularly concerned with Wells, Rocky Reach, Rock Island, Wanapum and Priest Rapids Dams and their associated reservoirs lying within the traditional lands of our Tribal people.

It is clear that there are at least two concepts in the National Historic Preservation Act of 1966 that bear upon this matter.

First, there is the expenditure of Federal funds on an undertaking, in this case the preparation of an EIS on Columbia River Systems Operation and the implementation of a systems operation alternative. The DEIS recognizes that effects to cultural resources will occur as a result of the implementation of any SOS alternative on the portions of the Columbia River System occupied by non-Federal dams and reservoirs, but says that "The SOR also mentions but has not analyzed the possibility of

potential effects of operations at the Federal Dams on several non-Federal reservoirs, specifically, the five mid-Columbia River dams (Wells, Rocky Reach, Rock Island, Wanapum, and Priest Rapids) owned by three public utility districts (Chelan, Douglas, and Grant), and Brownlee Dam owned by Idaho Power Company. SOR alternatives that involve drawdown, increased storage or increased streamflow beyond existing operations have potential for cultural resources effects. Likewise, the SOR has not conducted detailed impact analyses for Federally administered reaches of the river that are not regulated by dams, such as the Hanford Reach and the middle Snake River reach in the Hells Canyon National Recreation Area. These reaches are also sensitive to SOR alternatives that would increase streamflow beyond current limits" (Appendix D, pg 1-3, Section 1.2).

Although Brownlee Dam, Hells Canyon and the Hanford Reach are not within the traditional lands of the people of the CCT, we are attuned to the concerns of all Indian people. The situation on these stretches of the Snake and Columbia Rivers has been neglected in the DEIS in the same way as have the areas of our primary concern. Regarding Brownlee Reservoir, Appendix D, pg 3-11, Section 3.3.1 Assumptions and Limitations, states, "This analysis is limited in scope to areas downstream of Brownlee Reservoir, as is the SOR analysis in general. It is possible that operations upstream of Brownlee could affect cultural resources in those upstream areas." Appendix D pg 4-26, Section 4.7 Effects at Other Reaches of the Columbia System states, "Downstream effects at run-of-river reservoirs tend to take the

form of accelerated streambank erosion when pools are maintained at high streamflows. This problem is potentially acute on the mid-Columbia dams owned by public utility districts. This problem also occurs on the lower Snake and lower Columbia reservoirs". Appendix D, pg 5-8, Section 5.5 Cumulative Impacts says "The effect of the system reservoirs on downstream river reaches and non-Federal impoundments is also cumulative, Rapid fluctuations in these river reaches can cause river bank slumping that destroys cultural resources." When combined with the erosion of cultural resources at the reservoirs themselves, the cumulative effect is significant, placing a relatively high percentage of the region's significant riverine cultural resources in jeopardy. In the Columbia Basin, as elsewhere, cultural resources located along the banks of major rivers include many kinds of sites not duplicated in other locations."

Between the Cultural Resources Appendix and the Main Report of the DEIS, an important concept has been lost. The Appendix clearly indicates that cultural resources will be affected in non-Federal reservoirs by systems operation. However, the Main Report, pg 3-2, Section 3.1.2 Non-Federal Dams and Reservoirs contains the following rather weak statement:

"Impacts at non-Federal projects were included to the extent these projects would be significantly affected by any of the alternatives analyzed in the study".

We are not concerned with the effect of systems operation on the non-Federal *projects*, we are concerned with the effects of systems operation on elements of the environment, including cultural resources, within the non-Federal projects.

Mid-Columbia River Dams - "Flow patterns at the mid-Columbia projects are influenced by operations at the Canadian and Federal projects upstream, particularly Grand Coulee. While releases from Grand Coulee are reregulated by Chief Joseph, a Federal project located upstream from Wells Dam, Federal storage project operations still affect the size and timing of flows at the five PUD dams. The SOR strategies do not include any specific actions that would require the mid-Columbia projects to operate outside their normal ranges. The limited SOR evaluation of these projects is intended to check this assumption, and determine whether any shifts in flow patterns would have identifiable consequences." (Main Report, pg 3-2, Section 3.1.2).

Insofar as cultural resources are concerned, this is the only material contained within the Main Report regarding the non-Federal Dams and stands in contrast to the information presented in Appendix D.

It is clear that under Federal regulations there is a responsibility on the part of the Federal government to extend the same level of identification and protection to cultural resources on non-Federal lands as to those on Federal lands when a Federal undertaking may affect cultural resources.

Secondly, beyond the responsibility to cultural resources on non-Federal lands indicated above where adverse effects from the implementation of an SOS alternative can be anticipated, there is considerable additional Federal involvement in the non-Federal projects. These projects are licensed by the Federal government, the power that they generate is at least in part distributed through BPA transmission facilities and the PUDs participate in international agreements which involve the Federal government. Direct Federal participation in the non-Federal projects is done on an hourly basis. A computer system centered at Grant County PUD provides hourly updates to the Federal and non-Federal projects. The data provided is used to coordinate systems operation on all of the projects. The system was designed, built, and is operated with Federal and non-Federal participation. Although the CCT does not have all the details of Federal involvement in relation to the PUD dams, reservoirs, electrical generation and transmission facilities, it is clear that there is significant involvement that should be considered "undertakings".

The National Environmental Policy Act, Section 102 states that "the Congress authorizes and directs that, to the fullest extent possible...all agencies of the Federal government shall...include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement...on (i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided...(iii) alternatives to the proposed action, (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." Appendix D of the DEIS states that implementation of a SOS alternative will impact cultural resources in the reservoirs of the non-federal dams located upon the Columbia River. It is clear that all of the above provisions of NEPA apply.

The CCT most seriously urges the Federal agencies to comply with Sections 106 and 110 of the NHPA and Section 102 of NEPA regarding responsibility to cultural resources on non-Federal lands that may be adversely effected as the result of Federal undertakings. The magnitude of efforts directed towards compliance with th NHPA and NEPA on Federal lands should be equaled on non-Federal properties. In light of the above, it appears that an arbitrary and capricious decision was made to

exclude non-Federal projects on the Columbia River from the EIS and that the SOR Federal agencies will be in non-compliance with regulations until such time as they consider the non-Federal projects in their planning.

NOMINATION OF GRAND COULEE DAM AND THE COLUMBIA BASIN PROJECT,
TO THE NATIONAL REGISTER OF HISTORIC PLACES

Grand Coulee Dam and its electrical generation and transmission facilities, Lake Roosevelt and its shorelines, the Columbia Basin Project with its systems of reservoirs, dams and canals and the transportation network created or modified as a result of these projects are over 50 years old. This system, in its entirety, should be evaluated under the criteria of the National Register and the effects of SOS alternatives should be assessed under the provisions of Section 106 of the National Historic Preservation Act.

Even if the application of the criteria of the National Register is delayed due to SOR EIS time constraints, the system must be treated as if it is eligible for the National Register until such time as the criteria are applied and a determination is made. "Section 110(a)(2) of the National Historic Preservation Act requires that agencies "exercise caution" that uninventoried historic properties and those properties that have been identified but not yet evaluated or nominated to the National Register are not adversely impacted or inadvertently transferred,

sold, demolished, substantially altered or allowed to deteriorate significantly. Until an evaluation can be made, properties should be treated as though they are eligible and managed accordingly" (Section 110 Guidelines, Section (a)(2)(d).

Grand Coulee Dam, Lake Roosevelt, the associated power generation and distribution network and the Columbia Basin Project are of particular interest to the CCT since the construction of this enormous project has had such an effect on the traditional lands, waters, cultural and natural resources and lives of the people who originally inhabited the region upon which the Grand Coulee Dam and the associated Columbia Basin Project was imposed.

THE REMOVAL OF ONE OR MORE DAMS AS AN ALTERNATIVE

It has been clearly indicated to the SOR Agencies that the Native American people are very unhappy about not having a meaningful role in the EIS process. It may be late in the process to point out an obvious alternative that may or may not have been considered in scoping and screening, but the Tribes were not included in the scoping and screening process.

This alternative is the removal of one or more dams from the system. It seems that removal of dams would be beneficial to cultural resources, beneficial to the natural environment in general and would to have a positive effect on water quality, wildlife and anadromous fish. There would be obvious negative aspects to this alternative, of course.

Page 4-116, Section 4.2.7, Cultural Resources, of the Main Report says "Certain SOSs would be associated with the modification of structures such as spillways, dam embankments, and fish passage facilities, potentially causing direct impacts to historic or cultural properties. These structural elements are not considered in the SOR. Instead, they are addressed in the Corps' SCS." We have been told that the System Configuration Study does

not include Chief Joseph or Grand Coulee Dams. Therefore, an alternative that assesses the effects of the removal of one or both of these dams and/or any engineering modifications to these dams or to other structures should be addressed in the SOR EIS.

We only ask that if the removal of dams has not been considered, that it be given the same consideration as other alternatives that have been included in the process.

SOR AND CANADIAN DAMS AND RESERVOIRS

The CCT has special concerns about the operation of the Columbia River System in in Canada. There are many people on the Colville Reservation whose native lands were in what is now Canada. The international border does not coincide with the traditional distribution of people upon the land. In addition to the CCT, there are probably other Tribes with similar situations and concerns.

It has been clearly indicated in the DEIS that systems operation in Canada is determined by needs within the United States. Therefore, decisions which affect the environment in Canada, including cultural resources, are made by SOR agencies.

SOR Federal Agency Officials should examine Federal trust obligations to the people whose roots are in Canada but who now are residing upon and/or are associated with the Colville Reservation as a result of the actions of the government of the United States.

Furthermore, under Section 402 (16 U.S.C. 470a-2) of the National Historic Preservation Act, Amendments of 1980, Federal agency heads have an obligation to consider Federal undertakings outside the United States. This Section says "Prior to the approval of

any Federal undertaking outside the United States which may directly and adversely affect a property which is on the World Heritage List or on the applicable country's equivalent of the National Register, the head of a Federal agency having direct or indirect jurisdiction over such undertaking shall take into account the effect of the undertaking on such property for purposes of avoiding or mitigating any adverse effects."

A review of current Canadian regulations that address cultural resources and traditional cultural properties and their articulation with the SOR should be accomplished. This review should include Tribal people from the area of potential effect wherever they may now reside. If the Canadian regulations do not adequately serve the concerns of the Government of the United States and Tribal people, an agreement should be considered.

ASSUMPTIONS AND THE MODELS

The authors of the cultural resource appendix have constructed models in order to get some idea of what effect the various system operating strategies would have upon the cultural resources at the 14 installations studied in the EIS. The models have required assumptions, and assumptions have been made. Many of the assumptions appear to be relatively benign, and where they appear somewhat less than benign, a few of their drawbacks are discussed in the document.

As long as the assumptions remain only assumptions and are firmly fixed as such in the minds of the people responsible for devising the historic preservation plan, they are probably relatively harmless. However, "assumption creep" has already begun. The assumptions - those suppositions made in order to construct the models have begun to assume a state of reality within the pages of the DEIS. For instance, in Appendix D of the DEIS, the document describes an approach used to analyze site loss potential due to erosion. The archaeologists chose Dworshak and John Day dams as representative of the range of physical and operating conditions at storage (Dworshak) and run-of-river dams (John Day). Looking at the results of their analysis, they remark "This information also will be used in developing site

protection/preservation and monitoring programs in response to the effects of the operating strategy ultimately chosen for implementation by the SOR process." (DEIS, Appendix D, pg 1-6, Section 1.4.4).

The abstract is thus becoming concrete, the supposition is on its way to becoming reality. Models whose underpinnings rest almost exclusively on assumptions are models that must be tested against reality. As a start, Dworshak does not appear to be a representative storage dam. Perhaps there is no one storage dam that is representative of all five dealt with in the document (Banks Lake has thus far been excluded). Perhaps John Day Dam is not representative of its class either. The SOR should deal with each reservoir in the system as unique until such time as the analysis of factual data reveals the comparability of one reservoir to another and if there are meaningful similarities within the two types of reservoir.

CULTURAL RESOURCES AND THE ALTERNATIVES

It is well established in both Appendix D and the Main Report that all of the alternatives under consideration will adversely affect cultural resources.

The methods that were employed to predict effects to cultural resources were generally adequate for use as a planning tool given the base-line data available. They appear to have identified potential impacts to the recorded historic properties within the reservoirs. However, although the methods are adequate for the purposes intended, there are some major areas of concern that need to be addressed.

The methods are only applied to recorded historic properties (i.e., prehistoric archaeological sites and properties of the historic period). Traditional Cultural Properties were excluded. There are vast numbers of unrecorded historic properties and traditional cultural properties that are not included in the study. Furthermore, the data base varies greatly from reservoir to reservoir. It is understood that the EIS process deals with existing data, but it must also be understood that in the case of cultural resources, the data is very incomplete. Again, it is cautioned that the models presented in Appendix D are only untested models based upon assumptions and very limited data in the case of historic properties. It would be a serious mistake

to utilize the material contained in the section on analysis of impacts created by the implementation of any of the alternatives as if it were "real" for purposes beyond those of the SOR document.

Both the Main Report and Appendix D contain what may be considered to be three "classes" of cultural resources. Those which are on the National Register, those which are recorded but for which the criteria of the National Register have not been applied, and unrecorded cultural resources including Traditional Cultural Properties. This division is very apparent in the sections on alternatives in Appendix D. This division of cultural resources is useful in the context of examination of alternatives and in other applications, but the Federal agencies are reminded that all of the cultural resources listed above *must be treated as if they are on the National Register* for management purposes. Section 110 Guidelines, Section (a)(2)(d) states "Exercising caution. Section 110(a)(2) of the National Historic Preservation Act requires that agencies "exercise caution" that uninventoried historic properties and those properties that have been identified but not yet evaluated or nominated to the National Register are not adversely impacted or inadvertently transferred, sold, demolished, substantially altered or allowed to deteriorate significantly. Until an evaluation can be made,

properties should be treated as though they are eligible and managed accordingly". Aside from SOR EIS considerations, this provides the Federal agencies with a management opportunity that has not been exercised in past operations.

Within the area of primary concern to the CCT, the study was only applied to two Federal reservoirs, Lake Roosevelt and Lake Rufus Woods, while it is clear that it should have been applied to at least one more Federal reservoir-Banks Lake, and to five non-Federal reservoirs. For further details see the appropriate sections of these comments.

The reduction of the number of alternatives under consideration is part of the EIS process, of course, but they are still being changed at the date of this writing (February 21, 1995). The Federal agency consultant conducting the cultural resources analysis has not had time to apply the methodology to the new alternatives. He learned of the changes in alternatives only today. How can effective comments be made during the "comment period" when the alternatives are still in a state of flux? The entire SOR EIS process is fraught with a sense of undue haste, frustration and futility due to a general lack of direction, coordination and unrealistic time schedules. How can we meaningfully address the alternatives when they are not yet established?

On this same date, it was distressing to learn that the Federal agency consultant had not included the information gathered for the BPA Intertie study in his research (1986: *A Cultural Resources Assessment of Bonneville Power Administration's Proposed Intertie Development and Use, Lake Roosevelt, Lake Pend Oreille, Lake Kocanusa, Dworshak Reservoir, and Hungry Horse Reservoir*. Assembled by Glenn D. Hartmann, Eastern Washington University Reports in Archaeology and History 100-52, Archaeological and Historical Services, Cheney, Washington 99004). The existence of this study was brought to the attention of the Federal agency consultant by the CCT SOR EIS cultural resources consultant. The Intertie study uses methodology similar to that employed in the SOR study to project the effects of alternatives ("scenarios" in the Intertie study) upon cultural resources. The question must be asked as to how many other important sources have not been examined in the course of the preparation of the SOR document? Again, we do not propose to do the research necessary to answer this question, that is the responsibility of the Federal agencies.

The projected effects of the implementation of of the various alternatives are presented within the context of the entire Columbia River System. This is appropriate. However, the cultural resources of some Native American groups will be impacted more severely than others depending upon the alternative selected. The CCT has major concerns for Native American

historic properties and traditional cultural properties wherever they may occur. The CCT could assess the potential damage of each of the alternatives currently under consideration in light of its own particular interests, as could other Tribes, but we prefer to join with other Tribal entities in a unified effort to provide for all cultural resources wherever they may occur. It would seem that if we were to assess the alternatives based only upon our own needs, then we might well prefer an alternative which while best serving our interests, might cause increased harm to the cultural resources of our neighbors.

MITIGATION AND MANAGEMENT

When mitigation and management come under consideration in the process, then the particular interests of the CCT will be presented along with the broader mutual concerns of all Native American people within the Columbia River System. Highly developed plans for identification and recordation of cultural resources, mitigation of impacts and long term management are essential. Whatever agreements and planning documents this may require, Programmatic Agreements, Historic Preservation Plans, ect., a long-term coordinated, Columbia River System-wide plan for the identification and management of cultural resources must be implemented and, beyond that, each Tribe's special concerns must be provided for. This will require two levels of effort on the part of the Federal agencies. The details of these plans remain to be set forth and agreed upon by all interested parties, but the basic requirements listed above are considered to be essential and non-negotiable by the Colville Confederated Tribes.

CONFEDERATED TRIBES OF THE COLVILLE RESERVATION

COMMENTS TO SYSTEM OPERATION REVIEW (SOR)

DRAFT ENVIRONMENTAL STATEMENT, MAY 1995

COMMENTS BY: ADELINE FREDIN, HISTORY/ARCHAEOLOGY
DEPARTMENT

The original Colville Indian Reservation was established by Executive Order of April 09, 1872.

The original Colville Indian Reservation was in existence for less than three months, when it was exchanged for the present reservation under Executive Order of July 02, 1872. Colville Confederated Tribes' still have reserved rights.

The Act of July 01, 1892, divided the present reservation of approximately 2,900,000 acres into the North Half and South Half and restored the North Half consisting of approximately 1,500,000 acres to the public domain.

July 07, 1883, the Moses Agreement was made.
July 04, 1884, the Moses Agreement was ratified.

During the year 1885, and later years, the government moved to the Colville Reservation, the Joseph Band of Nez Perce Indians, and also members of the Palus Tribe.

May 01, 1886, Columbia Reservation was restored to the public domain, except for certain allotted tracts.
(Executive Order) Tribes having reserved rights.

March 22, 1906, the South Half consisted of approximately 1,400,000 acres. After Tribal Members were provided 80 acre allotments, the government authorized and directed the classification appraisal and sale of the balance of the lands, that is, the surplus land after the allotments.

May 03, 1916, the lands in the South Half, which were classified as irrigable and grazing were opened to entry and the lands classified as mineral were made subject to location and disposal under the mineral land laws. The lands classified as timberlands were, however, not opened to entry.

September 19, 1934, and November 19, 1939, the undisposed lands, including the timberlands which had not been open to entry were withdrawn from any further disposition, until the matter of their return to Tribal ownership was settled.

July 24, 1956, the remaining undisposed lands, in the South Half, comprising approximately 818,000 acres were restored to Tribal Ownership.

System operations area of effect, include but is not limited to Grand Coulee Dam and Reservoir area, Chief Joseph Dam and Reservoir, non-Federal dams and their reservoirs. Only Reservoirs will be used here and not the Lakes. Lakes are identified to be unnatural features created behind each of the dams. The non-federal dams are: Douglas County Public Utility District (PUD), Chelan County PUD, Grant County PUDS, and their reservoirs. The reservoir behind Grand Coulee Dam extends upstream approximately 151 miles. It is, therefore, estimated that the reservoirs upstream and downstream reservoirs totals approximately 660 plus miles of shoreline. The total estimated shoreline miles for all of the reservoirs identified here total over 1,300 miles.

Federal Law requires that any Indian Lands, that are directly effected by a Federal undertaking, the Tribes will be a participant to the Federal undertaking agreements and management plans. The Colville Reservation is directly within the project area and has vested interest by reserved rights identified as traditional and aboriginal territories for Grand Coulee Dam, Chief Joseph Da and Douglas County PUD (Wells Dam). The Colville Tribe also has existing MA allotments within Chelan County PUDS and Douglas County PUD. Grant County PUD is ancestral and aboriginal rights for cultural resources and all of

former Moses Reservation, Colville Reservation and existing Colville Reservation and North Half Colville Reservation.

Tribal members still live and understand their traditional and cultural way of life. They are also educated to technical, scientific studies and standards regarding their own environmental and natural resources. Tribal members who live between these two worlds have an insight to their own traditional teaching that are applicable to technical and scientific standards of today.

Traditional teaching explain spawning behavior and migration behavior that were important to our ancestral dependency on fishery for subsistence and industry. However, the field of science as well as institutions are not willing to explore or to understand how the Indian people applied their traditional teaching to management responsibilities. The Tribal People see their understanding of the environment and natural resources behavior as "common sense". Tribal members' observation of their own understanding of the environment are taken for granted. This is largely due to generations of traditional teaching.

The Reservoirs behind Grand Coulee Dam and the other dams identified above are not natural features as they are man made lakes. The reservoirs have inundated all of the lands that had been occupied and was land use areas to the Tribes for thousands of years. Wetland, watershed areas located along side free flowing rivers have been inundated by reservoirs. Traditional, cultural resources and materials had little or no opportunity to become established above the new water levels. Prime lands located above the new water levels became converted for orchards, farming and private home development. Shoreline areas became converted to recreation use. Nowhere, in the management process did the government set aside lands for natural setting. None of the lands were set aside for traditional use to support our Indian way of life.

The Governments' only interest was to generated power,

at any cost. Tribes' today are taking a look at the effect of these Dams' and how the Tribes' rights were effected by government projects. These rights represent the Tribes' right to land use of ancestral, traditional and aboriginal territories. To fish, hunt and collect their own traditional resources. To understand what percentage of the traditional land use area is still there. Can any of the traditional land use area be restored to the Tribes? What rehabilitation needs to take place to bring land use up to its' traditional land use level? These concerns must be brought up to the same level as wild life mitigation by the Federal Government. Also, to understand these effects, the Tribes' will need support from the government to acquire the information.

Some of the land use setting was cool and damp, that was there when there were free flowing rivers. How high was the cool damp canopy? Can this cool damp canopy, that was important to natural resources setting be recreated? Another question may be, is there lands where these features exist now and can these lands be restored to traditional land use for the Tribes?

There are plants that grow well in damp areas and cannot be found in dry areas. Plants that grow well in wet areas but will not do well in damp areas. There are plants and materials that like dry settings, but grow in a damp canopy setting. Other features that may be important are north and/or south slopes, elevation information, plant communities and how these figure into rehabilitation.

Added to these concerns, is the fact that there was no inventory of plants, plant communities and what land features were important to plants, roots, materials, medicines and other resources that at one time occupied the river environment.

The greatest effect to any one group of people the government has admitted to is the Colville Confederated Tribes. By the one single Dam construction, changed forever the Indian way of life

that had been there for thousands of years. The Tribal ceremonies, religion/religious practices that were important to fishery. Cultures and traditional way of life that were supported by fishery subsistence and industry. Almost overnight, the Indian peoples' way of life was lost, destroyed forever, because of Grand Coulee Dam.

The DRAFT EIS alternative never included any fish by-pass to the upper reaches of the Columbia River system. It must be assumed then, that the Federal Government did not think it was important to consider fish by-pass as an alternative. However, the Colville Tribe believes that the Federal Government has a trust responsibility to include all of the alternatives to be considered. It is therefore the Colville Tribes' request, that a fish by-pass be included as an alternative. Also, to request the Federal Government negotiate with the Colville Confederated Tribes for one or more fish by-pass alternatives.

In reference to System Operations proposed alternative. The reservoirs reaction to all of the alternatives is the same. At the present operating level, the effect of erosion, block slumping and slides are causing affect to archaeological sites, burial sites and traditional resources that are important to the Colville Tribes. Any one of the reservoirs mentioned above behave the same to present pool operating level. Tribal values are based on tradition and culture, these values have no dollar value to refer to. The effects to ancestral burial sites and their own ancestral occupation sites are valued by traditional levels only. System Operations proposed alternatives did not make any provisions for "Tribal Values".

At the other extreme of Proposed Alternatives, is "fish flush" for reservoirs storage projects. Grand Coulee Dam is a Reservoir storage project. The volume of water, that is moved is in-itself destructive to lands, cultural resources, fishery, recreation, traditional and cultural use of the water and other natural resources. Any draw down of the reservoir is an effect. An extreme draw down, such as a fish flush

will cause measurable damage to cultural resources that are referenced by Harvey Rice, PhD, see attached statement. The Colville Tribes have not placed any of their concerns at any monetary level. There is a feeling of mental anguish, caused by a loss that cannot be measured. The Federal Government has not made any effort to assist the Tribe in dealing with this mental and emotional loss.

DRAFT TRADITIONAL RESOURCES COMMENTS TO

SYSTEM OPERATION REVIEW - EIS 1995

Traditional resources are an important part of our own environment. Proper management of these traditional resources provide ecological balance for both animal and human well being. We cannot afford to assume that any of these resources are not important to any one of us.

The creation of dams caused back water, inundation of shallow river areas and riverside environment. At no time, did the government consider these environments important to ecological balance or for needs by the Indian People. There was no effort to collect information or any intent by the government to measure the impacts caused by the dams or their reservoirs on any resources.

River shallows, aquatic life are important for fish, animals and human needs for hundreds and thousands of years. There was no research to identify what life forms there were in any of the aquatic communities before they became inundated by reservoirs. There is no record of any plant or animal species that are no longer in the Columbia River or tributaries. The same is true of riverside environments. Plant communities of Indian soap, shampoos, medicines and materials were inundated by reservoirs or by government destruction to make way for the new reservoirs.

Free flowing rivers, provided different temperatures to riverside areas. Once the rivers were changed to a slow moving river or pool environment, there was no longer the cool temperatures caused by river sprays to the air. How high above the surface of the rivers had the temperatures changed depends on land features on either side of the river or both. This environment created by free flowing river was important to traditional resources and to support wildlife areas.

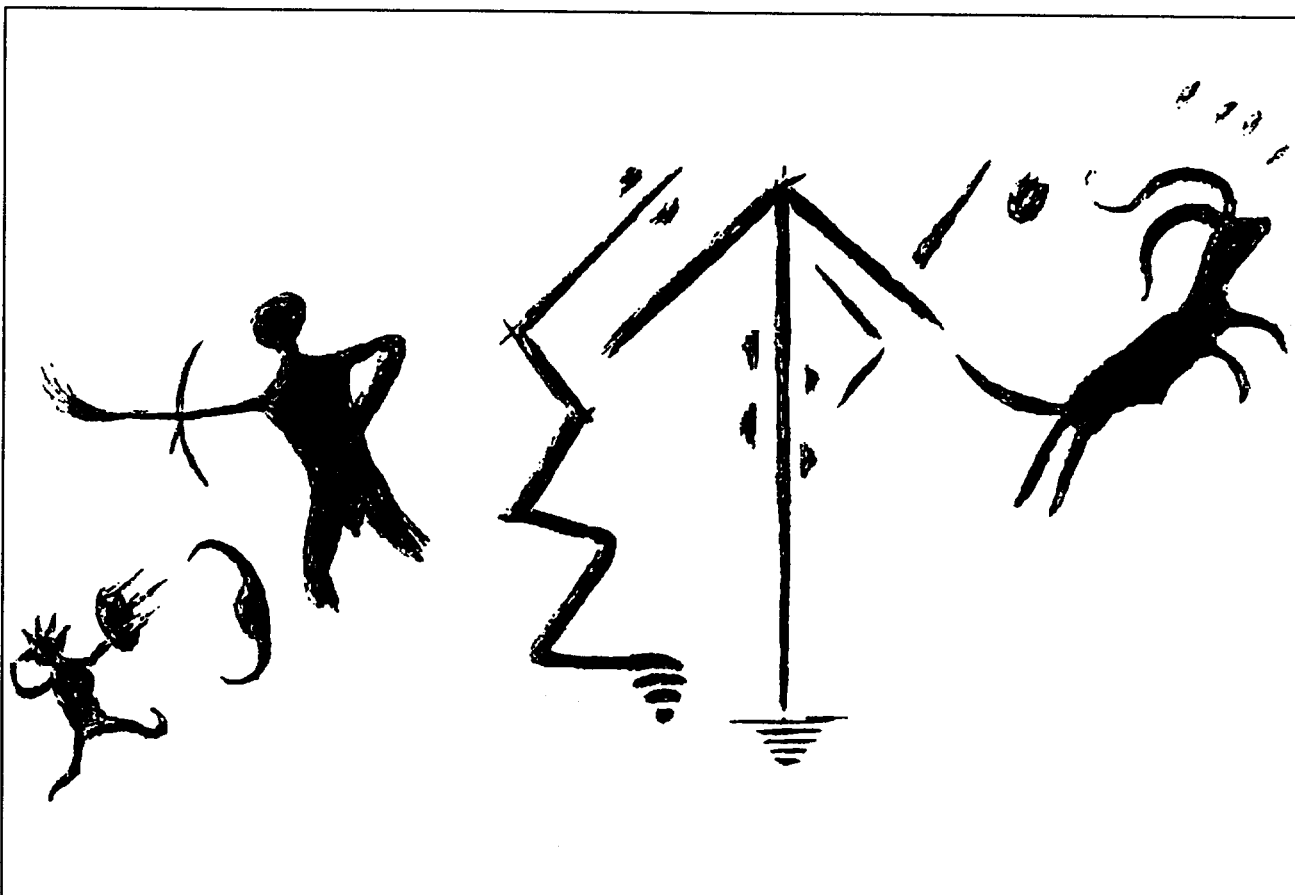
Once the cooler temperatures were removed, plant communities changed, dry climate plant communities

displaced plants that required the cool setting provided by free flowing river.

Dams backed water above the natural river flow levels. In most cases, government cleared the land ahead of the reservoirs. The reservoirs filled to full pool before any of the plant communities could recover from land clearing projects.

It is the Tribes understanding, that once a EIS document is sent out for public review, there can be no changes to the information in the document. Also, that if there are any additional information or changes of the document, the review time is changed to compensate the readers' understanding of the new information.

The comments made here are based only on information presented in the DRAFT System Operation Review, 1994, Environmental Impact Statement. Any modeling information sent to the Tribe, that was not included in the SOR/EIS was not reviewed as part of the SOR/EIS document.



Over all width, about 30 inches.












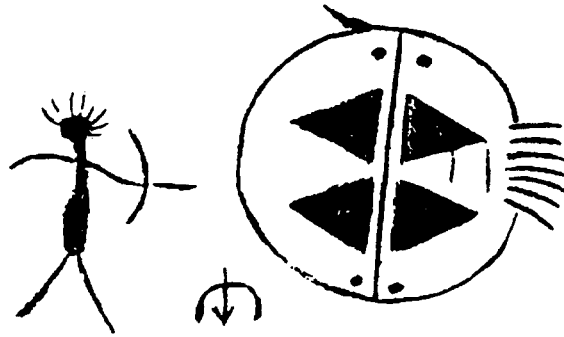
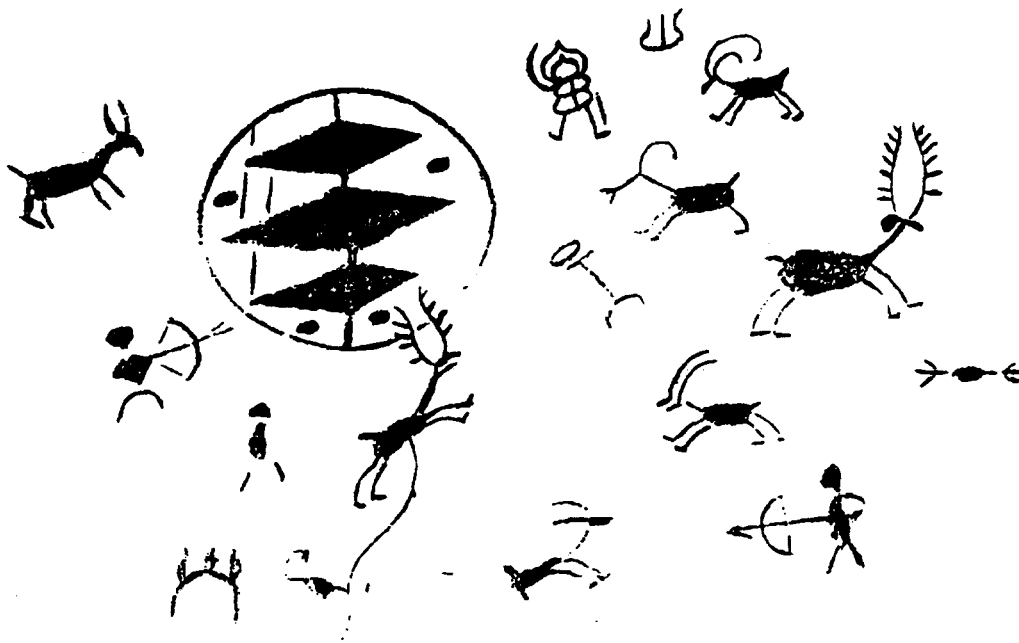
LEGEND: When the sun was in Aries , and Mars  and Venus  were at war in the constellation Sagittarius  the Four  Primary Forces  caused six  fire mountains  to rise up  out of the waters  of the ocean .

Fig. 3 A chronogram, or astronomically dated picture writing.* Chief Peter Wapato of the Chelan Indians related the Indian legend, "The Elevation of the Pacific Coastlands," which he associated with this petroglyph. The writing is inundated by the Rock Island power dam.

-69b-



"A"



"B"

Fig. 46 . Picture writings at Rock Island Rapids of the Columbia River. Overall width: "A", 40 inches; "B", 7 feet.

INDIAN PLACE NAMES
NARRATIVE BY MARY MARCHAND

The following research of Indian place names has been made possible through a grant provided by BPA as part of the Columbia River Systems Operation Review.

The grant is to be used for research on Indian place names of the areas behind Grand Coulee Dam and up the Columbia River as far as the Canadian Border. It also includes a few place names of the areas behind Chief Joseph Dam up the Columbia River to Grand Coulee Dam.

The Tribes' comprised of the Colville Confederated Tribes area Wenatchee, Chelan, Entiat, Methow, Okanogan, Nespalem, San Poil, Colville, Lakes, Moses, Snake River, Palouse and Chief Joseph band of Nes Perce. The Colville Confederated Tribes' will represent the interest of all of the Tribes' listed here. The following information will demonstrate some of our peoples' interest and concerns.

The Colville Indian Reservation is one of the largest "Indian" lands that is directly within System Operations Project area. The Reservation is bordered on the east, south and west by the Columbia River. Grand Coulee Dam and its' reservoir borders the south and east side of the Colville Reservation, Chief Joseph Dam and its' reservoir borders the southwest end of the reservation, Wells Dam reservoir borders the south and west end of the reservation.

Grand Coulee Dam has been identified to be a "storage" reservoir by System Operations Projects. The two dams, Chief Joseph Dam, (U.S. Army Corps of Engineers) and Wells Dam (non-federal) both below

Grand Coulee Dam are "run-of-the-river". The dam's below Wells Dam are also non-federal dams, and were not included in the DRAFT EIS for System Operations. Never-the-less, The Colville Tribe feels that the non-federal dams will be effected by System Operations. System Operations will also have an effect on cultural and traditional resources, that are important to the Tribes comprised of this Reservation.

Indian Place Names attached here are for Grand Coulee Dam and its' reservoir, and Chief Joseph Dam, the next dam downstream of Grand Coulee Dam, Chief Joseph reservoir extends upstream to just below Grand Coulee Dam, there will only be a few of these.

The Indian people have lived in the area for hundreds of thousands of years. The rivers, streams, and landform were known by their Indian names before the encroachment of white settlers to Indian Country. The list will identify river, streams, and landform that still have Indian names carried over and are still being called by their Indian names today. The list will provide information only for spelling of the Indian name the way it is called by our Indian language. Where possible, the Indian names will have a definition of the name. It should also be explained that Indian names are descriptive, and that a number of these names are so old that the meaning has been lost. We can only explain that land use has altered the landform to the extent that the name may no longer apply.

The Indian place names attached here have been obtained from Randy Bouchard and D. Kennedy, (Indian Land Use and Occupancy). Bouchard's spelling of the Indian names are not the phonetic

writing system. Because Bouchard had no standardized or systematic writing system, the letters used to write the Indian words vary from word to word. Even though the individuals providing the information are considered by the Tribe to be reliable, the information may be flawed because of the way the words were spelled by Bouchard. It is the intention of the project to correct and provide corrections here.

Most of the 408 place names I have obtained from a book titled "Indian Land Use and Occupancy In The Franklin D. Roosevelt Lake area of Washington State", prepared by R. Bouchard and D. Kennedy for the Colville Tribes and the United States Bureau of Reclamation.

Bouchard's information was obtained from Albert Louie, Martin Louie, Joe Covington, Johnny Francis, Nettie Francis, Charlie Quintasket, Susan Louie, Ed Monaghan, Louie Pichette, Selena Pascal, Mary Marchand, Julia Quintasket, Cecelia Pichette, Margaret Sherwood, Louise Lemery, Ellen Stone and Johnny Adolph. Other information was gathered from institutions, organizations, archives, universities and libraries in Canada and the United States. The final report was finished June 30, 1984.

Information thus far has been obtained through tapes of other elders on the Colville Reservation from Adeline Fredin, in the History Department. Some of the elders were: Isabel Arcasa, Herman Friedlander, Ed Monaghan, Nancy Judge, Christine Sam, Margaret Piatote and Charles Quintasket.

This research was started December 19, 1994, and should be done in draft form, by the end of May, 1995. The information will be

typed, with the phonetic spelling to get the more distinct pronunciation of the various dialects. Other information was obtained from the construction of dams on the Columbia River. What has been documented thus far, has been devastating, not only to the local people who live in this area, but to other tribes' from Montana, Idaho, the Methow's, Chelan's and Canadian Bands. All these people who traveled miles for their winter supplies of fish, meat, roots, hides, furs, and decorative materials for clothing and spiritual dances, stopped coming after the salmon was destroyed.

The loss of land, the money value, as well as the uprooting of the people that lived in all of the inundated land can never be fully described. These areas had been occupied by ancestry for hundreds of years. The pictographs petroglyphs, rock formations, pit houses, artifacts pertaining to oral history stories went under water.

Today, the few elders that are left that knew and had seen all of these area's still suffer from the heartache of what was lost through the construction of Grand Coulee Dam, Chief Joseph Dam, and all the other dams. The hurt is so deep that they at times, do not even want to talk about it.

The construction of dams whether they be Federal or Private damaged so much more than just land/ground being inundated. The strong teachings for us as Indian people, the other effects were emotional, spiritual, life style, of living, diet, medicinal plants/herbs/roots, Indian names, etc.

The uprooting of people by back waters had devastating effects.

They had to relocate homes, stores, schools, fishing and hunting grounds without any compensation.

All of the place names were lost due to flooding of these areas, and the names were relocated to higher ground in areas where they may not have been even close to the original sites and infringing on place names that were there and lost because the same area had to be renamed. Thus, the place names, that will be entered on the maps may still be revised later, if the people from these areas come up with different pronunciations, and meanings.

The spirituality of people became lost with the areas that were destroyed because of the back waters of these dams. Some of these places supplied the food, water from special springs, even the drinking water from the rivers, areas for gathering feathers, horns, rouge and for quests.

This project to date has not touched but a fraction of what still should be done that would fall under the "Columbia River System Operation Review".

Some of the recommendations for this project would be to research all of the place names for all of the areas that encompass the Priest Rapids Dam, north to take in the Moses Coulee area, the Wenatchee, Entiat, Chelan, Methow, and up the Okanogan River to the Canadian Border. All of these place names are derived from the bands that are part of the Colville Confederated Tribes.

A study of all the Indian names of the people themselves. Some of which are already lost, but some can still be documented. The Indian names when given to an individual related to why you are and the importance of that name was deeply respected, to the point that

area's were known because of the person themselves. Some of these Indian names carried authority as to leadership, spiritual people or heads of family.

The uprooting of place names and Indian names of people may have led up to the disrespect of people, lands, and property. Our ancestry and elders may have been destroyed to lose their identity, teachings, and self-respect that they stopped passing on what they were taught. We as Indian, have be relocated, stolen from, shifted here and there by their society that had no value as to the fact that we had no control of what we might have been, as a nation. Attached is a copy documenting events to the final or abrupt loss of salmon.

- 1874 Direct and indirect effects of commercial fishing to fisheries of the Confederated Tribes reach disaster proportions: over one-half the normal run is destroyed.
1884. The "banner year" of commercial killing of salmon on the lower Columbia. Loss to Confederated Tribes about three-fourths, with the full effects to come about 1890.
1890. Salmon runs to the Colville waters of the Confederated Tribes almost completely destroyed.
- 1921-31 Reduced commercial fishing; some improvement in the runs to the upper Columbia River after 1927.
1932. Rock Island Dam completed.
1933. Construction started on Grand Coulee Dam.
1933. Construction started on Bonneville Dam.
1937. Bonneville Dam completed (with fishway).

1941. Grand Coulee Dam completed (no fishway; migrating fish completely blocked).



Colville Confederated Tribes

P.O. Box 150 - Nespelem, WA 99155

(509) 634-4711

March 30, 1994

Phillip W. Thor
Bonneville Power Administration
Representative to Columbia River
System Operation Review Interagency Team
Post Office Box 2988
Portland, OR 97208-2988

REFERENCE: Preliminary DRAFT EIS
System Operation Review
Cultural Resources

Dear Mr. Thor

We have reviewed the DRAFT EIS re: System Operation Review. We have reviewed the alternatives described for system operations. The Tribes comments are to the following systems 1) Grand Coulee Dam, and the storage reservoir behind Grand Coulee Dam, 2) Chief Joseph Dam, and flowing reservoir behind Chief Joseph Dam, 3) Banks Lake Irrigation storage lake. For any of the alternatives for storage reservoir, and or flowing reservoirs behind the two Dam's. The alternatives described in the DRAFT EIS has an impact to the security, protection, preservation of the cultural resources, archaeological sites, ceremonial, and religious and burial sites. The attached comments made by the Colville Tribes provides more detailed information and comments to the Tribes concerns. Before the Colville Tribe can agree to any one of the systems operations described by the DRAFT EIS, the Tribe must have an understanding that there will be proper management for the concerns mentioned here.

One of the areas not included in the DRAFT EIS, for System Operations are the non-federal projects that operate on the same Columbia River. The Public Utilities Districts (PUD), Douglas, Chelan, and Grant County PUD's Wanapum Dam and Priest Rapids Dam have the same effects to the resources. However, in reference to cultural resources management, two of the non-federal projects have existing MOU's for cultural resources management, with the confederated Tribes of the Colville Reservation. The two systems not having an MOU for cultural resources management are, Grant County PUD and Priest Rapids Dam. Grant County PUD has the east sides of the reservoir in Wenatchee Territory and the west. The Moses territory is located project, area south and east. All of

Priest Rapids Dam reservoir, south. south will include the Palous Tribes. See attached maps, and legal description for supporting information, also included are a list of supporting documents.

Thank you for your time and consideration.

Sincerely

Adeline Fredin
Adeline Fredin
History/Archaeology

The Confederated Tribes of the Colville Reservation are comprised of twelve distinct tribes. Historically each of the tribes had recognized individual tribal bands. The bands were recognized to have as many as two to four villages that represented their political unit. The policy making authority for and by the bands was in cooperation with the larger tribal governing process. The tribal policy making responsibility and authority was by individuals who were at the band level and were elected, or had inherited the position from their own ancestry.

Within each of the political units, individuals would represent social; environmental; fishery; game; harvestable and traditional resources; the harvest areas; the political realm; protection and management of resources; and policy decisions. This way of life extended to, and for the most part centered around ceremonies, religions, traditions, and customs. This autonomous life-style was in existence and undisturbed by any outside influence for hundreds and thousands of years.

The Indian people were not effectively consulted with or counceled by the federal government in view of the total effect of the Grand Coulee Dam. The 1994 BPA EIS offers an opportunity for the Colville Tribe to revisit the effects and impacts caused by the construction of Grand Coulee Dam, and to furnish information on how the Colville Tribes have never been compensated for any of these effects or impacts resulting from the construction of Grand Coulee Dam, or its reservoir.

The Fishing industry which had been an entity since the earliest time of the Indian people's existence was obliterated. Religion, ceremonies, traditions, and cultures that were dependent on the continued flow of the salmon was also destroyed. The resources to make mats, bags, baskets, the medicines, and foods that had supported the Indian way of life were inundated by the back waters of the Dam. During the hundreds and thousands of years the people lived here they developed and constructed river crossings to reach their own camps, and people who lived on either side of the river. Harvesting and gathering areas were reached by the same river crossings. The back waters destroyed these locations, as well as others, such as, burial sites, home sites, buildings and allotments. The Federal government did not find homes for displaced Indians, or provide any assistance to move their buildings, churches, equipment, or belongings. There was no relief for any of the impacts caused by the Dam or the back waters. For our grandparents, and their children their was no freedom from the pain caused to their people and their unique Indian way of life.

The Federal government must make an effort to compensate for the damage, destruction and effect caused by the construction of Grand Coulee Dam. Cultural Resources Management is under way, the funding is limited and will not meet the full management process required by law and regulations for proper cultural resources management. The Federal government made some mistakes which should be viewed as a learning experience. Bonneville Power

Administration and the Colville Tribe have an opportunity to correct some of the mistakes and impacts caused by Grand Coulee Dam and the back waters (reservoir).

There must be full understanding of the Indian way of life, traditions, customs, religions, ceremonies, and culture related to the river. A Social Anthropologist has a chance to interview the few remaining people who still remember the Columbia River before the Dams. Our people have a right to know and understand their own ancestral way of life.

Archaeological scientific research can also provide information and opportunity for research and education for science. The materials resulting from site mitigation properly stored in a Tribal Repository, and funded by the Agency. The archaeological materials to be managed by the Colville Tribe, and trust responsibility remaining with the Agency responsible for the effect. The archaeological project and anthropological project also has an opportunity to train tribal members in procedures and process for short/long term management. Any training for cultural resources management, procedures, process, repository and any other related responsibility be funded by the Agency.

The people have made efforts to restore the following skills to their people: languages, basket and bag making, medicines, and other uses of the natural resources. Because of the changes identified here that drastically modified their Indian way of life that had been in place for countless generations. The people have a right to call their hunting sites, fishing sites, and occupation sites, land use areas by their Indian names, in addition they have the right to connect this information with ancestral past of these locations.

Natural material and resources need to be researched by a particular method of Botany, a biologist dealing with plants that were important to our people. This information is also important to ecosystem management so that these plants can be included in the management process.

The comments made herein apply not only to Grand Coulee Dam, and its reservoir, but to the Chief Joseph Dam, Banks lake, and the storage area for the Bureau of Reclamation Irrigation as well.

Chief Joseph Dam stopped the flow of salmon to old fishing sites located below Grand Coulee Dam. Though this did not have the same total devastation to our Indian way of life that had occurred by the construction of Grand Coulee Dam, there were immeasurable impacts to our right to fish for salmon for traditional use. The Chief Joseph Dam did not manage any of the cultural resources, archaeological sites, or consult with the Colville Tribe. The back waters from Chief Joseph Dam washed out an undetermined number of burial sites, archaeological sites, ceremonial and religious sites, occupation sites, and pictograph sites. The Chief Joseph Dam, U.S. Army Corps of Engineers project did not provide any protection for

the area affected by the back waters and as a result grave robbers, artifact collectors moved in to take artifacts exposed by the new reservoir.

In addition, there has never been a monitoring plan in place to protect the sites which the U.S. Army Corps agreed to protect.

Banks Lake comes from the reservoir behind Grand Coulee Dam. For hundreds and thousands of years this land was used by our people. The Coulee walls have caves, rock shelters that haven't even been documented, recorded, investigated, or managed. The occupation sites located on the floor of the Coulee canyon have been inundated by Banks Lake along with their land use area. Sacred and ceremonial sites have been made inaccessible to the Indian people because of the commercial use. Bureau of Reclamation lease land to other agencies, rather than considering any land use that may still be important to the Indian people.

There has never been a comprehensive cultural resources survey for the Banks Lake area. Nor a management, protection, preservation or monitoring plan to manage any of the resources mentioned. Additionally, a consultation process does not exist, and no communication with the Colville Tribe in reference to a proposed action plan is not in place.

For every one of these projects there will always remain a feeling of loss, of shame even though they were innocent of any act that created the Dams, or stopped the free flow of the river. Water is one of our most sacred resources. The ceremonies that require water or are water based leave a lingering feeling that some how we had played a role in allowing things to happen. Therefore, water quality is important.

We have identified some of the effects here, and have made recommendations to what is important, what has not been done by the agencies responsible for management. These must be properly managed, it is requested that the responsible agency provide the necessary and adequate funding to implement management for the resources mentioned here.

The information and statement applies to the following Tribes and their ancestral, usual and accustomed territories:

1. Wenatchee
2. Chelan
3. Entiat
4. Methow
5. Okanogan
6. Nespalem
7. Sanpoil
8. Lakes
9. Colville
10. Moses (Moses Columbia)
11. Palouse (Snake River Palouse)
12. Chief Joseph Band of Nez Perce

BRIEF LAND HISTORY OF THE COLVILLE RESERVATION

The original Colville Indian Reservation was established by Executive Order of April 9, 1872, for the use and occupancy of the Methow, Okanogan, San Poil, Lake, Colville, Calispel, Spokane, Coeur d'Alene and such other Indians as the Department saw fit to locate thereon. Other tribes located on the reservation were the Snake River Palouse branch of the Yakima, the Joseph band of the Nez Perce, the Moses Columbia, and the Wenatchee band of Indians.

The original Colville Reservation was in existence for less than three months when it was exchanged for the present reservation under Executive Order of July 2, 1872. The present reservation of approximately 2,900,000 acres was divided into the North and South halves by the Act of July 1, 1892, which restored the North Half consisting of approximately 1,500,000 acres to the public domain.

There was a group of tribes under the leadership of Chief Moses which resided during the early 1880's on the Columbia Reservation in the State of Washington. This group of tribes included (1) the Columbia, (2) Chelan, (3) Entiat and (4) Wenatchee. The Columbia Reservation was established by Executive Order of April 19, 1879, as amended by Executive Orders of March 6, 1880, and February 23, 1883, "for the permanent use and occupancy of Chief Moses and his people, and such other friendly Indians as may elect to settle thereon with his consent and that of the Secretary of the Interior."

On July 7, 1883, an Agreement was made in Washington, D. C., signed by the Secretary of the Interior and the Commissioner of Indian Affairs, which contained a provision that, if the Chief Moses group of tribes and other Indians who were then residing on the Columbia Reservation would move to the Colville Reservation, the United States "will secure to Chief Moses and his people as well as to all other Indians who may go on the Colville Reservation**." This agreement was ratified by the Act of Congress of July 4, 1884 (23 Stat. 76, 79-80). Subsequently, starting in or about 1886, members of the Chief Moses tribal groups were moved to the Colville Reservation. Also, during the year 1885 and later years, the Government moved to the Colville Reservation, members of the Joseph Band of Nez Perce Indians and members of the Palus Tribe.

Except for certain allotted tracts, the Columbia Reservation was restored to the public domain by Executive Order of May 1, 1886.

The South Half consisted of approximately 1,400,000 acres. The Act of March 22, 1906, after providing for 80 acre allotments, authorized and directed the classification appraisal and sale of the balance of the lands (that is, the surplus lands after the allotments), with the net proceeds of the sales to be deposited in the Treasury for the benefit of the Indians. Subsequently, by Presidential Proclamation of May 3, 1916, the lands in the South Half which were classified as irrigable and grazing were opened to entry, and the lands classified as mineral were made subject to location and disposal under the mineral land laws. The lands classified as timberlands were, however, not opened to entry. The lands were thereafter opened to entry and disposed of pursuant to the Presidential Proclamation of May 3, 1916.

Subsequently, by Departmental Orders of September 19, 1934 and November 19, 1939, the undisposed lands (including the timberlands which had not been open to entry) were withdrawn from any further disposition until the matter of their return to tribal ownership was settled. Then, by the Act of July 24, 1956, the remaining undisposed lands in the South Half comprising approximately 818,000 acres were restored to tribal ownership.

The land status of the Colville Reservation on June 30, 1970, is as follows:

Tribal Trust	935,440	
Individual Trust	67,998	
Non Trust	410,695	
Total	1,414,133	acres

Important Acts and Executive orders affecting the land status of the Colville Reservation.

1. COLVILLE RESERVATION ESTABLISHED

Executive Order Dated April 9, 1872
 Department of the Interior
 Office of Indian Affairs

Washington, D.C., April 8, 1872

Sir: I have the honor to invite your attention to the necessity for the setting apart by Executive order of a tract of country hereinafter described, as a reservation for the following bands of Indians in Washington Territory, not parties to any treaty, Viz:

The Methow Indians, numbering	316
The Okanogan Indians, numbering	340
The San Poil Indians, numbering	538
The Lake Indians, numbering	230
The Colville Indians, numbering	631
The Calispel Indians, numbering	420
The Spokane Indians, numbering	725
The Coeur d'Alene Indians, numbering	700
And scattering bands	300
Total	4,200

***Excluding that portion of the tract of country referred to, found to be in the British possessions, the following are the natural boundaries of the proposed reservation, which I have the honor to recommend be set apart by the President for the Indians in question, and such others as the department may see fit to settle thereon, viz: Commencing at a point on the Columbia where the Spokane River empties in the same; thence up the Columbia River to where it crosses the forty-ninth parallel north latitude; thence east, with said forty-ninth parallel, to

where the Pend d'Oreille or Clark River crosses the same; thence up the Pend d'Oreille or Clark River to where it crosses the western boundary of Idaho territory, the one hundred and seventeenth meridian west longitude; thence south, along said one hundred and seventeenth meridian, to where the Little Spokane River crosses the same; thence southwesterly, with said river, to its junction with the Big Spokane River; thence down the Big Spokane River to the place of beginning.

The papers hereinbefore referred to are respectfully submitted herewith.

Very respectfully, your obedient servant,

F. A. Walker, Commissioner
The SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
Washington, D.C., April 9, 1872

Sir: I have the honor to submit herewith a communication, dated the 8th instant, from the Commissioner of Indian Affairs, and accompanying papers, representing the necessity for the setting apart, by Executive order, of a tract of country therein described for certain bands of Indians in Washington Territory not parties to any treaty.

The recommendation of the commissioner in the premises is approved, and I respectfully request that the President direct that the tract of country designated upon the enclosed map be set apart for the Indians referred to and such others as this department may see fit to settle thereon.

I am, sir, very respectfully, your obedient servant,

B. R. Cowen, Acting Secretary.

THE PRESIDENT.

EXECUTIVE MANSION,
Washington, April 9, 1872

It is hereby ordered that the tract of country referred to in the within letter of the Acting Secretary of the Interior, and designated upon the accompanying map, be set apart for the bands of Indians in Washington Territory named in communication of the Commissioner of Indian Affairs dated the 8th instant, and for such other Indians as the Department of the Interior may see fit to locate thereon.

U. S. GRANT

2. COLVILLE RESERVATION EXCHANGED FOR PRESENT RESERVATION

Executive Order Dated July 2, 1872
EXECUTIVE MANSION
Washington, July 2, 1872

It is hereby ordered that the tract of country referred to in the within letter of the Commissioner of Indian Affairs as having been set apart for the Indians therein named by Executive order of April 9, 1872, be restored to the public domain, and that in lieu thereof the country bounded on the east and south by the Columbia River on the west by the Okanogan River, and on the north by the British possessions, be, and the same is hereby; set apart as a reservation for said Indians, and for such other Indians as the Department of the Interior may see fit to locate thereon.

U. S. GRANT

3. COLUMBIA OR MOSES RESERVATION ESTABLISHED

Executive Order of April 19, 1879
EXECUTIVE MANSION, April 19, 1879

It is hereby ordered that the tract of country in Washington Territory lying within the following described boundaries, viz: Commencing at the intersection of the forty-mile limits of the branch line of the Northern Pacific Railroad with the Okinakane River; thence up said river to the boundary line between the United States and British Columbia; thence west on said boundary line to the forty-fourth degree of longitude west from Washington; thence south on said degree of longitude to its intersection with the forty-mile limits of the branch line of the Northern Pacific Railroad; and thence with the line of said forty-mile limits to the place of beginning, be, and the same is hereby, withdrawn from sale and set apart as a reservation for the permanent use and occupancy of Chief Moses and his people, and such other friendly Indians as may elect to settle thereon with his consent and that of the Secretary of the Interior.

R. B. HAYES

Executive Order of March 6, 1880
EXECUTIVE MANSION, March 6, 1880

It is hereby ordered that the tract of country in Washington Territory lying within the following described boundaries, viz: Commencing at a point where the south boundary line of the reservation created for Chief Moses and his people by Executive order dated April 19, 1879, intersects the Okinakane River; thence down said river to its confluence with the Columbia River; thence across and down the east bank of said Columbia River to a point opposite the river forming the outlet to Lake Chelan; thence across said Columbia River and along the south shore of said

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 4

outlet to Lake Chelan; thence following the meanderings of the south bank of said lake to the mouth of Shebekin Creek; to its source; thence due west to the forty-fourth degree of longitude west from Washington; thence north along said degree to the south boundary of the reservation created by Executive order of April 19, 1879; thence along the south boundary of said reservation to the place of beginning, be, and the same is hereby, withdrawn from sale and settlement and set apart for the permanent use and occupancy of Chief Moses and his people, and such other friendly Indians as may elect to settle thereon with his consent and that of the Secretary of the Interior, as an addition to the reservation set apart for said Chief Moses and his people by Executive order dated April 19, 1879.

R. B. HAYES

4. COLUMBIA OR MOSES RESERVATION CANCELLED

Executive Order of February 23, 1883
EXECUTIVE MANSION, February 23, 1883

It is hereby ordered that the tract of country in Washington Territory lying within the following described boundaries, viz, commencing at the intersection of the forty-fourth degree of longitude west from Washington, with the boundary line between the United States and British Columbia; thence due south 15 miles; thence due east to the Okinakane River; thence up said river to the boundary line between the United States and British Columbia; thence west along said boundary line to the place of beginning, being a portion of the country set apart for the use of Chief Moses and his people by Executive orders of April 19, 1879, and March 6, 1880, be, and the same is hereby, restored to the public domain.

CHESTER A. ARTHUR

Executive Order of May 1, 1886
EXECUTIVE MANSION, May 1, 1886

It is hereby ordered that all that portion of country in Washington Territory withdrawn from sale and settlement and set apart for the permanent use and occupation of Chief Moses and his people, and such other friendly Indians as might elect to settle thereon with his consent and that of the Secretary of the Interior, by the Executive orders dated April 19, 1879, and March 6, 1880, respectively, and not restored to the public domain by the Executive order dated February 23, 1883, be, and the same is hereby, restored to the public domain, subject to the limitations as to disposition imposed by the act of Congress, approved July 4, 1884 (23 Stats., pp. 79-80), ratifying and confirming the agreement entered into July 7, 1883, between the Secretary of the Interior and the Commissioner of Indian Affairs and Chief Moses and other Indians of the Columbia and Colville Reservations in Washington Territory.

And it is hereby further ordered that the tracts of land in Washington Territory

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 5

surveyed for and allotted to Sar-sarp-kin and other Indians in accordance with the provisions of said act of July 4, 1884, which allotments were approved by the Acting Secretary of the Interior April 12, 1886, be, and the same are hereby, set apart for the exclusive use and occupation of said Indians, the field notes of the survey of said allotments being as follows (description of 37 allotments).

5. AGREEMENTS WITH THE COLUMBIA AND COLVILLE

A. July 7, 1883, Ratified July 4, 1884, 23 Stat., 79.

In the conference with Chief Moses and Sarsarp-kin, of the Columbia Reservation, and Tonasket and Lot, of the Colville Reservation, had this day, the following was substantially what was asked for by the Indians: Tonasket asked for a saw and grist mill, a boarding school to be established at Bonaparte Creek to accommodate one hundred pupils (100), and a physician to reside with them, and \$100. (one hundred) to himself each year.

Sar-sarp-kin asked to be allowed to remain on the Columbia reservation with his people, where they now live, and to be protected in their rights as settlers, and in addition to the ground they now have under cultivation within the limit of the fifteen mile strip cut off from the northern portion of the Columbia Reservation, to be allowed to select enough more unoccupied land in Severalty to make a total to Sar-sarp-kin of four square miles, being 2,560 acres of land, and each head of a family or male adult one square mile; or to move on to the Colville Reservation, if they so desire, and in case they so remove, and relinquish all their claims to the Columbia Reservation, he is to receive one hundred (100) head of cows for himself and people, and such farming implements as may be necessary.

All of which the Secretary agrees they should have, and that he will ask Congress to make an appropriation to enable him to perform.

The Secretary also agrees to ask Congress to make an appropriation to enable him to purchase for Chief Moses a sufficient number of cows to furnish each one of his band with two cows; also to give Moses one thousand dollars (\$1,000) for the purpose of erecting a dwelling-house for himself; also to construct a saw mill and grist-mill as soon as the same shall be required for use; also that each head of a family or each male adult person shall be furnished with one wagon, one double set of harness, one grain cradle, one plow, one harrow, one scythe, one hoe, and such other agricultural implements as may be necessary.

And on condition that Chief Moses and his people keep this agreement faithfully, he is to be paid in cash, in addition to all of the above, one thousand dollars (\$1,000) per annum during his life.

All this on condition, that Chief Moses shall remove to the Colville Reservation and relinquish all claim upon the Government for any land situate elsewhere.

Further, that the Government will secure to Chief Moses and his people, as well as to all other indians who may go on to the Colville Reservation, and engage in

farming, equal rights and protection alike with all other Indians now on the Colville Reservation, and will afford him any assistance necessary to enable him to carry out the terms of this agreement on the part of himself and his people. That until he and his people are located permanently on the Colville Reservation, his status shall remain as now, and the police over his people shall be vested in the military, and all money or articles to be furnished him and his people shall be sent to some point in the locality of his people, there to be distributed as provided. All other Indians now living on the Columbia Reservation shall be entitled to 640 acres, or one square mile of land, to each head of family or male adult, in the possession and ownership of which they shall be guaranteed and protected. Or should they move on to the Colville Reservation within two years, they will be provided with such farming implements as may be required, provided they surrender all rights to the Columbia Reservation.

All of the foregoing is upon the condition that Congress will make an appropriation of funds necessary to accomplish the foregoing, and confirm this agreement; and also, with the understanding that Chief Moses or any of the Indians hereto-fore mentioned shall not be required to remove to the Colville Reservation until Congress does make such appropriation, etc.

H. M. Teller, Secretary of Interior.
 H. Price, Commissioner of Indian Affairs.
 Moses (his x mark),
 Tonasket (his x mark),
 Sar-sarp-kin (his x mark).

B. July 4, 1884, 23 Stat., 79

For the purpose of carrying into effect the agreement as entered into at the city of Washington on the seventh day of July, eighteen hundred and eighty-three, between the Secretary of the Interior and the Commissioner of Indian Affairs and Chief Moses and other Indians of the Columbia and Colville reservations, in Washington Territory, which agreement is hereby accepted, ratified, and confirmed, including all expenses incidental thereto, eighty-five thousand dollars, or so much thereof as may be required therefor, to be immediately available; Provided, That Sarsopkin and the Indians now residing on said Columbia reservation shall elect within one year from the passage of this act whether they will remain upon said reservation on the terms therein stipulated or remove to the Colville reservation: And provided further, That in case said Indians so elect to remain on said Columbia reservation the Secretary of the Interior shall cause the quantity of land therein stipulated to be allowed them to be selected in as compact form as possible, the same when so selected to be held for the exclusive use and occupation of said Indians, and the remainder of said reservation to be thereupon restored to the public domain, and shall be disposed of to actual settlers under the homestead laws only, except such portion thereof as may properly be subject to sale under the laws relating to the entry of timber lands and of mineral lands, the entry of which shall be governed by the laws in force concerning the entry of such lands.

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 7

6. NORTH HALF OF COLVILLE RESERVATION CEDED

July 1, 1892, 27 Stat., 62

An act to provide for the opening of a part of the Colville Reservation, in the State of Washington, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That subject to the reservations and allotment of lands in severalty to the individual members of the Indians of the Colville Reservation in the State of Washington herein provided for, all the following described tract or portion of said Colville Reservation, namely: Beginning at a point on the eastern boundary line of the Colville Indian Reservation where the township line between townships thirty-four and thirty-five north, of range thirtyseven east, of the Willamette meridian, if extended west, would intersect the same, said point being in the middle of the channel of the Columbia River, and running thence west parallel with the forty-ninth parallel of latitude to the western boundary line of the said Colville Indian Reservation in the Okanagon River, thence north following the said western boundary line to the said forty-ninth parallel of latitude, thence east along the said forty-ninth parallel of latitude to the northeast corner of the said Colville Indian Reservation, thence south following the eastern boundary of said reservation to the place of beginning, containing by estimation one million five hundred thousand acres, the same being a portion of the Colville Indian Reservation created by executive order dated July second, eighteen hundred and seventy-two, be, and is hereby, vacated and restored to the public domain notwithstanding any executive order or other proceeding whereby the same was set apart as a reservation for any Indians or bands of Indians, and the same shall be open to settlement and entry by proclamation of the President of the United States and shall be disposed of under the general laws applicable to the disposition of public lands in the State of Washington.

Sec. 2. That the net proceeds arising from the sale and disposition of the lands to be so opened to entry and settlement shall be set apart in the Treasury of the United States for the time being, but subject to such future appropriation for public use as Congress may make, and that until so otherwise appropriated may be subject to expenditure by the Secretary of the Interior from time to time, in such amounts as he shall deem best, in the building of schoolhouses, the maintenance of schools for such Indians, for the payment of such part of the local taxation as may be properly applied to the lands allotted to such Indians as he shall think fit, so long as such allotted lands shall be held in trust and exempt from taxation, and in such other ways as he may deem proper for the promotion of education, civilization, and self-support among said. Indians.

Sec. 3. That each. entryman under the homestead laws shall, within five years from the date of his original entry and before receiving a final certificate for the land covered by his entry, pay to the United States for the land so taken by him, in

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 8

addition to fees provided by law, the sum of one dollar and fifty cents per acre, one third of which shall be paid within two years after the date of the original entry; but the rights of honorably discharged Union soldiers and sailors, as defined and described in sections twenty-three hundred and four and twenty-three hundred and five of the Revised Statutes of the United States, shall not be abridged, except as to the sum to be paid as aforesaid.

Sec. 4. That each and every Indian now residing upon the portion of the Colville Indian Reservation hereby vacated and restored to the public domain, and who is so entitled to reside thereon, shall be entitled to select from said vacated portion eighty acres of land, which shall be allotted to each Indian in severalty. No restrictions as to locality shall be placed upon such selections other than that they shall be so located as to conform to the Congressional survey or subdivisions of said tract or country, and any Indian having improvements may have the preference over any other person in and to the tract of land containing such improvements, so far as they are within a legal subdivision not exceeding in area the quantity of land that he or she may be entitled to select and locate. All such allotments shall be made at the cost of the United States, under such rules and regulations as the Secretary of the Interior may from time to time prescribe. Such selections shall be made within six months after the date of the President's proclamation opening the lands hereby vacated to settlement and entry, and after the same have been surveyed, and when such allotments have been selected as aforesaid and approved by the Secretary of the Interior, the titles thereto shall be held in trust for the benefit of the allottees, respectively, and afterwards conveyed in fee simple to the allottees or their heirs, as provided in the act of Congress entitled "An act to provide for the allotment of land in severalty to Indians on the various reservations, and to extend the protection of the laws of the United States and Territories over the Indian, and for other purposes," approved February eighth, eighteen hundred and eighty-seven, and an act in amendment and extension thereof, approved February twenty-eighth, eighteen hundred and ninetyone, entitled "An act to amend and further extend the benefits of the act approved February eighth, eighteen hundred and eighty-seven, entitled 'An act to provide for the allotment of land in severalty to Indians on the various reservations and to extend the protection of the laws of the United States over the Indians, and for other purposes:'" Provided, That such allotted lands shall be subject to the laws of eminent domain of the State of Washington, and shall, when conveyed in fee simple to the allottees or their heirs, be subject to taxation as other property in said State.

Sec. 5. That all Indians residing in the lands hereby vacated and restored, shall have the right, if they so prefer, under the direction of the Indian agent, to occupy and reside upon such portions of the Colville Indian Reservation not hereby vacated as are not occupied by or in the possession of any other Indian or Indians.

Sec. 6. That the land used and occupied for school purposes at what is known as Tonasket school, on Bonaparte Creek, and the site of the sawmill, gristmill, and other mill property on said reservation, is hereby reserved from the operation of this act, unless other lands are selected in lieu thereof: Provided, That such reserved lands shall not exceed in the aggregate two sections, and must be selected in legal subdivisions conformably to the public surveys, such selection to

be made by the Indian agent of the Colville Agency, under the direction of the Secretary of the Interior and subject to his approval: Provided, however, That said Indians may, in lieu of said sites or either of them, select other lands of equal quantity, for such purposes, either on the vacated or unvacated portions of said reservation, the same to be designated in legal subdivisions by said Indian agent, under the direction of and subject to the approval of the Secretary of the Interior, in which case, said first designated tracts shall not be exempt from the operation of this act; such selection to be made and approved within six months after the survey of said lands and the proclamation of the President.

Sec. 7. That for the purpose of making the allotments and selections in this act provided, including surveys of the lands provided to be vacated and restored to the public domain, thirty-five thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of any money in the Treasury of the United States not otherwise appropriated, which said sum shall be reimbursable from the proceeds of the lands when sold as hereinbefore provided.

Sec. 8. That nothing herein contained shall be construed as recognizing title or ownership of said Indians to any part of the said Colville Reservation, whether that hereby restored to the public domain or that still reserved by the Government for their use and occupancy.

Received by the President June 20, 1892.

(Note by the Department of State-The foregoing act having been presented to the President of the United States for his approval, and not having been returned by him to the house of Congress in which it originated within the time prescribed by the Constitution of the United States, has become a law without his approval.)

7. CEDED LANDS IN NORTH HALF OPENED FOR SETTLEMENT

Proclamation of April 10, 1900, 31 Stat., 1963

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Whereas, by section one of the act of July 1, 1892 (27 Stat., 62), entitled "An Act to provide for the opening of a part of the Colville Reservation, in the State of Washington, and for other purposes" it is provided:

That subject to the reservations and allotment of lands in severalty to the individual members of the Indians of the Colville Reservation in the State of Washington herein provided for, all the following described tract or portion of said Colville Reservation, namely: Beginning at a point on the eastern boundary line of the Colville Indian Reservation where the township line between townships thirty-four and thirty-five north, of range thirty-seven east, of the Willamette Meridian, if extended west, would intersect the same, said point being in the middle of the channel of the Columbia River, and running thence east along the said forty-ninth

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 10

parallel of latitude to the western boundary line of the said Colville Indian Reservation in the Okanagon River, thence north following the said western boundary line to the said forty-ninth parallel of latitude, thence east along the said forty-ninth parallel of latitude, thence east along the said forty-ninth parallel of latitude to the northeast corner of the said Colville Indian Reservation, thence south following the eastern boundary of said reservation to the place of beginning, containing by estimation one million five hundred thousand acres, the same being a portion of the Colville Indian Reservation, created by executive order dated July second, eighteen hundred and seventy-two, be, and is hereby, vacated and restored to the public domain, notwithstanding any executive order or other proceeding whereby the same was set apart as a reservation for any Indians or bands of Indians, and the same shall be open to settlement and entry by the proclamation of the President of the United States and shall be disposed of under the general laws applicable to the disposition of public lands in the State of Washington,

And

Whereas it is provided by section three of said act, That each entryman under the homestead laws shall, within five years from the date of his original entry and before receiving a final certificate for the land covered by his entry, pay to the United States for the land so taken by him in addition to fees provided by law the sum of one dollar and fifty cents per acre, one third of which shall be paid within two years after the date of the original entry; but the rights of honorably discharged Union soldiers and sailors, as defined and described in sections twenty-three hundred and four and twenty-three hundred and five of the Revised Statutes of the United States, shall not be abridged, except as to the sum to be paid as aforesaid,

and

Whereas by section six of said act it is provided: That the land sued and occupied for school purposes at what is known as Tonasket school, on Bonaparte Creek, and the site of the sawmill, gristmill, and other mill property on said reservation, is hereby reserved from the operation of this act, unless other lands are selected in lieu thereof: Provided, That such reserve lands shall not exceed in the aggregate two sections, and must be selected in legal subdivisions conformably to the public surveys, such selection to be made by the Indian Agent of the Colville Agency, under the direction of the Secretary of the Interior and subject to his approval: Provided, however, That said Indians may, in lieu of said sites or either of them, select other lands of equal quantity, for such purposes, either on the vacated or unvacated portions of said reservation, the same to be designated in legal subdivisions by said Indian Agent, under the direction of and subject to the approval of the Secretary of the Interior, in which case said first-designated tracts shall not be exempt from the operation of this act; such selection to be made and approved within six months after the survey of said lands and the proclamation of the President.

and

Whereas, in a clause in the Indian Appropriation Act of July 1, 1898 (30 Stat., 571), it is provided:

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 11

The purchase money not required at the time of entry may be paid in five equal installments. These payments will become due at the end of one, two, three, four and five years after the date of entry, unless commutation proof is made. If such proof is made, all the unpaid installments must be paid at that time. Where three year proof is submitted, the entryman may make payment of the unpaid installments at that time or at any time before they become due and final certificate will issue, in the absence of objection, upon such payment being made. If any entryman fails to make any payment when it becomes due, all his former payments will be forfeited and his entry will be cancelled.

7. No person will be permitted to select more than one tract, present more than one application to enter, or file more than one declaratory statement in his own behalf.

8. If any person fails to select the tract he desires to enter on the date assigned to him for that purpose, or if, having made such selection he fails to perfect it by making entry or filing and payments as herein provided, or if he presents more than one application for registration or presents an application in any other than his true name, he will forfeit his right to make entry or filing under this Proclamation.

9. None of the lands opened to entry under this Proclamation will become subject to settlement or entry prior to 9 o'clock a.m. October 18, 1916, except in the manner prescribed herein; and all persons are admonished not to make any settlement before that time on lands not covered by entries or filings made by them under this Proclamation. All the said lands not then entered by persons assigned numbers hereunder, will, at that hour, become subject to settlement and entry under the general provisions of the homestead laws and the aforesaid Act of Congress.

10. The Secretary of the Interior shall make and prescribe such rules and regulations as may be necessary and proper to carry the provisions of this Proclamation and of the said Act of Congress into full force and effect and is hereby authorized to prescribe the time when and the manner in which lands in any or all the townships temporarily withheld from disposal, as herein provided, may be opened to settlement and entry.

In Witness Whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this third day of May in the year of our Lord one thousand nine hundred and sixteen, and of the Independence of the United States the one hundred and fortieth.

WOODROW WILSON

By the President: Robert Lansing, Secretary of State.
(Seal.)

===

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 21

That the mineral lands only in the Colville Indian Reservation, in the State of Washington, shall be subjected to entry under the laws of the United States in relation to the entry of mineral lands: Provided, That lands allotted to the Indians or used by the Government for any purpose or by any school shall not be subject to entry under this provision,

and in another clause that,

The Indian Allotments in severalty provided for in said act shall be selected and completed at the earliest practicable time and not later than six months after the proclamation of the President opening the vacated portion of said reservation to settlement and entry, which proclamation may be issued without awaiting the survey of the unsurveyed lands therein. Said allotments shall be made from lands which shall at the time of the selection thereof be surveyed, excepting that any Indian entitled to allotment under said act who has improvements upon unsurveyed land may select the same for his allotment, whereupon the Secretary of the Interior shall cause the same to be surveyed and allotted to him. At the expiration of six months from the date of the proclamation by the President, and not before, the non-mineral lands within the vacated portion of said reservation which shall not have been allotted to Indians as aforesaid, shall be subject to settlement, entry and disposition under said act of July first, eighteen hundred and ninety-two: Provided, That the land used and occupied for school purposes at what is known as Tonasket School, on Bonaparte Creek, and the site of the sawmill, gristmill and other mill property on said reservation, are hereby reserved from the operation of this act, unless other lands are selected in lieu thereof as provided in section six of the aforesaid act of July first, eighteen hundred and ninety-two.

and

Whereas, all the terms, conditions and considerations required by said Acts of July 1, 1892, and July 1, 1898, precedent to the issuance of the Proclamation provided for therein, have been, as I hereby declare, complied with:

Now, therefore, I, William McKinley, President of the United States, by virtue of the power in me vested by the statutes hereinbefore mentioned, do hereby declare and make known that all of said lands hereinbefore described, restored by the said Act of July 1, 1892, will, at and after the hour of twelve o'clock noon (Pacific standard time) six months from the date hereof, to wit: The 10th day of October, nineteen hundred, and not before, be open to settlement and entry under the terms of and subject to all the conditions, limitations, reservations, and restrictions contained in the statutes above specified, and the laws of the United States, applicable thereto, saving and excepting such tracts as have been or may be allotted to or reserved or selected for, the Indians, or other purposes, under the laws herein referred to.

Sections sixteen and thirty-six in each township will be subject to such right of the State of Washington thereto as may be ascertained and determined by the land department in the administration of the grant of lands in place to that State for the support of common schools.

The lands which have been allotted to the Indians are for greater convenience particularly described in the accompanying schedule, entitled "Schedule of lands allotted to the Indians in restored portion of Colville Reservation, Washington, and withheld from settlement and entry by proclamation of the President, dated April 10, 1900," and which schedule is made a part hereof.

Notice, moreover, is hereby given that it is by law enacted that at the expiration of six months from the date of the proclamation by the President, and not before, the non-mineral lands within the vacated portion of said reservation which shall not have been allotted to or reserved or selected for the Indians, or for other purposes, shall be subject to settlement, entry and disposition under said Act of July 1, 1892; and all persons are hereby warned from attempting to make settlement on any of said lands prior to the date fixed for the opening thereof.

In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington, this tenth day of April, in the year of our lord nineteen hundred, and of the Independence of the United States the one hundred and twenty-fourth.

WILLIAM MCKINLEY

By the President, JOHN HAY, Secretary of State.
(Seal.)

8. AUTHORITY FOR ALLOTTING ON COLVILLE RESERVATION

A Allotments Authorized on Colville Reservation or Moses Agreement Indians

(March 8, 1906, 34-Stat., 55)

An act providing for the issuance of patents for lands allotted to Indians under the Moses agreement of July seventh, eighteen hundred and eighty-three.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and directed to issue patents to such Indians as have been allotted land under and by virtue of the agreement concluded July seventh, eighteen hundred and eighty-three, by and between the Secretary of the Interior and the Commissioner of Indian Affairs and Chief Moses and other Indians of the Columbia and Colville reservations, commonly known as the Moses agreement, accepted, ratified, and confirmed by the Act of Congress approved July fourth, eighteen hundred and eighty-four (Twenty-third Statutes, pages seventy-nine and eighty), which patents shall be of legal effect and declare that the United States does and will hold the lands thus allotted for the period of ten years from the date of the approval of this act in trust for the sole use and benefit of the Indian to whom such allotment was made, or in case of his decease, either prior or subsequent to the issuance of such patent, of his heirs, according to the laws of the

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 13

State of Washington, and that at the expiration of said period the United States will convey the same by patent to the said Indian, or his heirs as aforesaid, in fee, discharged of said trust and free of all charge or incumbrance whatsoever. And if any conveyance shall be made of the lands so held in trust by any allottee or his heirs, or any contract made touching the same, except as hereinafter provided, before the expiration of the time above mentioned, such conveyance or contract shall be absolutely null and void.

Sec. 2. That any allottee to whom any trust patent shall be issued under the provisions of the foregoing section may sell and convey all the lands covered thereby, except eighty acres, under rules and regulations prescribed by the Secretary of the Interior. And the heirs of any deceased Indian to whom a patent shall be issued under said section may in like manner sell and convey all of such inherited allotment except eighty acres, but in case of minor heirs their interests shall be sold only by a guardian duly appointed by the proper court upon the order of such court, made upon petition filed by the guardian, but all such conveyances shall be subject to the approval of the Secretary of the Interior, and when so approved shall convey a full title to the purchaser the same as if a final patent without restrictions upon alienation had been issued to the allottee. All allotted land alienated under the provisions of this act shall there-upon be subject to taxation under the laws of the State of Washington.

Approved, March 8, 1906.

B. Allotments for Indians Within the Diminished Reservation Authorized and Lands Not Allotted Were Authorized for Sale and Disposition.
(March 22, 1906, 34 Stat., 80)

An act to authorize the sale and disposition of surplus or unallotted lands of the diminished Colville Indian Reservation, in the State of Washington, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and directed, as hereinafter provided, to sell or dispose of unallotted lands in the diminished Colville Indian Reservation, in the State of Washington.

Sec. 2. That as soon as the lands embraced within the diminished Colville Indian Reservation shall have been surveyed, the Secretary of the Interior shall cause allotments of the same to be made to all persons belonging to or having tribal relations on said Colville Indian Reservation, to each man, woman, and child eighty acres, and, upon the approval of such allotments by the Secretary of the Interior, he shall cause patents to issue therefor under the provisions of the general allotment law of the United States.

Sec. 3. That upon the completion of said allotments to said Indians the residue or surplus lands that is, lands not allotted or reserved for Indian school, agency, or other purposes of the said diminished Colville Indian Reservation: shall be classified under the direction of the Secretary of the Interior as irrigable lands.

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 14

grazing lands, timber lands, mineral lands, or arid lands, and shall be appraised under their appropriate classes by legal subdivisions, with the exception of the lands classed as mineral lands, which need not be appraised, and which shall be disposed of under the general mining laws of the United States, and, upon completion of the classification and appraisal, such surplus lands shall be open to settlement and entry under the provisions of the homestead laws at not less than their appraised value in addition to the fees and commissions now prescribed by law for the disposition of lands of the value of one dollar and twenty-five cents per acre by proclamation of the President, which proclamation shall prescribe the manner in which these lands shall be settled upon, occupied, and entered by persons entitled to make entry thereof: Provided, That the price of said lands when entered shall be fixed by the appraisal, as herein provided for, which shall be paid in accordance with rules and regulations to be prescribed by the Secretary of the Interior upon the following terms: One-fifth of the purchase price to be paid in cash at the time of entry and the balance in five equal annual installments to be paid in one, two, three, four, and five years, respectively, from and after the date of entry, and in case any entryman fails to make the annual payments, or any of them, promptly when due all rights in and to the land covered by his or her entry shall cease, and any payments theretofore made shall be forfeited and the entry canceled, and the lands shall be reoffered for sale and entry: Provided further, That the lands remaining undisposed of at the expiration of five years from the opening of the said lands to entry shall be sold to the highest bidder for cash, at not less than one dollar per acre, under rules and regulations to be prescribed by the Secretary of the Interior, and that any lands remaining unsold ten years after the said lands shall have been opened to entry may be sold to the highest bidder for cash without regard to the above minimum limit of price.

Sec. 4. That the said lands shall be opened to settlement and entry by proclamation of the President, which proclamation shall prescribe the time when and the manner in which these lands may be settled upon, occupied, and entered by persons entitled to make entry thereof, and no person shall be permitted to settle upon, occupy, and enter any of said lands except as prescribed in such proclamation: Provided, That the rights of honorably discharged Union soldiers and sailors of the late Civil and Spanish Wars, as defined and described in sections twenty-three hundred and four and twenty-three hundred and five of the Revised Statutes, as amended by the act of March first, nineteen hundred and one, shall not be abridged.

Sec. 5. That all of said lands returned and classified as timber lands shall be sold and disposed of by the Secretary of the Interior under sealed bids to the highest bidder for cash or at public auction, as the Secretary of the Interior may determine and under such rules and regulations as he may prescribe.

Sec. 6. That the proceeds not including fees and commissions arising from the sale and disposition of the lands aforesaid, including the sums paid for mineral and town-site lands shall be after deducting the expenses incurred from time to time in connection with the allotment, appraisal, and sales, and surveys, herein provided, deposited in the Treasury of the United States to the credit of the Colville and confederated tribes of Indians belonging and having tribal rights on the Colville Indian Reservation, in the State of Washington, and shall be expended for

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 15

their benefit, under the direction of the Secretary of the Interior, in the education and improvement of said Indians, and in the purchase of stock cattle, horse teams, harness, wagons, mowing machines, horserakes, thrashing machines, and other agricultural implements, for issue to said Indians, and also for the purchase of material for the construction of houses or other necessary buildings and a reasonable sum may also be expended by the Secretary, in his discretion, for the comfort, benefit, and improvement of said Indians: Provided, That a portion of the proceeds may be paid to the Indians in cash per capita, share and share alike, if, in the opinion of the Secretary of the Interior, such payments will further tend to improve the condition and advance the progress of said Indians, but not otherwise.

Sec. 7. That any of said lands necessary for agency, school, and religious purposes, and any lands now occupied by the agency buildings and the site of any sawmill, gristmill, or other mill property on said lands are hereby reserved from the operation of this act: Provided, That all such reserved lands shall not exceed in the aggregate three sections and must be selected in legal subdivisions conformable to the public surveys, such selection to be made by the Indian agent of the Colville Agency, under the direction of the Secretary of the Interior and subject to his approval.

Sec. 8. That the Secretary of the Interior is hereby vested with full power and authority to make all needful rules and regulations as to the manner of sale, notice of same, and other matters incident to the carrying out of the provisions of this act, and with authority to reappraise and reclassify said lands if deemed necessary from time to time, and to continue making sales of the same, in accordance with the provisions of this act, until all of the lands shall have been disposed of.

Sec. 9. That nothing in this act contained shall be construed to bind the United States to find purchasers for any of said lands, it being the purpose of this act merely to have the United States to act as trustee for said Indians in the disposition and sales of said lands and to expend or pay over to them the net proceed derived from the sales as herein provided.

Sec. 10. That to enable the Secretary of the Interior to survey, allot, classify, appraise, and conduct the sale and entry of said lands as in this act provided the sum of seventy-five thousand dollars, or so much thereof as may be necessary, is hereby appropriated from any money in the Treasury not otherwise appropriated, the same to be reimbursed from the proceeds of the sales of the aforesaid lands: Provided, That when funds shall have been procured from the first sales of the land the Secretary of the Interior may use such portion thereof as may be actually necessary in conducting future sales and otherwise carrying out the provisions of this act.

Sec. 11. That nothing contained in this act shall prohibit the Secretary of the Interior from reserving from said lands, whether surveyed or unsurveyed, such tracts for town-site purposes, as in his opinion may be required for the future public interests, and he may cause any such reservations, or parts thereto be surveyed into blocks and lots of suitable size, and to be appraised and disposed of under such regulations as he may prescribe, and the net proceeds derived from the sale of such lands shall be paid to said Indians, as provided in section six of this

act.

Sec. 12. That if any of the lands of said diminished Colville Indian Reservation can be included in any feasible irrigation project under the reclamation act of June seventeenth, nineteen hundred and two, the Secretary of the Interior is authorized to withhold said lands from disposition under this act and to dispose of them under the said reclamation act, and the charges provided for by said reclamation act shall be in addition to the appraised value of said lands fixed as hereinbefore provided and shall be paid in annual installments as required under the said reclamation act, and the amounts to be paid for the land, according to appraisement, shall be credited to the fund herein established for the benefit of the Colville Indians.

Approved, March 22, 1906.

===

C. Allotments Within the Diminished Reservation to be Issued Under the Provisions of the General Allotment Laws and Sections 30 and 17 of the Act of June 25, 1910

(June 25, 1910, 36 Stat., 855-Sections 30 and 17)

Sec. 30. That section two of the act of March twenty-second, nineteen hundred and six, authorizing allotments on the Colville Indian Reservation, be, and the same hereby is, amended so as to authorize allotments to be made to Indians on the diminished Colville Reservation, in the State of Washington, entitled to allotments under existing laws in conformity with the general allotment laws as amended by section seventeen of this act.

===

Sec. 17. That so much of the Indian appropriation act for the fiscal year nineteen hundred and ten, approved March third, nineteen hundred and nine, as reads as follows, to wit: "That the Secretary of the Interior be, and he hereby is, authorized, under the direction of the President, to allot any Indian on the public domain who has not heretofore received an allotment, in such areas as he may deem proper, not to exceed, however, eighty acres of agricultural or one hundred and sixty acres of grazing land to any one Indian, such allotment to be made and patent therefor issued in accordance with the provisions of the act of February eighth, eighteen hundred and eighty-seven," be, and the same is hereby, repealed, and sections one and four of the act of February twenty-eighth, eighteen hundred and ninety-one (Twenty-sixth Statutes, page seven hundred ninety-four), be, and the same are hereby, amended to read as follows:

"Sec. 1. That in all cases where any tribe or band of Indians has been or shall hereafter be located upon any reservation created for their use by treaty stipulation, act of Congress, or Executive order, the President shall be authorized to cause the same or any part thereof to be surveyed or resurveyed whenever in his opinion such reservation or, any part thereof may be advantageously utilized for agricultural or grazing purposes by such Indians, and to cause allotment to each

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 17

Indian located thereon to be made in such areas as in his opinion may be for their best interest not to exceed eighty acres of agricultural or one hundred and sixty acres of grazing land to any one Indian. And whenever it shall appear to the President that lands on any Indian reservation subject to allotment by authority of law have been or may be brought within any irrigation project, he may cause allotments of such irrigable lands to be made to the Indians entitled thereto in such areas as may be for their best interest not to exceed, however, forty acres to any one Indian, and such irrigable land shall be held to be equal in quantity to twice the number of acres of non-irrigable agricultural land and four times the number of acres of non-irrigable grazing land: Provided, That the remaining area to which any Indian may be entitled under existing law after he shall have received his proportion of irrigable land on the basis of equalization herein established may be allotted to him from non-irrigable agricultural or grazing lands: Provided further, That where a treaty or act of Congress setting apart such reservation provides for allotments in severalty in quantity greater or less than that herein authorized, the President shall cause allotments on such reservations to be made in quantity as specified in such treaty or act subject, however, to the basis of equalization between irrigable and non-irrigable lands established herein, but in such cases allotments may be made in quantity as specified in this act, with the consent of the Indians expressed in such manner as the President in his discretion may require."

"Sec. 4. That where any Indian entitled to allotment under existing laws shall make settlement upon any surveyed or unsurveyed lands of the United States not otherwise appropriated, he or she shall be entitled, upon application to the local land office, for the district in which the lands are located, to have the same allotted to him or her and to his or her children in manner as provided by law for allotments to Indians residing upon reservations, and such allotments to Indians on public domain as herein provided shall be made in such areas as the President may deem proper, not to exceed, however, forty acres of irrigable land or eighty acres of nonirrigable agricultural land or one hundred sixty acres of non-irrigable grazing land to any one Indian; and when such settlement is made upon unsurveyed lands the grant to such Indians shall be adjusted upon the survey of the lands so as to conform thereto and patent shall be issued to them for such lands in the manner and with the restrictions provided in the act of which this is amendatory. And the fees to which the officers of such local land office would have been entitled had such lands been entered under the general laws for the disposition of the public lands shall be paid to them from any moneys in the Treasury of the United States not otherwise appropriated, upon a statement of an account in their behalf for such fees by the Commissioner of the General Land Office, and a certification of such account to the Secretary of the Treasury by the Secretary of the Interior."

**ALL NON-MINERAL, UNALLOTTED AND UNRESERVED LANDS
WITHIN**

**THE DIMINISHED COLVILLE RESERVATION, CLASSIFIED AS
IRRIGABLE LANDS, GRAZING LANDS, OR ARID LANDS, SHALL BE
DISPOSED OF AND SHALL BE OPENED FOR SETTLEMENT.**

(Proclamation dated May 3, 1916, 39 Stat., 1778)

BY THE PRESIDENT OF THE UNITED STATES.
A PROCLAMATION

I, Woodrow Wilson, President of the United States of America, by virtue of the power and authority vested in me by the Act of Congress approved March 22, 1906 (34 Stat. L., 80) do hereby prescribe, proclaim, and make known, that all the non-mineral, unallotted and unreserved lands within the diminished Colville Indian Reservation, in the State of Washington, classified as irrigable lands, grazing lands, or arid lands, shall be disposed of under the general provisions of the homestead laws of the United States and of the said Act of Congress, and shall be opened to settlement and entry and settled upon, occupied, and entered only in the manner herein prescribed: Provided, That all lands classified as timber or mineral, all lands designated for irrigation by the Government, and all lands within the following townships and parts of townships shall not be disposed of under this proclamation:

Townships 31, 32, 33, and 34 north, range 35 east; township 30 north, range 31 east; township 31 north, range 30 east; north half of township 31 north, range 28 east; townships 32, 33, and 34 north, range 28 east; south half and south half of north half of township 33 north, range 27 east; and fractional part north and east of Lake Omache of township 32 north, range 27 east.

1. A registration for the lands will be conducted at the cities of Spokane, Wenatchee, Colville, Wilbur, Republic and Omak, Washington, beginning July 5, and ending July 22, 1916, Sunday excepted, under the supervision of John McPhaul, Superintendent of the opening. Any person qualified to make entry under the general provisions of the homestead law may register.

2. Any person who was honorably discharged after at least ninety days service in the United States Army, Navy or Marine Corps, during the Civil War, the Spanish-American War or the Philippine Insurrection (or the widow or minor orphan children of such person) may register either in person or by agent. Other persons will not be permitted to register by agent. No person shall present more than one application in his own behalf and one as agent.

Each application for registration must show the applicant's name, postoffice address, age height and weight, and must be inclosed in an envelope bearing no distinctive marks or any paper other than the application. No envelope shall contain more than one application.

3. Each applicant must himself sign and swear to his application on or after July 5, and not later than July 22, 1916, at Spokane, Wenatchee, Colville, Wilbur, Republic or Omak, Washington, before a notary public designated by the Superintendent: Except a soldier's or sailor's application and power of attorney appointing an agent may be signed and sworn to by the applicant at any time after the date hereof and prior to the close of the registration, but the agent must sign and swear to the application during the time, at one of the places and in the manner herein prescribed for the execution, of other applications. After applications have been properly executed they must be delivered to the Superintendent or to some

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION Page 19

person designated by him to receive them.

4. Beginning at 10 o'clock a.m. on July 27, 1916, at the said city of Spokane and continuing thereafter from day to day, Sundays excepted, as long as may be necessary, there shall be impartially taken and selected indiscriminately from the whole number of envelopes presented, such number thereof as may be necessary to carry the provisions of this proclamation into effect, and the applications for registration contained in the envelopes so selected, shall when correct in form and execution, be numbered serially in the order in which they were selected, beginning with number one, and the numbers thus assigned shall fix and control the order in which the persons named therein may make entry of the lands.

5. A list of the successful applications showing the number assigned to each will be conspicuously posted and furnished to the press for publication as a matter of news and a proper notice will be promptly mailed to each of these applicants.

6. Beginning at 9 o'clock a.m., on September 5, 1916, and continuing thereafter on such dates as may be fixed by the Secretary of the Interior, persons holding numbers assigned to them under this proclamation will be permitted to select and enter the tracts they desire as follows: A map room will be established at such place as shall be decided upon by the Secretary of the Interior, where numbers assigned will be called in their numerical order. When an applicant's number is called, he must at once select the tract he desires to enter and will be allowed ten days following the date of selection within which to complete entry at the proper land office. During such period he must file a homestead application at the land office, accompanying the same with the usual filing fees and commissions and in addition thereto one-fifth of the appraised value of the tract selected. If the lands are in the Spokane, Washington, land district, entry must be made at the Spokane land office; if in the Waterville, Washington, land district, entry must be made at the Waterville land office. To save the expense incident to a trip to the land and to return to the land office, he may, following his selection, execute his homestead application for the tract selected within the land district and file same in the land office, where it will be held awaiting the payment of the fees and commissions and one-fifth of the appraised value of the land. In that event, the payment must be made within ten days following the date of selection. Payments can be made only in cash, by certified checks on national and state banks and trust companies, which can be cashed without cost to the Government, or by postoffice money orders made payable to the receiver of the land office. These payments may be made in person, through the mails or any other means or agency desired, but the applicant assumes all responsibility in the matter. He must see that the payments reach the land office within the ten days allowed, and where failure occurs in any instance where the application has been filed in the land office without payment, as herein provided for, the application will stand rejected without further action on the part of the local officers.

In case of declaratory statements, allowable under this opening, the same course may be pursued, except that the filing fees must be paid within the ten days following date of selection, the party having six months after filing within which to complete entry. Soldiers or sailors or their widows or minor orphan children making homestead entry of these lands must make payment of fees, commissions and purchase money as is required of other entrymen.

10. THE LAST IMPORTANT LEGISLATION AFFECTING THE COLVILLE RESERVATION WAS THE ACT OF JULY 24, 1956, 70 STAT., 626 and 627 KNOWN AS PUBLIC LAW NO. 772. IT RESTORED TO TRIBAL OWNERSHIP APPROXIMATELY 818,277 ACRES OF UNDISPOSED OR SURPLUS LANDS WHICH WERE CREATED UNDER THE ACT OF MARCH 22, 1906.

(P.L. 772, 70 Stat., 626 & 627 dated July 24, 1956)

Restoring to tribal ownership certain lands upon the Colville Indian Reservation, Washington and for other purposes. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the undisposed-of lands of the Colville Indian Reservation, Washington, dealt with by the Act of March 22, 1906 (34 Stat. 80), are hereby restored to tribal ownership to be held in trust by the United States to the same extent as all other tribal lands on the existing reservation, subject to any existing valid rights.

Sec. 2. For the purpose of effecting land consolidations between the Colville Indians and nonindians in Ferry and Okanogan Counties, the Secretary of the Interior is hereby authorized, with the consent of the tribal council as evidenced by a resolution adopted in accordance with the constitution and bylaws of the tribe, under such regulations as he may prescribe, to sell or exchange tribal lands in connection with the acquisition of lieu lands, and to acquire through purchase, exchange, or relinquishment, lands or any interest in lands, water rights, or surface rights. The acquisition of lands pursuant to this Act shall be limited to lands within the boundary of the reservation. Exchanges of lands, including improvements thereon, shall be made on the basis of approximate equal value. In carrying out the provisions of this Act, if non-Indian lands are involved the board of county commissioners of counties in which land is located shall by proper resolution consent before such nonindian land is acquired for the tribe or an individual Indian. No lands or interests in lands owned by the Confederated Tribes of the Colville Reservation shall be subject to disposition hereafter without the consent of the duly authorized governing body of the tribes, and no lands or interests in lands shall be acquired for the tribes without the consent of the said governing body.

Sec. 3. Title to lands or any interest therein acquired pursuant to this Act shall be taken in the name of the United States of America in trust for the tribe or individual Indian and shall be nontaxable as other tribal and allotted trust Indian lands of the Colville Reservation.

Sec. 4. The agreement entered into by the Confederated Tribes of the Colville Reservation and Okanogan and Ferry Counties of the State of Washington on April 21, 1954, is hereby ratified and approved.

Sec. 5. The Business Council of the Confederated Tribes of the Colville Reservation shall, in accordance with resolution numbered 1955-33, dated April 8, 1955, of the Colville Business Council, submit to the Secretary of the Interior within five years from the date of enactment of this Act proposed legislation providing for the termination of Federal supervision over the property and affairs of the Confederated Tribes and their members within a reasonable time after the submission of such proposed legislation.

Approved July 24, 1956.

BRIEF LAND HISTORY OF THE COLVILLE INDIAN RESERVATION

