US Army Corps of Engineers
Walla Walla District

Lower Snake River Juvenile Salmon Migration Feasibility Study

Draft Social Analysis Report

Prepared by
Foster Wheeler Environmental Corporation

June 1999

Predecisional Documentation
For Information Purposes Only - Not For Comment

FOREWORD

This document is the product of the US Army Corps of Engineers' (Corps) efforts to involve the region in the development of the *Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement (FR/EIS)*. The Corps has reached out to regional stakeholders (states, tribes, Federal agencies, organizations, and individuals) for the input and development of various work products. This and various other products associated with the development of the EIS process, the opinions and/or findings expressed herein do not necessarily reflect the official policy or position of the Corps. The Corps will review and incorporate information from these products into the analysis and development of the Draft FR/EIS

In addition, this analysis is only one part of the overall Economic Appendix of the EIS. Other critical components of the economic analysis include power, water supply, recreation, regional, and tribal impacts. For a true economic analysis of the implications of any of the study alternatives, economic costs and benefits of all the components of the analysis must be considered, but without any individual component taken out of context.

This document is being released for **information purposes only.** The Corps will not be responding to comments at this time. The formal comment period will coincide with the release of the Draft FR/EIS, expected in Fall 1999.

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Acronyms

BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
BoR	Bureau of Reclamation
BPA	Bonneville Power Administration
CCC	Civilian Conservation Corps
Corps	U.S. Army Corps of Engineers
CRITFC	Columbia River Inter-Tribal Fish Commission
CRP	Conservation Resource Program
DREW HIT	Drawdown Regional Economic Workgroup Hydropower Impact Team
ESA	Endangered Species Act
EWITS	Eastern Washington Intermodal Transportation Study
Feasibility Study	Lower Snake River Juvenile Salmon Migration Feasibility Study
FEMAT	Forest Ecosystem Management Assessment Team
HDR	HDR Engineering, Inc.
ICBEMP	Interior Columbia Basin Ecosystem Management Project
I-O	Input-Output Model
M&I	Municipal and Industrial
NED	National Economic Development
NMFS	National Marine Fisheries Service
P&G	Principles and Guidelines
PATH	Plan for Analyzing and Testing Hypotheses
Potlatch	Potlatch Corporation
PUD	Public Utilities District
SBC	Surface Bypass Collector
SOR	System Operation Review
USDA	U.S. Department of Agriculture

1. Introduction

1.1 Organization of the Report

This report is divided into five sections. Section 1 details the purpose, scope, methodology, and assumptions that guide this study. Existing and historic socioeconomic conditions are described in Section 2. Information is provided at the regional and community scale with emphasis also placed on selected focus communities. Section 3 describes the potential social impacts across the region and across time under each of the proposed alternatives. Section 4 projects potential social impacts for each of the focus communities under consideration and compares these community level social impacts across the alternatives. Section 5 discusses potential social mitigation activities and provides preliminary cost estimates.

1.2 Purpose

The purpose of this Social Analysis Report is to examine the range of potential social impacts that may occur as a result of actions designed to recover wild salmon populations on the lower Snake River through the Lower Snake River Juvenile Salmon Migration Feasibility Study (Feasibility Study). This report focuses on the potential community level impacts resulting from changes in the local and regional biological, economic, and physical environment. While other reports addressing the economic impacts of the proposed alternatives focus on national economic development (NED), this report attempts to outline the distributional and equity effects on specific communities within the broader regional context. Communities are the focus of this report because it is at this level that social impacts resulting from resource policy changes may be most keenly felt (Force and Machlis, 1997). This study has been designed to meet the requirements specified in the U.S. Army Corps of Engineers (Corps) 1983 *Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&G). The key issues addressed include the following:

- what the social impacts will be and when (timing);
- who will be affected;
- how they will be affected (beneficial/adverse);
- how much they will be affected; and
- how the communities may respond.

By answering these questions through the use of qualitative and quantitative data, the social analysis provides a greater understanding of the anticipated impacts and highlights the need for and location of potential mitigation measures. Uncertainty exists throughout this analysis because of the uniqueness of the proposed actions and the unknown nature of how markets, communities, and political entities will respond to the implementation of these actions, particularly the natural river drawdown alternative. The degree and magnitude to which the proposed alternative will affect communities throughout the region depends in large part on how these communities respond to potential and actual changes.

1.3 Scope

The scope of the analysis in this report covers the potential social impacts associated with the four main alternatives under consideration by the Corps. These alternatives include the base case or existing condition (A1), existing conditions with maximum transport (A2a), major system improvements (A2c), and natural river drawdown or dam breaching (A3). The effects on the human environment of A2a and A2c do not differ significantly and therefore will be referred to as A2 unless a distinction is made.

The geographic scope of the analysis will be limited to communities within the lower Snake River region (Figure 1). This region includes the counties listed in Table 1 and the communities listed in Table 2. For the purpose of analysis, the potentially affected lower Snake River region was divided into three subregions: downriver, reservoir, and upriver. The counties that comprise these subregions and the combined lower Snake River study area are identified in Table 1. Three distinct subregions were created to better understand the differential effects of the proposed alternatives. For a more complete description of the definition, justification, and delineation of the subregions see the Regional Economic Report (AEI, 1999).

Figure 1 - Study Subregions and Focus Communities

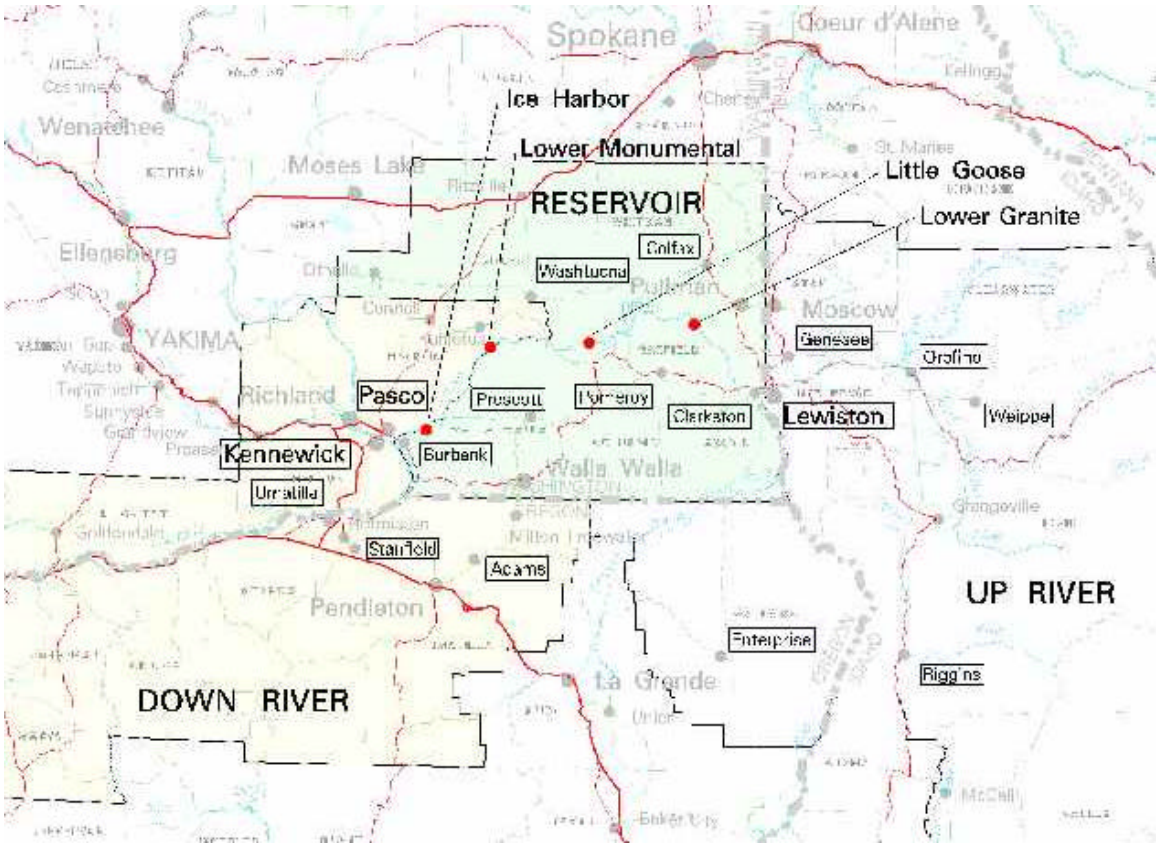


Table 1
Regional Analysis Study Area

Downriver Subregion	Reservoir Subregion	Upriver Subregion
Oregon	**Washington**	**Idaho**
Gilliam	Adams	Clearwater
Hood River	Asotin	Custer
Morrow	Columbia	Idaho
Sherman	Franklin	Latah
Umatilla	Garfield	Lemhi
Wasco	Walla Walla	Lewis
	Whitman	Nez Perce
Washington		Valley
Benton		**Oregon**
Klickitat		
Skamania		Wallowa

There are three distinct time phases to this analysis. Impacts do not occur just during the most intensive phases of project implementation but also before and after implementation (Grambling and Freudenburg, 1992). The first phase includes the planning and decision-making period of the Feasibility Study from the initiation of the feasibility study and Environmental Impact Statement (EIS) scoping to the final selection of a preferred alternative. The second phase includes the implementation phase, proposed from the years 2002 to 2012 depending on the alternative selected (Corps Implementation Report, 1999). The third phase includes the post-implementation social effects. Potential community level impacts will be examined across these three phases but are limited to an overall study period of 20 years.

The scope of this social analysis does not provide a comprehensive assessment of all the communities within the defined study region. Nor are the communities selected for this analysis representative of all communities in the region. Rather, the intent of the study is to provide decision-makers with information regarding the various impacts across a range of communities likely to be affected by the proposed alternatives. Tribal

communities are not examined as part of this study. A study entitled, *Tribal Circumstances,* prepared by the Columbia River Inter-Tribal Fish Commission (CRITFC), documents the potential social, cultural and economic effects of the proposed alternatives on tribal populations (Meyer, 1999).

1.4 Methodology and Assumptions

In order to address the key study questions, the following steps were taken to obtain reliable information on potential social impacts: 1) develop an understanding of the issues raised in the original scoping conducted by the Corps in 1995 and through the public information meetings conducted by the Corps during this study, 2) select key focus communities to capture the range of possible direct impacts, 3) select appropriate social indicators for the types of anticipated social impacts, 4) describe the trends and history of the region and case study communities, and 5) develop estimates of potential impacts, the magnitude of these impacts, and the range of community responses. This analysis is supplemented by information obtained through a series of interactive community forums, which included each of the focus communities. The community forum information includes each community's perceptions of its history, an assessment of its current situation, and a projection of potential social impacts under each of the proposed alternatives. The data sources and methods for each step are described in the following sections.

1.4.1 Selection of Focus Communities

Secondary data sources, including the 1990 Census of Population and Housing and the 1992 Census of Agriculture, as well as preliminary impacts identified by the Drawdown Regional Economic Workgroup (DREW) study teams, were consulted to evaluate communities for inclusion as focus communities. The study team examined the potential impacts of the three alternatives under consideration to identify a group of focus communities that met the following criteria:

- Communities that might experience large potential impacts (positive or negative) as a result of the project alternatives; and
- Communities that are diverse in size, economic activity, and potential socioeconomic impacts (level, type, and timing of impacts).

Table 2 lists the communities selected as focus communities for this study.

Table 2
Selected Focus Communities

Reservoir	Clarkston, WA	6,860	Medical Services, Wholesale & Retail Trade	Navigation, Implementation, Recreation, A-Fish, Power
	Colfax, WA	2,865	Agriculture, Sate/Local Government, Wholesale & Retail Trade	Transportation, Recreation
	Pomeroy, WA	1,475	Agriculture, State/Local/Federal Government	Navigation, Recreation, Implementation
Downriver	Kennewick, WA	48,010	Wholesale & Retail Trade, Services, F.I.R.E.	Navigation, Recreation, Irrigation, Implementation, Power
	Pasco, WA	22,370	Agriculture, Transportation	Navigation, Recreation, Irrigation, Implementation, Power
	Umatilla, OR	3,155	Agriculture, State/Local/Federal Government	Recreation, Navigation, Irrigation
Upriver	Lewiston, Idaho	30,271	Manufacturing, Wholesale & Retail Trade	Navigation, Implementation, A-Fish, Power, Recreation
	Orofino, ID	3,122	Timber, Agriculture, State/Local/Federal Government	A-Fish
	Riggins, ID	495	Travel & Tourism, Agriculture, State/Local/Federal Government	Recreation, A-Fish

A-Fish: Anadromous Fish
F.I.R.E.: Finance, Insurance, and Real Estate

1.4.2 Selection of Social Indicators

Social indicators were identified with the intent of providing basic facts about the focus communities and providing a baseline from which to assess and predict potential social impacts resulting from the proposed alternatives. Social indicators are secondary sources of information, collected over time that provide an integrated picture of the social and economic dimensions of the focus communities.

Social indicators are addressed at both the county and community level. It should be noted that because of recent changes in census methodology not all indicators are available for all communities across time. This is particularly the case with smaller communities. If 1995 or 1996 data were not available at the community level, 1990 community Census data were used rather than more recent county level data because county level data may not reflect community level facts. These limitations are noted, as appropriate, in the baseline profiles developed for each community.

The study team selected social indicators by reviewing the literature on social indicators in natural resource management (US Department of Commerce, 1994; Burch and DeLuca, 1984; Machlis and Wright, 1984; Rossi and Gilmartin, 1980; and Burge, 1994) and considering the issues raised in the System Operation Review (SOR) EIS and the potential impacts identified during the scoping process and public information meetings related to this present study. The selected indicators were organized into four thematic areas: People, the Economy, Place, and Vision and Vitality. The People (Demographics) dimension relates to the characteristics of individuals or households in the community and changes. The Economic (Jobs and Wealth) dimension relates to the major businesses and sources of jobs in the community. The Place (Character) dimension refers to the built and natural environment of the community. The Vision and Vitality (Organization and Leadership capacity) dimension refers to the characteristics of the community's social organizations and ability to get things done.

1.4.3 Development of Baseline Profiles of Focus Communities

The following baseline profiles briefly describe each community's geographic location in relation to the lower Snake River, and identify historic and current conditions based on the selected social indicators. These profiles, based on secondary data, are reinforced and enriched with the self-assessment information gathered through the community forum process.

1.4.4 Identification of Potential Economic, Physical, and Biological Impacts

A thorough review of the reports developed by the various Corps and National Marine Fisheries Service (NMFS) workgroups provided the information critical in determining the projected impacts on the human environment. Reports reviewed include the following: Anadromous Fish Economics, Anadromous Fish Biology, Water Supply, Recreation, Air Quality, Water Quality, Transportation, Power, Implementation, Mitigation, Regional Economics, and Flood Control. Wherever possible, study team leaders were consulted to further allocate and identify the geographic distribution of impacts at the local level. It is important to note that the identified potential changes are not limited to economics but also the effects of physical and biological changes upon the human environment.

1.4.5 Evaluating the Significance of Potential Impacts

The significance of potential impacts was evaluated in four different ways. First, the employment and income impacts at the subregion level from the input-output (I-O) model were allocated and estimated for each of the focus communities based on the criteria outlined in Section 4. These impacts were evaluated based on the relative changes they represent for each study community and are reported as negative or positive. Attention was paid to how special populations (poor, minority, and elderly) would be affected. Second, other non-economic changes that might result from the projected economic, physical, and biological impacts were identified and allocated to each of the focus communities. Determination of the significance of impact was limited to negative, positive, or unable to determine. Third, by consulting the literature on how rural communities are affected by social and economic changes and their possible responses to these changes, we present a comparative evaluative method for understanding the scope and dimensions of potential social impacts. Finally, the issues raised during the course of public involvement and through the community interactive forums provide a community perspective on the significance of potential impacts and possible community responses.

A summary of the impacts across alternatives was prepared describing who will be affected, how they will be affected, and when they will be affected.

1.4.6 Determination of Mitigation Measure

Mitigation measures for potential jobs losses identified through the I-O model were examined, as well as potential measures for non-direct job losses and community social impacts. A review was conducted of recent Federal natural resource policy decisions and mitigation, as well as other employment mitigation programs, to estimate the content and budgetary scope of these programs. Additionally, community members who attended the community interactive forums listed potential mitigation measures for their community.

2. Characterization of Study Region and Communities

2.1 Regional Overview/Trends

The social resources of communities located in the vicinity of the lower Snake River will be affected by the proposed action. These effects would be felt primarily within communities in the immediate vicinity of the lower Snake River. Effects would also be felt in nearby upland areas that draw water supplies from the river and more distant commodity production areas that rely on the river for transportation. The proposed action also has the potential to generate indirect economic effects throughout the region. Potential sources of indirect regional economic effects include changes in recreational activities, commercial fisheries, navigation, and power. The following sections discuss regional trends in population, income and employment, poverty, age, race, industry specialization, and land tenure. For ease of presentation, trends are discussed at the subregional level (see Table 1). Reference is made to individual counties, as appropriate.

2.1.1 Population

The majority of the area surrounding the lower Snake River is sparsely populated. The total population of the study area was approximately 582,124 in 1995 (Table 3). Population is distributed unevenly among the 25 counties and three subregions that comprise the study area. The downriver subregion, which extends from the confluence of the Snake and Columbia rivers to below Bonneville Dam, is the most populated, accounting for 278,429 or approximately 48 percent of the study region’s 1995 population (Table 3). More populated counties in the region include Benton (133,070) and Walla Walla (52,982) counties in Washington, and Umatilla County, Oregon (64,040). These counties accounted for 22.9 percent, 9.1 percent, and 11.0 percent of the 1995 study area population, respectively.

Table 3
Population By Subregion
1970-95

	Total Population				Percent Change		
	1970	1980	1990	1995	1970-1980	1980-1990	1990-1995
Downriver	172,712	241,361	246,560	278,429	39.7	2.2	12.9
Reservoir	139,055	159,178	162,167	178,739	14.5	1.9	10.2
Upriver	101,292	114,968	114,212	124,951	13.5	-0.7	9.4
Total	413,059	515,507	522,939	582,119	24.8	1.4	11.3

Source: Bureau of Census, 1970, 1980, 1990; State Estimated, 1995

During the 1970's, the States of Washington, Oregon, and Idaho experienced respective population growth rates of 21.1 percent, 25.9 percent, and 32.4 percent. The overall study area population increased by 102,448 people or 24.8 percent over this period. Although most study area counties reported population increases during this decade they were for the most part smaller than their respective state averages. The downriver subregion grew most rapidly and also experienced the highest absolute population increase due in part to expanding irrigated agriculture and expanded activity at the Hanford Reservation, which is located in Benton County, Washington. Benton County, Washington in the downriver subregion accounted for 41 percent of the total study area population increase during this decade. Umatilla County, Oregon, also in the downriver subregion, represented approximately 14 percent of this total increase. Franklin County, Washington in the reservoir subregion accounted for about 9 percent of total population growth in the study area.

The study area experienced a more modest growth rate of 1.4 percent during the 1980s, with 11 of the 25 study area counties experiencing net-outmigration. Population in the downriver and reservoir subregions grew by just 2.2 and 1.9 percent, respectively, while population in the upriver subregion decreased by 0.6 percent due in part to the decrease in federal timber supply and forest workers. None of the counties in the study

area had growth rates that exceeded their respective state averages, which were 17.8 percent, 8 percent, and 6.7 percent for the states of Washington, Oregon, and Idaho, respectively. The modest population increase for the study area as a whole also reflects the relatively small growth rates in the more populated study area counties. The population of Benton County, which increased by 62 percent over the preceding decade, increased by just 2.8 percent between 1980 and 1990.

All but one of the study area counties reported population growth between 1990 and 1995. Benton County accounted for approximately 35 percent of the net study area increase of 59,165 or 11.3 percent. Population growth rates in the subregions ranged from 9.4 percent in the upriver subregion to 12.9 percent in the downriver subregion. Population in the reservoir subregion increased by 10.2 percent over this period. The states of Washington, Oregon, and Idaho experienced corresponding respective growth rates of 11.6 percent, 10.5 percent, and 15.5 percent. The reservoir counties of Adams, Asotin, and Franklin all experienced population increases greater than 10 percent over this period. Valley County, Idaho in the upriver subregion experienced the most significant growth rate in the study area with a population increase of 28.9 percent. Lemhi and Lewis counties, Idaho, in the upriver subregion also grew by more than 10 percent over this period.

2.1.2 Income and Employment

Per Capita Income

Average per capita income in the 25 county study area was $17,570 in 1995, with little variation across the three subregions (Table 4). The states of Washington, Oregon, and Idaho had respective per capita incomes of $23,974, $21,915, and $19,199 in 1995. U.S. per capita income in 1995 was $23,359. Viewed in 1995 dollars, per capita income increased in the study area and all three subregions during the 1970s and ranged in 1980 from $15,732 in the upriver subregion to $21,287 in the downriver region. Since 1980, however, this figure has declined in both the downriver and reservoir subregions, while the upriver subregion has experienced modest increases (Table 4). In 1995 per capita income in the 25 study area counties ranged from $14,576 in Morrow County, Oregon in the downriver subregion to $22,058 in Benton County, Washington also in the downriver subregion.

Table 4
Per Capita Income By Subregion
1970-95

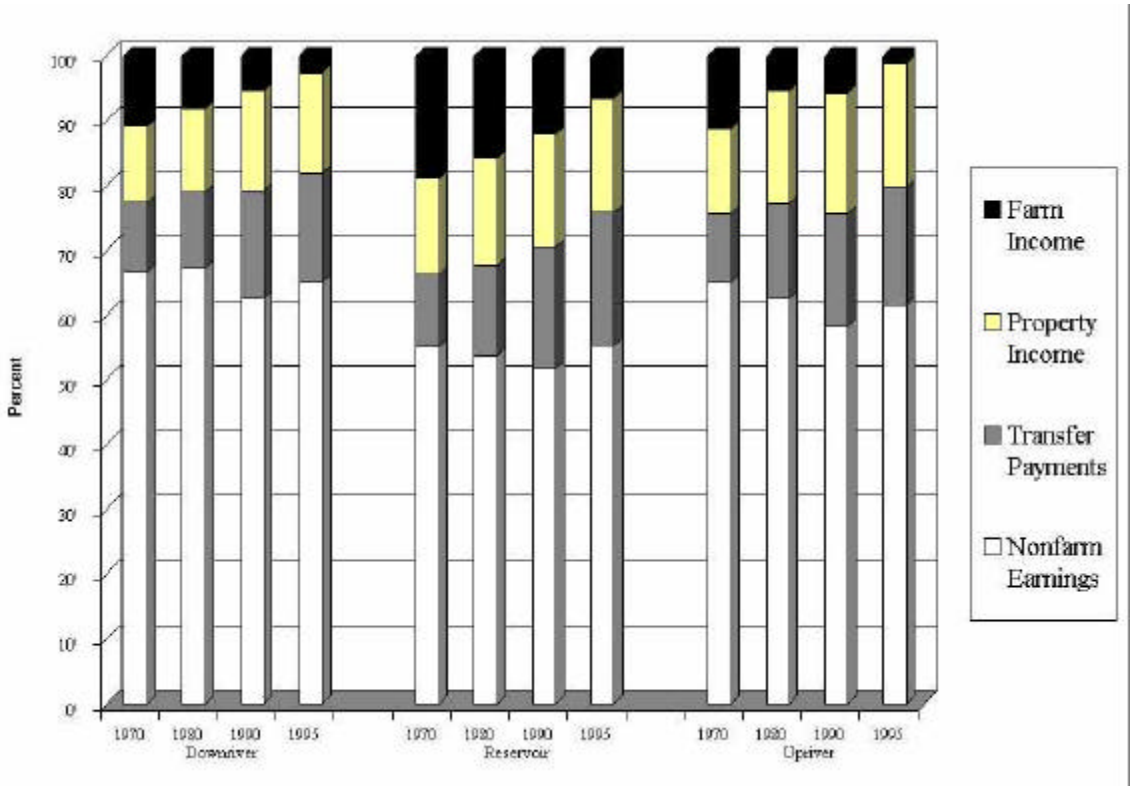
	1970	1980	1990	1995
Downriver	15,490	21,287	19,167	17,332
Reservoir	15,906	19,566	18,916	17,760
Upriver	13,173	15,732	17,590	17,661
Study Area	14,772	18,805	18,529	17,570

Source: Bureau of Economic Analysis (BEA), 1995

Sources of Personal Income

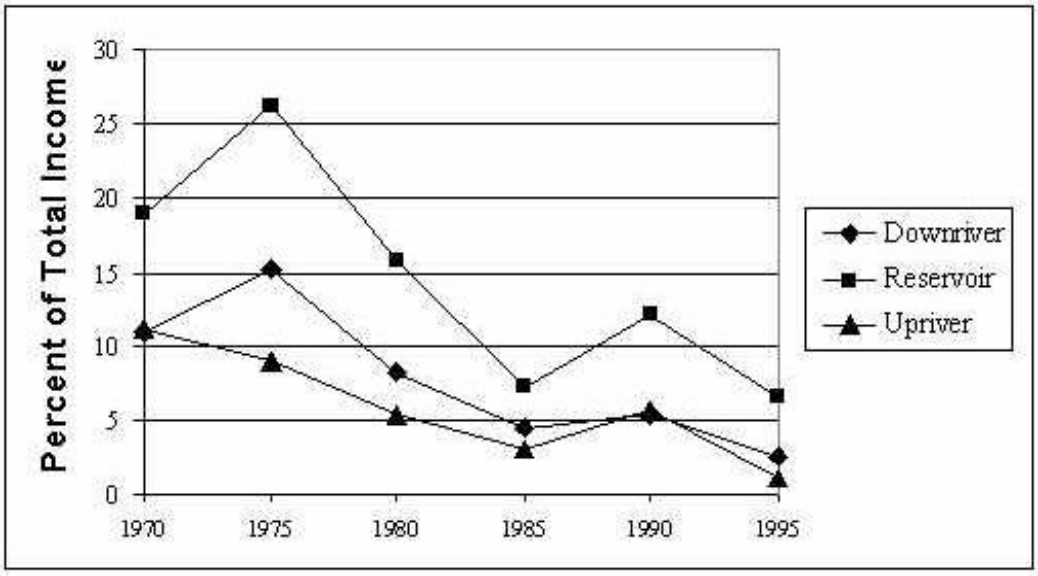
Non-farm earnings are the largest source of personal income in all three subregions. In 1995, non-farm earnings as a percentage of total personal income ranged from 55.3 percent in the reservoir subregion to 65 percent in the downriver subregion (Figure 2). The remaining components of personal income are transfer payments, property income, and farm income. Transfer payments have increased as a percentage of total income in all subregions since 1970. Property income has also increased across the board but at more modest rates (Figure 2).

Figure 2. Income by Subregion, 1970-1995



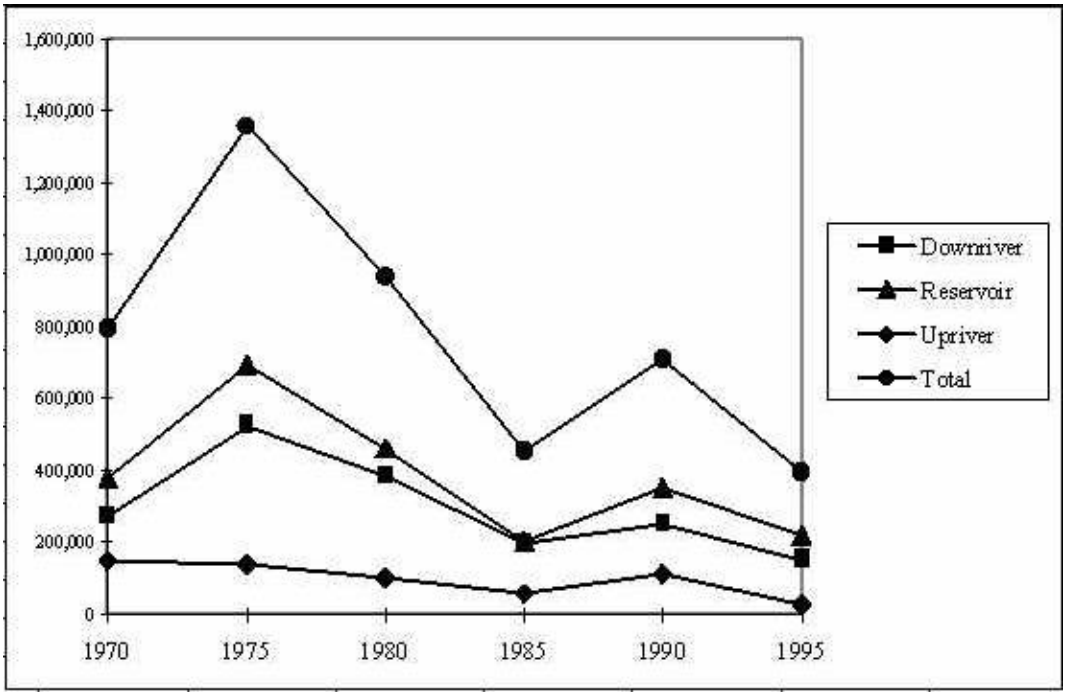
Farm income as a portion of total income has fluctuated in all three subregions since 1970 but has consistently comprised a larger share of total income in the reservoir subregion than it does in the upriver and downriver subregions (Figure 3). Farm income is also larger in absolute terms in the reservoir subregion (Figure 4).

Figure 3. Farm Income as a Percentage of Total Income by Subregion, 1970-95



Source: BEA, 1999

Figure 4. Total Farm Income by Subregion, 1970-95 (1995, thousands of dollars

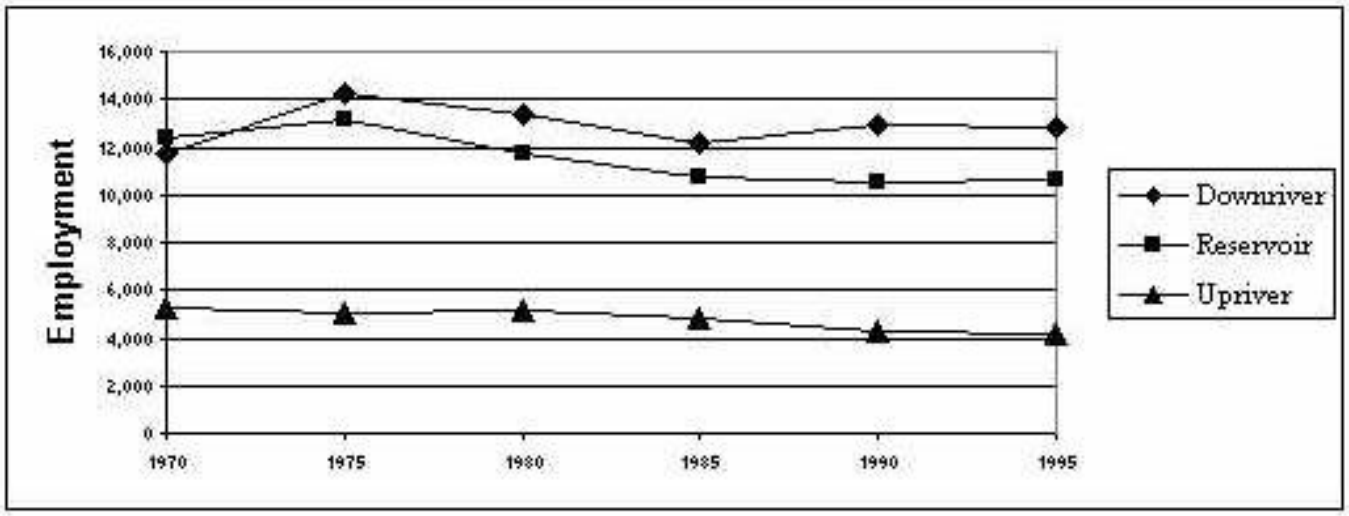


Source: BEA, 1999

Farm income from 1970 to 1995, both as a portion of total income and in absolute terms, exhibits similar trends in all three subregions, with peaks in 1975 and, to a lesser extent, in 1990 (Figures 3 and 4). Troughs are evident in 1985. Farm income increased between 1985 and 1990 but has since been declining. In 1995, farm income, viewed in constant dollars at five-year intervals, reached its lowest point during the 25 year study period in all three subregions. In absolute dollars, 1995 farm income in the upriver subregion had declined to just 25 percent of its 1990 amount. The corresponding figures in the downriver and reservoir subregions were 60.4 and 62.1 percent, respectively.

Fluctuations are even more noticeable at the county level, with six of the 25 study area counties recording negative farm income values in 1995. Four of these six counties are located in the upriver subregion; the other two are part of the downriver subregion. All but one of the 25 study area counties, Benton County, Washington, which is part of the downriver subregion, experienced an absolute decrease in farm income between 1990 and 1995. Farm employment, by contrast, stayed relatively constant between 1990 and 1995 in all three subregions, actually increasing slightly in the reservoir subregion. In general, farm employment followed the same trends as farm income between 1970 and 1995 (Figure 5). Employment is discussed in more detail in the following section.

Figure 5. Farm Employment by Subregion, 1970-95



Source: BEA, 1999

Employment

The economy of the Pacific Northwest has undergone substantial change over the past three decades. In terms of job formation it has grown much faster than the nation as a whole with total employment in the states of Washington, Oregon, and Idaho increasing by more than 210 percent. Jobs in the 25 county study area increased by about 74 percent from 1970 to 1995 (Table 5). The total number of jobs in both the region and the study area has increased even as employment in historically important job sectors, such as manufacturing, logging, mining, and farming and ranching has declined or remained stagnant. At the aggregate level, employment in the study area increased in nearly all sectors between 1970 and 1995. Exceptions include the farm and military sectors, both of which experienced an absolute decline in the numbers employed. Employment in service industries has increased significantly. These increases include gains in recreation and tourism, business, education, and management and engineering services. The study area also experienced large gains in the retail trade and state and local government sectors. Growth was also evident in the wholesale trade and the finance, insurance and real estate sectors (Table 5).

Table 5
Employment in the 25 Study Counties
1970-95

	1970		1995		Change 1970-95	
	Employed	Percent	Employed	Percent	Change in Employment	Percent Change
Total full- and part-time employment	183,686		318,740		135,054	73.5
Farm employment	29,417	16.0	27,625	8.7	-1,792	-6.09
Non-farm employment	154,269	84.0	291,115	91.3	136,846	88.7
Ag. Serv., forestry, fishing, other	1,894	1.2	7,721	2.7	5,827	308.0
Mining	430	0.3	738	0.3	308	71.6
Construction	8,238	5.4	14,715	5.1	6,477	78.6
Manufacturing	24,343	15.9	30,955	10.8	6,612	27.2
Transportation and public utilities	7,745	5.0	11,726	4.1	3,981	51.4
Wholesale trade	4,580	3.0	10,540	3.7	5,960	130.0
Retail trade	26,732	17.4	53,079	18.6	26,347	98.6
Finance, insurance, and real estate	8,184	5.3	13,290	4.6	5,106	62.4
Services	32,948	21.5	83,390	29.2	50,442	153.0
Government and government enterprises	38,376	25.0	59,740	20.9	21,364	55.7
Federal, civilian	6,444	4.2	7,133	2.5	689	10.7
Military	3,570	2.0	2,581	1.0	-989	-27.7
State and local	28,362	18.5	50,003	17.5	21,641	76.3

Source: BEA, 1999

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These patterns appear to be broadly similar across all three subregions, with absolute increases in all sectors with the exception of the farm and military sectors in the reservoir and upriver subregions and the mining sector in the downriver subregion. Employment in the farm sector declined by 14.1 and 20.9 percent in the reservoir and upriver subregions, respectively. The downriver subregion, by contrast, experienced a 9 percent increase in farm employment. A simple comparison between the two years, 1970 and 1995, may, however, mask substantial fluctuations in the intervening period. This is evident, for example, in the farm employment trends presented by subregion in Figure 5.

Total full-time and part-time employment increased most rapidly in the downriver subregion over the study period, with a 99 percent increase in the number employed compared to 47.5 and 66.4 percent increases in the reservoir and upriver subregions, respectively. The downriver subregion labor force was already larger than that in the reservoir and upriver subregions in 1970. As a result, growth trends viewed at the study area level largely reflect those in the downriver subregion. The downriver subregion experienced larger relative and absolute employment gains than the other two subregions in almost all sectors. This was particularly noticeable in the services, retail trade, and state and local government sectors.

The 1995 employment profiles of the three subregions are fairly similar (Table 6). The downriver subregion, however, has a much larger portion of total employment concentration in the services sector, 34.4 percent compared to 25.2 and 23.5 percent in the reservoir and downriver subregions, respectively. The reservoir and upriver subregions, in turn, have larger concentrations of employment in the government and government enterprises section.

Table 6
Employment by Subregion
1995

	Downriver		Reservoir		Upriver	
	Employed	**Percent**	**Employed**	**Percent**	**Employed**	**Percent**
Total full- and part-time employment	151,124		92,535		75,081	
Farm employment	12,785	8.5	10,668	11.5	4,172	5.6
Non-farm employment	138,339	91.5	81,867	88.5	70,909	94.4
Ag Serv., forestry, fishing, other	4,044	3.0	2,537	3.1	1,140	1.6
Mining	44	0.0	15	0.0	679	1.0
Construction	6,863	5.0	3,604	4.5	4,248	6.1
Manufacturing	14,692	10.8	8,110	10.1	8,153	11.8
Transportation and public utilities	5,554	4.1	3,173	3.9	2,999	4.3
Wholesale trade	3,990	2.9	4,563	5.7	1,987	2.9
Retail trade	25,202	18.5	13,795	17.1	14,082	20.3
Finance, insurance, and real estate	5,929	4.4	3,751	4.6	3,610	5.2
Services	46,783	34.4	20,303	25.2	16,304	23.5
Government and government enterprises	22,804	16.8	20,836	25.8	16,100	23.2
Federal, civilian	2,742	2.0	2,070	2.6	2,321	3.4
Military	1,167	0.9	751	0.9	663	1.
State and local	18,881	14.0	18,006	22.3	13,116	18.9

Source: Bureau of Economic Analysis, 1999

2.1.3 Poverty

The percentage of the population below the poverty rate increased in all three subregions between 1979 and 1989 (Table 7). In 1990, 20.1 percent of the reservoir subregion population was below the poverty rate. This represents a 5.8 percent increase since 1979. Reservoir subregion counties with about 20 percent of their population below the poverty rate include Franklin, Asotin, and Columbia Counties, all located in Washington State.

Table 7
Poverty Rates by Subregion
1979-89

	1979	1989
Downriver Average	9.0	13.4
Reservoir Average	14.3	20.1
Upriver Average	13.0	14.9

Source: Bureau of Census, 1980, 1990

The share of population below the poverty rate in the downriver and upriver subregions in 1989 was 13.4 and 14.9 percent, respectively. Counties with relatively high portions of their population below the poverty rate in 1989 include Umatilla, Oregon in the downriver subregion (16.5 percent), and Latah and Lemhi counties, both in Idaho and the upriver subregion, with poverty rates of 18.5 and 20.2 percent, respectively.

2.1.4 Age

Average median age increased in all three subregions between 1980 and 1990 (Table 8). Average median age in 1990 ranged from 33.2 years old in the reservoir subregion to 35.7 years old in the upriver subregion. Average median age in 1980 was around 30.5 years old in all three subregions in 1980. The median age is the middle age in each county. Half the population in the county is younger than this age, the other half is older. The average median ages presented by subregion in Table 6 are weighted averages of the median ages of the counties that make up each subregion.

Table 8
Age by Subregion
1980-90

	1980	1990	Dependency Ratio, 1990
Downriver Average	30.7	34.8	74.5
Reservoir Average	30.5	33.2	74.3
Upriver Average	30.4	35.7	72.3

Source: Bureau of Census, 1980, 1990

Median age in the downriver counties in 1990 ranged from 32.1 to 37.8 in Benton County, Washington and Gilliam County, Oregon, respectively. Median age in the reservoir counties in 1990 covered a wide range from 24.4 years in Whitman County to 41.1 years in Garfield County. Median age in the upriver counties in 1990 ranged from 27.4 to 38.1 years in Latah and Lemhi counties, respectively. Median age increased in all 25 study area counties between 1980 and 1990. Median age increases in the downriver subregion counties ranged from 2.8 to 5.3 years. Increases in median age in the counties that comprise the reservoir subregion ranged from 0.8 to 4.3 years. The upriver subregion counties saw the greatest increase in median age between 1980 and 1990 with increases ranging from 2 to 8.2 years. Median age in four of the nine upriver subregion counties increased by more than five years over this period. Another measure of age is the dependency ratio. This ratio compares the population under 18 and over 64 years old with the population of working age. The average dependency ratio for each subregion is shown in Table 8. These ratios range from 72.3 in the upriver subregion to 74.5 in the downriver subregion. A dependency ratio of 70, for example, means that for every ten people of working age there are seven people under 18 or above 65 years of age.

2.1.5 Race

The 25 county study area in 1990 contained a larger proportion of Caucasians (90.3 percent) and Native Americans (1.7 percent) than the United States (80 percent and 0.8 percent, respectively), a smaller proportion of African Americans (0.9 percent compared to 12 percent nationally), and a similar proportion of people of Hispanic origin (8.3 percent compared to 9 percent nationally). Hispanics are the largest non-Anglo group in the study area, increasing by 20,554 or 90.2 percent between 1980 and 1990 (Table 9). Although the fastest growing ethnic group in Washington state, Hispanics accounted for just 6.1 percent of the state's population in 1996. The Caucasian population experienced an absolute decline of 12,251 or 2.5 percent between 1980 and 1990.

Table 9
Race and Ethnicity in the 25 Study Counties
1980 to 1990

	1980		1990		1980-1990	
	Total	Percent	Total	Percent	Total	Percent
Total Population	515,507	100.0	522,999	100.0	7,492	1.5
Caucasian	484,779	94.0	472,528	90.3	-12,251	-2.5
African American	4,074	0.8	4,493	0.9	419	10.3
Native American	6,932	1.3	8,698	1.7	1,766	25.5
Asian	4,767	0.9	8,434	1.6	3,667	76.9
Other Race	14,953	2.9	28,889	5.5	13,936	93.2
Hispanic Origin	22,783	4.4	43,337	8.3	20,554	90.2
Total		100.0		100.0		

Note: Census data are subject to self-reporting and processing errors. This is particularly the case with Native Americans and Hispanic seasonal workers. The Census Bureau considers "Hispanic origin" to be an ethnic category rather than a racial category. People of Hispanic origin may be of any race, and are counted in the race figures as well. People categorized in the "Other Race" category include those who write in other racial categories, such as multiracial or multiethnic, on the census form.

Source: US Department of Commerce, Bureau of the Census

Caucasian is the dominant category in all three subregions ranging from 85.2 percent of the population in the reservoir subregion to 96 percent in the upriver subregion. The Caucasian population experienced absolute declines in each of the three subregions between 1980 and 1990. This is most noticeable in the reservoir subregion, which experienced an absolute loss of 7,736 Caucasian people over this period. The downriver and reservoir subregions both saw significant increases in the other race and Hispanic population categories. People of Hispanic origin comprised 13.5 percent of the reservoir subregion population in 1990. In contrast, less than one percent of upriver subregion population was of Hispanic origin in 1990.

Relatively large concentrations of minority groups were present in 2 of the 7 reservoir counties in 1990. Over 30 percent of the populations in Adams and Franklin counties, Washington were persons of Hispanic origin. Hood River County, Oregon, located in the downriver subregion also had a relatively large Hispanic population of 16.3 percent.

Franklin County's African American population was also relatively high, 3.5 percent compared to a study area average of 0.9 percent. This is still substantially below the national average of 12 percent and may reflect the relatively urban nature of this county, which includes the city of Pasco.

Relatively large concentrations of Native Americans were evident in three downriver and one of the upriver counties in 1990, with Native American populations ranging from 3.1 to 4.8 percent, compared to the study area average of 1.7 percent. An Indian Reservation is located in each of these counties.

2.1.6 Industry Specialization

The Economic Research Service (ERS) has developed six groupings based on broad classifications of economic specialization, which are derived from labor income data. The ERS designates rural counties in one of six non-overlapping economic types: farming, mining, manufacturing, government, services, and nonspecialized. Counties are also classified into five overlapping policy types: retirement-destination, Federal lands, commuting, persistent poverty, and transfer-dependent. The ERS economic and policy classifications for the 25 study counties are identified for 1979 and 1989 in Table 10.

Table 10
ERS Typologies by County
1979-89

County	State	Economic Groups		Policy Groups			
		1979	1989	1979		1989	
Downriver Subregion							
Gilliam	OR	Farming	Farming	Recreation			
Hood River	OR		Services	Fed Lands	Recreation	Fed Lands	
Morrow	OR	Farming	Farming				
Sherman	OR	Farming	Farming				
Umatilla	OR	Non-Special		Unclassified			
Wasco	OR	Non-Special		Unclassified	Recreation		
Benton	WA			Metro		Metro	
Franklin	WA			Metro		Metro	
Klickitat	WA	Manufacturing	Farming				
Skamania	WA		Manufacturing	Fed Lands		Fed Lands	Commuting
Reservoir Subregion							
Adams	WA	Farming	Farming				
Asotin	WA	Non-Special		Retirement		Commuting	
Columbia	WA	Farming	Farming				
Garfield	WA	Farming	Farming				
Walla Walla	WA	Non-Special		Unclassified			
Whitman	WA	Government	Farming				
Upriver Subregion							
Clearwater	ID	Manufacturing	Manufacturing	Fed Lands		Fed Lands	
Custer	ID	Government	Mining	Fed Lands		Fed Lands	
Idaho	ID	Manufacturing	Non-Special	Fed Lands		Fed Lands	
Latah	ID	Government	Government				
Lemhi	ID		Government	Fed Lands	Recreation	Fed Lands	
Lewis	ID	Farming	Farming				
Nez Perce	ID	Manufacturing	Non-Special				
Valley	ID		Government	Fed Lands	Recreation	Fed Lands	Retirement
Wallowa	OR	Farming	Farming	Fed Lands		Fed Lands	

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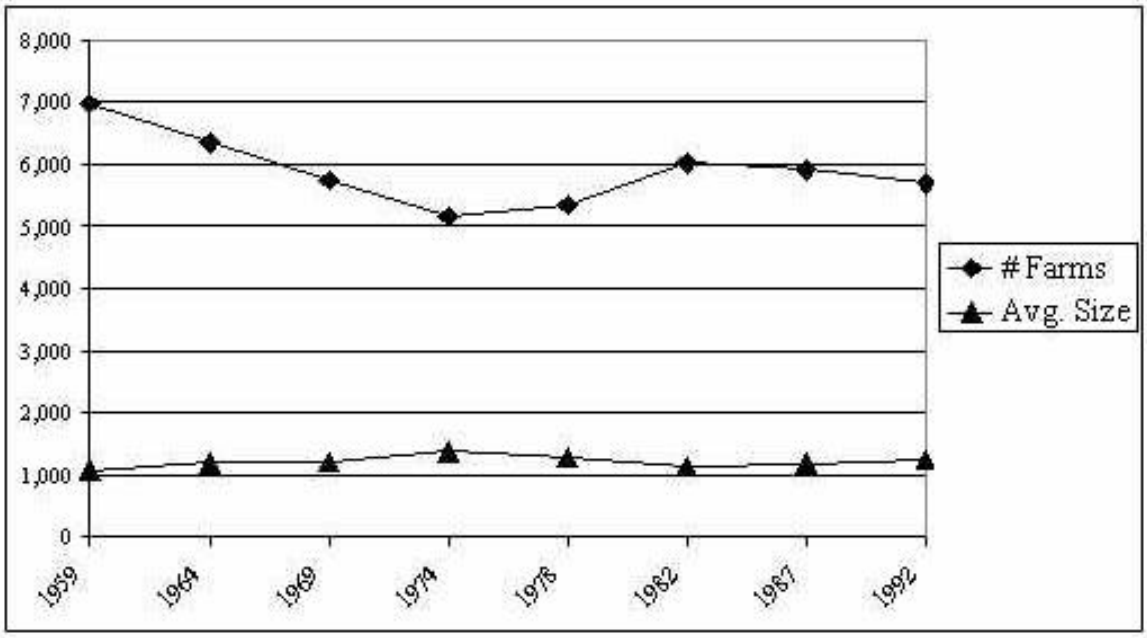
The ERS classifications remain fairly constant in most counties from 1979 to 1989. Some change in classification was evident in the economic group classifications, particularly in the upriver subregion. Idaho and Nez Perce counties, Idaho were both reclassified from manufacturing to non-specialized, while Custer County, Idaho shifted from government to mining. Klickitat County, Washington in the downriver subregion also changed economic classification, switching from manufacturing to farming.

2.1.7 Land Tenure Characteristics

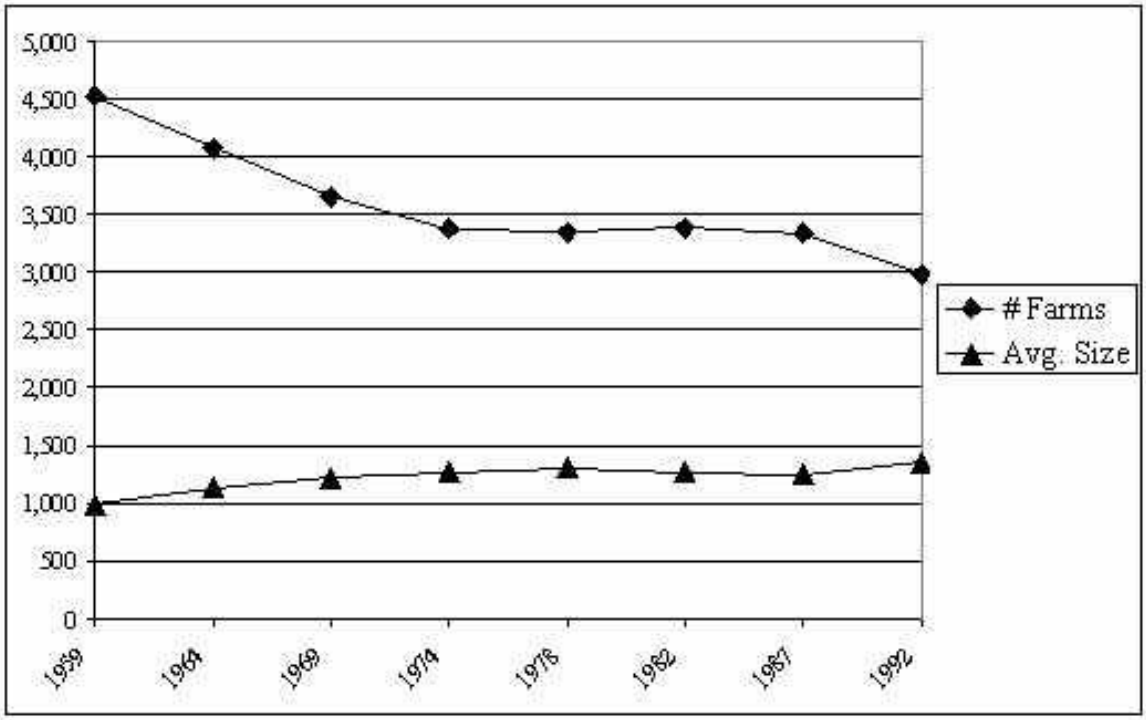
Agricultural land tenure has undergone significant changes in all three subregions. In all cases these changes have involved a decrease in the number of farms and an increase in average farm size. The downriver subregion has the largest number of farms and acres farmed of the three subregions. Between 1959 and 1992 this subregion lost 1,279 farms or 18.4 percent of the 1959 total (Figure 6). The reservoir and upriver subregions over this period lost 1,544 and 1,537 farms, respectively, 34.1 and 32.6 percent of their 1959 totals (Figures 7 and 8).

Figure 6. Number and Average Size of Farms in the Downriver Subregion, 1959-92



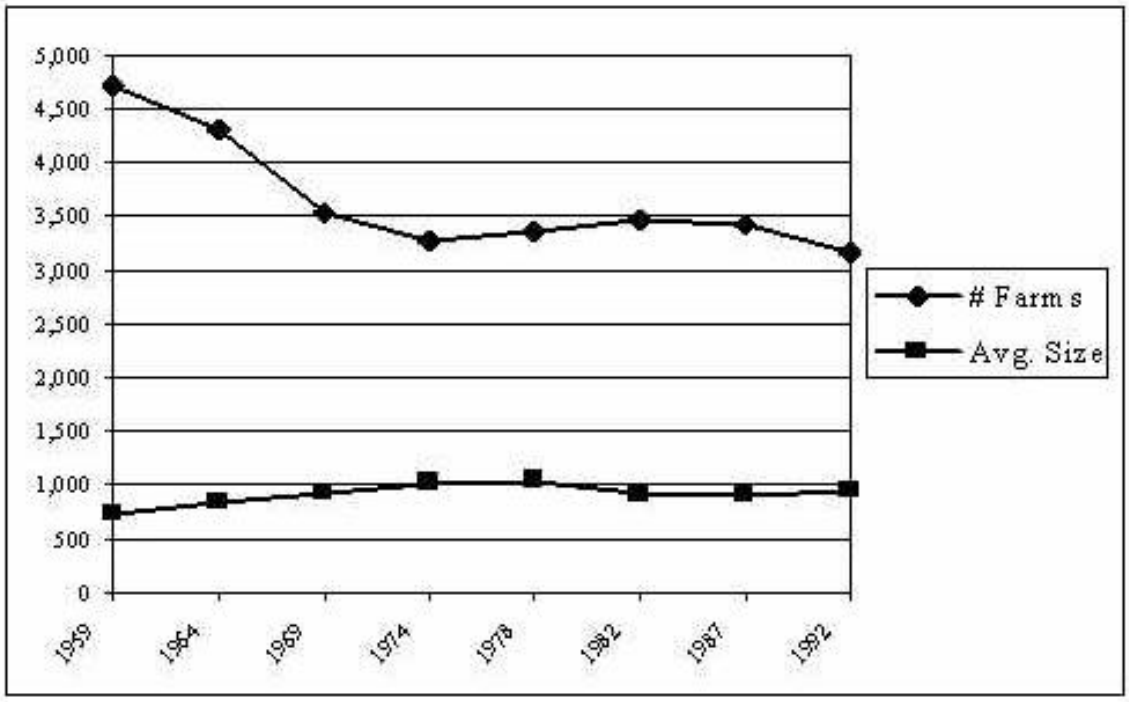
Source: USDA Census of Agriculture, 1959, 1964, 1969, 1974, 1978, 1982, 1987, 1992

Figure 7. Number and Average Size of Farms in the Reservoir Subregion, 1959-92



Source: USDA Census of Agriculture, 1959, 1964, 1969, 1974, 1978, 1982, 1987, 1992

Figure 8. Number and Average Size of Farms in the Upriver Subregion, 1959-92



Source: USDA Census of Agriculture, 1959, 1964, 1969, 1974, 1978, 1982, 1987, 1992

This has not, however, been a simple linear decline. Rather, all three subregions experienced both increases and decreases in the number of farms between 1959 and 1992 (see Figures 6 through 8). The average size of farms also fluctuated over this period. In general, the trend has been toward increasing farm size in all three subregions.

2.2 Characteristics of Communities

The communities located throughout the study area are diverse in terms of their size, economic activity, and relationship to the lower Snake River. The purpose of this section is to describe these basic characteristics in order to put the analysis of the focus communities into the context of the other 101 communities in the study region. The 101 communities in the region are presented in Table 11.

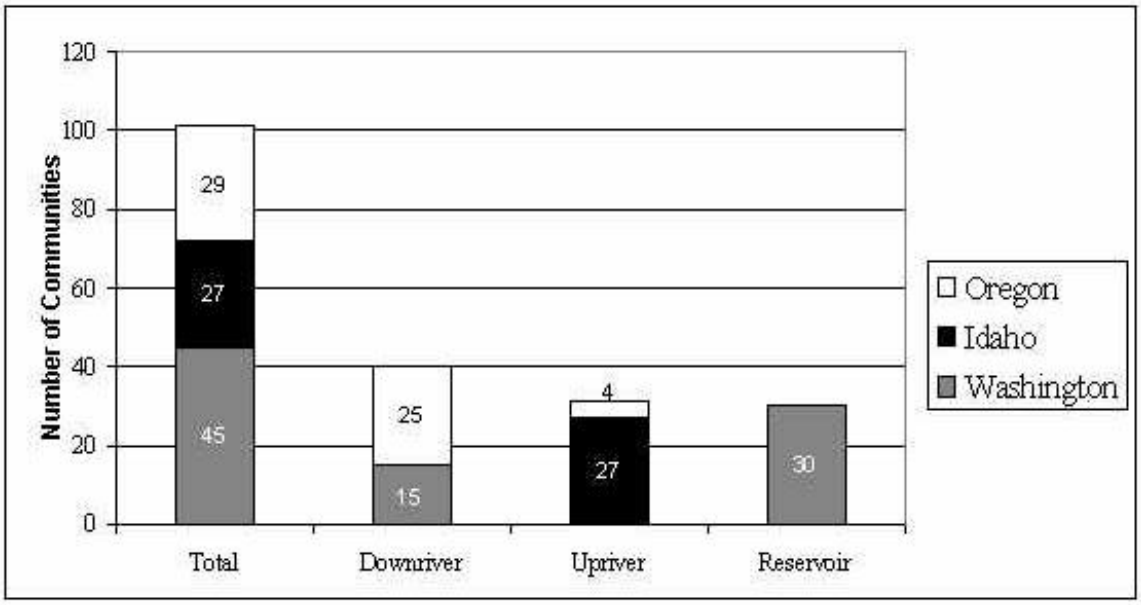
Table 11
Communities Located In the Lower Snake River Subregions

Reservoir Subregion			Downriver Subregion			Upriver Subregion		
Community	**State**	**County**	**Community**	**State**	**County**	**Community**	**State**	**County**
Othello	WA	Adams	Benton City	WA	Benton	Weippe	ID	Clearwater
Lind	WA	Adams	Richland	WA	Benton	Elk River	ID	Clearwater
Ritzville	WA	Adams	Prosser	WA	Benton	Pierce	ID	Clearwater
Washtucna	WA	Adams	*Kennewick*	*WA*	*Benton*	*Orofino*	*ID*	*Clearwater*
Asotin	WA	Asotin	Finley	WA	Benton	Mackay	ID	Custer
Clarkston	*WA*	*Asotin*	Highland	WA	Benton	Challis	ID	Custer
Starbuck	WA	Columbia	West Richland	WA	Benton	Elk City	ID	Idaho
Dayton	WA	Columbia	Kahlotus	WA	Franklin	Kooskia	ID	Idaho
Pomeroy	*WA*	*Garfield*	Mesa	WA	Franklin	Cottonwood	ID	Idaho
College Place	WA	Walla Walla	*Pasco*	*WA*	*Franklin*	*Riggins*	*ID*	*Idaho*
Burbank	WA	Walla Walla	Connell	WA	Franklin	Grangeville	ID	Idaho
Prescott	WA	Walla Walla	West Pasco	WA	Franklin	Bolvil	ID	Latah
Waitsburg	WA	Walla Walla	Arlington	OR	Gilliam	Genesee	ID	Latah
Walla Walla	WA	Walla Walla	Condon	OR	Gilliam	Troy	ID	Latah
Colfax	*WA*	*Whitman*	Hood River	OR	Hood River	Juliaetta	ID	Latah
St. John	WA	Whitman	Bingen	WA	Klickitat	Deary	ID	Latah
Tekoa	WA	Whitman	White Salmon	WA	Klickitat	Potlatch	ID	Latah
Garfield	WA	Whitman	Goldendale	WA	Klickitat	Onaway	ID	Latah
Endicott	WA	Whitman	Klickitat	WA	Klickitat	Kendrick	ID	Latah
Palouse	WA	Whitman	Irrigon	OR	Morrow	Moscow	ID	Latah
Colton	WA	Whitman	Boardman	OR	Morrow	Salmon	ID	Lemhi
Uniontown	WA	Whitman	Ione	OR	Morrow	Nez Perce	ID	Lewis
Oakesdale	WA	Whitman	Lexington	OR	Morrow	Craigmont	ID	Lewis
Farmington	WA	Whitman	Heppner	OR	Morrow	Kamiah	ID	Lewis
La Crosse	WA	Whitman	Moro	OR	Sherman	Lapwai	ID	Nez Perce
Albion	WA	Whitman	Grass Valley	OR	Sherman	*Lewiston*	*ID*	*Nez Perce*
Malden	WA	Whitman	Rufus	OR	Sherman	Culdesac	ID	Nez Perce
Pullman	WA	Whitman	Wasco	OR	Sherman	Joseph	OR	Wallowa
Rosalia	WA	Whitman	Adams	OR	Umatilla	Lostine	OR	Wallowa
			Weston	OR	Umatilla	Wallowa	OR	Wallowa
			Stanfield	OR	Umatilla	Enterprise	OR	Wallowa
			Ukiah	OR	Umatilla			
			Pilot Rock	OR	Umatilla			
			Athena	OR	Umatilla			
			Helix	OR	Umatilla			
			Echo	OR	Umatilla			
			Hermiston	OR	Umatilla			
			Mton-Freewater	OR	Umatilla			
			Umatilla	*OR*	*Umatilla*			
			Pendleton	OR	Umatilla			
			Mission	OR	Umatilla			

Note: Focus Communities are noted in italics.

Communities in Washington State (45) represent nearly 50 percent of the communities in the study region with Oregon and Idaho almost equally represented with 29 and 27 communities respectively. With the exception of four communities in the Upriver region, the Oregon communities are downstream of the lower Snake River projects. Two thirds of the communities in Washington are located directly around the reservoirs. Approximately half of the Idaho communities are located at the eastern, upstream end of the reservoirs. Figure 9 identifies the distribution of communities by subregion and state.

Figure 9. Distribution of Communities Within the Lower Snake River Subregions

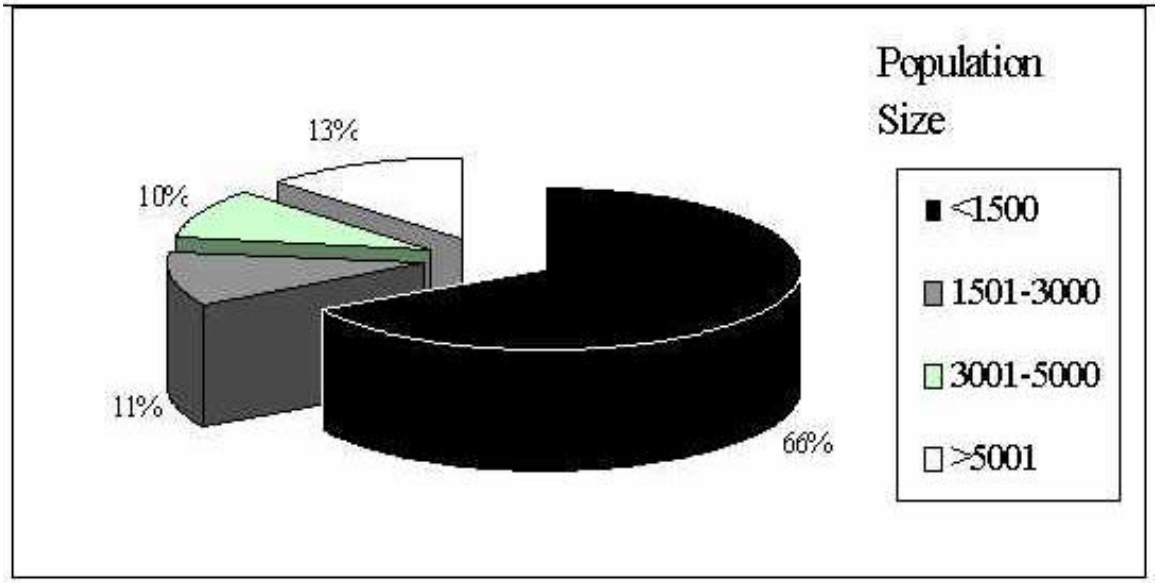


2.2.1 Population

In general the geographic area of northeastern Oregon, southeastern Washington, and North Central Idaho is sparsely populated and rural. The size of communities range from small rural towns with populations less than 200 to cities with populations from 8,000 to almost 50,000. The major population centers are the Tri-Cities (Richland, Kennewick, and Pasco), Walla Walla, the Quad-Cities (Pullman, Moscow, Lewiston, and Clarkston), and Hermiston/Pendleton. Only 5 communities in the study region have populations in excess of 20,000. These larger population cities serve as regional trade centers, educational centers and provide a diversity of employment opportunities from manufacturing and professional services to tourism. These cities make up a large share of the economically diverse communities in the

region. Community assessments conducted as part of the Interior Columbia Basin Ecosystem Management Project (ICBEMP) and the Westside Forest Ecosystem Management Assessment Team (FEMAT) found that larger communities are more resilient to economic changes because of the more developed infrastructure and diversity of human resources to build upon. In general the communities in the lower Snake River study area are small. Sixty-six percent have populations less than 1,500 and 60 percent have populations less than 1,000. The distribution of communities by size is shown in Figure 10.

Figure 10. Distribution of Community Size in the Lower Snake Region



2.2.2 Population Trends

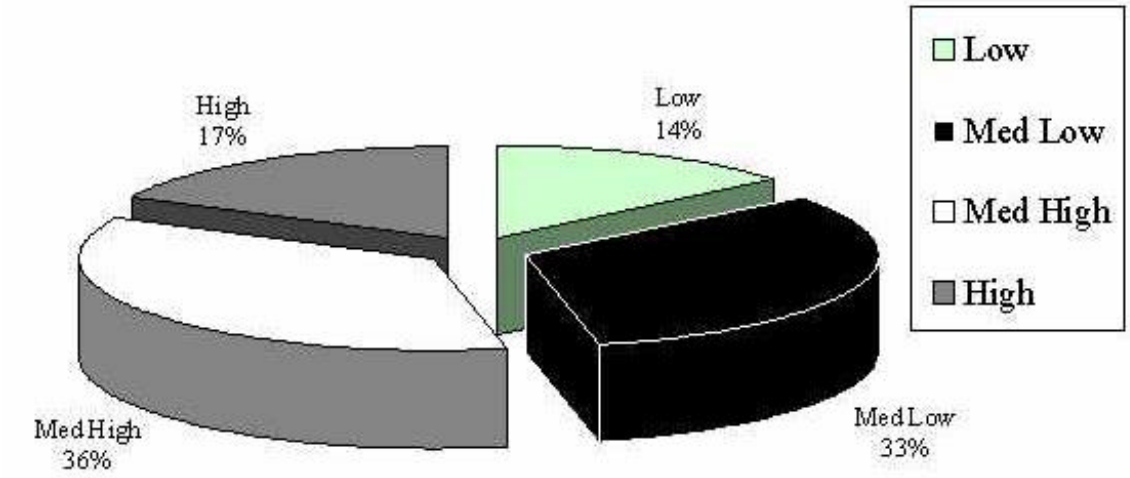
Most rural areas in the dryland agricultural region of the Palouse (Eastern Washington and North Central Idaho) exhibited very slow growth over the 1980s and 1990s while some rural areas offering high quality scenery and recreation have grown rapidly since 1990 (Johnson and Beales, 1994). Almost all the communities in the subregions have increased in population since 1990 (Idaho, Washington, and Oregon State Population Estimates, 1996 and 1997). Population forecasts for the communities and counties in the region generated by the Interior Columbia Basin and the Washington State Office of Financial Management indicate that the region will continue to see population growth over the next 15 years.

2.2.3 Economic Characteristics

The majority of towns in the region are small and, therefore, have narrow economic bases with fewer industries and fewer firms per industry than larger communities. The economic diversity index is a good indicator of the level that a given community relies upon just a few industries in the private sector or on public sector jobs for local employment. The ICBEMP developed an index based on the proportion of a town's total direct employment attributable to each industrial sector (23 sectors) that contributed to that town's economy in 1995. The index measures the extent to which communities are dependent on these sectors based on the number of sectors present and the concentration of total direct employment in any one sector (Harris *et al.*, Forthcoming). Low, Medium Low, Medium High, and High categories represent the quartile distributions across the Interior Columbia Basin.

Within the lower Snake River study region, the majority of communities fall in the Medium Low and Medium High. The distribution of communities based on the ICBEMP economic diversity index is shown in Figure 11. The towns located in each category are identified in Table 12.

Figure 11. Percentage of Communities in LSR Region by Economic Diversity



Source: ICBEMP, 1997

Table 12
Communities in LSR Region by Economic Diversity

Low	Medium Low	Medium High	High
Helix, OR	Pierce, ID	Lostine, OR	***Clarkston, WA***
Weippe, ID	Weston, OR	Moscow, ID	White Salmon, WA
Burbank, WA	***Colfax, WA***	Pullman, WA	Pendleton, OR
Ione, OR	Irrigon, OR	***Richland, WA***	Walla Walla, WA
Colton, WA	St. John, WA	Deary, ID	Salmon, ID
Farmington, WA	Tekoa, WA	Kamiah, ID	***Pasco, WA***
Starbuck, WA	College Place, WA	Rosalia, WA	Hermiston, OR
Asotin, WA	Juliaetta, ID	***Orofino, ID***	Bingen, WA
Ukiah, OR	Garfield, WA	Milton-Freewater, OR	Othello, WA
Adams, OR	Lapwai, ID	Grangeville, ID	Dayton, WA
Elk River, ID	Endicott, WA	Potlatch, ID	Goldendale, WA
Albion, WA	Palouse, WA	Pilot Rock, OR	Challis, ID
Malden, WA	Rufus, OR	***Riggins, ID***	Enterprise, OR
	Joseph, OR	Cottonwood, ID	Prosser, WA
	Kahlotus, WA	Boardman, OR	***Lewiston, ID***
	Finley, WA	**Prescott, WA**	***Kennewick, WA***
	Uniontown, WA	Mackay, ID	
	Stanfield, OR	Elk City, ID	
	Troy, ID	Kooskia, ID	
	Ritzville, WA	Wasco, OR	
	Mesa, WA	Heppner, OR	
	Washtucna, WA	***Pomeroy, WA***	
	La Crosse, WA	***Umatilla, OR***	
	Lexington, OR	Echo, OR	
	Genesee, ID	Benton City, WA	
	Culdesac, ID	Connell, WA	
	Nez Perce, ID	Athena, OR	
	Craigmont, ID	Moro, OR	
	Grass Valley, OR	Waitsburg, WA	
	Wallowa, OR	Arlington, OR	
		Lind, WA	
		Oakesdale, WA	
		Condon, OR	

Note: Focus Communities are in ***bold italics***, and Forum Communities are in **bold**.

Economic diversity is also considered to be an important component of community resiliency. Community resiliency has been defined as a town's ability to successfully deal with multiple social and economic changes in society and is a primary indicator of a community's health and vitality (ICBEMP, 1997). One important component of the economic diversity index is the relative indication it provides of the economic opportunities present in a community. In the lower Snake River study region, communities in the lower categories of the economic diversity index are primarily small agricultural towns.

To provide a more detailed description of the economic condition of communities in the lower Snake River study region, the 1995 ICBEMP direct employment profiles were examined to determine the percentage of employment in given industrial sectors. The distribution of communities by the percentage of employment in selected sectors of agriculture, state, local and Federal government, timber, and travel and tourism is displayed in Figure 12. Selected employment data are provided for each community in Table 13.

Figure 12. Number of LSR Communities by Percentage of Direct Employment in Industrial Sectors

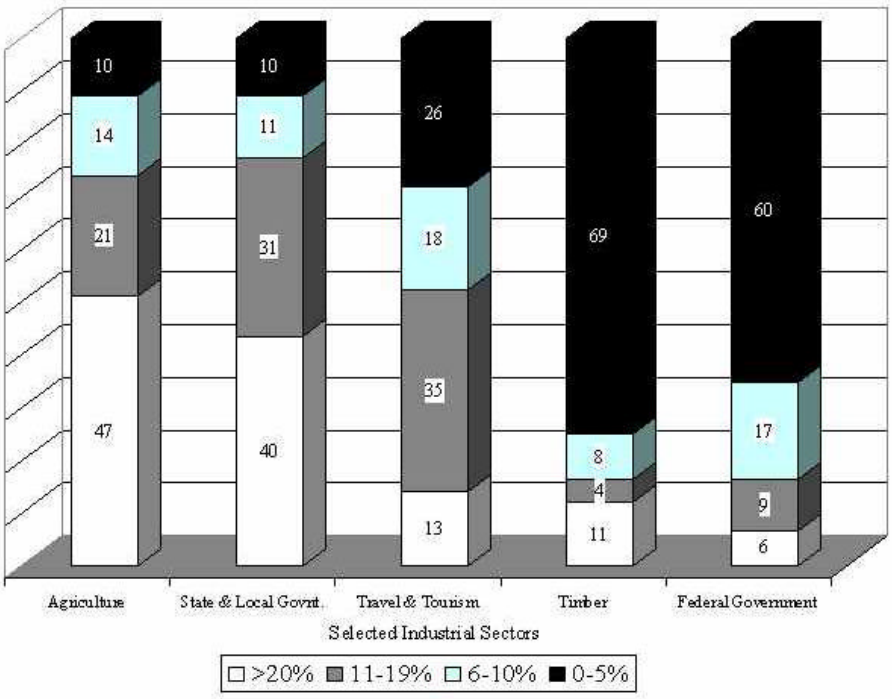


Table 13
1995 Direct Employment By Sector

State and Local	Percent	Agriculture	Percent	Timber	Percent	Federal Employment	Percent	Travel and Tourism	Percent
		Lostine	Low	Richland	Low		Low		Low
Finley	Low	**CLARKSTON**	**Low**	**COLFAX**	**Low**	Helix	Low	Colton	Low
La Crosse	Low	Pierce	Low	Helix	Low	Wasco	Low	Finley	Low
Adams	**Low**	Moscow	Low	Irrigon	Low	Colton	Low	Lexington	Low
Malden	Low	**LEWISTON**	**Low**	St. John	Low	Finley	Low	Troy	Low
Lostine	Low	Pullman	Low	Tekoa	Low	Ukiah	Low	Juliaetta	Low
Albion	Low	Richland	Low	Othello	Low	Grass Valley	Low	Albion	**Low**
Elk River	Low	Weston	Low	College Place	Low	Lexington	**Low**	**Genesee**	Low
Lexington	Low	**KENNEWICK**	**Low**	Boardman	Low	**Washtucna**	Low	Malden	**Low**
Mackay	Low	White Salmon	Low	**Burbank**	**Low**	Lind	Low	**Kahlotus**	**Low**
Elk City	Low	Pendleton	Med Low	Garfield	Low	Tekoa	Low	**Burbank**	Low
Wasco	Med Low	Helix	Med Low	Lapwai	Low	Arlington	Low	Uniontown	Low
Ukiah	Med Low	Deary	Med Low	Ione	Low	Palouse	Low	Farmington	Low
Rufus	Med Low	Walla Walla	Med Low	Endicott	Low	Troy	Low	Starbuck	Low
KENNEWICK	**Med Low**	Kamiah	Med Low	Palouse	Low	College Place	Low	Lind	**Low**
Waitsburg	Med Low	Irrigon	Med Low	Prosser	Low	Juliaetta	Low	**Adams**	**Low**
Hermiston	Med Low	Rosalia	Med Low	**Prescott**	**Low**	Irrigon	Low	**Washtucna**	Low
Pierce	Med Low	**OROFINO**	**Med Low**	Mackay	Low	Albion	Low	Palouse	Low
Nez Perce	Med Low	M-Freewater	Med Low	Rufus	Low	Hermiston	Low	Goldendale	Low
Craigmont	Med Low	St. John	Med Low	Wasco	Low	Waitsburg	Low	College Place	Low
Grass Valley	Med Low	Grangeville	Med Low	Colton	Low	Garfield	Low	Condon	Low
Connell	Med Low	Salmon	Med Low	**Kahlotus**	**Low**	Asotin	Low	Garfield	Low
LEWISTON	**Med High**	**COLFAX**	**Med Low**	Connell	Low	Farmington	Low	Heppner	Low
Grangeville	Med High	Potlatch	Med Low	Finley	Low	Deary	Low	Pierce	Low
Joseph	Med High	**PASCO**	**Med High**	Uniontown	Low	Rosalia	**Low**	Pomeroy	Low
RIGGINS	**Med High**	Hermiston	Med High	Athena	Low	**KENNEWICK**	Low	Weston	Low
Boardman	Med High	**Weippe**	**Med High**	Moro	Low	Mil-Freewater	Low	Othello	Med Low
Weston	Med High	Bingen	Med High	Waitsburg	Low	Endicott	**Low**	Pilot Rock	Med Low
Mi-Freewater	Med High	Tekoa	Med High	Lind	Low	**Genesee**	**Low**	Oakesdale	Med Low
Salmon	Med High	Othello	Med High	Oakesdale	Low	**Prescott**	Low	Lapwai	Med Low
CLARKSTON	**Med High**	Pilot Rock	Med High	Condon	Low	Nez Perce	Low	Prosser	**Med Low**
Othello	Med High	**RIGGINS**	**Med High**	Ritzville	Low	Craigmont	**Low**	**Weippe**	Med Low
Kooskia	Med High	College Place	Med High	Mesa	Low	**LEWISTON**	Low	Potlatch	**Med Low**
Starbuck	Med High	Dayton	Med High	Farmington	Low	Culdesac	Low	**Prescott**	**Med Low**
Ritzville	Med High	Juliaetta	Med High	**Washtucna**	**Low**	Oakesdale	Low	**COLFAX**	Med Low
Walla Walla	Med High	Cottonwood	Med High	Starbuck	Low	Uniontown	Low	Tekoa	Med Low
Challis	Med High	Boardman	Med High	La Crosse	Low	Goldendale	Low	Athena	Med Low
Mesa	Med High	Goldendale	Med High	**Genesee**	**Low**	Mesa	Low	Challis	Med Low
Condon	Med High	Challis	Med High	Asotin	Low	La Crosse	Low	Irrigon	Med Low
Bingen	Med High	**Burbank**	**Med High**	Ukiah	Low	Othello	Low	Nez Perce	Med Low
Richland	Med High	Garfield	Med High	Culdesac	Low	Dayton	Low	Craigmont	Med Low
PASCO	**Med High**	**Enterprise**	**Med High**	Grass Valley	Low	Prosser	**Low**	Endicott	Med Low
Rosalia	Med High	Lapwai	Med High	**Adams**	**Low**	**COLFAX**	Low	White Salmon	Med Low
Kamiah	Med High	Ione	Med High	Albion	Low	Condon	Low	Dayton	Med Low
Goldendale	Med High	Endicott	Med High	Malden	Low	Ione	Low	St. John	Med High
Wallowa	Med High	Palouse	High	Pullman	Low	Connell	Low	Connell	Med High
Potlatch	Med High	Prosser	High	**KENNEWICK**	**Low**	Pierce	Low	Bingen	**Med High**
Lapwai	Med High	Prescott	High	Pasco	Low	Weston	Low	**OROFINO**	Med High
Benton City	Med High	Mackay	High	Benton City	Low	Clarkston	**Low**	Helix	Med High
Athena	Med High	Rufus	High	Hermiston	Low	**Weippe**	**Low**	Kooskia	Med High
Pendleton	Med High	Elk City	High	**POMEROY**	**Low**	**PASCO**	Low	Elk River	**Med High**
Lind	Med High	Kooskia	High	Moscow	Low	Ritzville	Low	**Stanfield**	Med High
College Place	Med High	Wasco	High	Rosalia	Low	Cottonwood	Low	Richland	Med High
Cottonwood	High	Heppner	High	Dayton	Low	Joseph	Low	Boardman	Med High
Irrigon	High	**POMEROY**	**High**	Challis	Low	Richland	Low	Moro	Med High
Culdesac	High	**UMATILLA**	**High**	**UMATILLA**	**Low**	Moscow	Low	Echo	Med High
Troy	High	Echo	High	**Stanfield**	**Low**	Athena	**Low**	Mesa	**Med High**
Arlington	High	Colton	High	M-Freewater	Low	**Stanfield**	Low	**PASCO**	Med High

Dayton	High	Joseph	High	Weston	Low	Pullman	Low	Deary	Med High
Oakesdale	High	**Kahlotus**	**High**	**Enterprise**	**Low**	Potlatch	Low	Walla Walla	Med High
White Salmon	High	Benton City	High	Pendleton	Low	Kamiah	Med Low	Ritzville	Med High
Pilot Rock	High	Connell	High	Nez Perce	Low	Kooskia	Med Low	Elk City	Med High
Weippe	**High**	Finley	High	Craigmont	Low	St. John	Med Low	Pullman	Med High
Prosser	High	Uniontown	High	**CLARKSTON**	**Low**	Pilot Rock	Med Low	Benton City	Med High
OROFINO	**High**	Athena	High	**RIGGINS**	**Low**	Walla Walla	Med Low	Grangeville	Med High
UMATILLA	**High**	Moro	High	Cottonwood	Low	Malden	Med Low	Kamiah	**Med High**
Enterprise	**High**	**Stanfield**	**High**	Echo	Low	Challis	Med Low	**UMATILLA**	Med High
Washtucna	**High**	Waitsburg	High	Walla Walla	Low	Benton City	Med Low	Salmon	Med High
POMEROY	**High**	Arlington	High	Elk River	Low	White Salmon	**Med Low**	Hermiston	Med High
Heppner	High	Lind	High	Lexington	Med Low	**UMATILLA**	Med Low	Pendleton	Med High
Farmington	High	Oakesdale	High	Arlington	Med Low	Pendleton	Med Low	Cottonwood	**Med High**
Juliaetta	High	Condon	High	Salmon	Med Low	Boardman	Med Low	**LEWISTON**	**Med High**
Genesee	**High**	Troy	High	Goldendale	Med Low	Heppner	**Med Low**	**Enterprise**	Med High
Kahlotus	**High**	Ritzville	High	Heppner	Med Low	**Adams**	Med Low	Culdesac	Med High
Burbank	**High**	Mesa	High	White Salmon	Med Low	Elk River	Med Low	Grass Valley	Med High
Moro	High	Farmington	High	Troy	Med Low	Wallowa	Med Low	Arlington	Med High
Prescott	**High**	**Washtucna**	**High**	Grangeville	Med Low	Bingen	Med Low	Joseph	Med High
Echo	High	Starbuck	High	**LEWISTON**	**Med High**	Echo	**Med High**	Lostine	**Med High**
Deary	High	La Crosse	High	**OROFINO**	**Med High**	**OROFINO**	Med High	**KENNEWICK**	Med High
Stanfield	**High**	Lexington	High	Bingen	Med High	Salmon	**Med High**	Wallowa	High
Moscow	High	**Genesee**	**High**	Wallowa	Med High	**Kahlotus**	**Med High**	Waitsburg	High
Uniontown	High	Asotin	High	Kamiah	High	**Enterprise**	Med High	Moscow	**High**
Pullman	High	Ukiah	High	Potlatch	High	Grangeville	**Med High**	**CLARKSTON**	High
St. John	High	Culdesac	High	Elk City	High	**RIGGINS**	Med High	Min-Freewater	High
Garfield	High	Nez Perce	High	Kooskia	High	Moro	**Med High**	Rufus	High
COLFAX	**High**	Craigmont	High	Deary	High	**POMEROY**	Med High	La Crosse	High
Palouse	High	Grass Valley	High	Lostine	High	Mackay	High	Mackay	High
Tekoa	High	**Adams**	**High**	Pilot Rock	High	Elk City	High	Asotin	High
Ione	High	Elk River	High	Juliaetta	High	Lostine	High	Wasco	High
Endicott	High	Albion	High	Joseph	High	Rufus	High	Ukiah	High
Asotin	High	Wallowa	High	**Weippe**	**High**	Starbuck	**High**	Rosalia	**High**
Colton	High	Malden	High	Pierce	High	**Burbank**	High	**RIGGINS**	High
Helix	High					Lapwai		Ione	

Note: Low <5%, Med Low 6-10%, Med High 11-19%, High >20%.
(Community Forums in **Bold**, Focus Communities in **BOLD CAPS**.
Source: Harris *et al.*, forthcoming.

Almost half of the communities in the region have 20 percent or more of their employment in agriculture, while 68 percent of the communities have 11 percent or more employment in the agricultural sector. This employment includes not only farm proprietors and employees but also farm services. The two other dominant sectors present in the region are state and local government, including school employees, and travel and tourism. Travel and tourism was calculated by factoring out the share of services and retail trade attributable to travelers and tourism (Harris *et al.*, Forthcoming).

2.3 Focus Community Baseline Profiles

The following community profiles describe why each community was selected and provide an overview of historical community trends. They also outline each community's social, cultural, and economic relationship to the lower Snake River. Information related to four dimensions of community life--the People, the Economy, the Place, and Vision and Vitality--from 1970 to the present is also presented. The People (Demographics) dimension relates to the characteristics of individuals or households in the community and changes. The Economic (Jobs and Wealth) dimension relates to the major businesses and sources of jobs in the community. The Place (Character) dimension refers to the built and natural environment of the community. The Vision and Vitality (Organization and Leadership capacity) dimension refers to the characteristics of the community's social organizations and ability to get things done. These dimensions combined with historical information compiled for each community provide a snapshot of the focus communities and provide the basis for evaluating potential impacts. Summary information for each selected community is presented in Table 2.

2.3.1 Clarkston, Washington

Clarkston is located in Asotin County, across the Snake River from Lewiston at the confluence of the Snake and Clearwater rivers. It was selected as a focus community because of anadromous fish runs, navigation, construction and recreation opportunities along the Snake River.

History

In 1899 a bridge across the Snake River connected Lewiston and Jawbone Flats, the area officially incorporated as Clarkston in 1902. Agriculture, particularly berry production, dominated the town's economy in the early 1900s. By the 1950s, agricultural production grew to include grains and hay, peas, and other fruits. Livestock were also raised. Transportation consisted of railroad and boat which brought supplies up from Portland and grain down on the return trip. As water transportation on the Snake improved into Hells Canyon, Clarkston became a gateway for tourists exploring Hells Canyon. Lower Granite Dam was completed in 1975, flooding much of the fruit orchards and beef processing plants along the river. A second bridge linking Clarkston and Lewiston was constructed in 1982. Today, Clarkston remains active as a regional trading center via its port, while agricultural production, outdoor recreational opportunities, and a growing retiree population add to its diversity.

People (Demographics)

The estimated population of Clarkston in 1996 was 6,860. This represents a 1.6 percent increase since 1990 after slowly increasing 7 percent between 1970 and 1990. From 1980 to 1990 the median age increased from 33 years to 35 years. Over 21 percent of the total population was 65 years old and over in 1990. The dependency ratio, a measure of the age structure of the community (those between 18 and 65 divided by those less than 18 and greater than 65 years old), was 90. School district enrollment in 1999 was 3,031, an increase of 207 students since 1990. In 1990 Native Americans and Hispanics each made up 2 percent of the total population.

Economics

Total employment in Clarkston in 1990 was 2,347 down from 2,506 in 1980. Unemployment in 1990 was 6.4 percent. This represents a decrease from the 1980 unemployment rate of 8.4 percent. Employment in 1990 was highest in retail trade with 602 employees. Manufacturing of durable goods contributed 250 employees. The Corps employs 23 individuals in Clarkston in relation to the operation of Lower Granite Dam. Overall economic diversity in Clarkston was calculated as high for 1995. Major employers include the Clarkston school district, Tri-State Memorial Hospital, Poe Asphalt, and Price-Costco. Much of the employment for Clarkston residents is in the service sector in Lewiston and with the Potlatch Corporation. Retiree income is of growing importance in the community as Clarkston becomes a retirement destination.

Clarkston also serves as a regional trade center and is served by barging and trucking services. There is no rail service in Clarkston. The Ports of Clarkston and Wilma move local agricultural products and manufactured goods downriver and bring agricultural inputs and petroleum products upriver. Recreation on the reservoirs and further upriver on the Clearwater and Snake rivers is also an important economic component including both services (upstream jet boating, fishing, and sternwheeler boat tours) and boat manufacturing.

Median household income in 1990 was $16,641 with per capita income at $8,896. 23.6 percent of families for whom poverty status was determined were below the poverty line in 1990. This represents an increase from 17.3 percent in 1980. Unemployment rates have improved since 1990 and the county is not listed as a distressed county for the state of Washington. Electrical rates for households in 1998 were approximately 4.46 cents per Kilowatt-hour.

Character (Place)

Clarkston's location at the confluence of the Snake and Clearwater rivers affords community residents and visitors both slack water and white water recreation opportunities. Clarkston has access to 15 sites on the lower Snake River reservoirs within 50 miles such as Clarkston Landing, Hells Gate, Chief Timothy, the Greenbelt, and Boyer Park. The community has many local access sites and green areas along the river. Fishing is an important social activity in the community with over 19 percent of the total population holding steelhead tags during the 1998 fishing season.

Land tenure can be characterized by the loss of 26 farms in the county and a decrease in the average sized farm by 67 acres between 1969 and 1992. Local services include fire, police, and a regional hospital.

Vision and Vitality

Clarkston leaders have successfully obtained Federal grant funding for community development projects. Clarkston's 1983 Comprehensive Plan emphasizes growth management strategies to maintain its small city atmosphere while providing for high quality services to its residents. Key elements mentioned in the plan include:

- Joint efforts with the Port of Clarkston and the Army Corps of Engineers to encourage economic development of the Port. These include expanding industrial development while enhancing tourist facilities for water-related recreation development.
- Improve transportation by improving the existing street system.
- Encourage the development of tourist and recreation opportunities to stimulate economic development opportunities. Examples include strengthening the business district, attracting tour boats, improving air quality, and providing services as a gateway to Hells Canyon. Community members' perceptions and assessment are pending final University of Idaho report.

2.3.2 Colfax, Washington

Colfax is located in Whitman County in the heart of the Palouse, the dryland wheat, barley, pea, and lentil region of Eastern Washington and North Central Idaho. It is approximately 19 miles north of the lower Snake River. It was selected as a focus community primarily because of navigation and recreation opportunities and access.

History

Incorporated in 1873, Colfax is the oldest town in Eastern Washington. It was originally a sawmill town with cattle ranches and farms but over the years, agriculture became the primary industry. Colfax became the county seat in 1871. A series of floods and fires threatened to destroy the community, but the residents rebuilt. In 1963, the Corps constructed a concrete flood control project to eliminate the flooding problem in the downtown area. With the arrival of slackwater, the Port of Whitman County established new sites on the lower Snake River at Almota and Wilma. Downtown Colfax has recently completed a downtown revitalization project to widen Main Street, beautify the downtown, and enhance the business climate. The Port has also recently established a small industrial park on the outskirts of town.

People (Demographics)

The estimated population of Colfax in 1996 was 2,865. This represents a 3.8-percent increase since 1990 after slowly increasing 3.6 percent between 1970 and 1990. The school district and the postal area cover a much larger population. Around 5,000 area residents trade, work, go to school, and participate actively in community events. From 1980 to 1990 the median age increased from 36 years to 40 years. Over 23 percent of the total population was 65 years old and over in 1990. The dependency ratio was 87. School district enrollment in 1999 was 759, an increase of 31 students since 1990. In 1990, Native Americans, Hispanics, and African-Americans made up less than 1 percent of the total population.

Economics

Total employment in 1990 was 1,180 down from 1,228 in 1980. Unemployment in 1990 was a low 2.9 percent. This represents a decrease from the low 1980 unemployment rate of 4.9 percent. Employment in 1990 was highest in retail trade, services, agriculture, and state and local government. Overall economic diversity in Colfax was calculated as medium low for 1995. Major employers include Whitman County, Whitman Hospital, Colfax school district, Whitman House, and the McGregor Company. The Corps employs 7 individuals in Colfax in relation to the operation of Lower Granite Dam.

Colfax serves as an isolated trade center for outlying rural communities in the county and has access to rail, barging, and trucking services. The Port of Whitman moves local agricultural products and manufactured goods downriver to market and brings agricultural inputs and petroleum products upriver.

Median household income in 1990 was $26,445 with per capita income at $13,093. Twelve percent of families for whom poverty status was determined were below the poverty line in 1990. This represents an increase from 7.2 percent in 1980. Electrical rates for households in 1998 were approximately 4.50 cents per Kilowatt-hour.

Character (Place)

Colfax's location in the heart of the Palouse region and near the lower Snake River provides numerous recreational opportunities for this traditional agricultural community. Colfax has access to 15 recreational sites on the lower Snake River reservoirs within 50 miles. The Port of Whitman County manages Boyer Park and Marina, a primary destination for Colfax residents. Over 5 percent of the total population held steelhead fishing tags in 1998, while 24 percent of residents purchased general fishing licenses.

Land tenure can be characterized by the loss of 355 farms in the county and an increase in the average sized farm by 349 acres between 1969 and 1992. Local services include fire, police, and a hospital.

Vision and Vitality

Colfax's community leaders have recently obtained outside funding to complete the Main Street revision. Their latest Comprehensive Plan (1993) describes a strategy "...to nurture a harmonious environment that will enhance the quality of life for all citizens. It will provide for efficient municipal services, promote the business community and establish balanced economic growth..." Several of the key elements to achieve this vision include:

- enhance residential development opportunities and preserve opportunities for diversified lifestyles, to accommodate a growing population of at least 15% by the year 2002;
- enlarge the economic base by stimulating development of commercial facilities, a diverse job market and shopping opportunities, and by promoting Colfax as a retirement place;
- improve arterial and local road transportation;
- plan for rail abandonment to attain railroad rights-of-way;

- provide facilities and services for educational, cultural and recreational use; and
- maintain and improve the quality of the physical environment.

Colfax residents sponsor numerous activities including the Palouse Empire Fair, a traditional plowing bee and harvest bee and a summer festival. Over 11 churches and 21 social organizations actively participate in the community. Some of these organizations include the American Legion, Red Cross, Rotary, VFW, Historical Society, Whitman Conservation, Eagles, Elks, and 4-H.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.3 Pomeroy, Washington

Pomeroy is located in Garfield County approximately 15 miles south of the lower Snake River in southeastern Washington. US Highway 12 passes through town and connects Pomeroy to Clarkston and Lewiston to the east and Walla Walla and the Tri-Cities to the west. Pomeroy was selected because of navigation and recreation concerns.

History

Established in 1864, Pomeroy quickly experienced a rapid wave of population migration due to its location on the stagecoach line between the towns of Walla Walla and Lewiston. The economy was based primarily on cattle and vegetable farming. By 1878 the town had grown into a service and trade center, containing a flour mill, retail stores, and a hotel. Arrival of the Starbuck-Pomeroy rail branch in 1885 further expanded Pomeroy's population, while serving as the major source of transportation for agricultural products. A pea cannery was built in 1942 and remained operational until the 1960s. The construction of Little Goose Dam in 1970, followed by Lower Granite Dam in 1975 significantly increased the local population and economic base in Pomeroy, as construction workers and their families moved in. The rail line went bankrupt and was abandoned in 1981. Pomeroy of the 1990s has experienced many infrastructure improvements to its Main Street.

People (Demographics)

The estimated population of Pomeroy in 1996 was 1475. This represents a 5.9-percent increase since 1990 after a large decline of 23.6 percent between 1970 and 1990 in the wake of the post dam construction population and economic boom. Pomeroy is the only large community in the county and thus the population served by, and employed and involved in, the community is much larger. From 1980 to 1990 the median age increased from 41 years old to 46 years old. Over 28 percent of the total population was 65 years old and over in 1990. The dependency ratio was 105. School enrollment in 1990 was 234 students. In 1990 Native Americans and Hispanics made up less than 2 percent of the total population. Recent demographic changes have included an increasing population on public assistance.

Economics

Total employment in 1990 was 572. Unemployment in 1990 was a low 2.6 percent. Employment in 1990 was highest in agriculture, retail trade, services, and state and local government. Overall economic diversity in Pomeroy was calculated as medium high for 1995. Major employers include the Forest Service, Army Corps of Engineers, county government, the local school district, Garfield County Memorial Hospital, and Dye Seed Ranch. The Corps employs 20 individuals who reside in Pomeroy.

Pomeroy is an isolated community with strong economic and social links to the Lewiston and Clarkston Valley. The community has access to barge and trucking services. There is no rail service in the county.

Median household income in 1990 was $22,903 with per capita income at $11,283. Families for whom poverty status was determined were below the poverty line in 1990 were 6.5 percent. Electrical rates for households in 1998 were approximately 5.13 cents per kilowatt-hour.

Character (Place)

Pomeroy's location in the midst of rich farmland between the lower Snake River and the Umatilla National Forest and the Tucannon Wilderness provides numerous recreational opportunities for this traditional agricultural community. Pomeroy has access to 20 recreational sites on the lower Snake River reservoirs within 50 miles. Primary destinations for Pomeroy residents on the reservoirs are Chief Timothy State Park, Boyer Park, and Central Ferry. Over 8 percent of the total population held steelhead fishing tags in 1998, while 40 percent of residents purchased general fishing licenses.

Land tenure can be characterized by the loss of 60 farms in the county and an increase in the average sized farm by 338 acres between 1969 and 1992. Local services include fire, police, and a hospital.

Vision and Vitality

Pomeroy has actively worked to develop and restore an old flour mill and has obtained outside funding for other local projects like downtown beautification. Pomeroy's 1995 Comprehensive Plan describes key elements for maintaining its small town atmosphere. These include:

- Attaining economic well-being through diversification and economic stability;
- Encourage the development of businesses that utilize locally-grown products and value-added industries;
- Protecting the natural and built environments through preservation, conservation, and enhancement;
- Attracting out-of-town money by focusing on recreation and tourism;
- Encourage efficient multi-modal transportation systems based on regional priorities and coordinated with county and city comprehensive plans;
- Increase the opportunity for residents to purchase or rent affordable safe and sanitary housing; and
- Protect the viability of agricultural and forest practices from nuisances lawsuits that encourage and may even force the premature removal of lands from agricultural uses and timber production.

Pomeroy residents sponsor numerous activities including the Garfield County fair, a rodeo and fair, and a tumbleweed festival. Six churches and other social organizations actively participate in the community. Some of these organizations include the civic theatre, spinners club, Men's club, Kiwanis, Shriners, VFW, the Historical Society, 4-H, service club, and the Eagles.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.4 Kennewick, Washington

Kennewick is located in Benton County across the Columbia River from Pasco. It was selected as a focus community because of navigation, recreation, irrigation, and power concerns.

History

Incorporated in 1904, Kennewick is the largest community of the Tri-Cities. It began as a predominantly agricultural-driven economy, linked to the Northern Pacific Railroad route which moved its products to markets. World War II brought new prosperity to the region: In the 1940s, the plutonium production facilities at Hanford Project were created. Hanford employees greatly expanded Kennewick's population and the retail base grew to meet the needs of the increasing population. With the development of the Columbia Basin Project, irrigated agriculture expanded around the community, contributing to its rapid growth.

People (Demographics)

The estimated population of Kennewick in 1996 was 48,010. This represents a 13.9-percent increase since 1990 after increasing 177 percent between 1970 and 1990 through growth and annexation. From 1980 to 1990 the median age increased from 27 to 30. The dependency ratio was 66. School district enrollment in 1999 was 13,823 students, an increase of 1,694 students since 1990. The Hispanic population increased from 4.1 to 8.7 percent of the population between 1980 and 1990. African American and Native Americans made up 1.1 and 1 percent respectively of the total population.

Economics

Total employment in Kennewick in 1990 was 19,393 with an unemployment rate of 7.0 percent. This represents a slight increase from the 1980 unemployment rate of 6.7 percent. Employment in 1990 was highest in retail trade with 4,089 employees with services, non-durable manufacturing, and transportation, communication, and public utilities contributing 7,047, 2,271 and 2,152 jobs respectively. Services, agriculture, and recreation were the fastest growing sectors between 1980 and 1990. Overall economic diversity in Pasco was calculated as high in 1995. Major employers include the school district, Kennewick General Hospital, Sandvik Special Metals, and Costco. Kennewick is considered a regional retail center and is served by rail and trucking modes of transportation. Barge transportation is located across the river in Pasco.

Median household income in 1990 was $28,261 with per capita income at $12,767. Twelve percent of families for whom poverty status was determined were below the poverty line in 1990. This represents an increase from 7.2 percent in 1980. Benton County has been designated as an economically distressed area due to high unemployment over the last 3 years. Electrical rates for households in 1998 were approximately 4.28 cents per Kilowatt-hour.

Character (Place)

Kennewick's location on the Columbia River affords community residents and visitors with abundant opportunities for slack water recreation. Kennewick residents have access to 32 developed water recreation sites, including six on the lower Snake River reservoirs within 50 miles such as Fish Hook Park and Landing, Charbonneau, and Central Ferry. Waterfront development and parks are an integral part of the character of Kennewick.

Land tenure can be characterized by the loss of 21 farms in the county and a decrease in the average size farm by 108 acres between 1969 and 1992. Local services include fire, police, and hospital.

Vision and Vitality

The 1998 Kennewick Comprehensive Plan describes a strategy to "...fashion development and growth with conscientious planning and foresight..." Elements of this plan include:

- Encouraging growth within the current city limits while protecting critical areas.
- Promoting work at the regional level to enhance the Columbia River Shoreline and Kennewick's riverfront.
- Diversifying the economy, which is currently dominated by nuclear fuel manufacturing, the construction of nuclear power plants, and agriculture. Initiatives include targeting the underdeveloped industrial sector, providing affordable housing, and capitalizing on tourism benefits of the currently under-utilized Columbia River.

- Maintaining the navigability of the Columbia River for commercial barge traffic.
- Improving all modes of transportation, including the rail system, expansion of Columbia River port capabilities, and expansion of public access to local waterways for recreation.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.5 Pasco, Washington

Pasco is located in Franklin County to the north of the confluence of the Snake and Columbia Rivers. Pasco and the other Tri-Cities create a hub of human and commodity movements through the lower Columbia Basin. Pasco was selected as a focus community because of water supply issues, navigation/transportation, power, recreation opportunities and sites, and anadromous fish runs.

History

Officially incorporated in 1891, Pasco attributes its establishment and early growth to railroad construction near the Snake and Columbia Rivers in the 1870s. Steam-powered boats provided transportation into the region prior to the arrival of the railroad. Pasco soon moved from a single economy of rail to livestock and agricultural production made possible by pumping water from the rivers for irrigation in the 1890s. A more intensive irrigation project was developed in 1910. Airmail service to Pasco began in 1926, and a new airport by the rail was dedicated in 1929. In 1943 the Hanford nuclear project began. Although Pasco is located on the opposite side of the Columbia River from the Hanford facilities, it did receive some population and economic spillover, particularly with the 1985 creation of the I-182 highway bridge which connects Pasco to Richland. Work on environmental restoration in Hanford continues to provide economic benefits to Pasco. Dry land and irrigated agriculture in the surrounding countryside continue to play an important role in Pasco's development.

People (Demographics)

The estimated population of Pasco in 1996 was 22,370. This represents a 10 percent increase since 1990 after increasing 46.1 percent between 1970 and 1990. From 1980 to 1990 the median age remained stable at 27 years. The dependency ratio was 83. School enrollment of local residents in 1990 was 4,906, an increase of 1,272 students since 1980. Hispanics made up 40.8 percent of the population in 1990, up from 20.9 percent in 1980. African Americans and Native Americans made up 5.6 percent and 1 percent, respectively, of the total population.

Economics

Total employment in Pasco in 1990 was 7,726 with an unemployment rate of 11.5 percent. This represents an increase from the 1980 unemployment rate of 10.1 percent. Employment in 1990 was highest in retail trade with 1,387 employees in both manufacturing of durable and non-durable goods and agriculture contributing 1,352 and 1,286 jobs, respectively. From 1980 to 1989, employment in agriculture has increased 170 percent. Overall economic diversity in Pasco was calculated as high in 1995. Major employers include Iowa Beef, the school district, Universal Frozen Foods, Boise Cascade, and Burlington Northern.

Pasco is considered a regional trade center and is served by rail, barging, and trucking services. The Port of Pasco operates both rail and barge loading facilities. The Port is the furthest port upstream on the Columbia River. Its position on US Highway 395 and Interstate Highway 82, combined with its large rail yard, makes Pasco the primary transportation node in the lower Columbia Region.

Median household income in 1990 was $17,897 with per capita income at $8,016. Twenty-eight percent of families for whom poverty status was determined were below the poverty line in 1990. This represents an increase from 12 percent in 1980. Franklin County has been designated as an economically distressed area. Electrical rates for households in 1998 were approximately 4.28 cents per Kilowatt-hour.

Character (Place)

Pasco’s location at the confluence of the Snake and Columbia Rivers affords community residents and visitors abundant opportunities for slack water recreation. Pasco residents have access to 32 developed water recreation sites, including six on the lower Snake River reservoirs within 50 miles, such as Charbonneau, Fish Hook Park and Landing, and Windust Park.

Land tenure between 1969 and 1992 can be characterized by the gain of 66 farms in the county and no change in the average size farm. Local services include fire, police, and a regional hospital.

Vision and Vitality

The 1995 Comprehensive Plan lists critical elements to move the community forward to 2015. These include:

- Focusing on the land use of the city by improving its physical appearance, encouraging cluster development, promoting community services, and encouraging small-scale neighborhood commercial hubs.
- Providing adequate park and recreation opportunities, such as improving segments of the Columbia and Snake River shoreline.
- Supporting efforts to build a train-transit interstate bus terminal for residents.
- Maintaining economic development by promoting new businesses, tourism and recreational opportunities on the Columbia and Snake Rivers.
- Maintaining a strong relationship with the Port.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.6 Umatilla, Oregon

Umatilla is located in Umatilla County, downstream from the confluence of the Snake and Columbia Rivers on the Columbia River. Umatilla was selected as a focus community because of navigation/transportation, recreational opportunities and sites, and irrigation.

History

Initially called Columbia, the town of Umatilla was founded in 1863 as a site for transferring gold on the Columbia River to the Walla Walla route. When mining declined, the town stagnated but then grew into a local service center for increasing irrigated agricultural activity. The building of the Umatilla Army Depot in the 1940s and the McNary Dam in the 1950s contributed to a population boom. In 1963 a major portion of Umatilla was destroyed because of flooding caused by the John Day Dam, built 40 miles downriver.

People (Demographics)

The estimated population of Umatilla in 1996 was 3,310. This represents an 8.7-percent increase since 1990 after increasing 348 percent between 1970 and 1990 through rapid expansion of irrigated agriculture. From 1980 to 1990 the median age increased from 24 to 28. The dependency ratio was 74. School enrollment of local residents in 1990 was 744. Hispanics made up 17.1 percent of the total population in 1990, up from 11.9 percent in 1980. African Americans and Native Americans made up 0.2 percent and 1.6 percent respectively of the total population.

Economics

Total employment in Umatilla in 1990 was 1,225, with an unemployment rate of 12.4 percent. This represents an increase from the 1980 unemployment rate of 6.4 percent. Employment in 1990 was highest in retail trade with 266 employees with both durable and non-durable manufacturing and all services contributing 208 and 279 jobs respectively. Overall economic diversity in Umatilla was calculated as medium high in 1995. Major employers include the school district, Boise Cascade, Sectric, and JM Manufacturing.

Umatilla is tightly linked to the economies of the Tri-Cities, Hermiston, Boardman, and Irrigon. The Port of Umatilla plays an important role in the handling of locally produced agricultural products and goods via the Columbia Waterway and rail.

Median household income in 1990 was $20,799 with per capita income at $8,481. Nineteen percent of families for whom poverty status was determined were below the poverty line in 1990. This represents an increase of 7.1 percent since 1980. Electrical rates for households in 1998 were approximately 5.40 cents per Kilowatt-hour.

Character (Place)

Umatilla’s location on the Columbia River on the John Day pool provides abundant water for irrigation and recreation. Umatilla’s residents have access to 29 developed water recreation sites including four on the lower Snake River reservoirs within 50 miles. Fishing is an important activity as indicated by the annual Walleye fishing tournament and the marketing slogan "Walleye Capital of the World." Over 9 percent of the total population had steelhead fishing tags for the 1998-fishing season.

Land tenure can be characterized by the gain of 157 farms in the county and a slight decrease in the average size farm of 16 acres between 1969 and 1992. Local services include fire, police, and a hospital in nearby Hermiston.

Vision and Vitality

The leadership of Umatilla has actively pursued the development and diversification of the local economy. According to the 1977 Umatilla Comprehensive Plan, "throughout its history, the growth of Umatilla has been influenced by fluctuations in the agricultural economy and development along the Columbia River, and the immediate future will likely follow a similar pattern."

The key elements of concern emphasized in the document include:

- Recreation: Continued access to and enjoyment of local outdoor recreational opportunities on the Columbia and Umatilla Rivers.
- Economic growth: Future expansions in irrigated agriculture, agri-business and industrial facilities to strengthen the economy.
- Transportation: Improvement of land transportation via the development of I-82 to link I-90 to I-80.

Community organizations, including six churches and various service organizations such as Kiwanis, Masonic temple, boy scouts, explorer scouts, and the senior center and the local chamber of commerce, contribute to the vision and vitality of Umatilla. The community sponsors diverse events such as landing days, the walleye tournament, and a community Christmas tree lighting ceremony, a stage rider's rodeo, and circus conducted by the chamber of commerce.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.7 Lewiston, Idaho

Lewiston is located in Nez Perce County at the confluence of the Clearwater and Snake rivers. Three major US highways in the region intersect in Lewiston and provide access to Eastern Washington, Northern Idaho, Montana, and Southern Idaho. It was selected as a focus community for the following reasons: navigation at the Port of Lewiston (the only seaport in Idaho), recreational opportunities and access along the lower Snake River, construction impacts associated with implementation, and anadromous fish runs on the Snake and Clearwater Rivers.

History

Founded in May 1861, Lewiston was the second permanent settlement in Idaho and the first incorporated town. Because of its location on the junction of the Snake and Clearwater rivers and seasonal navigation on the lower Snake River, Lewiston served as a supply center for regional mining operations. Following the gold boom, Lewiston continued to grow as a regional shopping, market, and distribution center for agricultural and timber operations. The Port of Lewiston was established in 1958. The Lewiston Orchards were annexed in 1969, doubling the town's area and population. The construction of the Lower Granite dam in 1975 brought slackwater to Lewiston, making it the most inland port on the 460 mile Columbia-Snake River transportation system.

People (Demographics)

The estimated population of Lewiston in 1996 was 30,271. This represents a 7.8-percent increase since 1990 after slowly increasing 7.7 percent between 1970 and 1990. From 1980 to 1990 the median age increased from 31 years to 35 years. The dependency ratio, a measure of the age structure of the community, was 69. School district enrollment in 1999 was 5,121, an increase of 561 students since 1990. Native Americans and Hispanics made up 1.4 percent and 1.2 percent respectively of the total population.

Economics

Total employment in Lewiston in 1990 was 13,120 with an unemployment rate of 6.4 percent. This represents a decrease from the 1980 unemployment rate of 8.4 percent. Employment in 1990 was highest in retail trade with 2,607 employees. Manufacturing of durable and non-durable goods accounted for 2,771 jobs. Overall economic diversity in Lewiston was calculated as high for 1995. Major employers include the Potlatch Corporation (Potlatch), Lewis and Clark State College, St. Joseph Regional Medical Center, and Blount, Inc. Potlatch is by far the largest employer in the valley.

Lewiston is considered a regional trade center and is served by rail, barging and trucking services. The Port of Lewiston has both rail and barge loading facilities. Primary downriver shipments include grains and wood products, logs and wood chips from Potlatch, which are transported both in bulk and in containers. Recreation on the reservoirs and further upriver on the Clearwater and Snake rivers is also an important component of the local economy and includes both services and boat manufacturing.

Median household income in 1990 was $25,711, with per capita income at $12,828. Eight percent of families for whom poverty status was determined were below the poverty line in 1990. Electrical rates for households in 1998 were approximately 4.25 cents per Kilowatt-hour.

Character (Place)

Lewiston's location at the confluence of the Snake and Clearwater rivers affords community residents and visitors both slack water and white water recreation opportunities. Lewiston has access to 15 developed sites on the lower Snake River reservoirs within 50 miles. Important recreational areas include Chief Timothy, Clarkston Landing, and Hells Gate. The levee system provides open green space along the river with trails and recreational facilities. Fishing is an important element in the community with over 11 percent of the total population holding steelhead tags during the 1998 fishing season.

Land tenure can be characterized by the loss of 147 farms in the county and an increase in the average sized farm by 334 acres between 1969 and 1992. Local services include fire, police, and a regional hospital.

Vision and Vitality

Lewiston's leadership has actively pursued and obtained Federal grants. The 1991 Comprehensive Plan lists its key planning objectives. These include:

- Encourage orderly and diverse growth by promoting economic, social and educational opportunities.
- Prevent urban sprawl while encouraging use of undeveloped lots.
- Encourage industrial development that utilizes local labor and products, and is harmonious with the local environment.
- Protect open spaces and promote environmentally sound activities.
- Pursue transportation projects that lead to economic development.
- Encourage recreational opportunities, such as use of the waterfront. This may include development of a greenbelt from the Lewiston Grain Growers to Hells Gate State Park, and development of a boat launch facility in North Lewiston.
- Protect the existing biological ecosystem of the city and promote its improvement.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.8 Orofino, Idaho

Orofino is located in Clearwater County, 45 miles upstream from the lower Snake River at the confluence of the North Fork and the Clearwater River. US Highway 12, the major highway connecting Lewiston to Montana, passes through the middle of town. National Forests, Wild and Scenic Rivers, the Dworshak Reservoir, and the Selway-Bitterroot Wilderness Area are located in close proximity.

Orofino was selected because of the anadromous fish runs on the Clearwater River, the sport fishing industry related to those runs, and the current conflicts with flow augmentation from the Dworshak Reservoir required under the 1995 Biological Opinion that affect recreation. Orofino markets itself as the "Steelhead Capital of the World" and boasts the world's largest steelhead fish hatchery.

History

Orofino's history is centered on its natural resources: gold prospectors first settled Orofino in 1861 and then demolished it when ore deposits were found beneath the town. Orofino was later rebuilt in a different location at the confluence of Orofino Creek and the Clearwater River. In 1889 the Northern Pacific Railroad began service to the town, and in 1897 the first post office was established. Starting in the 1900s, wood production dominated the economy and continues today. Orofino was incorporated in 1925, and by 1940 it was an established center for white pine logging. Agriculture also grew. In 1962 the Lewis and Clark Highway was completed and was seen as a source of economic stimulation for tourism and commerce. In 1968 construction on Dworshak dam began and contributed to population increases in Orofino. Much of the population remained post construction. Although timber production has been on the decline over the past decade from diminishing supplies of timber from National Forest lands, new opportunities in recreational tourism were created from the Clearwater River and the Dworshak Reservoir. The nation's largest steelhead hatchery contributes to this tourism. The listing of Snake River salmon has negatively impacted these recreational developments.

People (Demographics)

The estimated population of Orofino in 1996 was 3,122. This represents an 8.6 percent increase since 1990 after a 26.1 percent decrease between 1970 and 1990. From 1980 to 1990 the median age increased from 31 years to 38 years. The dependency ratio was 73. School enrollment in 1999 was 1,613, a decrease of 90 students since 1990. Native Americans and Hispanics made up 2 and 1.5 percent respectively of the total population.

Economics

Total employment in Orofino in 1990 was 1,162, with an unemployment rate of 11.8 percent. This represents a decrease from the 1980 unemployment rate of 17.7 percent. The county is listed by the BLS as a labor surplus area because of this consistently high unemployment rate. Employment in 1990 was highest in retail trade and manufacturing, agriculture, forestry and fisheries. Overall economic diversity was calculated as medium high for 1995. Major employers include the school district, the Clearwater National Forest, the Department of Health and Welfare, Clearwater Valley Hospital, The Potlatch Corporation, and Konkolville Lumber Company. The community is considered isolated economically although it is served by both rail and trucking services. The mills utilize the lower Snake River transportation indirectly through their sales of wood chips to Potlatch in Lewiston, which are processed or shipped downstream.

Median household income in 1990 was $24,309 with per capita income at $12,251. Eight percent of families for whom poverty status was determined were below the poverty line in 1990. Electrical rates for households in 1998 were 4.63 cents per Kilowatt-hour.

Character (Place)

Orofino has access to ports on the lower Snake River within 50 miles. Aside from local access to reservoir recreation opportunities on Dworshak Reservoir, Orofino has access to six sites on the lower Snake reservoirs within 50 miles. Fishing is an important element in the community with over 19 percent of the total population holding steelhead tags during the 1998 fishing season.

Land tenure can be characterized by the loss of 13 farms in the county and a decrease in the average sized farm by 259 acres between 1969 and 1992. Local services include fire, police, and a regional hospital.

Vision and Vitality

Orofino's civic leadership has been successful in obtaining Federal grants as well as maintaining up-to-date comprehensive plans. Key elements in Orofino's 1997 Comprehensive Plan include:

- promote a healthy and safe environment for residents;
- encourage young people to stay by making housing and employment accessible;
- promote tourism as a means of economic diversity;
- develop alternate means of public transportation, improve roads, and pave streets;
- encourage efforts to make Highway 12 a 4-lane road to Lewiston;
- establish an alternate water source for the city;
- promote the construction of a new bridge across the Clearwater River; and
- develop a new airport.

One justification for the need to further diversify the local economy was the negative impacts of the salmon listing on the two main recreational industries.

Community activities and celebrations include a Bass fishing tournament, lumberjack days, and the President's Cup golf tournament. Active groups include 13 churches as well as economic development and civic organizations like the chamber of commerce, Rotary, American Legion, veterans of foreign wars auxiliary, 4-H, and Kiwanis.

Community members' perceptions and assessment are pending final University of Idaho report.

2.3.9 Riggins, Idaho

Riggins is located in Idaho County, upstream from the lower Snake River along the Salmon River, a tributary to the Snake. A major north-south highway (US 95) passes through the middle of town. Riggins was selected as a focus community because of the anadromous fish runs on the Salmon River, the recreational and sport fishing on the Salmon River, as well as the effects of listed salmon stocks on whitewater recreation.

History

The discovery of gold first attracted settlement in the Riggins area, which was officially named in 1908. Mining was replaced by livestock raising, which remained prominent until the 1950's. National forests were established nearby. With the Civilian Conservation Corps (CCC) program of the 1930s, as well as other Federal projects, many roads, trails, fences, and water developments were established. During World War II, a sawmill was built and logging became a dominant industry. The 1982 fire that destroyed the mill forced the community to rebuild their economy. The residents who stayed shifted to a recreation-based economy of fishing, river floating, and hunting, made possible by the resources of the Salmon River. In 1982 there was only one river outfitting company. Now, Riggins boasts 15 of these, plus six motels, five restaurants, and three real estate agencies, among other services. The Salmon River Economic Development Association was formed in 1992 to assess the economic health of the area. Since its inception, many city improvements have occurred. Additionally, a medical clinic recently opened, the Goff Bridge has been replaced, and a new water system is being coordinated with the improvement of Highway 95.

People (Demographics)

The estimated population of Riggins in 1996 was 495. This represents an 11.7-percent increase since 1990 after a 17% percent decrease between 1970 and 1990. The median age in 1990 was 44.6. The dependency ratio, a measure of the age structure of the community, was 110. School district enrollment in 1999 was 244 students. Native Americans and Hispanics each made up less than 1 percent of the total population.

Economics

Total employment in Riggins in 1990 was 138, with an unemployment rate of 6.8 percent. This represents a decrease from the 1980 unemployment rate of 13.5 percent. Idaho County is listed by the Bureau of Labor and Statistics (BLS) as a labor surplus area because of this consistently high unemployment rate. Employment in 1990 was highest in retail trade, services, and government and governmental enterprises. Overall economic diversity was rated as medium high for 1995. Major employers include the Forest Service, the local school district, and Paul's Market. The community is considered isolated economically although it is served by trucking services and lies on US highway 95.

Median household income in 1990 was $11,458 with per capita income at $6,103. Approximately 26 percent of families for whom poverty status was determined were below the poverty line in 1990. Electrical rates for households in 1998 were approximately 5.18 cents per Kilowatt-hour.

Character (Place)

Riggins has no access to ports on the lower Snake River within 50 miles. Additionally it does not have access within 50 miles to recreational opportunities on the lower Snake River. It does have access to abundant whitewater on the Salmon River and other recreational opportunities on Forest Service lands. Fishing is an extremely important element in the community with over 46 percent of the total population holding steelhead tags for the 1998 fishing season.

Land tenure may be characterized by the loss of 73 farms in the county and an increase in the average sized farm by 65 acres from 1969 to 1992. Services in Riggins include fire and police.

Vision and Vitality

Riggins civic leadership has been successful at obtaining Federal grants for community development. Although Riggins does not have a comprehensive plan, the leadership joined in developing a Gem Community Plan in 1997. The plan places an emphasis on the need to diversify its economic situation while having as little impact as possible on small town atmosphere and lifestyle. It calls for "improving the economic status of the existing population through increasing the length of the tourist season, encouraging cottage industries, helping market existing products produced by local residents, and guiding changes that are inevitable." Key elements in the plan include:

- promote tourism via the internet, brochures, and the construction of a river path;
- support holistic management of agriculture through weed control, watershed management, and fishing controls; and
- support shared use of Hells Canyon.

Community members' perceptions and assessment are pending final University of Idaho report.

3. Description of Social Impacts: Geographic and Temporal Scope

3.1 Power

The primary socioeconomic impacts associated with changing power production under the proposed alternatives result from a percentage change in existing electricity rates and the siting of new energy facilities. These impacts are evaluated for each of the focus communities in terms of the relative increase in retail power rates, the dependency on Bonneville Power Administration (BPA) power, the percentage change in local employment, the effect on export industries, and the proximity to the siting of new power generation facilities.

Impacts would occur immediately if the dam breaching alternative were implemented. The following analysis of rate impacts on consumers is quite uncertain because of recent changes in regional power marketing and the potential future rate effects of BPA privatization and energy deregulation on Pacific Northwest consumers. For the purpose of this analysis, the existing power marketing structure will be assumed in order to isolate the marginal effects of lost hydropower production capability on ratepayers and communities in the region.

3.1.1 Electrical Rate Impacts

Alternatives A1 and A2

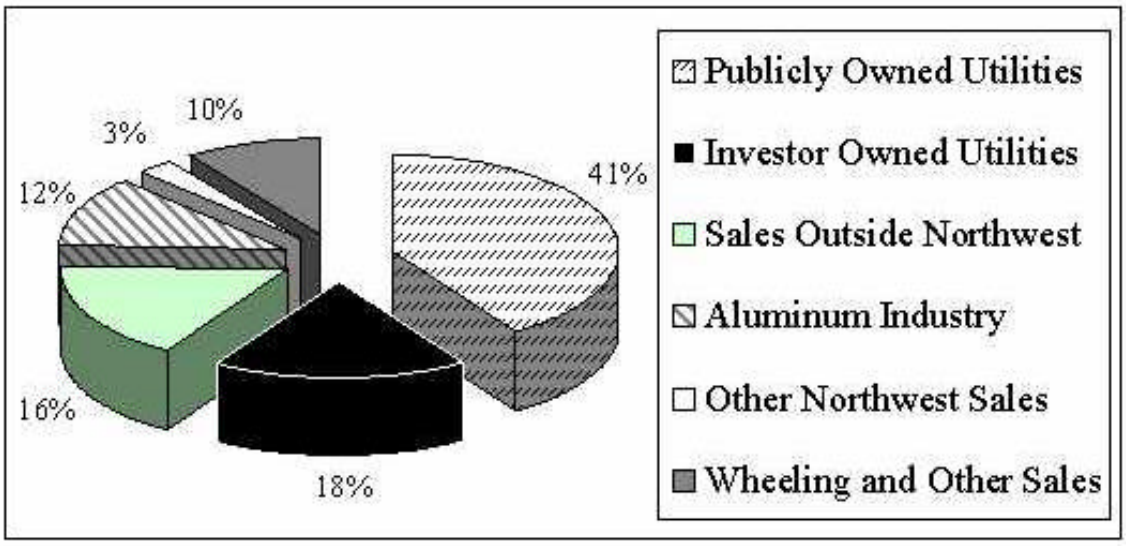
Under Alternative A1 no new facilities are proposed as there is no lost energy production. Because existing anadromous fish mitigation and recovery programs are paid through the BPA and 5.6 percent of current residential rates contribute to these programs, there is uncertainty about the potential increases in BPA rates to meet Salmon recovery goals. Under the Memorandum of Agreement in effect from 1996 to 2001, BPA will invest approximately $252 million dollars per year for fish and wildlife throughout the Columbia-Snake River System (BPA Fast Facts, 1997). These expenditures may continue into the future under A1 and may continue to increase.

Under Alternative A2, the hydrosystem would be reconfigured and would actually produce more energy. Although the rate impact of this increased production was not quantified it is assumed that the change would be minimal and individual ratepayers throughout the Northwest would not be affected.

Alternative A3, Dam Breaching

Under Alternative A3, lost hydropower would be replaced by a more expensive form of generation--combined cycle turbines fueled by natural gas--or through a combination of conservation and renewable energy. Regardless of the method for replacing the power, individuals throughout the Northwest would be faced with more costly sources of energy. Under one scenario modeled by the Drawdown Regional Economic Workgroup Hydropower Impact Team (DREW HIT), the impacts of increased rates would most likely be distributed equally throughout the Pacific Northwest, the subregions, and the focus communities. Under another scenario, only BPA customers would pay for the increase in power production costs (DREW HIT, 1999). The mechanism for cost recovery has not been determined at this time, but it is assumed that those utilities purchasing directly from BPA would be more at risk for increased rates. As seen in Figure 13 approximately 59 percent of BPA revenue in 1997 was generated through sales to public utilities and investor owned utilities, while 12 percent came through firm power sales to the aluminum industry (BPA Fast Facts, 1997). The effects of increased rates on these consumer groups are discussed below.

Figure 13. 1997 BPA Sources of Revenue as Percentage of Total Revenue ($2,271 million)
Source: BPA Fast Facts, 1997



In addition, someone must pay for the costs of implementing Alternative A3 and this cost implies additional rate impacts unless Congress pays for the cost of dam breaching. Two possible scenarios are examined here. The first scenario assumes that the nation's taxpayers would pay all the implementation costs. The second scenario assumes that BPA would repay hydropower's share of the implementation costs, which would be approximately 90 percent of total costs.

For the purpose of this discussion, it is assumed that wholesale cost increases to utilities would be passed directly on to consumers regardless of the proportion of the local utility's energy purchased from BPA. This is considered to be a worst case scenario. Furthermore, it is assumed that the average residential rate for the Pacific Northwest is 5 cents per kilowatt-hour (kWh) (Northwest Power Planning Council). BPA's average residential rate is 5.3 cents per kWh (BPA Fast Facts, 1997). Midpoint estimates of electrical rates in the year 2010 resulting from replacing lost hydroelectric production (*i.e.*, no implementation costs covered by consumers) range from 5.097 cents/kWh if the cost increase is passed on to all Pacific Northwest consumers to 5.333 cents/kWh if the cost is passed on to just BPA customers. This represents a potential range of increase in electrical rates from 1.9 percent to 6.7 percent.

Midpoint estimates of electrical rate increases resulting from replacing lost hydroelectric production and covering 90 percent of the costs of dam breaching range from 5.138 cents/kWh to 5.472 cents/kWh. This represents a potential range of increase in electrical rates from 2.8 percent to 9.4 percent.

Table 14 illustrates the potential average monthly electrical bill increases for residential, commercial, industrial, and aluminum plan consumers. This table displays the mid point estimates under two scenarios (all costs of dam breaching borne by the federal government and 90 percent of dam breaching costs borne by increased BPA electrical rates).

Table 14
Potential Monthly Electric Bill Increases

Consumer Type	Average Electricity Consumed (kWH/month)	Average Monthly Increase for Replacement Power		Average Monthly Increase (Replacement Power, Plus 90% A3 Implementation	
		BPA Load High Cost	PNW Load Low Cost	BPA Load	PNW Load
Residential	1,113	$5.25	$1.07	$5.30	$1.50
Commercial	6,199	$29.25	$6.01	$29.30	$8.60
Industrial	280,848	$1,325.60	$272.42	$1,325.60	$387.40
Aluminum	160,600,000	$758,032.00	$155,282.00	$758,028.80	$221,538.60

Source: DREW HIT, 1999
Note: A more detailed discussion of the range rate impacts associated with the alternatives and scenarios for covering the implementation costs may be found in Section 7 of the DREW HIT report.

Regional Employment and Income Impacts

The regional economic impacts of these rate increases result from a decline in household and business income available for the purchase of other goods and services. The estimated impact on jobs caused by the middle rate increase is a total job loss of 1,498 (-743 jobs in Washington, -507 in Oregon, -248 in Idaho and -36 in Montana). The estimated impact on personal income is $41.374 million (-$21.056 million in Washington, -$38.813 million in Oregon, -$5.901 million in Idaho, and -$.614 million in Montana).

The overall effect of these rate increases would be an increase in the cost of living and of doing business. Since all commercial businesses may be affected in a similar fashion no one sector would gain a competitive advantage if they serve a local or regional market. All businesses would see an equal increase in the cost of doing business and could pass this cost on to consumers. On the other hand, those industries that produce for export such as the aluminum industry and irrigated agriculture may be placed at a competitive disadvantage. It is important to note, though, that average electrical rates for all sectors in the Northwest are well below national averages and these anticipated rate increases will not move Northwest consumers significantly towards the national averages. The relative effects of these changes are discussed in the following section.

Special Populations

Implications for Households

The social impacts of increased electrical rates would be relatively minor at the household level. Although rates may increase from 2.0 to 9.5 percent and increase the general cost of living, households in the region would still be well below the national average residential rate of 8.4 cents/kWh (BPA Fast Facts). In addition to the effects on residential consumers, households may also face an increase in the general cost of living as producers pass on increased costs of doing business to household consumers.

Implications for Fixed Income Households

Families on fixed income may have a more difficult time adapting to a higher cost of living. For example, increases in annual household electrical bills may range from $12.84 to $63.00. This increase may not create a significant social impact for fixed income families but the added expense may reduce the resources available for other essential expenditures.

Effects on Commercial Businesses

The response of small commercial businesses in the region would likely be to pass the increased costs of operations on to local and regional consumers. According to the Edison Electrical Institute (1998), southwest and Californian commercial businesses pay approximately 25 to 100 percent more for electricity than Northwest commercial enterprises. Under Alternative A3 the Pacific Northwest would still be able to attract new businesses with low, competitive electrical rates.

Implications for Irrigated Agriculture

Irrigated agriculture throughout the Pacific Northwest uses large quantities of electricity to pump water from ground wells and irrigation intakes, thus they would be disproportionately affected by increased electrical rates. In addition, since agricultural producers are price takers, that is, they cannot pass the increased costs of production on to consumers, increased electrical rates would decrease net farm income. The absolute amount would depend on the level of consumption.

Effects on Non-fixed Rate Export Oriented Industries

Industries in the region that produce for export may be placed at a competitive disadvantage from increased electrical rates. A comparison of monthly Northwest industry expenditures for electricity with other regions on the west coast indicate that the effect would be marginal. For example, data from the Edison Electrical Institute indicate that small industries outside of the Northwest pay on average between $1,000 to $24,000 more per month for 400,000 kWh. Only one other region in the U.S., that serviced by the Tennessee Valley Authority, has lower rates. It appears that an increase in electricity rates ranging from 2 to 9.5 percent would not create a barrier to attracting new businesses to the Pacific Northwest.

Implications for the Aluminum Industry

The potential effects on the aluminum industry in the Northwest are significant because their fixed rate contracts with BPA provide low electrical costs to this energy intensive industry. No industry studies were conducted as part of this feasibility study and therefore no clear conclusions may be drawn about the financial impact or the employment impacts of a rate increase. It is clear that the low cost of power in the Pacific Northwest provides a competitive advantage for this industry. Without an industry specific study it is difficult to determine what the industry response to this rate impact would be. If world market prices for aluminum are high, the industry may continue to purchase from BPA at higher costs without affecting overall profits. The industry may also respond by purchasing from other investor owned utilities at the same price it currently receives from BPA. In this case, residential consumers may see higher rate impacts than indicated in this study. Finally, if alternative low cost sources of electricity are unavailable and world market conditions are not favorable, the industry may respond by relocating or closing facilities.

3.1.2 Siting of New Power Production Facilities

The need to produce additional power to meet the existing demand may be met by siting two combined cycle facilities near the Umatilla area or through a combination of conservation and renewable energy sources (currently under study). The short term (1-2 years) regional employment and income impacts of this new construction and operations activity are estimated at 3,625 jobs and an increase in personal income of $116.8 million in the lower Snake River region for each facility. The long-term regional employment impacts for the operation of each new facility have been estimated at 550 jobs. Total long-term employment would be approximately 1,100 jobs in the lower Snake River region. The social impacts to those communities located near the new facility may include a shift in the composition of the local population, disruptions to daily living and commuting patterns, and decreased air quality. Because the locations of new facilities are not confirmed, these impacts will be briefly discussed in the community impacts section of this report.

3.2 Recreation

The social analysis focuses on the impacts of changing recreational access for local communities and the regional impact of changes in employment and income related to visitation to the lower Snake River. Changes in recreational opportunities are not addressed as adverse or beneficial because particular uses of the river reflect individual preferences that may be quite distinct throughout the region and because most all of the current uses will still be available under the various alternatives. Changed opportunities may bring new and different types of recreationists into the region and affect the social make-up of certain communities. Specific communities rely on certain types of recreational opportunities as a part of their economic base and the effects of altered opportunities are discussed on a community-by-community basis. The analysis also focuses on how community members might respond to the impacts from changing river access and recreation opportunities during and following drawdown implementation.

The following presents an overview of the general regional recreational changes associated with the proposed alternatives and the regional economic and social impacts.

3.2.1 Current Users and Uses

Recreation access and opportunities are key elements of the current quality of life and provide one element of the sense of place for communities in the region. A 1985 survey by the Corps found that between 80 and 89 percent of use of the lower Snake River came from within 100 miles. A more recent survey found that over half

the participants in water-dependent recreation came from seven cities in the region (Kennewick, Richland, Pasco, Clarkston, Lewiston, Pullman and Walla Walla), with Spokane and Yakima the next largest contributors of visitation (AEI/Normandeau, 1998). Finally, another survey conducted by AEI in 1998 found that over 38 percent of the surveyed population in the local counties surrounding the lower Snake River visited the river reservoirs in 1998.

These survey results indicate that existing recreational opportunities and access sites are well utilized by local populations. The most common activities on the reservoirs vary from reservoir to reservoir as seen in Table 15. With the exception of the Little Goose pool, fishing is an important use of the lower Snake River reservoirs. Picnicking, boating, and sightseeing were also identified as important. The AEI survey found that local county residents' attitudes towards the relative importance of different recreational uses of the lower Snake River were as follows by rank order: 1) recreational salmon fishing in the river, 2) reservoir fishing for small mouth bass, catfish, and bluegill, 3) reservoir recreation such as water-skiing and motor boating, and 4) river recreation such as rafting, canoeing, and kayaking. These are the types of users from the region that will be affected by changes in access and recreational opportunities on the lower Snake River under the proposed alternatives.

Table 15
Importance of Recreation Activities
on the Four Lower Snake Pools

	Current Distribution of Recreational Activity (By Rank)			
	Ice Harbor	**Lower Monumental**	**Lower Granite**	**Little Goose**
Fishing	1	2	3	6
Other	2	1	1	1
Sightseeing	3	5	4	5
Picnic	4	3	5	2
Boating	5	4	2	4
Camping	6	7	7	7
Swimming	7	6	6	3
Water-Skiing	8	8	8	8
Hunting	9	9	9	9

Source: Based on ACOE 1998 survey of users.

3.2.2 Recreational Access Changes: Alternatives A1 and A2

Under Alternatives A1 and A2, the existing access, developed and undeveloped recreation areas, and current lake-type recreational opportunities would not change. Access areas, marinas, and non-anadromous fishing opportunities would remain available for local community members. The probabilities for continued or improving wild anadromous fishing opportunities would be lower over all uncertainties than those associated with Alternative A3. This is based on projections by NMFS and the DREW Anadromous Fish Economic team. These projections indicate that harvest of anadromous fish does not have a high probability of occurring under A1 or A2 over the full range of uncertainties associated with the salmon life-cycle.

3.2.3 Recreational Access Changes: Alternative A3

Under Alternative A3, access to recreation on the lower Snake River would be adversely affected with the loss of 11 of 32 developed recreation areas. These areas would be closed because they would no longer provide access to the water. Additionally, 18 sites would require modifications to provide access to the river. None of the 10 recreation areas that provide marina boat moorage or dockside service facilities would be able to operate under Alternative A3 although some of these facilities may provide some services such as temporary moorage. The effects of closure would be distributed across the region as follows:

- Ice Harbor: 1 out of 6 recreational areas closed
- Lower Granite: 3 out of 14 recreational areas closed
- Lower Monumental: 3 out of 6 recreational areas closed
- Little Goose: 4 out of 6 recreational areas closed

The effects on these lost recreation areas would take place immediately upon implementation and access would be further limited after the initial drawdown as sites are being modified and riparian vegetation is restored (10-20 years). Although these developed recreational sites would be affected, new access may become available at undeveloped or primitive sites.

The social effects of changing and lost recreational access are evaluated for each community based on the proportion and degree of affected sites within 50 miles of the community. The social effects are discussed in the time frame of implementation and post-implementation. This measure will also help to identify the potential displacement and travel requirements for local residents during and following implementation if Alternative A3 is selected.

3.2.4 Recreational Opportunities

Recreational opportunities would change dramatically under Alternative A3 as the 140-mile long reservoir system would be converted to a 140-mile-long free-flowing river. Although most of the existing recreational opportunities would still exist, the mix of opportunities would change. It is assumed that local communities would continue to make use of the river resource for recreation. This is based on the 1971 findings from a Washington State University survey conducted prior to the impoundment of Lower Granite Dam that found over 88 percent of the visitors lived within 2 hours of the river.

In addition, upriver communities that depend on recreational guided fishing would be expected to see benefits from the increased probability of salmon recovery and growth in the wild salmon and steelhead fishery.

New, non-fishing, recreational opportunities and increased visitation to a free flowing river after 10 years are estimated to create between 542 and 1,489 jobs and $11.476 and $31.514 million in personal income in the reservoir subregion. After 20 years these estimates increase to between 594 and 1,520 jobs and $12.575 million to $32.166 million in personal income. Increased anadromous fishing opportunities in the reservoir region would create 91 jobs and $2.205 million in personal income after 10 years and increase to 107 jobs and $2.582 million in personal income after 20 years. Increased anadromous fishing opportunities in the upriver subregion are estimated to create 733 jobs and $13.748 million in personal income after 10 years and 1,499 jobs and $28.111 million in personal income after 20 years.

3.2.5 Displacement and Crowding

One response to the short-term disruption of recreational activities on the lower Snake River by communities in the local area may be to shift lake-type recreational activities to the Columbia River, the Dworshak Reservoir, or Lake Coeur d’Alene. This increased usage for reservoir type recreation by displaced recreationists may create economic opportunities in other areas as well as crowding at existing sites. Additionally, the short term disruption of access and opportunities may also displace recreationists to sites up-river on the Clearwater, Middle Snake, and Salmon rivers.

3.2.6 Populations of Special Concern

Recreational opportunities on the lower Snake River would change under Alternative A3 and one population, the elderly, may be less able to adapt and respond to this change. A free-flowing river would present greater challenges and greater risks to those elderly who now participate in reservoir recreation. For example, although fishing will still be available on the river, the elderly who enjoy this activity may be not have the physical abilities to fish on a free-flowing river.

The following discussion of Navigation/Transportation related social impacts is primarily based on the DREW Transportation Report dated April 15th, 1999, and spreadsheet models provided by the Corps, Portland District.

3.3.1 Social Impacts of Alternatives A1 and A2

Under Alternatives A1 and A2 no changes are forecast in the regional navigation system and thus no direct social impacts are identified. Although not directly related to actions under A1 and A2, the continued presence and operation of the lower Snake River waterway and low-cost barge transportation may continue to exert pressure on the viability of railroads and therefore historic trends in railroad abandonment throughout the lower Snake region may continue. The social effects of rail line abandonment on rural areas have been well documented and include the realignment of trade centers and trade hierarchies, negative impacts on smaller grain handling operations, increased trucking congestion, impacts to local roads, and decreases in local tax revenue (Russell *et al.*, 1995; USDA/ERS, 1974; Zimmerman, 1930; Landis, 1932; Lively, 1932; Casavant and Lenzi, 1989; Bangsund *et al.*, 1997). These impacts may well continue under A1 and A2 if additional branch rails are lost throughout the upriver and reservoir subregions.

In addition to these recent trends in the availability and abundance of modes of transportation, the overall farm sector has experienced and would continue to experience significant trends in the foreseeable future under Alternatives A1 and A2. These trends include a decline in rural farm community population size, a decreasing number of farms, increasing average farm size, and a growing income gap among community residents (see Dillman *et al.*, 1986; Wimberley, 1986; Heffernan and Heffernan, 1986; Allen and Dillman, 1994). Several key factors contribute to these trends. These include the role of increasing agricultural technology, specialization and productivity of farms, the outmigration from rural America and the in-migration of a non-farm population, and finally the rise of the information age and the decline of the traditional family farm and community control (see Field and Burch, 1988; Loboa, *et al.*, 1993; Allen and Dillman, 1994; and Dillman, 1986). Data on farm size and number of farms as well as discussions with

local agricultural extensionists confirm that these trends continue today and are likely to continue with the lower Snake River waterway remaining intact. The social impacts of these trends are the further reduction in community cohesion, loss of rural agricultural population, decrease in local retail sales, reductions in social services, and increased strain on the fiscal resources of local governments (see Table 16).

Table 16
Trends in Rural Agricultural Communities

Trend	Author	Study	Findings
Technological Advancement	Field and Burch, 1988 Dillman *et al.*, 1986 Wimberley, 1986 Loboa *et al.*, 1993	Sociological review on the effects of agricultural technology on farm structure	Increased specialization and productivity of farm operations has caused a shift away from family farms toward large-scale and corporate farming.
	Goldschmidt, 1978	Examination of the relationship between large-scale farming and community well-being in two California communities	An increase in large-scale farming and the concomitant decline in small-scale, family farming is associated with a loss of community social cohesion, reduction in social and public services, and spirals into other negative effects.
	Buttell and Larson, 1982 Heffernan *et al.*, 1986	Qualitative examination of the relationship between part- time farming and community structure	The surgence of part-time farming in rural agricultural communities changes many rural economics from predominantly agricultural communities to service sector.

Outmigration and aging farm population	Allen and Dillman, 1994	Case study of the social dynamics of a small farming community in Eastern Washington.	Out-migration due to technological advances has influenced the social system of the entire community. For example, population reductions have forced schools to close and consolidate. High school graduates often leave the community in search of employment opportunities.
	Rodefeld *et al.*, 1978	Study of community demographic changes resulting from population migration out of rural agricultural communities.	Out-migration is selective and affects the socioeconomic characteristics of the entire community. It leaves an age structure in the community with a high proportion of older people and children. The resulting consequences include a strain in medical, educational, recreational, and other services; and a decreased tax base.
Rise of the Information Age	Dillman, 1985 Dillman, 1986 Allan and Dillman, 1994	General effects of increased levels of information and communication and decreased community control and mass society interaction.	Farmers are experiencing more external control over farm decision-making and other aspects of community life. Increased information networks and communication changes the traditional rural farming community. A social caste system is evolving as outside employment opportunities and larger but fewer farms challenge community cohesion. Also, a new influx of in-migration by non-farmers seeking a small-town quality of life and new type of population growth.

3.3.2 Social Impacts of Alternative A3

Under Alternative A3 numerous social impacts are forecast for communities and community members in the upriver and reservoir subregions that currently use the waterway. These users include grain farmers, wood products industries, and purchasers of upstream petroleum. The social impacts addressed in this section focus on those resulting from changes in the modes and nodes and associated costs of transporting commodities with the loss of the lower Snake River waterway. The analysis is based upon the location and magnitude of these changes as identified in the Corps' Navigation report (Corps, 1999) and the Portland District's transportation model.

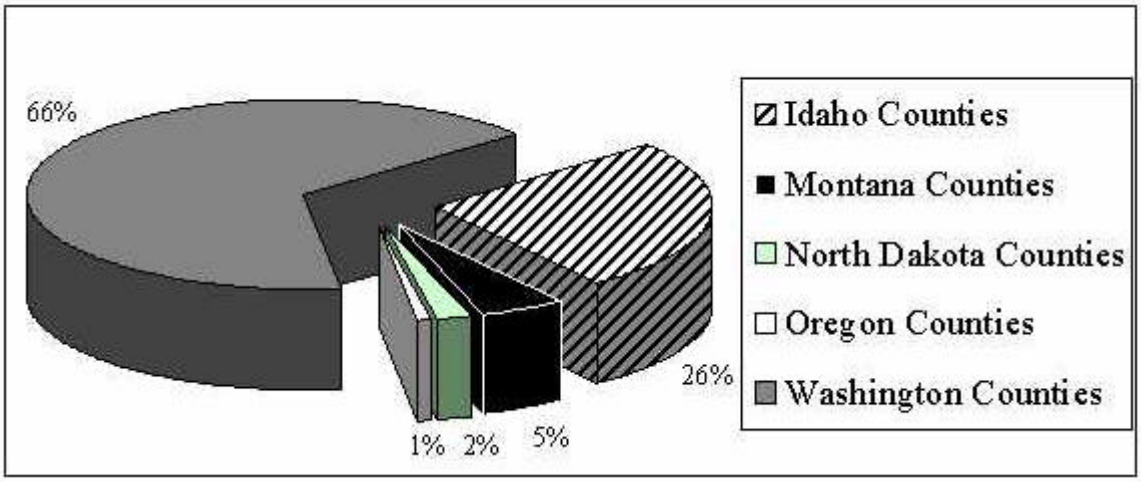
The social impacts include changes in regional employment and income, decreased farm income and farm viability, increased rate of farm loss and corresponding loss of rural farm population, decreased farm land values and county property tax revenue, and safety and congestion concerns associated with increased traffic flows. Because farmers are price takers, that is they must take the price offered by the marketplace and cannot pass increased costs on to consumers, and must bear the burden of production or transportation cost changes, the following discussion focuses primarily on the dryland farming sector and small agricultural communities. It is this population that dominates the study region and that will incur the majority of the transportation cost changes.

Impacts are discussed in the context of short-term, implementation, and post implementation time periods. Key elements of this discussion focus on who is affected, how much they are affected, when they will be affected, and how they might respond. For the purpose of this discussion, transportation costs refers to the economic costs of alternative modes of transportation while total costs refers to the increased economic costs of transportation, storage, and handling for alternative modes and nodes of transportation.

3.3.3 Distribution of Transportation Effects within the Region

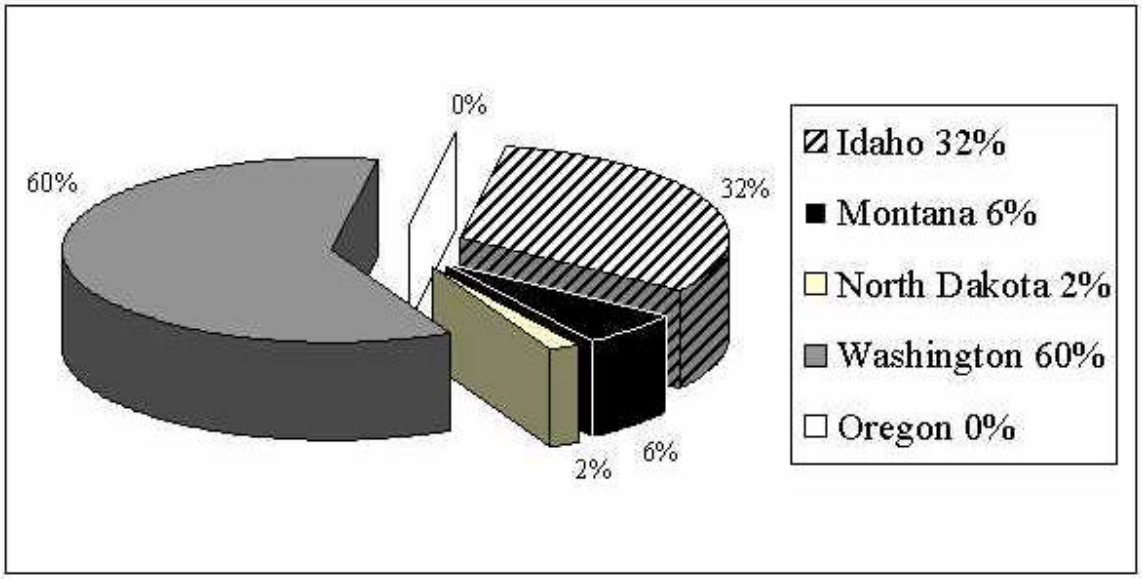
Increased transportation, storage, and handling costs (total costs) will be distributed throughout the region although the impacts will not fall equally on all states or subregions. Figures 14 and 15 depict the distribution of origin of all grains shipped on the lower Snake River and the share of the cost increases by states shipping grain that would be directly affected by the loss of navigation on the lower Snake River. These figures account for all the grain and counties affected by a loss of navigation on the lower Snake River.

Figure 14. Percentage of Total Bushels Shipped on LSR by Place of Origin



Source: ACOE Portland District Model, 1999

Figure 15. Percent of Total Transportation Cost Increase A3 By State



Source: ACOE Portland District Model, 1999

Together, the States of Washington and Idaho account for 92 percent of the total grain moved on the Lower Snake River. Approximately two-thirds of the total grain moved on the lower Snake River originates in Washington State. According to the Portland District's model, grain shipments that originate in Washington would experience 60 percent of the total increase in grain related transportation costs. Idaho shippers would assume a disproportionate percentage, 32 percents of costs compared to 26 percent of shipments, due to more costly alternative transportation modes.

3.3.4 Distribution of Transportation Effects Within the Subregions

Approximately 5,000 harvested farms that currently ship grains on the lower Snake River are located in 13 of the 25 counties that comprise the lower Snake River subregion. These 13 counties account for approximately 75 percent of the total grain movements on the river and 74 percent of the total cost increase for grain movements affected by the loss of navigation under the dam breaching alternative (Table 17).

Table 17
Grain Movements and Share of Total Costs by Affected Study Area Counties

County	State	Region	Total Bushels (Wheat and Barley) Shipped on LSR 1997-1998	Percentage of Total Grain Shipped on LSR	Percentage of Total Increased Costs
Latah	Idaho	Upriver	5,374,956	6	7.5
Lewis	Idaho	Upriver	4,591,014	5	5.7
Idaho	Idaho	Upriver	4,465,078	5	7.0
Nez Perce	Idaho	Upriver	2,492,018	3	4.8
Clearwater	Idaho	Upriver	103,768	>1	0.2
Wallowa	Oregon	Upriver	736,804	1	0.2
Whitman	Washington	Reservoir	31,058,493	33	34.6
Walla Walla	Washington	Reservoir	7,226,949	8	5.9
Adams	Washington	Reservoir	6,352,012	7	2.1
Columbia	Washington	Reservoir	3,679,223	4	2.2
Garfield	Washington	Reservoir	3,663,733	4	2.3
Asotin	Washington	Reservoir	782,051	1	1.4
Franklin	Washington	Downriver	738,569	1	0.5
Lower Snake River Region Totals			**71,264,669**	**75**	**74.1**
Total LSR Bushels			**95,177,430**		
Total Costs			**$25,000,000**		

Source: Portland District Model, 1999

The five counties from the study area that ship the largest quantities of grain on the lower Snake River are also those that would be most affected by the increased costs. Latah, Idaho, and Lewis counties in Idaho and Whitman and Walla Walla counties in Washington would see over 60 percent of the total cost increase. Whitman County alone would incur approximately 34.6 percent of the total cost.

Additionally, the reservoir subregion would incur a disproportional amount of total increased costs, approximately 48.5 percent, while the upriver subregion would account for approximately 25 percent of the total increase. Counties located outside the lower Snake River subregion in Washington, Idaho, North Dakota, and Montana would share the remaining 24 percent of the increase in total grain transportation costs.

3.3.5 County and Farm Level Impacts

Key Assumptions for Farm-Related Socioeconomic Impacts

Knowing geographically who will be affected is the first step to determining how large those effects will be for individual farmers. Five key uncertainties make forecasting the actual future impact on individual farms, farm regions, counties, and rural farm communities difficult to determine. First, the future of the farm program deficiency payments which, under the Freedom to Farm Act, are scheduled to be phased out by 2001 but may be extended. Second, international market conditions and future prices received for export agricultural products vary greatly from year to year. Third, the fixed and variable costs of farming have increased over time and may continue to do so while at the same time new crops and rotations are being introduced into the region. Fourth, technological advances in crop production and seasonal variations in rainfall make forecasting average yields over time difficult for more than one year in advance. Finally, the actual magnitude of total transportation cost increases, including pricing adjustments by alternative modes of transportation in the absence of barge transportation, are unknown at this time. For the purpose of this assessment it is assumed that yields remain constant at 1996 averages, white winter wheat remains the dominant profitable crop in the region, prices received over the past ten years will remain on average stable, costs of production remain stable, the farm program will be phased out by 2001, and that costs differences between existing transportation and future transportation will not be subject to market adjustments.

Subregion Transportation Cost Changes

For the purpose of this analysis, transportation, storage, and handling cost changes will be given in 1997 costs and situated into the context of 1997 land use and 1997-1998 shipping volumes to illustrate the distributional effects of lost river navigation on the lower Snake River. It is important to note that these cost changes are changes in the cost to provide the transportation service and not the cost of obtaining the service. For the purpose of this analysis it is assumed that the relative difference between the modal costs under the base case and modal costs under the drawdown alternative remain constant.

Changes in transportation costs and total costs can be displayed in many ways. The following discussion presents costs in terms of per bushel and per acre changes. The next section presents the changes in transportation costs and total costs as related to net farm income.

As shown in Table 18, per bushel transportation cost changes associated with lost river navigation on the lower Snake River range from a low estimate of $0.05/bushel in Franklin County, Washington to a high estimate of $0.31/bushel in Idaho and Nez Perce counties, Idaho for bushels of wheat and barley currently shipped on the lower Snake River. If this increased transportation cost were distributed over all the bushels produced in the each county the average increased cost would range from a low of less than $0.01/bushel in Franklin County to a high estimate of $0.30/bushel in Idaho County.

Table 18
Increased Transportation Costs and Total Costs per Bushel by County

County	State	Region	Total Wheat and Barlet Production (1996)[1]	Total Wheat and Barley Bushels Shipped on LSR (1997-98)[2]	Percentage of Affected Wheat And Barley (Shipped on LSR, 1996)[3]	Transport Cost Increase ($) (1998)[4]	Average Transport Cost Increase/ Bushel of Total Wheat and Barley Production[5]	Average Transport Cost Increase/ Bushel Shipped on Lower Snake River[6]	Total Transport/ Storage/ Handling ($)[7]	Total Impact Per Affected Bushel ($)[8]	Impact per Bushel of Total Production ($)[9]
Latah	ID	Upriver	7,883,700	5,374,956	68	1,085,509	0.14	0.20	1,880,841	0.35	0.24
Lewis	ID	Upriver	4,743,800	4,591,014	97	1,053,000	0.22	0.23	1,430,038	0.31	0.30
Idaho	ID	Upriver	4,539,900	4,465,078	98	1,372,732	0.30	0.31	1,755,955	0.39	0.39
Nez Perce	ID	Upriver	8,033,800	2,492,018	31	770,285	0.10	0.31	1,206,587	0.48	0.15
Clearwater	ID	Upriver	403,000	103,768	26	23,763	0.06	0.23	40,188	0.39	0.10
Wallowa	OR	Upriver	1,788,900	736,804	41	44,552	0.02	0.06	44,552	0.06	0.02
Whitman	WA	Reservoir	54,082,000	31,058,493	57	5,731,622	0.11	0.18	8,714,428	0.28	0.16
Walla Walla	WA	Reservoir	22,391,000	7,226,949	32	538,130	0.02	0.07	1,482,182	0.21	0.07
Adams	WA	Reservoir	15,598,000	6,352,012	41	423,375	0.03	0.07	532,985	0.08	0.03
Columbia	WA	Reservoir	7,290,000	3,679,223	50	300,610	0.04	0.08	543,001	0.15	0.07
Garfield	WA	Reservoir	9,021,000	3,663,733	41	586,760	0.07	0.16	586,760	0.16	0.07
Asotin	WA	Reservoir	1,600,000	782,051	49	205,043	0.13	0.26	342,684	0.44	0.21
Franklin	WA	Downriver	8,420,000	738,569	9	37,330	0.00	0.05	115,428	0.16	0.01
				71,264,669					18,675,628		
									21,193,351		

Source: Portland District Model Output (1999)
[1]Source: USDA National Agriculture Statistical Service, 1999
[2]ACOE Portland District, 1999
[3]Rough estimate for level of county dependency to ship grain on LSR. Data not available for same year as Portland Corps data (Source: NASS, 1999)
[4]ACOE Portland District Model
[5]Total transportation cost by county divided by total wheat and barley production in county.
[6]Total transportation cost by county divided by total wheat and barley shipped on LSR.
[7]ACOE Portland District, 1999
[8]Total costs (transportation, storage, and handling) by county divided by bushels shipped in LSR.
[9]Total costs (transportation, storage, and handling) by county divided by total wheat and barley bushels shipped on LSR.

When projected additional storage and handling costs are added to increased transportation costs, the impact per bushel of wheat currently shipped on the lower Snake River ranges from a low of $0.08/bushel in Adams County, Washington to a high of $0.48/bushel in Nez Perce County, Idaho. If these costs are spread across the total production of each county in the region the impact ranges from a low of $0.01/bushel in Franklin County, WA to a high of $0.39/bushel in Idaho County.

Table 19 presents the range of average impacts per acre by county within the subregions. This measure is important because many farmers calculate net return per acre and because the effects of increased transportation costs per bushel are more significant for those farms producing more bushels of wheat and barley per acre. These calculations then take into account differential yields based on average county or regional yields identified by agricultural extension offices at Washington State University and University of Idaho.

Table 19
Increased Transportation Costs and Total Costs Per Acre By County

County	State	Region	Average Transport Cost Impact Per Acre ($)[1]	Average Total Impact Per Acre of Land ($)[2]	Average Total Impact Per Acre of Total Wheat and Barley Production[3]	Average Total Impact Per Acre of Total Harvested Cropland[4]
Latah	ID	Upriver	14.00	24.49	19.09	9.40
Lewis	ID	Upriver	16.10	21.80	21.10	12.27
Idaho	ID	Upriver	21.70	27.53	27.07	12.66
Nez Perce	ID	Upriver	21.70	33.89	10.51	7.30
Clearwater	ID	Upriver	16.10	27.11	6.98	1.66
Wallowa	OR	Upriver	3.90	3.93	1.62	0.83
Whitman	WA	Reservoir	13.50	21.04	12.09	10.86
Walla Walla	WA	Reservoir	4.90	14.36	4.63	4.42
Adams	WA	Reservoir	3.15	3.78	1.54	1.38
Columbia	WA	Reservoir	5.20	9.59	4.84	5.66
Garfield	WA	Reservoir	10.40	10.41	4.23	5.45
Asotin	WA	Reservoir	15.60	26.29	12.85	11.20
Franklin	WA	Downriver	2.25	7.03	0.62	0.40

Source: Portland District's Model Output, 1999
[1]Assumes that all increased transportation costs per bushel of affected production are incurred on acreage dedicated to be shipped on the LSR (county average yields multiplied by average per bushel costs).
[2]Assumes that total costs per bushel of affected production are incurred on acreage dedicated to be shipped on LSR (county average yields multiplied by average total per bushel yields).
[3]Assumes that total costs per bushel are spread out over total county production of wheat and barley and multiplied by average yields for the county.
[4]Assumes that total costs incurred by a county are spread out over all harvested acreage in the county (total costs by county divided by total harvested acreage in the county).

The range of impacts per acre from increased transportation cost increases range from $2.25/acre in Franklin County, Washington to a high of $21.70/acre in Idaho and Nez Perce counties, Idaho. When the total costs of storage, handling, and transportation are spread out over all harvested acres in the county the impact ranges from a low of $0.40/acre in Franklin County to $12.66/acre in Idaho County. The costs identified in Table 19 represent the maximum increased costs per acre of those counties affected by loss of navigation on the lower Snake River. None of the other affected counties in the states of Oregon, Idaho, North Dakota, Montana, and Washington will see per acre cost increases higher than these.

It is important to note that the high per acre impacts reflect the worst case scenario whereby all of a farmer's production is shipped via the lower Snake River. Jessup *et al.* (1997) calculated that those farmers likely to see this high impact were those that are located close to the river and currently ship all their wheat and barley production directly from the farm to Snake River port elevators (1997). The actual impact on individual farms should fall within the ranges presented in the table above depending on the percentage of the farm production that currently moves on the lower Snake River, total acreage planted in wheat and barley, and the availability of transportation alternatives (*i.e.*, near a rail loading facility or not).

Net Farm Income Impacts Within the Subregions

Increased transportation, storage, and handling costs associated with drawdown may be placed into perspective by examining their effects on two representative farm budgets developed by Washington State University. These budgets were examined to estimate the overall impact of total increased costs on net farm income based on an average sized farm, average price received, production costs, and common crop rotation. The two county farm budgets represent the extremes of high yield and low yield and high cost and low cost counties within the study area. These budgets do not represent all farms in the region.

Net farm income is a measure of financial performance that subtracts cash operating expenses and depreciation from cash receipts. This measure represents the income available to compensate the farm family for its resources such as a return to the operator and family labor, management, net worth, and risk. The following budgets are based on costs estimated for the 1990 report titled *Grain Farms in Eastern Washington: An Economic Assessment* by Barron *et al*.

Representative farm budgets are presented in Table 20. Under the base condition, all wheat and barley production on the farms is shipped on the lower Snake River. The farm budget for the drawdown condition represents the worst case scenario whereby all the wheat and barley production from a farm moves to more expensive alternate modes of transportation and incurs the average cost increase for the county's affected wheat and barley production.

Table 20
Adams County and Whitman County Representative Farm Budgets

Whitman County Representative Farm Budget

	East Whitman County Base Condition ($)	**East Whitman County Drawdown ($)**
Cash Receipts	(3.67/bushel)	(3.39/bushel)
Wheat (38382 @ $3.67)	140,861.94	130,114.98
Barley (248.2 tons @ $91.67)	22,752.49	20,320.13
Dry Peas (6,835.5 cwt. @ $9.00)	61,519.50	61,519.50
Government Deficiency Payments	--	--
Total	**225,133.93**	**211,954.61**
Expenses		
Variable Costs	202,229.00	202,229.00
Fixed Costs	13,612.00	13,612.00
Total Costs	215,841.00	215,841.00
Net Farm Income	9,292.93	(3,886.39)
Change in Net Farm Income		(13,179.32)

Adams County Representative Farm Budget		
	Adams County Base Condition ($)	**Adams County Drawdown ($)**
Cash Receipts	(3.71/bushel)	(3.63/bushel)
Wheat (31348 @ $3.71)	116,302.94	113,793.24
Government Deficiency Payments	--	--
Total Revenue	116,302.94	113,797.24
Expenses		
Variable Costs Fixed Costs Total Costs	100,688.00 8,988.00 109,676.00	100,688.00 8,988.00 109,676.00
Net Farm Income	6,626.94	4,117.24
Change in Net Farm Income		(2,509.70)

Notes:

Eastern Whitman County Typical Farm

1. Assumes 1,375 crop acres, 34.5 percent cropland owned and 65.5 percent crop share basis, depreciation based on original investment, and a dept to asset ratio of 20 percent.

2. Three-crop rotation. Yields 75 bushels winter wheat, 1.5 tons spring barley, and 18 cwt. dry peas.

3. Market prices based on 10-year Olympic average 1988-1998 Portland prices less transportation costs.

4. Assumed existing transportation costs at 28 cents (3.95 - 0.28 = $3.67 per bushel of wheat). Barley $100.00/ton - $8.33/ton = $91.67. Peas $9.00, cwt. after transportation costs deducted. No government deficiency payments.

5. Drawdown Assumptions: increased transportation, storage, and handling costs average 28 cents per bushel of wheat and barley. Although storage and handling are considered in variable costs, the increase under drawdown will be deducted from the price received.

6. New prices - Winter wheat $3.39 ($3.67-28) and Barley $81.87 ($91.67-$9.80/ton). Assumes that all grain from farm moves on river prior to drawdown scenario and subjected to increased costs.

Adams County Typical Farm

1. Assumes 2,000 crop acre, 35 percent owned and 65 percent rented on crop share basis, depreciation based on original investment and a debt asset ratio of 20 percent.

2. Wheat yields 42 bushels/acre.

3. Market prices based on 10-year Olympic Average 1988-1998 Portland prices less transportation costs.

4. Assumed 24 cents per bushel transportation costs. No government deficiency payments.

5. Drawdown Assumptions: increased transportation, storage, and handling costs average 8 cents per bushel deducted from the price received for a total new price of $3.63.

Source: Barton *et al.*, 1990.

The assumptions for the budget estimates are given in the footnotes to Table 20.

As mentioned above these budgets illustrate the worst case effects on farm budgets. They are not the most likely scenarios for all farmers in the subregion. Many farmers will face lower total storage, handling, and transportation costs and therefore see a lower decrease in net farm income. Although these budgets indicate that, on average, farms facing similar cost structures would be able to recover their variable

costs (planting and harvesting), the margin is quite low. If wheat prices were to fall to 1999 levels, these farms would not be able to cover their variable costs and therefore might not plant a crop. If the government deficiency program were to remain in place some of this uncertainty might be eliminated.

The estimated net losses to farms for these two counties is higher than the average impact per farm based on the total increased costs in the county divided by the number of harvested farms in the county (see Table 21). For example, in Whitman County the impact per farm was estimated at $8,705 with the farm budget showing a decrease of $13,179 while in Adams County the estimated impact per farm was $1,055 with the farm budget indicating an decrease of $2,509 per farm. The fact that these estimates are lower than the farm budget estimates indicates that the above examples are in fact the worst case scenario that will be faced by some farms. Other factors that will play a role in the final impact at the farm level include the debt to asset ratio on the farm, whether the farm is wholly owned or partially leased, and the crop rotation employed by the farm. Those farms that have high debt to asset ratios or who do not own the land are more at risk from these increased costs. As shown in Table 21, the average impacts per farm vary greatly throughout the subregion.

Table 21
Net Farm Impacts

County	Number of Harvested Farms (1992)	Average Transport Cost Per Number of Harvested Farms ($)	Average Total Cost Per Number Of Harvested Farms	Average Farm Income ($) (1970-95) [1]	Transport Cost Impact As a Percentage of Average Total County Farm Income (%)[2]	Total Cost Impact As A Percentage of Average Total County Farm Income (%)[3]
Upriver						
Latah, ID	492	2,206	3,822	18,451,000	5.88	10.97
Lewis, ID	143	7,363	10,000	13,451,000	7.83	10.63
Idaho, ID	495	2,773	3,547	15,145,000	9.06	11.59
Nez Perce, ID	249	3,093	4,485	21,259,000	3.62	5.68
Clearwater, ID	139	170	289	2,077,000	1.14	1.93
Wallowa, OR	267	166	166	13,444,000	0.33	0.33

Reservoir						
Whitman, WA	1,001	5,725	8,705	89,487,000	6.40	9.74
Walla Walla, WA	594	905	2,495	58,669,000	0.92	2.53
Adams, WA	505	838	1,055	70,281,000	0.60	0.76
Columbia, WA	157	1,914	3,458	21,348,000	1.41	2.54
Garfield, WA	163	3,599	3,599	15,639,000	3.75	3.75
Asotin, WA	66	3,106	3,106	7,255,000	2.83	4.72
Downriver						
Franklin, WA	732	51	157	88,614,000	0.04	0.13

Source: USDA Census of Agriculture, 1992, and Portland District's Model Output, 1999.
[1]Source: USDA Economic Research Service (ERS), presented in US Department of Commerce, BEA 1998 Regional Economic Information Systems (REIS). County averages calculated from 1970, 1975, 1980, 1985, 1990, 1995 data points. Farm income data is for all harvested farms (grain and livestock) and consists of farm proprietor net income, wages and salaries of farm labor (except from labor contractors, which are classified as agricultural services and captured in non-farm earnings), pay-in-kind of hired farm labor, and the salaries of corporate farm officers. Net income includes cash receipts from marketing, government payments to farmers, rental value of farm dwellings, the value of food and fuel produced and consumed on farms and the value of the net changes in inventories of crops and livestock less production costs.
[2]Based on Transportation Cost increases from ACOE Portland District's Transportation Model, 1999. This percentage would also represent the average impact per farm. Those farms closer to the lower Snake River ports in each of these counties would likely see higher impacts.
[3]Based on total costs (transportation, storage, and handling costs).

On average, farms in specific counties will see annual impacts as high as $10,000 while other counties will see impacts lower than $1,000 per farm. The absolute magnitude of the cost increase is an important determinant of the level of community and social impacts but it needs to be placed into the context of the overall health of farms in the county.

One key question is will farms go out of business with these additional costs or will the additional costs further accelerate the consolidation of farms (*i.e.*, continue the regional trend towards fewer farms and larger farms)? A sensitivity analysis was performed by the Regional Impact Assessment Team indicated that approximately 30,000 acres might go out of production based upon the supply elasticity of wheat. The economic impacts of this land going out of production have been estimated at 261 jobs and $6.8 million in income.

To ground this estimate in truth, fine scale data to identify those farms most vulnerable to total increased costs associated with drawdown are not available, thus a rough proxy of marginal (or vulnerable) farms was developed based on the percentage of total harvested acreage of land enrolled in the Conservation Reserve Program (CRP). The CRP is a Federal program administered through the U.S. Department of Agriculture (USDA) to temporarily remove highly erodible land from production and increase the conservation of soil in return for a fixed payment per acre. The logic of this indicator is that farmers will not enroll their land in the program when the returns on the land are higher if the land stays in production than with the payment for fallow cropland even if the land is highly erodible. Much of the Palouse region that encompasses the reservoir and upriver subregions is considered to be highly erodible (Black *et al.*, 1996). The limitation on the use of this proxy is that all the counties are not equal in their erosion problem. It is interesting to note that Whitman County, though having one of the highest erosion rates in the region, has the lowest percentage of land enrolled in the CRP program and high average yield (Black *et al.*, 1996) (See Table 22). Conversely, Latah County has a higher enrollment rate, equal or higher average production yields, and a lower erosion rate than Whitman County. Thus this proxy does seem to indicate that there are more marginal farms in Latah County than in Whitman County.

Table 22
CRP Acres by Affected Counties in the Lower Snake River Subregion

County	State	Region	Total CRP Acres (1995)	Total CRP Wheat and Barley Acreage (1995)	CRP Wheat and Barley Acreage As A Percent of Total Harvested Acres	CRP Total Acreage As A Percentage of Total Harvested Acreage
Latah	ID	Upriver	36,590	25,645	13	18
Lewis	ID	Upriver	6,045	4,996	4	5
Idaho	ID	Upriver		NA	NA	NA
Nez Perce	ID	Upriver	6,449	4,370	3	4
Clearwater	ID	Upriver	2,714	2,228	9	11
Wallowa	OR	Upriver	24,103	16,705	31	45
Whitman	WA	Reservoir	46,876	37,014	5	6
Walla Walla	WA	Reservoir	114,083	70,022	21	34
Adams	WA	Reservoir	215,634	155,764	40	56
Columbia	WA	Reservoir	22,667	16,256	17	24
Garfield	WA	Reservoir	16,081	12,492	12	15
Asotin	WA	Reservoir	23,918	16,593	54	78
Franklin	WA	Downriver		NA	NA	NA

Source: National Agricultural Statistics Service, 1995

As seen in Table 22, only Wallowa County, Oregon in the Upriver subregion has more than 20 percent of wheat and barley acreage enrolled in the CRP Program. No Idaho counties have more than 20 percent enrollment of acreage while Asotin, Adams, and Walla Walla counties, Washington, in the Reservoir subregion all have greater than 20 percent enrollment rates. Of these counties, only Asotin County will face increased transportation costs higher than 10 cents per bushel. If this proxy measure is valid then farms in Asotin County might be considered to be high risk for continued operation under the drawdown conditions. Predicting if farms will go out of business or if land will go out of production is not possible with any certainty. What is

possible is to identify key risk elements that will be discussed in the community level analysis. This community level analysis will evaluate each community and county situation individually by comparing the total transportation cost increase with total farm income in the county. Additionally, farm level impacts will be compared with local trends in farm consolidation and rates of farm losses to explore local level responses to this change.

Assuming no acreage goes out of production, the regional economic study estimated the direct, indirect, and induced employment and income impacts of a decrease in farm income as the loss of 100 jobs and $2.331 million, respectively, in the upriver subregion. The estimated effects of decreased farm income in the reservoir region are a loss of 139 jobs and $3.436 million in personal income. These losses of employment and income will be distributed to communities throughout the reservoir and upriver regions.

Since farm income is diverted away from households to transportation expenditures, employment and income losses are offset by growth in direct, indirect, and induced effects of increased rail and trucking activity. The estimated effects in the reservoir region are a gain of 294 jobs and $7.839 million in personal income. The estimated effects in the upriver region are a gain of 181 jobs and $5.149 million in personal income. It is assumed that these gains will be distributed in the regional trade center communities and along the new trade routes. The net effects of a decrease in net farm income and increased expenditures on rail and truck transportation are positive for the upriver and reservoir subregions. The upriver subregion is expected to gain 81 jobs and $2.818 million in personal income while the reservoir region will gain 155 jobs and an increase in personal income of $4.403 million (AEI, 1999).

The net social effect will be a loss of service jobs in remote and isolated communities while communities on the major trade routes US 12 and US 26 will gain employment and income (AEI, 1999).

Uncertainty of Transportation System Capacity

Another factor affecting farmers and farm communities in the region is the uncertainty of the alternative transportation modes ability to handle the current grain production. The Portland District's study indicates that export loading facilities should be able to handle the volume of grain movements but there are shortages in capacity at the existing Columbia River elevators. An additional uncertainty is how much new volume can be absorbed by the existing rail system. The Corps estimates that an additional 27 million bushels of grain will need to be moved by rail. The short-term ability of the rails to respond to this increased demand for services is unknown

at this time. The length of time it will take for the rails to supply capacity to increased demand under drawdown is also unknown. If the drawdown alternative is selected, this uncertainty may affect individual farmers' short-term decisions to plant crops even prior to implementation or may provide a rational incentive to enroll lands in the CRP program.

Responses of Farms to Increased Transportation Costs and Uncertainty

Predicting the actual change in farm ownership patterns, farm viability, and the level of impact at individual farms is difficult. However, other studies indicate that factors that might compromise the viability of farms include the current debt load of the farm, degree of ownership of the farm, farm size, and crop rotation. In this study, additional factors were identified including the proximity to alternative transportation modes, the cost of those transportation modes, the level of dependency on the lower Snake River system to move grain to market, and the percentage of acreage enrolled in the CRP program.

Farmers in the region may respond to this increased cost in a number of ways. The most likely rational response given the uncertainty of alternative transportation capacity would be an increase in acreage enrolled in the CRP program. This would provide a hedge against transportation capacity shortages and fear of price gouging by the rail and trucking industry. The social and economic effects of the CRP program have been well documented and include rural farm population loss, increased absentee ownership, decreased retail sales and farm service jobs, community stress, and an adverse affect on community cohesion as a result of the restructuring of the local economy (Martin *et al.*, 1988, Henderson *et al.*, 1992). (See Table 23 and Annex B.)

Table 23
Potential Illustrative Impacts of Alternative A3 on Rural Agricultural Communities

Action	Author	Study	Findings
Community Effects of Implementation of the Conservation Reserve Program	Martin *et al.*, 1988	I/O model of three counties in Oregon to determine the effects of the CRP on population base and economic vitality	Population loss: The CRP contributes to population reduction because farmers receiving CRP payments may leave the community, absentee landowners.
			Decreased economic base: Loss of farmers and farm income translates to a loss of farm service employees, retail sales, and other retail businesses
			Leakage of spending to larger trade centers
			Loss to individual farmer; the greater the productivity of the land locked in the CRP the worse the economic impact to the farmer because it translates to a net loss of income
			Mental distress: Individual and community stress is experienced when local economics are restructured because of CRP-induced impacts
	Henderson *et al.*, 1992	Multi-community approach to determine effects of CRP on communities in Kansas, Oklahoma, and Texas	Community responses are highly determined by adjacent communities. Consumers spend a higher proportion of government payments in larger communities, and thus smaller communities adjacent to larger ones were most negatively impacted by the CRP, because money tended to flow from the smaller communities to the larger ones.

Effects of Transportation Changes on Rural Communities	Landis, 1938	The effects of transportation on small town populations in Washington	Transportation is a primary force of change in the growth and decline of rural communities; small towns near waterways facilitated early trade center growth.
	Lively, 1932	The effects of transportation on rural trade center populations in Ohio and Minnesota	Trade centers linked to a rail or highway system were less likely to decline than more remote communities
	Crane and Leatham, 1993	The relationship between transportation expenditure and economic growth in Texas	Transportation expenditure on trucking may have a positive economic impact on farm and non-farm incomes in rural areas due to increases in construction, maintenance, and trucking jobs, as well as improved access to and from rural areas
	Bangsund *et al.*, 1997	The effects of rail line abandonment in North Dakota	Trucking may cause increased transportation and highway maintenance costs, reduced personal income and gross business volume because of the added costs to production, declines in local employment, and reduced local tax revenue.
	USDA/ERS, 1974	Evaluation of rail service reorganization on communities in the Midwest	Caused further hauls and the added cost of trucking forced smaller grain handlers out of business. Individuals and communities that survived most effectively are those that have relatively little competition for shipping on the route and have low debt to asset ratios
	Zimmerman, 1930	The interaction between communities in response to transportation changes	As one community becomes dominant because of improved transportation access, other adjacent smaller communities may lose their function and decline. Through the process, larger communities become more specialized

Effects of Socioeconomic Changes on Rural Farm Communities	Albrecht *et al.*, 1988 Leistritz *et al.*, 1989	A study on financial distress experienced by farmers resulting from the Farm Crisis	Farmers most effected by the Farm Crisis were those who entered farming more recently and rented a majority of their land. Describes the link between community population reduction and economic distress.
	Beylea and Lobao, 1990	Survey of Ohio farms to determine the relationship between farm size and economic vulnerability	Moderate-sized farms and their farmers had the highest debt-to-asset ratio and tended to have higher rates of displacement. Such farms are predominantly family run.
	Leistritz *et al.*, 1989	Study of North Dakota farmers to determine a subset of distressed farmers that actually leave farming.	Although many farmers become distressed during financial hardships, displaced farmers are often younger, more educated, with less equity and more opportunities available elsewhere
	Salamon, 1986	The effects of farm consolidation on community cohesion	Corporate managers and landlords are not a functional part of the community and, therefore, farm consolidation causes adverse impacts to community cohesion
	Heffernan and Heffernan, 1986 Albrecht *et al.*, 1988 Stinson *et al.*, 1986	Interviews with Missouri farmers to determine community economic impacts from the Farm Crisis	The economic well-being of the entire community is affected by changes in the farm sector due to a multiplier effect and the already fragile economic base of rural agricultural communities. Farm crisis led to depression and stress related to perceived economic stress. Collective depression when farm community perceives stress and helplessness and become less involved in the community.
	Dillman, 1986	Effects of diversified economics of agricultural communities	Part-time farming, telecommuting, and other current practices make it more possible for communities to remain strong in the face of disturbances to farm sector
	Beylea and Loboa, 1990	Coping mechanisms for responding to stress	Farmers with the highest levels of education and family farmers had the strongest coping mechanisms
	Harris, Brown, and McLaughlin, 1996	Responses to socioeconomic changes in rural communities in the inland Northwest	Ability to diversify economically a good indicator of resiliency. Population size is a strong indicator for predicting likely responses to change. Large towns tend to be more economically diverse.

	Beggs *et al.*, 1996	Community change and attachment	Community response to economic change is positively correlated to the degree of community attachment and therefore affects resiliency. Degree of attachment is based on characteristics such as length of residency, interpersonal ties, and available job opportunities outside the community.
	Cottrell, 1951	Effects on rail line abandonment on community life	Those community members with other opportunities left while those who stayed dedicated themselves to diversifying the economic base and accepted a lower standard of living.
	Allen and Dillman, 1994	Study of Eastern Washington community responding to economic changes	Community cohesiveness tied to local businesses and face-to-face interaction with other community members

Another potential response to the cost increase and uncertainty might involve farmers purchasing semi-trucks and trucking their own grain to ports on the McNary pool. This could result in a disruption of community and family life whereby one or more community members would be on the road trucking grain for over 11 weeks of the year. The typical Palouse farm would need to take 66 round trips per year in a semi-truck to haul its grain production to the Columbia River assuming a wheat and barley production of 60,000 bushels and 910 bushels per truck load.

Another response to increased transportation costs will likely be an acceleration of the rate of consolidation of farms. This would result in fewer and larger farms in the region and would further decrease the rural farm population and perhaps lead to the exit of farming by younger farmers. The farm crisis of the late 1970s and early 1980's in the Midwest provides an extreme example of what happens to communities and individuals when farmers are forced out of the occupation rather than retiring from farming. The social effects of large scale restructuring of the farm sector in the Midwest in the late 1970s and early 1980s during the Farm Crisis resulted in population loss, reductions of support for schools, churches and community organizations (see Table 23 and Annex B). The effects in the Midwest may, however, be an extreme example of what happens to communities and individuals when farmers are forced out of the occupation rather than retiring. The context of the regional economy in 1999 is not similar to the Midwest's economy of the late 1970s. This analogy to the Midwest is useful to illustrate the types of social impacts in the absence of mitigation or compensation.

Finally, farmers who are attached to the way of life may continue to farm but be required to take on additional off-farm employment. In the context of Eastern Washington, Dillman (1986), for example, found that part-time farming has increased non-farm incomes, thus communities as a result have become more economically diverse and stable (see Table 23 and Annex B).

3.3.6 Decreased Farm Value and County Property Tax Revenue

Another negative effect of decreased net farm incomes is the secondary effect on local county property tax revenues. For the purpose of county tax assessment, agricultural property value per acre is based on the land's proven yield (bu/ac.) times a 5-year average price received for the commodity amortized over a 5-year period and taxed at 1.45 percent.

Whitman County serves as an illustration of the local tax impacts of implementing A3. Table 24 provides a point estimate for the county given current conditions and tax rates. Table 24 is pending review by Whitman County tax assessor.

Table 24
Pending Review by Whitman County Tax Assessor.

There may be two potential responses to this tax revenue shortfall. Counties could raise tax levies on open space. This is unlikely given the high levels of current taxation. Alternatively, given constraints on increasing tax rates, county expenditures could be decreased in order to maintain a balanced budget.

A potential offset to this decreased tax revenue may be the decrease in expenditures for county roads. According to Jessup and Casavant (1998) many of these county roads that currently serve as thoroughfares to ports on the lower Snake River will require less maintenance and repairs as traffic is diverted away from the river and onto state highways. The impact to county roads has not been quantified by the Corps' Navigation team or by the Washington State Legislative Transportation Committee. An additional offset of lost property tax revenue may be the increase in sales tax revenue due to increased transportation activity (trucking and rail) and overall related sales.

3.3.7 Effects on Other Shippers

3.3.8 Effects on Cruise Ships

Cruise ships currently move from Portland to Clarkston. Travelers disembark and engage in various local activities including tours to the Nez Perce Reservation and jet boat excursions to Hells canyon. The regional study estimated that the direct, indirect, and induced effects spending by these visitors in the Lewiston-Clarkston region are approximately 21 jobs and 2 million in retail sales. Assuming that these cruise ships continue to travel on the Columbia River, these jobs and spending may be gained in the Downriver Subregion.

3.3.9 Traffic Congestion and Safety

The loss of barging on the lower Snake River will displace grain and other commodity movements to rail and trucking. This displacement will take place immediately during the drawdown implementation. Increased traffic and congestion will affect local community mobility and will create adverse safety conditions on the major alternative transportation corridors.

Traffic Congestion on Major Alternative Transportation Corridors

Two traffic flow estimates are presented to identify the range of potential congestion impacts. The first estimate was produced by HDR Engineering, Inc. (HDR) for the Washington State Legislative Transportation Committee utilizing modified Eastern Washington Intermodal Transportation Study (EWITS) models (HDR, 1999). Their estimates of traffic flows are based on the worst case highway assumption that all the displaced grain from the lower Snake River moves by truck and railroads do not haul any of the additional volume. The HDR study also assumes that all grain shipments arriving in Lewiston from southern Idaho continue to move to Lewiston. Additionally, the HDR study assumes that all other commodity movements out of the Port of Lewiston move by way of US Highway 12 into Washington State and to the McNary Pool ports.

The second estimate was derived from the Portland District's Transportation Model. The Portland District's model of grain movement, in contrast, eliminates approximately 5 million bushels of wheat and barley that currently move through Lewiston from southern Idaho and diverts it to alternate modes of transportation in southern Idaho. Additionally, the Corps model assumes that approximately 10.3 million bushels of wheat and barley production from Idaho and 12.1 million bushels from Washington move by rail to Portland.

Both models assume average per day truck movements based on 252 weekdays in the year and that grain movements would be spread out over the year. Actual truck traffic may be higher than these estimates during some peak periods of the year. According to EWITS report No. 5, grain flows to Columbia River ports remain relatively constant throughout the year with peak movements during the months of November and December.

Washington State Department of Transportation Average Daily Traffic counts for 1997 provide the existing vehicle traffic counts presented in Table 25. 1997 Traffic Estimates are from milepost 22 for Highway 395 at the junction of Highway 12 and 395 in Pasco; milepost 0 on Highway 124 in Burbank and milepost 294 on SR 26 near the junction of SR260.

Table 25
Road Congestion Effects of Drawdown Truck Traffic

Affected Highways	Corps Estimate Average Trucks Per Day[1]	HDR Truck Per Day Estimate (Worst Case)	Current Daily Truck Traffic (1997)[2]	Current Daily Vehicle Traffic (1997)[2]	Percentage Increase In Current Daily Truck Traffic (Corps Estimate)	Percentage Increase In Current Daily Truck Traffic (HDR Estimate)	Percentage Increase In Existing Total Daily Traffic (HDR Estimate)	Percentage Increase In Existing Total Daily Traffic (Corps)
US12/SR124	85	620	519	3,450	119	16	18	2
SR 26	129	340	120	1,010	283	108	34	13
US 395S	76	380	3,360	12,700	11	2	3	1
395&26 Comb	205	720	3,360	12,700	21	6	6	2

[1]Based on grain movement projections from Portland District's Transportation Model
[2]Washington State DOT Annual Traffic Report

The highway segment most significantly affected is SR 26 from Colfax to the Tri-Cities with a tripling of truck traffic and a 13 to 34 percent increase in total traffic. The actual congestion effects on local highways will be discussed for each of the focus communities on these corridors and will be presented in terms of the percentage increase in total traffic. Traffic in Idaho will decrease on US 12 over Lolo Pass as will northbound traffic on US 195 from southern Idaho to Lewiston as these movements will be diverted northward to Interstate 90 and 395 or southward to Interstate 80. Additionally there will be less traffic on local county roads that currently handle truck movements to the lower Snake River ports (Jessup and Casavant, 1998).

The short-term regional employment and income impact of increased spending for truck and rail has been estimated as between 2,554 to 4,362 jobs and $83 to $242 million.

3.3.10 Road Safety

Increased volume of trucks on highways will adversely affect safety on those roads with increased volumes of grain truck shipments. Safety and accident estimates are based on accident rates per million truck miles. Changes in truck traffic volume are estimated from the models of transportation modal movements generated by the Portland District's transportation model. Each mode of transporting commodities (truck, barge, and rail) has a distinct safety history. Rail and barge accident rates are almost identical while trucking accident rates are higher by several orders of magnitude (Gillis and Casavant, 1994). State accident data for non-interstate roads in Washington State are estimated at 1.9 accidents per million miles for tractor semi-trailer and tractor double trailer trucks. 50 percent of accidents involve property damage, 1.368 percent of accidents involve fatalities and 49.39 percent of accidents involve injury (US Department of Transportation, 1995).

Total truck miles estimated from the Corps' transportation model were converted to million truck miles and accident rates applied to this factor. Actual 1996 accidents were compiled as the total number of accidents in 1996 on the affected segments of highway.

Table 26 shows the total increase in annual accidents particularly on Highway 26 between Colfax and the Tri-Cities. Projected accidents in Idaho should decrease as some truck traffic is diverted to more expensive yet closer rail loading facilities. For the focus communities that are on these major transportation routes, the safety risk will be evaluated based upon the percentage increase in accidents on the corresponding highway. Gillis and Casavant (1994) in a series of case studies of communities where highways pass through downtown areas noted the increase in damage to parked cars and the increased sales from traffic as effects of highway traffic.

Table 26
Regional Safety Impacts of Increased Truck Traffic

Main Alternative Highway	Total Bushels Shipped On LSR	Million Truck Miles	Total 1996 Accidents	Estimated Drawdown Annual Accidents	Percent Change In Total Accidents	Drawdown Annual Fatalities Increase	Drawdown Annual Injury Increase	Annual Property Damage Accidents
Displaced to Rail	19,590,427	-2.91	NA	-5.53		-0.08	-2.73	-2.76
Highway 395 Ritzville to Tri-Cities	15,860,145	1.29	145	2.45	1.7	0.03	1.21	1.22
US 12/124 Clarkston to Burbank	22,309,052	1.44	318	2.74	0.8	0.04	1.35	1.37
US 26 Colfax to 395	36,433,449	2.47	53	4.69	8.8	0.06	2.32	2.34
Total Regional Change				**4.35**		**0.06**	**2.15**	**2.18**

3.4 Anadromous Fish

This section is pending the Final Anadromous Fish Economics Report.

3.5 Irrigation and Municipal & Industrial Water

The four reservoirs on the lower Snake River currently provide irrigation pumping for commercial agriculture and water supply for industrial, recreational, and wildlife uses. Alternatives A1 and A2 would not affect these users or uses as reservoir pool levels would remain within the existing range of elevations. The drawdown of the river elevation to natural river levels under Alternative A3 would directly impact irrigation and municipal and industrial water supplies by stranding water intakes above river level.

The following discussion identifies who would be affected, how they would be affected, and how much they would be affected. Criteria are also provided for evaluating community level impacts of these changes in water supply.

3.5.1 Ice Harbor Irrigation

Those most directly affected by Alternative A3 are the 19 irrigated farms that draw water out of the Ice Harbor reservoir. According to a 1997-98 survey of irrigators conducted by the Corps, the size of these farms ranged from 500 to 12,000 acres. These irrigators manage 33,933 acres of the 37,000 estimated total acres irrigated by the Ice Harbor Reservoir (Corps Water Supply, 1999). Of the 37,000 acres, 23.5 percent are located in Franklin County and 76.5 percent are in Walla Walla County. Table 27 shows the degree to which the Ice Harbor acreage contributes to the overall agricultural acreage in this two county region. Acreage irrigated from Ice Harbor reservoir contributes over 30 percent of the overall irrigated agricultural acreage in Walla Walla County and only 4.1 percent of the acreage in Franklin County.

Table 27
Ice Harbor Acreage Contribution to Overall Agricultural Acreage in Franklin and Walla Walla Counties

County	Total County Harvested Acres	Total County Irrigated Acres	Total County Irrigated Land As A Percent of Total Acres Harvested	Ice Harbor Irrigated Agriculture Acreage	Ice Harbor Irrigated Acres As A Percent Of County Harvested Acres	Ice Harbor Irrigated Acres As A Percent Of County Irrigated Agriculture
Franklin	291,017	214,784	73.8	8,710	3.0	4.1
Walla Walla	335,454	92,702	27.6	28,290	8.4	30.5

The crops produced on these lands are in general high value crops. The amount of acreage dedicated to a variety of crops is shown in Table 28.

Table 28
Acreage Dedicated to Crops in Franklin and Walla Walla Counties

Crop	Total Acreage	Percent of Walla Walla and Franklin Counties Total Crop Production	Two-County Irrigated Acres in Production
Cottonwood	8,510	NA	
Potatoes	5,513	10.0	55,500
Field Corn	4,995	15.0	33,400
Fruit Trees	4,107	37.0	11,100
Wheat	3,515	NA	
Vineyards	2,294	99.7	2,300
Sweet Corn	1,998	10.9	18,400
Onions	1,110	24.1	4,600
Unidentified	4,884		

Employment information was obtained from 11 of the 12 farms surveyed by the Corps. A total of 2,973 employees, 812 full-time and 2,161 seasonal and part-time, worked at these farms during 1997. It is not clear if these seasonal workers are employed annually or for projects such as planting trees, harvesting, and pruning. These farms represent 84.3 percent of the acreage under cultivation in the Ice Harbor reservoir. If it is assumed that the other farms on the reservoir have similar employment per acre then it is estimated that the total affected population may be a total of 3,526 employees consisting of 963 full-time and 2,563 part-time and seasonal employees. No estimate of full time equivalencies exists. Based on interviews with farm owners, Hispanic workers make up to 90 percent of this employment. The environmental justice issues associated with this affected population will be addressed in the Environmental Impact Statement.

Corps' economists evaluated two approaches to determine the economic effects of Alternative A3 on Ice Harbor irrigators. One approach estimated the costs to construct a new intake and distribution system that would be reliable at lower water levels and would cost approximately $291,481,00 or an average annual cost of $17,552,400 at a 4.75 percent discount rate. Under this approach irrigators would continue to produce crops.

The second approach calculated the economic effect of Alternative A3, measured as a change in farmland value if this land did not have access to water from the Ice Harbor Reservoir. The economic effect would be a decrease in farmland value of $134,240,000 or an average annual cost of $6,438,100 at a 4.75 percent discount rate. Under this approach the land currently irrigated would revert back to dryland farming. Both approaches indicate that the cost of modification would be extremely high and, in the absence of Congressional appropriation to modify the pumps, the costs to individual irrigators would be prohibitive based on net farm income and total farm values. In this case it is assumed that the land would go out of production and the workers would be displaced.

The direct employment and income losses would be distributed in Franklin and Walla Walla counties. The total direct, indirect, and induced impacts would be distributed in the three county area of Walla Walla, Franklin, and Benton counties. Total employment and income effects are estimated at 2,256 jobs and $79.2 million, respectively.

The social effects of these displaced workers include a strain on public services, county tax revenue, school district levies, and stress among individuals that currently own and work on these farms.

3.5.2 Effects on Farmers Using Wells Along the Lower Snake River

Wells and farms within 1 mile of the lower Snake River would also be affected by Alternative A3. State water reports indicate that approximately 225 wells are located within 1 mile of the lower Snake River. Approximately 53 percent of these wells are used for either domestic or irrigation purposes. The distribution of these wells and the associated costs to modify the wells are summarized in Table 29. The well modification costs apply to the estimated 95 wells that would require modification.

Table 29
Distribution of Wells Within 1 Mile of the Lower Snake River
And Costs of Modification

County	Total Number of Affected Wells	Estimated Costs to Modify Wells
Asotin	67	$16,808,662
Columbia	12	$3,010,506
Franklin	49	$12,292,902
Garfield	13	$3,261,382
Walla Walla	45	$11,289,400
Whitman	39	$9,784,146

The average cost estimated by the Corps per well is approximately $594,000, although individual users will see higher or lower costs depending upon the post drawdown condition of their existing well. No information exists to determine if these users could afford the cost of these modifications. It is clear that the increased capital costs will place an additional financial burden on those irrigators using well water near the lower Snake River.

The short-term direct, indirect, and induced economic impacts of spending to modify these wells is estimated at 1,175 jobs and $37.849 million in income for the reservoir subregion.

3.5.3 Cattle Watering Corridors

Ranchers along the lower Snake River corridor would also be affected by the lowering of the pool elevation under Alternative A3. Landowners currently have access across government property to water at the lower Snake River reservoirs. Sixty-nine existing corridors would be affected. Mitigation for these effects has been accounted for in the implementation cost estimate for Alternative A3.

3.5.4 Downstream Irrigation

Approximately 100 to 150 million cubic yards of sediment have been deposited upstream of the lower Snake River dams since Ice Harbor became operational in the early 1960s. The Corps water quality study has estimated that under Alternative A3, approximately 50 percent or 50 to 75 million cubic yards of sediment will be eroded

and transported within the first few years of dam breaching. The most coarse sediments will be deposited in Lake Wallula below the current site of the Ice Harbor reservoir and downstream to the upper end of McNary pool. Finer sediments would be transported to the Columbia River estuary. The effect of this sediment on irrigators who take water out of Lake Wallula is unknown at this time.

3.5.5 Municipal and Industrial Users

Other affected Municipal & Industrial (M&I) water user groups are isolated on the Lower Granite pool in the communities of Lewiston and Clarkston. These pump stations provide water to six users including the Asotin County Public Utility District (PUD), the Clarkston Golf Course, the Lewiston Golf Club, Atlas Sand and Rock, and the Potlatch Corporation (Potlatch). The costs to modify the intakes and pumping stations has been estimated from $11,514,000 to $55,214,000 depending upon the need for Potlatch to modify its water cooling system. Approximately $10,683,000 of the low cost estimate are associated with the Potlatch water system. The effect of these costs on the operations of Potlatch and the other M&I users are unknown.

The estimated range of short-term direct, indirect, and induced impacts of modifying these pumps is 292 to 1,397 jobs and $7.737 to $37.101 million in personal income.

3.6 Implementation

The implementation of the proposed alternatives will require physical modifications of the operations and physical structure of the four lower Snake River facilities in order to achieve the objectives of each alternative. Implementation proposed for each alternative includes physical modifications and required mitigation as well as changes in operations at each project. These modifications would take place over distinct implementation periods starting in 2001 and reaching completion in 2005 to 2010 depending on the alternative. This estimate assumes that a decision is reached in 2001. The geographic scope of these implementation activities would take place in the river corridor area between the Lewiston/Clarkston Valley and the Tri-Cities. Potentially affected communities include Burbank, Prescott, Washtucna, Kahlotus, Starbuck, Pomeroy, Walla Walla, Colfax, and Dayton.

The social impacts on focus communities will be evaluated for each alternative in terms of the long-term and short-term effects on jobs and income, the influx of outside workers, and human movement patterns.

3.6.1 Alternative A1: Existing Conditions, 1995 Biological Opinion (Base Case)

Alternative A1 is programmed to begin implementation in the year 2001 and be completed by 2005. The majority of the activity associated with the alternative would occur between 2002 and 2004. Major implementation activities include, but are not limited to, turbine modifications, auxiliary water supply, fish ladders, separator improvements, end bay deflectors, juvenile fish facility improvements, additional barges, barge moorage cells, anadromous fish evaluation, and Bureau of Reclamation (BoR) water purchases.

Employment Associated with the Operations of A1

Currently the four lower Snake River facilities directly employ 210 individuals (USACE Walla Walla District, 1999). These Corps employees live in communities surrounding the lower Snake River including Burbank, Connell, Kennewick, Pasco, Touchet, Pomeroy, Ritzville, Starbuck, Albion, Clarkston, Colfax, Pullman, Dayton, Dixie, Kahlotus, Washtucna, and Prescott in Washington and Lewiston, Idaho.

Influx of Outside Workers

The low number of short-term jobs associated with this alternative should not lead to significant increases of outside workers in the focus communities in the lower Snake River subregion.

Human Movement Patterns

The construction activities under Alternative A1 should not affect the movement of local human populations living around the projects. The four lower Snake River facilities are currently utilized by local residents and visitors as bridges connecting roads on the north side of the river with those on the south. The projects operate allow passage year round during predominately daylight hours. Current levels of traffic across the projects should continue at the same levels as 1997 usage. Table 30 presents a rough estimate of daily traffic on the lower Snake facilities.

Table 30
Rough Estimate of Traffic Flow Over Lower Snake River Facilities

Project	Daily Average Traffic (1998)	Yearly Average Traffic (1998)
Ice Harbor	100	36,500
Lower Monumental	20	7,300
Little Goose	10	3,650
Lower Granite	10	3,650
Total	**140**	**51,100**

Source: USACE, Walla Walla District, 1999 (Not based on actual counts)

Based on the extent of the physical modifications, it does not appear that the movement of personnel and equipment would disrupt traffic in and around the four projects. The movement of equipment and materials would take place via the waterway and not via local roads.

3.6.2 Alternative A2a: Modified Existing Conditions With Maximum Transport

Alternative A2a is programmed to begin implementation in the year 2001 and be completed by 2005. The majority of the activity associated with this alternative would occur between 2002 and 2004. Project modifications include all of the same modifications associated with Alternative A1 with the exception of the modifications to the deflectors and pier extensions.

Jobs and Income

The implementation of alternative A2a would result in less employment and personal income than Alternative A1. During the four years of implementation, Alternative A2a produces between 1 and 1.5 million dollars less in personal income and between 56 and 39 fewer jobs than A1.

Employment Associated with Operations of Alternative A2a

The operation of Alternative A2a would require less spending and employment than the base case. This reduction results in a decrease of approximately 2.3 million dollars in personal income annually and a decrease in direct, indirect, and induced employment of approximately 83 jobs until the year 2026 within the lower Snake River subregion. From 2027 to 2100 no differences between the base case and Alternative A2a in employment or personal income are projected.

Influx of Outside Workers

Alternative A2a creates less employment and income than Alternative A1. Thus, there is no projected influx of outside workers.

Human Movement Patterns

Human movement patterns over and around the dams will continue as in the base case.

3.6.3 Alternative A2c, Major Improvements Surface Bypass Collection with Maximum Transport

Alternative A2c is programmed to begin implementation in the year 2001 and be completed by 2006. The majority of the activity associated with this alternative would occur between 2002 and 2006. Major activities associated with the implementation of this alternative include Alternative A1 modifications with the exception of the modification of the deflectors. In addition, Alternative A2c would include the testing and installation of surface bypass collectors and new extended screens.

Jobs and Income

This alternative would create an additional 1.9 to 5.9 million dollars in personal income and between 71 and 216 jobs than the base case during the period of implementation. These direct, indirect, and induced effects would take place throughout the lower Snake River study area.

Employment Associated with Operations of Alternative A2a

The operation of Alternative A2c requires more spending and employment than the base case in order to operate and maintain the surface bypass collectors. This increased operational cost results in increased personal income of approximately 1.26 million dollars annually and an increase in direct, indirect, and induced employment of 44 jobs until the year 2026 within the lower Snake River study area. From 2027 to 2100 the direct, indirect, and induced effects of the operation of Alternative A2c would create approximately $727,000 dollars in personal income and 25 jobs within the lower Snake River study area.

Influx of Outside Workers

The level of construction activity associated with the modifications under this alternative should not introduce significant numbers of outside workers into communities surrounding the projects on a temporary or a permanent basis.

Human Movement Patterns

Human movement patterns over and around the dams will continue as in the base case.

3.6.4 Alternative A3: Dam Breaching

Alternative A3 is programmed to begin implementation in the year 2001 and to be completed by 2009. The majority of the construction would occur between 2004 and 2007. Major activities associated with this alternative include power house turbine modifications, dam embankment removal, river channelization, temporary fish handling facilities, dam decommissioning, railroad relocations, bridge, reservoir, roadway and drainage structure protection and repair, recreation access modification, revegetation, cultural resource protection, and cattle watering facilities.

Jobs and Income

The direct, indirect, and induced effects of increased spending to implement this alternative, beyond the base case spending, would create a range of personal income increases from 2.3 million dollars in the first year, to 41.9 million in year 5, to 5.1 million in year 8. Employment increases in the lower Snake River subregion are projected to be from a low of 83 jobs in the first year to a high of 1,534 jobs in year 5, to 187 jobs in year 8.

Employment Associated with Operations of Alternative A3

After the initial implementation of Alternative A3, spending on annual operations and maintenance would be significantly reduced. Operations that would continue include Lyons Ferry Hatchery, habitat management units, and recreation sites. Estimates of the direct, indirect, and induced effects of decreased operations spending within the lower Snake River study area from 2009 to 2100 range from a loss of 44 to 35 million dollars of personal income and employment losses from 1,193 to 1,585 jobs. Direct job losses will include a portion of 210 current Corps employees living in communities throughout the reservoir and downriver subregions. The loss of government employees in small communities may be significant and it assumed that those individuals and their families would leave. Social impacts for each of the focus communities will be evaluated in terms of employment and income effects and population effects.

Influx of Outside Workers

These new short-term employment projections include both on- and off-site employment within the lower Snake River study area. Cost engineers at the Walla Walla district provided the labor hours for on site manual labor to implement this alternative. It appears that approximately 237 person years of labor would be required at each dam for on-site work. If this work were performed during a four-month period at each project the estimate of workers on site would be 711 during that four-month period. Based on interviews with cost engineers at the Walla Walla district, it is assumed that many of these workers would come from union halls in the region. Those workers from outside the region would most likely stay in the Tri-Cities or the Lewiston-Clarkston Valley and commute to the job site. It is not anticipated that trailer cities would be constructed at the job sites or that workers would stay in the small communities, such as Kahlotus, Prescott, Pomeroy, and Starbuck, that originally hosted the dam construction workers in the 1950s through the 1970s.

The influx of outside workers in large numbers and for a long duration can strain public services, create short-term housing shortages, and introduce a new set of cultural values into the community. Each community will be evaluated based on the potential percentage increase in total population in the community to determine the potential effects of outside workers.

Human Movement Patterns

The construction activities under Alternative A3 would affect the movement of local human populations living around the lower Snake River facilities. Transportation across the river would be eliminated at the four facility sites leaving only two bridge crossings between Clarkston and Burbank. The loss of crossing points across the river would affect communities such as Kahlotus, Washtucna, Starbuck, Prescott, Connell, Pomeroy, and Colfax.

Based on the extent of the physical modifications at the projects, damaged roads and rails and the movement of large machinery would disrupt traffic flows along SR 263, SR 261, SR 194, SR193, and other local county roads that run along the river. These state and county routes carry between 200 and 1700 vehicles daily (WSDOT, 1997). The traffic currently moving on these roads is primarily truck traffic accessing the port facilities. The movement of personnel and equipment would disrupt traffic in and around the four projects and there may be some congestion if work on implementation takes place before the ports have stopped loading grain. The movement of equipment and materials would take place via the waterway and not via local roads.

3.7 Air Quality

Preliminary air quality analysis indicates increases in fugitive dust emissions from exposed sediments under Alternative A3. The analysis does not present information on local level changes in particulate matter and therefore this effect on the environment in the focus communities cannot be addressed unless more detailed information is provided.

3.8 Salmon Recovery

The scientific uncertainty associated with the probability of anadromous fish recovery and the relative effects of the lower Snake River facilities on the future viability of the salmon under the proposed alternatives has and will continue to cause significant social impacts to communities throughout the region. Residents throughout the region feel that salmon recovery is a worthwhile goal. Existence value survey results and the attitudes and statements made both at community forums and public information meetings conducted throughout the course of this study have demonstrated this.

Although there is a demonstrated concern about salmon recovery, the population of the region is divided on the means for achieving salmon recovery and the risk, either biological or economic, associated with the proposed alternatives. The significant effects of this social division include an increase in interest group activity and the allocation of scarce resources to engage in the salmon-dams debate, changes in community social cohesion, future uncertainty related to the river system and the regional business climate, and the future uncertainty of the existence of wild salmon in the lower Snake River.

These impacts are discussed qualitatively for each community based on regional newspaper accounts over the past two years, observations made at public meetings and regional forums and roundtables, and the results of the community based assessments.

3.8.1 Interest Group Activity

The most significant social impact of this disagreement over the acceptable risk associated with the alternatives is the commitment of scarce resources for a broad array of interest group activities. Private interest groups including the Farm Bureau, the Idaho, Washington, and Oregon State Wheat Growers Associations, the Pacific Northwest Grain and Feed Association, the Pulp and Paper Workers Union, various Chambers of Commerce, and the Columbia River Alliance have invested considerable resources to advocate for the alternatives associated with a perceived low economic risk and a high biological risk (*i.e.*, non dam breaching alternatives). Joining in this position have been public sector groups such as county commissioners and city councils. One indicator of the position of these groups may be seen in the slogan, "Save Salmon--Save Our Dams."

On the other side, advocating a perceived lower biological risk and higher socioeconomic risk associated with dam breaching, private interest groups such as Idaho Rivers United, Save our Salmon Coalition, the Sierra Club, Idaho Conservation League, and the Northwest Sportfishing Industry Association have invested considerable resources to advocate for the lower biological risk alternative, dam breaching. In addition to these private interest groups, the Columbia River Tribes, as well as the state Fish and Game Commissions have been actively involved as participants in the process and more recently as advocates for dam breaching. One indicator of the position of these groups is the slogan, "Extinction is Forever, Dams are Not."

3.8.2 Social Cohesion

In some communities the debate between the perceived low biological risk alternative, dam breaching, and the low socioeconomic risk alternatives has decreased social cohesion and placed community members in adversarial positions. City councils have debated the issue and Chambers of Commerce have issued position papers. On the other hand, in communities where there is little division over the preferred risk exposure, and the primary economic interests in the communities are perceived to be adversely or beneficially affected by the proposed alternatives, community cohesion may increase through a united position on a preferred alternative. In both cases, scarce social and economic resources are being invested in the issue and will continue to be invested during the decision-making process and during the implementation of any of the alternatives.

3.8.3 Perceived Risk

Many communities and individuals in the region are faced with the tradeoffs between the perceived biological and socioeconomic risks associated with the proposed alternatives. Alternative A1 is perceived by those communities that consider themselves as dependent on the waterway as having a higher biological risk and a lower socioeconomic risk since the existing river system remains in place. Alternative A2 is also perceived to have a higher biological risk and a lower socioeconomic risk. Those communities that currently perceive themselves to be dependent on the lower Snake River Waterway perceive Alternative A3 as having a lower biological risk and a much higher socioeconomic risk. In other words, the future of the socioeconomic system and the communities is much less certain with the dams breached.

On the other hand communities that do not perceive themselves as dependent on the waterway but on the biological resource perceive Alternatives A1 and A2 as having a higher biological risk and a higher socioeconomic risk. These communities perceive Alternative A3 as having a lower biological risk and a lower socioeconomic risk. In those communities where there is a presence of groups dependent on the waterway and other groups dependent on the biological resource, the perceived risk of both groups create an environment where rival claims are made about the risks associated with the same proposed action.

3.8.4 Probability of Delisting

The effect of the Endangered Species Act (ESA) listing of lower Snake River salmon and steelhead populations has a direct social impact insofar as local administrative units, private developers, and other Federal agencies are required to follow specific regulations, engage in consultations, and fall under the oversight of NMFS. These requirements increase the cost of doing business both for the Federal agencies and local administrative and governmental bodies. According to the Anadromous Fish Appendix to the EIS, the alternative with the highest probability across the range of uncertainties of moving listed populations off the endangered list is dam breaching. Thus, there is a decreased future risk of increasing business costs due to the listing of the species.

Alternatives A1 and A2 both have lower probabilities across the uncertainties of reaching recovery. Thus, there is an increased risk of continued Federal oversight and increased regulatory costs for those private and public sector interests in the region.

3.9 Social Impact Evaluation

The significance of changes in the physical, biological, and socioeconomic environment in each of the nine focus communities was evaluated based on the criteria indicated in Table 31. The significance of the socioeconomic factors was determined as the difference between each alternative and the base case, Alternative A1, in both the short-term-predevelopment, and implementation- and the long-term-post-implementation phases. Some of the criteria are based on quantitative forecasts developed by other study teams and a disaggregation of the regional employment and income effects. Other criteria have been developed specifically from this Social Analysis. The significance of socioeconomic impacts for each of the focus communities are given in terms of very positive, positive, no impact, negative, and very negative. This rating system is not an interval scale with a true zero of no impact and the distance or degree of impact being additive. These are relative ratings that indicate the direction and actual magnitude of a given impact (*i.e.*, employment increase of greater or less than 5 percent).

Table 31
Criteria for Evaluating Significance of Changes in the Physical, Biological, and Socioeconomic Environment

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and	Short-Term	Long-Term

			Decision Making (Present to Imp)	Effect (2001-2012)	Effect (2012-2020)
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		--	--
A3		Residential Rate Increase <5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment >1 percent		--	--
A3		Decrease in Employment <1 percent		-	-
A3	Power Provider Rate Risk	Public-Owned Utility		--	--
A3		Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		--	--
A3		Poverty Rate <10 percent of all families		-	-
A3	New Powerplant Operation	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
A3	New Plant Construction	Increase in Regional Employment >5 percent		++	++
A3		Increase in Regional Employment <5 percent		+	+
A3		Within 50 Miles of Potential Plant Siting		-	-
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
A3		Short-Term Displacement		-	
A3		Short-Term Crowding		-	
A3	Anadromous Fishing Recreation	Increase in Employment >1 percent			++
A3		Increase in Employment <1 percent			+
A3		Short-Term Displacement		-	
A3		Short-Term Crowding		-	
A3		Local Fishing Opportunities			+
A3	Site Access	Decrease in Site Access >25 percent		--	--
A3		Decrease in Site Access <25 percent		-	-
A3	Site Services	Decrease in Site Services >25 percent		--	--
A3		Decrease in Site Services <25 percent		-	-
A3	Elderly Recreationists	Over 65 years >20 percent		--	--
A3		Over 65 years <20 percent		-	-

Transportation					
A3	Transport-Related Employment	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
A3	Farm Spending Related EMP	Decrease in Employment >1 percent		--	--
A3		Decrease in Employment <1 percent		-	-
A3	Dryland Farm Income	Decrease in Total County Farm Income >10%		--	--
A3		Decrease in Total County Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2 percent		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infra Construct	Increase in Employment >1 percent		++	
A3		Increase in Employment <1 percent		+	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
A3	Grain Transportation Costs	Increase in Cost >15 cents per bushel		--	--
A3		Increase in Cost <15 cents per bushel		-	-
A3	Farm Consolidation	Increase in Rate of Farm Consolidation		-	-
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transport Capacity Uncertainty	Increase in Transportation Uncertainty	-	-	
A3	Highway Congestion	Increase in Traffic Volume >2 percent		--/++	--/++
A3		Increase in Traffic Volume <2 percent		-/+	-/+
A3		Decrease in Traffic Volume		+/-	+/-
A3	Highway Safety	Increase in Highway Safety		+	+
A3		Decrease in Highway Safety		-	-
Water Supply					
A3	Dislocated Ag Workers/Spending	Decrease in Employment >1 percent		--	--
A3		Decrease in Employment <1 percent		-	-
A3	Farm Income	Decrease in Total County Farm Income >10%		--	--
A3		Decrease in Total County Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2 percent		-	-
A3	ST Pump Modifications	Increase in Employment >1 percent		++	
A3		Increase in Employment <1 percent		+	
A3		Increased costs for well irrigators/users		-	
Implementation/Avoided Cost					
A3/A2c	Implementation Employment	Increase in Employment >1 percent		++	
A3/A2c		Increase in Employment <1 percent		+	
A3	Outside Workers	Increase in Outside Workers >10 percent		--	
A3		Increase in Outside Workers <10 percent		-	
A3	Human Movement Patterns	Loss of Project Bridges Within 50 Miles		-	-
A3/A2c	Operations Employment	Decrease in Employment >1 percent		--	--
A3/A2c		Decrease in Employment <1 percent		-	-

Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3/A2c		Decreased Social Cohesion	-	-	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertain/Risk	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		
Other Social Effects					
A3	Population Impacts	Decrease in Population >5 percent		--	
A3		Decrease in Population <5 percent		-	
A3		Increase in Population >5 percent		++	
A3		Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses >5 percent		--	--
A3		Employment Losses <5 percent		-	-
A3		Increase Net Employment >1 percent		++	++
A3		Increase Net Employment <1 percent		+	+
A3		Decrease Net Employment >1 percent		--	--
A3		Decrease Net Employment <1 percent		-	-
A3	Total Short-Term Employment	Increase in Employment >5 percent		++	
A3		Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Increase Net Employment >1 percent		++	++
A3		Increase Net Employment <1 percent		+	+
A3		Decrease Net Employment >1 percent		-	--
A3		Decrease Net Employment <1 percent		-	-
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = Very positive
+ = Positive
(blank) = No impact
- = Negative
-- = Very negative

In addition to these ratings, the results of the community-based forums are referenced to highlight the community perceptions of potential social and economic impacts for each of the alternatives. Table 31 is organized based on the economic changes identified by the DREW teams, biological changes identified by NMFS and PATH, and physical changes from both DREW study teams and Corps engineers. The discussion that follows for each community uses this information but places it in the context of the four dimensions of community previously identified as People, Jobs and Wealth, Place, and Vision and Vitality. In addition, special populations within communities are identified and discussed in relation to the forecast changes.

Increases in both short-term and long-term local employment are considered beneficial although these benefits are qualified if there is a fundamental shift in the composition of the types of jobs and the traditional employment profile of the community. In other words, would the employment changes build on the past growth and direction of economic development in the community, expand the economic base, or move in an entirely new direction?

The significance of these employment and other social impacts will be discussed in the context of recent historical socioeconomic changes in each community. In other words, have these communities experienced significant changes, and how did they respond? Additionally, both the county resiliency rating and the community economic diversity rating will serve as indicators of overall community health of communities in which these impacts are expected to occur.

4. Description and Comparison of Community Social Impacts

4.1 Allocation of Regional Employment Impacts to Study Regions and Focus Communities

Regional employment effects developed by the Input-Output (I-O) analysis are allocated to the appropriate subregion and then disaggregated to the focus communities. Limitations associated with the I-O data are discussed in the Regional Analysis Report (AEI, 1999). The following analysis is also subject to these limitations. The following allocation involves distributing the change in regional jobs based on the distribution of existing jobs by community. If, for example, a community accounts for 10 percent of existing regional employment, 10 percent of the projected regional change would be allocated to that community. The resulting allocations are assessed qualitatively based on the local geographic context and economic structure to ensure that effects are distributed as accurately as possible.

The allocation of subregion jobs to community jobs is based on the 1995 ICBEMP community level data (Robison and Harris, 1995), which is the most recent community level employment information available. This data, developed from county-level REIS data, provides information on the functional economy of each community. This differs from the residence sample estimates provided in the 1990 census, which are limited to economic activities contained within city limits. The following sections discuss the allocation of employment change by major resource area and subregion.

4.1.1 Water Supply

No impacts are forecast for water supply related employment under Alternatives A1 and A2. Water supply impacts under Alternative A3 estimated by the regional study team are concentrated in the reservoir and downriver subregions in the vicinity of Ice Harbor reservoir. This area consists of three counties: Walla Walla, Benton, and Franklin. The regional study modeled the entire lower Snake River subregion to include the linkages between the downriver subregion and the reservoir region but these impacts are not spread out evenly over the entire region. A profile of employment in this three county region was developed to allocate these impacts. Within this three county subregion, community employment profiles were developed to allocate percentages of the projected impacts to Kennewick and Pasco.

Approximately 1,300 jobs would be affected by Alternative A3. Seventy percent of these impacts are allocated to the reservoir region (Walla Walla County) and 30 percent to the Downriver subregion (Benton and Franklin counties). Although approximately 80 percent of the irrigated lands are in Walla Walla County, many of the indirect and induced effects will be seen in the agricultural services sector, primarily in Pasco.

Short-term well modification impacts were modeled on the lower Snake River subregion and allocated to the reservoir, downriver, and upriver subregions as 50, 25, and 25 percent respectively.

Short-term municipal and industrial pump modification spending and related employment will occur primarily in the Lewiston-Clarkston valley and thus 90 percent of the impacts are allocated to upriver subregion and 10 percent to the downriver subregion.

The resulting distribution of impacts by subregion is shown in Table 32.

Table 32
Distribution of Long-Term and Short-Term Water Supply Employment Impacts

Region	Total Employment	Irrigation Employment Lost	Percent Change	Well Modification (ST Peak)	Percent Change	Pump Modification (ST Peak)	Percent Change
Upriver	75,081	0	0.00	294	0.39	263	0.35
Downriver	51,124	-677	-0.45	294	0.19	29	0.02
Reservoir	92,535	-1579	-1.71	587	0.63	0	0.00
LSR Total	**318,740**	**-2256**	**-0.71**	**1175**	**0.37**	**292**	**0.09**

4.1.2 Navigation and Transportation

Under A1 and A2 there are no changes to the existing transportation system. Under A3, farmers would no longer be able to ship commodities on the lower Snake River. This would shift employment from water transportation to more labor-intensive rail and trucking related employment. Increased transportation costs per bushel in the Upriver and Reservoir subregions would have three distinct impacts on farmers. First, it would decrease net farm income per county by the amount of the transportation cost increase times the number of affected bushels of grain and thus farm household spending would be decreased. This impact would be felt in all communities throughout the Upriver and Reservoir subregions. Thus, the allocation of negative impacts was distributed across all of the communities in the region based on the ratio of community to regional employment. This may distort the actual impacts that may be more significant in smaller communities that do not have a large service sector. This limitation is addressed on a community by community basis.

The second impact would be the creation of jobs in rail and truck related transportation and related expenditures, as farms would spend more on these modes of transportation. These impacts are distributed throughout the Upriver and Reservoir subregions, but those communities projected to be on major new road and rail transportation corridors would capture the largest increases in jobs and income. This shift in spending and related employment was modeled in the upriver and reservoir subregions. The increased employment was allocated evenly throughout communities in the subregion, as it is unclear if any one community would become a major trucking transportation hub.

The third impact area is the construction-related activity to improve, expand, and maintain infrastructure in the eastern Washington region. The data utilized by the regional study team were prepared by HDR Engineering, Inc., for the State of Washington Legislative Transportation Committee and utilized worst case scenarios for short-term infrastructure improvements with all truck or all rail transportation in eastern Washington. These scenarios represent the maximum expenditures needed for either rail or roadways in eastern Washington. As a result, 90 percent of the impacts were allocated to the reservoir region and 10 percent to both the upriver and downriver regions. Allocating these impacts to communities follows the same process as the impacts from a decrease in net-farm income. No data were available for long-term infrastructure maintenance costs and related employment in the reservoir, upriver, or downriver subregions.

Finally, a sensitivity analysis completed on marginal farms and the effects of increased transportation costs on total harvested acreage was conduced in the upriver region. These impacts were allocated to the focus communities as a percentage of the total upriver region.

No data were available on the employment and income effects in the wood products industries nor were impacts calculated for other water dependent employment.

Table 33 shows the distribution of impacts by study subregion for both long-term and short-term changes in employment.

Table 33
Transportation Employment Impacts by Subregion

Region	Total Employment	Grain Transport	Percent Change	Farm Spending	Percent Change	Infrastructure Construction Low Estimate	Percent Change
Upriver	75,081	181	0.24	-100	-0.13	255	0.34
Downriver	151,124	0	0.00	0	0.0.00	255	0.17
Reservoir	92,535	294	0.32	-139	-0.15	2045	2.21
LSR Total	**318,740**	**475**	**0.15**	**-239**	**-0.07**	**2555**	**0.80**

4.1.3 Power

Power production under Alternatives A1 and A2 would remain essentially unchanged and would not significantly affect regional employment. Under Alternative A3, the economic impacts of changing the hydropower system involve more expensive replacement power and would subsequently increase electrical utility rates. In addition, the operation and construction of replacement power plants would create jobs. The first of these impacts, rate changes, are dependent on the question of who pays for implementation as well as which rate-payers would see an increase directly in their electrical rates. Since it is unknown who would pay for the implementation of A3 or how the increased rates would be allocated, the regional and social analysis utilized the midpoint estimate from the Hydropower Team and distributed the impact evenly over the households in each of the affected states and subregions.

The high cost scenario assumes that 90 percent of the implementation cost of A3 would be covered by BPA and only BPA customers would see the combined increased costs of energy production and distribution. The reliance of each community on BPA provided electricity will be addressed qualitatively in the discussion of each focus community.

The economic impacts associated with the construction and operation of additional generating facilities were modeled for the entire lower Snake River subregion. The exact location of the assumed two new facilities is unclear but a likely location would be in the Hermiston-Umatilla region, therefore 70 percent of the operations employment was allocated to the downriver subregion and 30 percent to the reservoir region. Construction activity may produce short-term employment throughout the lower Snake River region, therefore, 75 percent of these impacts were allocated to the downriver subregion, 20 percent to the reservoir region, and 5 percent to the upriver region. These short-term employment impacts will not be allocated to communities but will be discussed in terms of changes in regional employment due to the lack of certainty about the siting of the facility.

Table 34 shows the distribution of long- and short-term employment impacts associated with changes in power production and cost for Alternative A3.

Table 34
Distribution of Long- and Short-Term Employment Impacts From Changes in Power Production and Cost for A3

Region	Total Employment	Power Rates	Percent Change	Power Operation	Percent Change	Powerplant Construction (ST)	Percent Change
Upriver	75,081	-19	-0.03	0	0.00	181	0.24
Downriver	151,124	-49	-0.03	770	0.51	2718	1.80
Reservoir	92,535	-21	-0.02	330	0.36	725	0.78
LSR Total	**318,740**	**-89**	**-0.03**	**1100**	**0.35**	**3624**	**1.14**

4.1.4 Recreation

Recreational opportunities, visitation, and economic benefits would remain essentially the same under alternatives A1 and A2 because employment changes predicted by the I-O model are based on the original PATH numbers. The economic impacts of changed recreational opportunities under A3 were modeled for both the upriver and reservoir subregions. The size of these impacts is directly related to the number of users. User estimates generated by the recreation study team vary over time. Associated economic impacts and employment projections vary accordingly. The following analysis uses the year 20 employment estimates based on the low contingent behavior results. This time frame coincides with the overall social analysis study period. Also, the majority of recreation activities are expected to have resumed by this time (Corps, 1999, Benge table).

Recreation-related employment increases were allocated to communities in the reservoir subregion based on the overall ratio of community to reservoir employment. The I-O analysis addressed potential effects to the lower Snake River region and the reservoir and downriver subregions. Some communities downriver may also receive recreation benefits. Potential employment increases in downriver communities were allocated based on the ratio of community to lower Snake River region employment.

Recreation-related employment gain is unlikely to be distributed evenly across the communities in the upriver subregion. Some communities have existing recreational sportfishing opportunities and would likely be the primary beneficiaries of increased employment. This issue is discussed further in the discussion of each community.

Table 35 shows the distribution of employment impacts to the study subregions caused by forecast changes in recreational visitation (using a 20-year low estimate).

Table 35
Employment Associated With Changes in Recreational Visitation by Subregion[1]

Region	Total Employment	All Recreation Employment (20 Years Low Estimate)	Percent Change
Upriver	75,081	1499	2.00
Downriver	151,124	0	0.00
Reservoir	92,535	701	0.76
LSR Total	**318,740**	**2200**	**0.69**

[1]These estimates are based on the 20-year low estimate (Loomis, 1999)

4.1.5 Implementation

Implementation of Alternative A2a represents approximately the same level of long term operational spending throughout the lower Snake River subregion. Alternative A2C, SBC with maximum transport, will result in minor additional expenditures and operational employment. These impacts were distributed proportionally throughout the lower Snake River subregion.

The economic impacts of implementing Alternative A3 may be divided into two categories. The first are long-term effects of decreased spending (avoided costs) and a decrease in regional employment. These impacts were modeled for the entire lower Snake River subregion. The allocation of the direct, indirect, and induced employment changes would follow the estimated distribution of direct employment associated with the current operation of the lower Snake River facilities (80 percent reservoir region, 10 percent upriver and 10 percent downriver). The allocation of these impacts to focus communities would be ground-truthed with estimates of the number of current Corps employees in each community.

The second area of impacts is those associated with the short-term construction activities of each of the alternatives. These impacts were modeled for the entire lower Snake River subregion. Alternative A2A would require additional short-term spending. The employment impacts were allocated to the subregions as follows: 40 percent reservoir, 40 percent downriver, and 20 percent upriver. Allocation to focus communities in the subregions would follow a proportional distribution.

Table 36 shows the allocation of projected employment impacts from the lost operations of the four lower Snake River facilities and the short-term construction activities associated with Alternative A3.

Table 36
Distribution of Employment Impacts From Lost Operations and Short-Term Construction for A3

Region	Total Employment	Lost Project Operations	Percent Change	Implementation (ST Employment) A3	Percent Change
Upriver	75,081	-130	-0.17	605	0.81
Downriver	151,124	-130	-0.09	1210	0.80
Reservoir	92,535	-1040	-1.12	1210	1.31
LSR Total	**318,740**	**-1300**	**-0.41**	**3025**	**0.95**

Limitations of Allocation Methodology

Estimates of employment change were developed at the subregional or regional level and impacts were allocated based on the proportion of local employment to total regional employment. This allocation assumes that the regional and subregional models accurately represent the structure of the local economy. This is unlikely to be the case. The economic structures of most communities are relatively simple consisting of fewer sectors than the economies modeled at the regional and subregional level. Local multipliers may be smaller or greater resulting in smaller or greater secondary or induced effects. Impacts may be localized and not distributed evenly across the region or subregion.

Recognizing these potential limitations, the community level allocations were also assessed qualitatively. This assessment took into account each community's geographic context and economic structure to ensure that employment effects are distributed as accurately as possible. This is discussed, as appropriate, in the following section.

This allocation methodology is intended to provide an approximation of the impacts at the local community level. Given the above concerns and the general limitations of multi-county I-O models, this approximation serves to illustrate the relative magnitude of likely impacts and not absolute impacts. These estimates should, however, be sufficient to provide an understanding of the likely effects of A3 across a range of communities.

4.1.6 Summary of Allocation of Regional Employment Impacts

The allocation of the total long-term employment changes under Alternative A3 including total jobs lost and net changes in employment are presented by subregion in Tables 37, 38, and 39. Tables 40 and 41 show the total short-term employment changes in employment by subregion.

Table 37
Long-Term Employment Changes for A3, As Allocated by Subregion

Total Regional Employment Impacts (Years 10 & 20)	Regional Highs and Lows (20 Years)														
	Reservoir					Upriver					Downriver				
	High Gains	Low Gains	High Loss	Med Loss	Low Loss	High Gains	Low Gains	High Loss	Med Loss	Low Loss	High Gains	Low Gains	High Loss	Med Loss	Low Loss
Power															
Rate Impacts			-26	-21	-16			-23	-19	-15			-61	-49	-38
New Plant Operations	330	330									770	770			
Transportation															
Annual Road (Unknown)															
Annual Rail (Unknown)															
Cruise Ships								-21	-21	-21	21	21			
Loss of Grain Farms (Sensitivity)															
Upriver Grain Transportation						181	181								
Reservoir Grain Transportation	294	294													
Upriver Farm Income Effect								-100	-100	-100					
Reservoir Farm Income Effect			-139	-139	-139										
Barge-Related Reservoir			-24	-24	-24										
Barge-Related Upriver								-50	-50	-50					
Effects on Other Shippers (Unknown)															
Water Supply															
Irrigation			-1,579	-1,579	-1,579								-677	-677	-677
Tribal Effects															
Recreation															
Reservoir Region Recreation	1,520	594													
Reservoir Region Fishing	107	107													
Upriver Fishing						1499	1499								
Avoided Costs (Operations Costs)															
Operations			-1,040	-1,040	-1,040			-130	-130	-130			-130	-130	-130
Total Gains/Losses	**2,251**	**1,325**	**-2,808**	**-2,803**	**-2,798**	**1,680**	**1,680**	**-324**	**-320**	**-316**	**791**	**791**	**-868**	**-856**	**-845**

Table 38
Forecast Direct, Indirect, and Induced Long-Term Employment Losses By Subregion

Range of Emp Losses	PNW Job Losses	PNW Jobs	Losses as a % of PNW Emp	Reservoir Region Losses	Reservoir Jobs	Losses as a % of Reservoir Subregion Emp	Downriver Losses	Downriver Jobs	Losses as a Percentage of Downriver Region Emp	Upriver Losses	Upriver Jobs	Losses as a % of Upriver Emp
High	-6,008	5,703,840	-0.105	-2.808	92,535	-3.03	-868	151,124	-0.57	-324	75,081	-0.43
Medium	-5,056	5,703,840	-0.089	-2.803	92,535	-3.03	-856	151,124	-0.57	-320	75,081	-0.43
Low	-5,388	5,703,840	-0.094	-2.798	92,535	-3.02	-845	151,124	-0.56	-316	75,081	-0.42

Table 39
Net Long-Term Changes By Subregion as Percentages of Total Regional Employment

	PNW Region Net				Reservoir Region		Downriver Region		Upriver Region	
	10 Year Rec	20 Year Rec	10 Year % Change	20 Year % Change	20 Year Net	Percent Change	20 Year Net	Percent Change	20 Year Net	Percent Change
Net worst case (low gains/high losses)	-1,946	-1,112	-0.034	-0.019	-1483	-1.603	-77	-0.051	1,356	1.8060
Net best case (high gains/low losses)	-47	766	-0.001	0.013	-547	-0.591	-54	-0.036	1,364	1.8167
Net most likely (low gains/med losses)	-1,326	-492	-0.023	-0.009	-1478	-1.597	-65	-0.043	1,360	1.8114
Low case (low gains/low losses)	-994	-160	-0.017	-0.003	-1473	-1.592	-54	-0.036	1,364	1.8167
High case (high gains/high losses)	-999	-186	-0.018	-0.003	-557	-0.602	-77	-0.051	1,356	1.8060

The total job losses forecast for each region represent approximately 3.0 percent, 0.6 percent, and 0.4 percent of the reservoir, downriver, and upriver subregions' total employment respectively, regardless of whether the high, medium, or low forecasts are considered (Table 37). Overall employment changes for the entire Pacific Northwest are estimated at between 0.1 percent and 0.09 percent. This includes both the low, medium, and high estimates. The majority of these job losses relate to employment associated with irrigated agriculture on the Ice Harbor Reservoir and the Corps operations of the four lower Snake River facilities. Table 38 highlights only those jobs lost as a result of implementation of Alternative A3 and does not include jobs gained by less efficient energy production and grain transportation modes.

As can be seen in Table 39 the combination of scenarios by subregion can significantly change the net employment effects of Alternative A3. On the level of the Pacific Northwest Region, total long-term employment changes range from a 0.001 percent increase in the best case scenario to the worst case scenario of a -0.034 percent decrease in regional employment after 10 years. After 20 years total long-term employment changes range from a 0.01 percent increase to a -0.02 percent decrease. The major factors driving this range of uncertainty are the estimates associated with power rate impacts and with recreational employment impacts. Again, the reservoir region has the most significant decreases ranging from -0.6 percent to -1.6 percent, with the downriver region also seeing a net decrease in employment from -0.051 to -0.036. The upriver region has a positive change in regional employment ranging from 1.81 to 1.82 percent increase in employment.

Short-term construction employment is forecast assuming that these changes are made to existing infrastructure. None of these changes are included in the Corps implementation plan except for those expenditures associated directly with implementation of Alternative A3.

Tables 40 and 41 show that peak short-term employment would contribute significantly to each of the study subregions. The reservoir region would experience approximately 5 to 6 percent in regional employment while the downriver and upriver subregions would experience increases from 2.9 to 3.0 and 2.1 to 3.7 percent, respectively.

Table 40
Forecast Peak Short-Term Employment Impacts (A3), As Allocated By Subregion

Peak Short-Term Employment (Occurs Over Years 1-7)	Total Employment Change		Water Reservoir		Upriver		Downriver	
	High	Low	High	Low	High	Low	High	Low
Power								
Short-Term Construction	3,625	3,625	725	725	181	181	2,719	2,719
Transportation								
Short-Term Road Construction	2,149	1,195	1,719	956	215	120	215	112
Short-Term Rail Construction	1,118	811	894	649	112	81	112	81
Short-Term Facilities Upgrades	1,095	548	876	438	110	55	110	55
Water Supply								
Short-Term Well Modification	1,175	1,175	588	588	294	294	294	294
Short-Term Pump Modification	1,397	292	140	30	1,257	263		
Tribal Effects								
Unknown								
Implementation								
Construction Modification	3,025	3,025	1,210	1,210	605	605	1,210	1,210
Total Employment Gains	**13,584**	**10,671**	**6,152**	**4,595**	**2,774**	**1,599**	**4,659**	**4,478**

Table 41 Net Short-Term Employment Changes By Subregion A3 As A Percentage of Subregional Employment								
Peak Short-Term Gains (Year)	**PNW Distribution (Jobs)**	**PWN Percent Change**	**Reservoir Impacts (Jobs)**	**Reservoir Percent Change**	**Upriver Impacts (Jobs)**	**Upriver Percent Change**	**Downriver Impacts (Jobs)**	**Downriver Percent Change**
High	13,584	0.238	6,152	6.648	2,774	3.694	4,659	3.083
Low	10,671	0.187	4,595	4.966	1,598	2.129	4,478	2.963
Total Employment	**5,703,840**		**92,535**		**75,081**		**151,124**	

4.1.7 Limitations of Allocation Methodology from Subregional Models to Focus Communities

The methodology of allocating employment impacts described above should be considered a rough approximation of the impacts to a local community. There is a danger of assuming that the subregion model represents the structure of a local economy when impacts are distributed based on the proportion of local employment to the total regional employment. Further, given the limitations of multi-county subregion I-O models, it should be noted that this approximation serves to illustrate the proportional magnitude of impacts and not absolute impacts.

The discussion of each focus community will be careful to confirm the impact allocation against the original socioeconomic profile of the community. Based on the results of the I-O model, small rural communities may be allocated a larger relative portion of the impacts than a larger urban community. This is a result of the relatively simple structure of the local economy and the level of economic leakage from the local economy. In other words, small rural economies may not be typical of the multipliers used in the regional I-O models and the secondary or induced impacts may be less than the model indicates. In some instances the local multipliers may be greater than those in the I-O models or some impacts may be very localized and not distributed across the subregion. Where quantifiable, appropriate adjustments have been made, otherwise the community discussion will discuss other factors relevant to the level of employment impacts.

4.2 Comparison of Alternatives by Community

A major limitation to the evaluation of social impacts at the community level is the availability of information regarding the economic impact on key sectors in the study area. Although this study has described the impacts to farms at the county level and the regional study team conducted a sensitivity impact analysis of decreased land

under production, it is not possible to predict how many farms would be affected and the level of that impact on a given community. In addition, no information exists to forecast the employment impacts on other waterway shippers such as forest products and their linkages to other mills in northeastern Oregon and north central Idaho. Finally, who will pay for increased electrical rates, how they pay, and how much they will pay has not been defined thus this analysis utilized a mid-point estimate where federal beneficiaries of BPA power would pay the costs.

In the absence of this information, the discussion of community level impacts should be considered incomplete. Notwithstanding these limitations, the following discussion will illustrate who will be affected, how they will be affected, and how they may respond to changes in the operation of the four lower Snake River facilities. Although the impact matrix and evaluation of impacts are presented by resource change, the discussion will put these changes into the context of the four dimensions utilized for the description of the base case. These dimensions are Jobs & Wealth (Economics), Place (Character of the natural and built environment), Vision & Vitality (Social Organization and Leadership), and People (Demographic changes and effects on individual populations). Discussions of the community level impacts include the direct and indirect impacts as identified in this study and the other Corps' studies. References to employment include direct, indirect, and induced employment changes in the community. The focus community analysis will be supplemented by the perceptions of community members who participated in the Community-Based Assessments conducted by the University of Idaho (this information will be added once the University of Idaho study is finalized).

4.2.1 Clarkston, WA

The socioeconomic impacts of the three alternatives on the community of Clarkston would include the effects of power costs, recreation activity, navigation/transportation, water supply, implementation, and anadromous fish recovery. Table 42 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment.

Table 42
Clarkston Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		--	--
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment >1 percent		++	++
A3		Short- Term Displacement		-	
A3	Anadromous Fishing Recreation	Increase in Employment <1 percent			+
A3		Short-Term Displacement		-	
A3	Site Access	Decrease in Site Access >25 percent		--	--
A3	Site Services	Decrease in Site Services >25 percent		--	--
A3	Elderly Recreationists	Over 65 Years >20 percent		--	--
Transportation					
A3	Transport-Related Employment	Increase in Employment <1 percent		+	+
A3	Farm Spending Related Emp	Decrease in Employment <1 percent		-	-
A3	Farm Income	Decrease in Total Cty Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrast Const	Increase in Employment >1 percent		++	
A3	Road, Rail,& Infrastructure Maint	Increase in Employment >1 percent		++	++
		Increase in Employment <1 percent		+	+
	Grain Transportation Costs	Increase in Cost >15 cents/bushel		--	--
A3	Farm Consolidation	Increased Rate of Farm Consolidation		-	-
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transport Capacity Uncertainty	Increase in Transportation Uncertainty	-	-	
A3	Highway Congestion	Increase in Traffic Congestion <2 percent		-	-
	Highway Safety	Decrease in Highway Safety		-	-
Water Supply					
A3	ST Pump Modifications	Increase in Employment >1 percent		++	
A3		Increased costs for well irrigators/users		-	
Implementation/Avoided Costs					
A3	Implementation Employment	Increase in Employment >1 percent		++	
A2c		Increase in Employment <1 percent		+	
A3	Outside Workers	Increase in Outside Workers >10 percent		--	
A3	Operations Employment	Decrease in Employment >1 percent		--	--
A2c		Increase in Employment <1 percent		+	+
Anadromous Fish Recovery					
A3	Social Cohesion	Decreased Social Cohesion	-	-	
A3	Recovery Uncertainty	Lower Uncertainty of Salmon Recovery		+	+
A2		Higher Uncertainty of Salmon Recovery		-	-
A2	Business Uncertainty	Lower Economic Uncertainty		+	+
A3		Higher Economic Uncertainty	-	-	-
A2	Extinction Risk	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		

Other Social Effects					
A3	Population Impacts	Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Increase Net Employment <1 percent		+	+
A3	Total Short-Term Employment	Increase in Employment >5 percent		++	
A3	Total Subregional Employment	Decrease Net Employment >1 percent		--	--
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+
A3	Population Impacts	Decrease in Population >5 percent		--	
A3		Decrease in Population <5 percent		-	
A3		Increase in Population >5 percent		++	
A3		Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses >5 percent		--	--
A3		Employment Losses <5 percent		-	-
A3		Increase Net Employment >1 percent		++	++
A3		Increase Net Employment <1 percent		+	+
A3		Decrease Net Employment >5 percent		--	--
A3		Decrease Net Employment <5 percent		-	-
A3	Total Short- Term Employment	Increase in Employment >5 percent		++	
A3		Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Increase Net Employment >1 percent		++	++
A3		Increase Net Employment <1 percent		+	+
A3		Decrease Net Employment >1 percent		--	--
A3		Decrease Net Employment <1 percent		-	-
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Alternative A3 would have significant effects on specific populations in Clarkston. It would create both winners and losers through the loss of a navigable waterway, loss of power produced at the four projects, a shift in transportation modes, a change in recreational opportunities and access, and an increased chance of anadromous fish recovery. In addition, the community would experience a dramatic short-term change in the character of the community as the reservoir is drained and a new shoreline is formed around the city. It is expected that Clarkston would realize short-term increases in implementation and M&I water supply modification related employment as well as a temporary influx of outside workers. Overall, the community would experience both increases and decreases in employment, with a projected net gain in employment. Perhaps the most significant effect on the community would be the stranded social costs of planning and development activities structured around the continued existence of the four lower Snake River facilities and a navigable waterway.

Jobs & Wealth

Overall, Alternatives A2a and A2c provide a higher degree of certainty about the economic future of Clarkston and do not adversely affect jobs and wealth directly. Alternative A3 adversely affects future economic certainty and increases future economic risks because not all of the indirect and induced effects of these changes are known. For example, it is unclear how the increased capital costs of pump and well modifications would affect Potlatch operations, the Clarkston Golf Course, or irrigators along the Lower Granite pool.

Negative impacts on community employment from Alternative A3 would result from increased residential electrical rates, reduction in county-wide farm income, loss of Corps related jobs, loss of water related port operations, loss of tour boat-related employment, and short-term decreased recreational opportunities. Farmers and other shippers currently utilizing the waterway to ship bulk products would experience increased costs to ship their goods and this may have a negative effect on employment in those economic sectors. Only Corps-related employment is projected to exceed a 1 percent decrease.

Positive impacts on community employment from Alternative A3 would result from truck transportation, post-implementation increases in river recreation-related activities, increased anadromous fishing opportunities, road maintenance, and the short-term increases in employment from implementation activities and modifications to wells and water pumps.

The effects of these changes on the largest employers demonstrate the degree to which there would be winners and losers in Clarkston. Potlatch Corporation is the largest employer in the Valley and would be negatively affected by higher shipping costs for some of their products. On the other hand, Poe Asphalt would likely benefit from both the short-term construction related implementation activities and the long-term road maintenance.

Place

Clarkston’s natural and built environment would change dramatically under Alternative A3 much like it did 25 years ago when the pools were filled and orchards were inundated. Adverse impacts from the loss of the Lower Granite pool include the short-term exposure of shoreline and mudflats. The community would lose recreational access sites at Chief Lookinglass Park and Nisqually John Landing as well as losing

some recreational site services at Chief Timothy State Park, Hells Canyon Resort, Southway Park, and Hells Gate State Park. In addition, the community would have some short-term displacement from steelhead and salmon fishing as well as displacement from other river related recreation. The identity of the community as a working water port would also be adversely affected although it would still retain its identity as a Snake River community and the gateway to Hells Canyon.

Another adverse affect of Alternative A3 would be an increase in truck traffic through the community and the county with a corresponding increased risk of traffic accidents. Additionally, the financial pressures exerted on local farmers from higher transportation costs may lead to a greater consolidation of farms and a change in the rural-urban interface of Clarkston.

Long-term benefits of Alternative A3 would include the revegatation and restoration of the normative Snake River and the community shoreline. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen continue to pursue this element of the Clarkston's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may, therefore, adversely affect community quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 all adversely affect Clarkston's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. Adverse effects of a change in the economic direction and identity of the community under Alternative A3 may include a pessimistic vision of not being able to control the community's future. The community has worked to develop recreational opportunities associated with the lower Snake River reservoirs, to bring tour boats from Portland into the community, to utilize the port as a development mechanism, and to develop retirement opportunities. Many of these plans would be significantly affected under this alternative. Additionally, the negative short- and long-term effects on both local and county property values and property tax revenue may create difficulties in obtaining sufficient funding to pursue new avenues of economic development and maintain the current level of community services.

People

Changes in the physical and economic human environment would affect distinct populations in the community. The high number of fixed income families would be required to pay a larger proportion of their income to power bills. The growing elderly population in Clarkston may be physically unable to engage in the new recreational opportunities on a free-flowing lower Snake River. Finally, the influx of short-term outside workers may disrupt traditional community patterns although the number of forecast workers is relatively small compared to the workforce that originally constructed the lower Snake facilities.

The forecast increase in long-term employment under Alternative A3 suggests that population trends should continue to increase but given the uncertainties associated with the business climate, overall population may remain stable or decrease slightly given short-term job losses.

4.2.2 Colfax

The socioeconomic impacts of the three alternatives on the community of Colfax would include the effects of power costs, recreation activity, navigation/transportation, water supply, implementation, and anadromous fish recovery. Table 43 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would have significant effects on specific populations in Colfax. It would adversely affect the community primarily through the loss of a navigable waterway, the corresponding shift in transportation modes to more expensive rail and truck movements, and a decrease in countywide net farm income and a drop in property values for agricultural lands. It is expected that Colfax would realize short-term increases in implementation and well modification related employment as well as a small temporary influx of outside workers. Overall, the community would experience both increases and decreases in employment, with a projected net loss in employment. The most significant effect on the community would be the additional financial pressures on grain farms from increased transportation, storage and handling costs, and the uncertainty of how the transportation system and individual farms would respond. The cumulative effects of Alternative A3 and the proposed phase out of the loan deficiency payments under the Freedom to Farm Act create an even greater uncertainty to individual farmers and farm communities like Colfax.

Table 43
Colfax Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate <10 percent of all families		-	-
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment >1 percent			++
A3		Short-Term Displacement		-	
A3	Anadromous Fishing Recreation	Increase in Employment <1 percent			+
A3	Site Access	Decrease in Site Access >25 percent		--	--
A3	Site Services	Decrease in Site Services >25 percent		--	--
A3	Elderly Recreationists	Over 65 years >20 percent		--	--
Transportation					
A3	Transportation-Related Emp	Increase in Employment <1 percent		+	+
A3	Farm Spending Related Emp	Decrease in Employment >1 percent		--	--
A3	Farm Income	Decrease in Total Cty Farm Income >10%		--	--
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrastructure Const	Increase in Employment >1 percent		++	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
	Grain Transportation Costs	Increase in Cost >15 cents/bushel		--	--
A3	Farm Consolidation	Increased Rate of Farm Consolidation		-	-
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transport Capacity Uncertainty	Increase in Transportation Uncertainty	-	-	
A3	Highway Congestion	Increase in Traffic Congestion <2 percent		-	-
A3	Highway Safety	Decrease in Highway Safety		-	-
Water Supply					
A3	ST Pump Modifications	Increase in Employment <1 percent		+	
		Increased costs for county well irrigators/users		-	
Implementation/Avoided Costs					
A3	Implementation Employment	Increase in Employment >1 percent		++	
A2c		Increase in Employment <1 percent		+	
A3	Outside workers	Increase in Outside Workers <10 percent		-	
A3	Human Movement Patterns	Loss of Project "Bridges" within 50 miles		-	-
A3	Operations Employment	Decrease in Employment >1 percent		--	--

Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3	Recovery Uncertainty	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		
Other Social Effects					
A3	Population Impacts	Decrease in Population <5 percent		-	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Decrease Net Employment <1 percent		-	-
A3	Total Short-Term Employment	Increase in Employment >5 percent		++	
A3	Total Subregional Employment	Decrease Net Employment >1 percent		--	--
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Jobs & Wealth

Overall, Alternatives A2a and A2c do not adversely affect jobs and wealth directly and provide a higher degree of certainty about the economic future. Alternative A3 adversely affects future economic certainty and increases future economic risks because not all of the indirect and induced effects of these changes are known. For example, it is unknown if some agricultural lands would go out of production or if none would go out of production, how many farm owners may be forced to sell and seek other employment.

Negative impacts on Colfax's employment from Alternative A3 would result from increased residential electrical rates, reduction in county-wide farm income, loss of Corps-related jobs, loss of water-related port operations, and short-term decreased recreational opportunities. Farmers currently utilizing the waterway to ship grains would experience increased costs to ship their goods and this would have a negative effect on farm income and would further decrease jobs that support farm household expenditures. Total county farm income is expected to decrease by at least 10 percent. The associated decrease in household spending is expected to reduce employment in Colfax by more than 1 percent. With transportation, storage, and handling costs expected to increase on average 16 cents per bushel, the value of agricultural land surrounding Colfax might be expected to fall by up to $140 per acre.

Positive impacts on community employment from Alternative A3 would result from an increase in truck and rail transportation employment, post-implementation increases in river recreation- related activities, increased anadromous fishing opportunities, and ongoing road maintenance. The increase in trucking- and rail transportation-related employment may be higher than predicted by the allocation of employment impacts due to the large volumes of grain produced in the lands surrounding Colfax and the position of Colfax on the highway that would carry a large load of the traffic. Short-term increases in employment would result from implementation activities, modifications to wells along the river, and upgrades to road and rail infrastructure.

Place

Colfax's natural and built environment would not change dramatically under Alternative A3. Changes would occur in the surrounding patterns of land ownership and in the access and recreational opportunities available on the nearby lower Snake River. Adverse impacts from the loss of the Lower Granite pool include the loss of developed access at recreational sites such as Wawawai County Park, Illia Dunes Landing, Willow Landing, Little Goose Landing, and Lyons Ferry Marina. Additionally, recreation services would be diminished at sites such as Boyer Park and Marina, Central Ferry State Park, and Chief Timothy State Park. In addition, the community would have some short-term displacement from steelhead and salmon fishing, as well as displacement from other river-related recreation as boat ramps are modified and the riverbank is revegetated. The identity of the community as an agricultural community should not be adversely affected by Alternative A3. The community would still continue to be the heart of the Palouse and a leader in wheat and lentil production.

Another adverse affect of Alternative A3 would be the financial pressures exerted on local farmers from higher transportation costs. This may lead to a greater consolidation of farms and a decrease in the number of community members active in the farming industry either directly or indirectly. With or without a navigable waterway, Colfax would continue to be a transportation hub for the movement of grain commodities produced in Whitman and neighboring counties. Truck traffic patterns would shift from a north-south orientation to an east-west orientation with an estimated slight increase in overall traffic through town. This may be economically beneficial but adverse for congestion and safety through downtown and on state highway 26 westbound. Finally, Colfax would lose a river crossing at the Lower Granite facility that provides an alternative transportation corridor between Colfax and Pomeroy in Garfield County.

Long-term benefits of Alternative A3 would include the revegatation and restoration of the normative Snake River. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen continue to pursue this element of the Colfax's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely affect this element of Colfax's quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 would adversely affect Colfax's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. The community has been united in its opposition to Alternative A3 and has been working through their political representatives to make this issue clear. Adverse effects of a change in the economic direction and identity of the community under Alternative A3 may challenge the leadership and vision of the community to provide cost effective means of transporting the large volumes of grains to market. One key factor that would challenge this response is the lack of certainty about the capacity of alternative modes of transportation to handle the volume of production currently shipped on the lower Snake River.

The community has worked to successfully develop industrial and shipping facilities with the Port of Whitman County. Some of these developments such as the industrial parks sited away from the river would be unaffected by the change in the waterway, while other facilities on the river would become obsolete. Perhaps the most significant impact on the vision and vitality of the community would be the expected drop in property tax revenue both from agricultural and non-agricultural lands. The community would be faced with either raising tax rates or cutting social services. Neither of these choices is harmonious with the community's future plans and would limit investments in the economic diversification efforts. One ameliorating factor would be that property tax revenue would not change overnight but rather would be phased in over a five-year period of decreased farm income.

People

Changes in the physical and economic human environment would affect distinct populations in the community. The poverty rate in Colfax is relatively low, as is the over 65 population, and thus large segments of the population would not be adversely affected by the increased electrical rates or the changes in slackwater recreation opportunities. Colfax may see a short-term influx of outside workers during the implementation but it is not expected that this would be a significant impact. The expected increased rate of land consolidation in the farm sector may contribute to a reduction in rural farm population. Overall, the expected decrease in net employment under alternative A3 suggests that community population would decrease slightly.

4.2.3 Pomeroy, WA

The socioeconomic impacts of the three alternatives on the community of Pomeroy would include the effects of power costs, recreation activity, navigation/transportation, water supply, implementation, and anadromous fish recovery. Table 44 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would have significant effects on specific populations in Pomeroy. It would adversely affect the community primarily through the loss of a navigable waterway, a corresponding shift in transportation modes to more expensive rail and truck movements, a decrease in countywide net farm income, and a drop in property values for agricultural lands. It is expected that Pomeroy would realize short-term increases in implementation- and well modification-related employment, as well as a significant temporary influx of outside workers. Overall, the community would experience both increases and decreases in employment, with a projected net loss in employment. The most significant effect on the community would be the additional financial pressures on grain farms from increased transportation, storage, and handling costs and the uncertainty of how the transportation system and individual farms would respond. The cumulative effects of Alternative A3 and the proposed phase out of the loan deficiency payments under the Freedom to Farm Act create an even greater uncertainty to individual farmers and farm communities like Pomeroy.

Table 44
Pomeroy Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate <10 percent of all families		-	-
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment >1 percent		++	++
A3		Short-Term Displacement		-	
		Local Fishing Opportunities			+
A3	Site Access	Decrease in Site Access >25 percent		--	--
A3	Site Services	Decrease in Site Services >25 percent		--	--
A3	Elderly Recreationists	Over 65 years >20 percent		--	--
Transportation					
A3	Transportation-Related Employment	Increase in Employment <1 percent		+	+
A3	Farm Spending Related Employment	Decrease in Employment <1 percent		-	-
A3	Dryland Farm Income	Decrease in Total Cty Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrastructure Const	Increase in Employment >1 percent		++	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
A3	Grain Transportation Costs	Increase in Cost <15 cents/bushel		-	-
A3	Farm Consolidation	Increased Rate of Farm Consolidation		-	-
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transportation Capacity Uncertainty	Transportation Capacity Uncertainty	-	-	
A3	Highway Congestion	Highway Congestion		--/++	--/++
A3	Highway Safety	Highway Safety		-	-
Water Supply					
A3	ST Pump Modifications	Increase in Employment <1 percent		+	
A3		Increased costs for well irrigators/users		-	
Implementation/Avoided Costs					
A3	Implementation Employment	Increase in Employment >1 percent		++	
A2c		Increase in Employment <1 percent			
A3	Outside Workers	Increase in Outside Workers >10 percent		--	
A3	Human Movement Patterns	Loss of Project "Bridges" Within 50 Miles		-	-
A3	Operations Employment	Decrease in Employment >1 percent		--	--
A2c		Increase in Employment <1 percent		+	+
Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty/Risk	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		

Other Social Effects					
A3	Population Impacts	Decrease in Population <5 percent		-	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Decrease Net Employment <1 percent		-	-
A3	Total Short-Term Employment	Increase in Employment >5 percent		++	
A3		Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Decrease Net Employment >1 percent		--	--
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Jobs & Wealth

Overall, Alternatives A2a and A2c would not adversely affect jobs and wealth directly and provide a higher degree of certainty about the economic future. Alternative A3 adversely affects future economic certainty and increases future economic risks because not all of the indirect and induced effects of these changes are known. For example, it is unknown if some agricultural lands would go out of production or, if none go out of production, how many farm owners may be forced to sell out and seek other employment.

Negative impacts on Pomeroy's employment from Alternative A3 would result from reduction in countywide farm income, loss of Corps-related jobs, increased residential electrical rates, and short-term decreased recreational opportunities. Farmers currently utilizing the waterway to ship grains would experience increased costs to ship their goods and this would have a negative effect on farm income and would further decrease jobs that support farm household expenditures. Total county farm income is expected to decrease less than 10 percent. The change in direct, indirect, and induced employment from a decrease in farm household spending is expected to decrease employment in Pomeroy by less than one percent. With transportation, storage, and handling costs expected to increase on average 7 cents per bushel, the value of agricultural land surrounding Pomeroy might be expected to fall by up to $40-$50 per acre.

Positive impacts on community employment from Alternative A3 would result from an increase in truck and rail transportation employment, post-implementation increases in river recreation related activities, increased anadromous fishing opportunities, and ongoing road maintenance. The increase in trucking and rail transportation related employment may be higher than predicted by the allocation of employment impacts.

Both the large volumes of grain produced in the lands surrounding Pomeroy and the position of Pomeroy on the highway that would carry a large load of the traffic from Idaho counties to ports on the Columbia River indicate that Pomeroy would see higher levels of transportation-related employment. Short-term increases in employment would result from implementation activities, modifications to wells along the river, and upgrades to road infrastructure.

Place

Pomeroy's natural and built environment would not change dramatically under Alternative A3. Changes would occur in the surrounding patterns of land ownership and in the access and recreational opportunities available on the nearby lower Snake River. Adverse impacts from the loss of the Lower Granite pool include the loss of developed access at recreational sites such as Wawawai County Park, Illia Dunes Landing, Willow Landing, Little Goose Landing, Lyons Ferry Marina. Access to Boyer Park and Marina by crossing the Lower Granite project would be lost. Additionally, recreation services would be diminished at sites such as Boyer Park and Marina, Central Ferry State Park, and Chief Timothy State Park. The community would also have some short-term displacement from steelhead and salmon fishing, as well as displacement from other river related recreation as boat ramps are modified and the riverbank is revegetated. The identity of the community as an agricultural community should not be adversely affected by Alternative A3.

Another adverse affect of Alternative A3 would be the financial pressures exerted on local farmers from higher transportation costs. This may lead to a greater consolidation of farms and a decrease in the number of community members active in the farming industry either directly or indirectly. Without a navigable waterway and access to the ports of Whitman and Garfield counties, Pomeroy would be on the major transportation route for the movement of grain and other commodities from Idaho and Asotin County. Truck traffic patterns would increase total vehicle traffic on US 12 through Pomeroy by more than 2 percent. This may be economically beneficial to roadside services but adverse for congestion and safety through downtown and on US Highway 12 westbound. Finally, Pomeroy would lose a river crossing at the Lower Granite project that provides an alternative transportation corridor between Pomeroy and Colfax in Whitman County.

Long-term benefits of Alternative A3 would include the revegetation and restoration of the normative Snake River. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen continue to pursue this element of the Pomeroy's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely affect this element of Pomeroy's quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 would adversely affect Pomeroy's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. Changes in the economic direction and base of the community under Alternative A3 may challenge the leadership and vision of the community to provide cost effective means of transporting the large volumes of grains to market since Pomeroy does not currently have rail access in the county. Additionally, leadership would be challenged to further enhance economic diversification efforts and to develop a recreational sector with a new type of tourism in mind.

Perhaps the most significant impact on the vision and vitality of the community would be the expected drop in property tax revenue both from agricultural and non-agricultural lands. The community would be faced with either raising tax rates or cutting social services. Neither of these choices is harmonious with the community's future plans and would limit investments in the economic diversification efforts. One ameliorating factor would be that property tax revenue would not change immediately but rather would be phased in over a five-year period of decreased farm income.

People

Changes in the physical and economic human environment would affect distinct populations in the community. The poverty rate in Pomeroy is relatively low, but Pomeroy has the highest median age and largest percentage of population over 65 in the study region. This retirement population would be adversely affected by loss of slack water recreational opportunities on the lower Snake River.

Another significant impact for Pomeroy would be the short-term influx of outside workers during implementation. Pomeroy and Garfield County housed large numbers of outside workers during the construction of the last two lower Snake River facilities and experienced the social stresses and economic boom associated with that activity. The level of workforce anticipated for the implementation of Alternative A3 is not expected to be as large or for as long a period as the prior construction. These workers may, however, have different values and habits than the local residents and may cause short-term stress to the community.

Overall, the expected decrease in net employment under alternative A3 indicates that community population would decrease slightly. In addition, the expected increased rate of land consolidation in the farm sector may contribute to further reduction in rural farm population and hinder attempts to keep young community members in the town.

4.2.4 Kennewick, WA

The socioeconomic impacts of the three alternatives on the community of Kennewick would include the indirect effects of irrigation, navigation/transportation, recreation activity, power costs, power production implementation, and anadromous fish recovery. Table 45 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would have minor direct effects on Kennewick but may have significant indirect effects since Kennewick is the retail and service center for the Tri-Cities and the surrounding region. The loss of Ice Harbor irrigated agriculture is expected to produce the most significant impacts. Beneficial effects may come from the siting of new power plants and the increased operations and maintenance employment and related spending, as well as anadromous fish recovery. Increased transportation activity in the Tri-Cities, primarily Pasco, is also expected to produce economic benefits for Kennewick.

Table 45
Kennewick Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		--	--
A3	Rate Employment Impacts				
A3		Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Public-Owned Utility		--	--
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		--	--
A3	New Powerplant Operation	Increase in Employment <1 percent		+	+
A3	New Plant Construction	Increase in Regional Employment >5 percent		++	++
A3		Within 50 Miles of Potential Plant Siting		-	-
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment <1 percent		+	+
A3		Short-Term Displacement		-	
A3		Short-Term Crowding		-	
A3	Anadromous Fishing Recreation	Increase in Employment <1 percent			+
		Local Fishing Opportunities			+
A3	Site Access	Decrease in Site Access <25 percent		-	-
A3	Site Services	Decrease in Site Services <25 percent		-	-
A3	Elderly Recreationists	Over 65 years <20 percent		-	-

Transportation					
A3	Transportation-Related Employment	Increase in Employment <1 percent		+	+
A3	Farm Spending Related Employment	Decrease in Employment >1 percent		--	--
A3		Decrease in Employment <1 percent		-	-
A3	Dryland Farm Income	Decrease in Total Cty Farm Income >10%		--	--
A3		Decrease in Total Cty Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrastructure Const	Increase in Employment >1 percent		++	
A3		Increase in Employment <1 percent		+	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
	Grain Transportation Costs	Increase in Cost >15 cents/bushel		--	--
		Increase in Cost <15 cents/bushel		-	-
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transportation Capacity Uncertainty	Increase in Transportation Uncertainty	-	-	
A3	Highway Congestion	Increase in Traffic Volume >2 percent		--/++	--/++
A3		Increase in Traffic Volume <2 percent		-/+	-/+
A3		Decrease in Traffic Volume		+/-	+/-
A3	Highway Safety	Increase in Highway Safety		+	+
A3		Decrease in Highway Safety		-	-
Water Supply					
A3	Dislocated Ag Workers/Spending	Decrease in Employment >1 percent		--	--
A3	ST Pump Modifications	Increase in Employment <1 percent		+	
A3		Increased costs for well irrigators/users		-	
Implementation/Avoided Costs					
A3/A2c	Implementation Employment	Increase in Employment <1 percent		+	
A3	Outside Workers	Increase in Outside Workers <10 percent		-	
A3	Human Movement Patterns	Loss of Project "Bridges" Within 50 Miles		-	-
A3/A2c	Operations Employment	Decrease in Employment <1 percent		-	-
Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty/Risk	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		
Other Social Effects					
A3	Population Impacts				
A3		Decrease in Population <5 percent		-	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Decrease Net Employment <1 percent		-	-
A3	Total Short-Term Employment	Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Decrease Net Employment <1 percent		-	-
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

It is expected that Kennewick would realize short-term increases in implementation and power plant construction employment. Overall, the community would experience both increases and decreases in employment, with a projected net loss in employment. Perhaps the most significant effect on the community would be the loss of agricultural production on the Ice Harbor pool and the uncertainty of those losses on the community economic structure. Aside from the specific physical and economic changes in Kennewick, a significant impact may be the fear that the successful breaching of the lower Snake River projects jeopardizes the future viability of the Columbia Waterway and the values it holds for Kennewick residents.

Jobs & Wealth

Overall, Alternatives A2a and A2c would not adversely affect jobs and wealth directly and have a higher degree of certainty about the economic future. Alternative A3 adversely affects future economic certainty and increases future economic risks because not all of the indirect and induced effects of these changes are known.

Negative indirect impacts on Kennewick's employment from Alternative A3 primarily result from the loss of irrigated agriculture and increased residential electrical rates. The water supply analysis concluded that the cost to modify the Ice Harbor pumps would cost more that the total land value or the value of the crops produced. The effect would be that Ice Harbor irrigated farm owners would not be able to make the necessary modifications and operations would cease. The effects of this economic loss to the region would indirectly impact the large service and retail sectors and, to a lesser degree, the agricultural service sectors in Kennewick. Losses are estimated at approximately 2 percent of total employment. The effects of increased residential electrical rates are estimated at below one percent. Total direct, indirect, and induced employment losses are estimated to be less than 2.5 percent of Kennewick's total employment.

Positive impacts on community employment from Alternative A3 would result from the operations and maintenance of new power plants in the region, increased trucking, rail, and barge transportation, post-implementation increases in river recreation-related activities, and road maintenance. Short-term increases in employment result from power plant construction, transportation infrastructure upgrades, and implementation activities. The long-term gains are estimated to be less than a 1-percent increase in Kennewick's total employment.

The positive and negative effects of these employment changes would be felt primarily in the service and retail and wholesale trade sectors. It does not appear that any one business or service would be disproportionately affected. Overall, the most significant effect of Alternative A3 would be the heightened uncertainty about the fate of the Columbia River.

Place

Kennewick's natural and built environment would not change significantly under Alternative A3. Adverse impacts from the breaching of the four lower Snake River facilities would eliminate nearby developed recreational access sites such as the North Shore Ramp, Ayer Boat Basin, and Lyons Ferry Marina. Kennewick would also lose some developed recreational site services at Charbonneau Park, Levy Landing, Fishhook Park, and Windust Park. Although this represents a small fraction of the recreational slack water recreational sites in the region, a more significant impact may be the short-term crowding at Columbia River sites from lower Snake River displaced recreationists. The identity of the community as a riverside retail and service urban center would not be adversely affected by this alternative.

Another indirect effect on Kennewick's place is the increased traffic into the Tri-Cities. Traffic increases are not expected to occur in the city of Kennewick but across the Columbia River in Pasco. Overall traffic volumes on highways from Eastern Washington feeding into the Tri-Cities are expected to increase between 2 and 6 percent. Some of this traffic may alter movement patterns by Kennewick commuters and may provide additional employment and income to Kennewick.

Long-term benefits of Alternative A3 would include the revegetation and restoration of the normative Snake River and the shoreline. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen continue to pursue this element of the Kennewick's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely affect future community quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 would all adversely affect Kennewick's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. The Chamber of Commerce has issued a position paper on the breaching of the lower Snake River facilities and has joined in rallies to save the dams. One significant impact on the vision and vitality of Kennewick of each of the alternatives, but primarily Alternative A3, is the fear that successfully breaching the dams or the continued listing of the salmon and steelhead as endangered

will lead to the eventual breaching of the Columbia River projects. The proposed alternatives of this study are seen as a first step to the removal of dams that provide the navigable waterway and recreational benefits to the community. Kennewick has been actively developing its waterfront, green areas, and Clover Island and the fear of future loss of their waterfront represents a significant effect of each of the study's alternatives.

People

Changes in the physical and economic human environment would affect distinct populations in the community. Benton County has been designated as an economically distressed area and has a high level of poverty. More than 10 percent of families are classified as below the poverty line. These families on low or fixed incomes would be required to spend a larger portion of their income on electrical bills. The forecast decrease in net long-term employment under Alternative A3 signifies that population trends may not continue to increase at current or historical rates although it is likely that the community's thriving economy would continue to grow and attract new community members.

4.2.5 Pasco, WA

The socioeconomic impacts of the three alternatives on the community of Pasco would include the effects of irrigation, navigation/transportation, recreation activity, power costs, implementation, and anadromous fish recovery. Table 46 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would have significant effects on specific populations in and around Pasco. It would create both winners and losers through the shift in transportation modes and nodes, a change in recreational opportunities and access, lost irrigation acreage and employment, construction and operation of new power plants, loss of power produced at the four projects, and an increased chance of anadromous fish recovery.

Table 46
Pasco Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
	Residential Rate Increases	Residential Rate Increase >5 percent		--	--
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Public-Owned Utility		--	--
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		--	--
A3	New Powerplant Operation	Increase in Employment <1 percent		+	+
	New Plant Construction	Increase in Regional Employment >5 percent		++	
		Within 50 Miles of Potential Plant Siting		-	-
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment <1 percent		+	+
A3		Short-Term Displacement		-	
A3		Short-Term Crowding		-	
A3	Anadromous Fishing Recreation	Short-Term Displacement		-	
A3		Short-Term Crowding		-	
		Local Fishing Opportunities			+
A3	Site Access	Decrease in Site Access <25 percent		-	-
A3	Site Services	Decrease in Site Services <25 percent		-	-
A3	Elderly Recreationists	Over 65 years <20 percent		-	-
Transportation					
	Transportation-Related				
A3	Employment	Increase in Employment <1 percent		+	+
A3	Farm Income	Decrease in Total Cty Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrastructure Const	Increase in Employment <1 percent		+	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
		Increase in Employment <1 percent		+	+
A3	Grain Transportation Costs	Increase in Cost <15 cents/bushel		-	-
A3	Transportation Capacity	Increase in Transportation Uncertainty	-	-	
A3	Uncertainty	Increase in Traffic Volume >2 percent		--/++	--/++
A3	Highway Congestion	Decrease in Highway Safety		-	-
	Highway Safety				
Water Supply					
A3	Dislocated Agricultural Workers	Decrease in Employment >1 percent		--	--
A3	Farm Income	Decrease in Total Cty Farm Income >10%		--	--
	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
		Decrease in Tax Revenue <2%		-	-
	Effects on Food Processors	Decrease in Agricultural Products		-	--
A3	ST Pump Modifications	Increase in Employment <1 percent		+	
A3		Increased costs for well irrigators/users		-	
Implementation/Avoided Costs					
A3/A2c	Implementation Employment	Increase in Employment <1 percent		+	
A3	Outside Workers	Increase in Outside Workers <10 percent		-	
A3	Human Movement Patterns	Loss of Project "Bridges" within 50 Miles		-	-
A3	Operations Employment	Decrease in Employment <1 percent			
A2c		Increase in Employment <1 percent		-	-

Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3	Recovery Uncertainty	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty	Lower Economic Uncertainty		+	+
A3		Higher Economic Uncertainty	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-	-	-
A3		Lower Extinction Risk	+	+	+
Other Social Effects					
A3	Population Impacts	Decrease in Population >5 percent		--	
A3		Decrease in Population <5 percent		-	
A3		Increase in Population >5 percent		++	
A3		Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Decrease Net Employment <1 percent		-	-
A3	Total Short-Term Employment	Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Decrease Net Employment <1 percent		-	-
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Additionally, the community would experience a dramatic short-term change in the character of the community as grain from eastern Washington, Idaho, Montana, and North Dakota presently shipped on the lower Snake River is rerouted into the Pasco port and through the Pasco rail yards. It is expected that Pasco would realize short-term increases in implementation and power plant construction employment. Overall, the community would experience both increases and decreases in employment, with a projected net loss in employment. Perhaps the most significant effect on the community would be the loss of agricultural production on the Ice Harbor reservoir and the uncertainty of those losses on the community economic structure. Aside from the specific physical and economic changes in Pasco, a significant impact may be the fear that a successful breaching of the lower Snake River projects would jeopardize the future viability of the Columbia Waterway.

Jobs & Wealth

Overall, Alternatives A2a and A2c would not adversely affect jobs and wealth directly and have a higher degree of certainty about the economic future. Alternative A3 adversely affects future economic certainty and increases future economic risks because all of the indirect and induced effects of these changes are not known. For example, it is unclear if the how the loss of irrigated agricultural production from Ice Harbor Reservoir would affect the growing food processing facilities in Pasco or how displaced agricultural workers would adapt to lost employment.

Negative impacts on Pasco employment from Alternative A3 result from the loss of irrigated agriculture, residential electrical rates, reduction in countywide farm income, and a loss of Corps- related jobs. The water supply analysis concluded that the cost to modify the Ice Harbor pumps would cost more than the total land value or the value of the crops produced. The effect would be that Ice Harbor irrigated farm owners would not be able to make the necessary modifications and operations would cease. Approximately 20 percent of the land is located in Franklin County and much of the agricultural service sector that supplies these farms would be affected. The direct, indirect, and induced employment losses in Pasco in just the agriculture/agricultural services sector are estimated to be approximately 9 percent of the agricultural sector, although the total loss of employment from this change is estimated to be less than 2.5 percent of Pasco's total employment. None of the other negative employment effects decrease employment by more than one percent. Total direct, indirect, and induced employment losses are estimated to be less than 2.5 percent of Pasco's total employment.

Positive impacts on community employment from Alternative A3 would result from increase trucking, rail and barge transportation, post-implementation increases in river recreation related activities, road maintenance, short-term increases in employment from power plant construction, transportation infrastructure upgrades, implementation activities, and modifications to lower Snake River wells. With Pasco becoming the closest port to eastern Washington and Idaho grain production, significant quantities of grain are forecast to move through the port rail and barge facilities. In effect, Pasco would receive a high percentage of the jobs lost by Lewiston, Clarkston, and the other lower Snake River water port operations. These gains are estimated to be less than a one percent increase in Pasco's total employment.

The effects of these employment changes on the largest employers in the community demonstrate the degree to which there will be winners, losers, and uncertain futures associated with Alternative A3. Boise Cascade operations depend to an unknown degree upon fiber plantations along the Ice Harbor reservoir. The loss of these plantations would place financial pressure on their operations and a long-term investment would be stranded. Burlington Northern Railroad, on the other hand, stands to gain or capture traffic volume as farmers and other shippers search for cost effective means to ship their products to Portland. Finally, Universal Frozen Foods would have a diminished source of primary product for food processing activities. The degree to which a decreased supply of agricultural products would affect employment is unknown.

Place

Pasco's natural and built environment would not change significantly under Alternative A3. Adverse impacts from the breaching of the four lower Snake River projects would eliminate developed recreational access sites such as the North Shore Ramp, Ayer Boat Basin, and Lyons Ferry Marina. Pasco would also lose some developed recreational site services at Charbonneau Park, Levy Landing, Fishhook Park, and Windust Park. Although this represents a small fraction of the recreational slack water recreational sites in the region, a more significant impact may be the short-term crowding from lower Snake River displaced recreationists. The identity of the community as a riverside transportation and agricultural urban center would not be adversely affected by this alternative.

The most significant change to the place of Pasco would be the increased truck traffic into the ports. Increased truck traffic would converge from Interstate 395, US 12 and SR 124 into the port facilities. Truck traffic into the city from the north is expected to increase between 6 and 21 percent from current truck traffic volumes. Overall vehicle traffic is expected to increase between 2 and 6 percent. Although this traffic represents an economic benefit to the community, it may congest the feeder streets to the port facilities and increase the safety risk within and outside of the city. This added traffic would also have a negative impact on the condition of city streets.

Long-term benefits of Alternative A3 would include the revegetation and restoration of the normative Snake River and the shoreline. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen continue to pursue this element of the Pasco's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely affect future community quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 all effect Pasco's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. The Chamber of Commerce has issued a position paper on the breaching of the lower Snake River facilities and has joined in rallies to save the dams. One significant impact on the vision and vitality of Pasco of each of the alternatives, but primarily Alternative A3, is the fear that successfully breaching the dams or the continued listing of the salmon and steelhead as endangered will lead to the eventual breaching of the Columbia River projects. The proposed alternatives of this study are seen as a first step to the removal of the Columbia River dams that provide the navigable waterway and recreational benefits to the community. Alternative A3 may

seriously challenge the leadership and vision of the community as they work to address the large numbers of displaced full-time and seasonal workers from the irrigated lands on Ice Harbor. The community has worked to successfully develop the facilities at the Port of Pasco and to diversify the local economy by developing value added food processing centers to the economic structure of Pasco. These plans and achievements may be adversely affected under this alternative.

Finally, the negative short- and long-term effects of lost agricultural production on both local and county property values and property tax revenue may create difficulties obtaining sufficient funding to pursue new avenues of economic development and maintain the current level and anticipated increased levels of community services.

People

Changes in the physical and economic human environment would affect distinct populations in the community. Franklin County has been designated as an economically distressed area and has a high level of poverty. More than 10 percent of families are classified as below the poverty line and these numbers may increase with the loss of employment on the Ice Harbor irrigated lands. These families on low or fixed incomes would be required to spend a larger portion of their income on electrical bills. In addition, farm workers displaced from the Ice Harbor lands are primarily Hispanic and Pasco's population is more than 40 percent Hispanic. The concerns related to the disproportional negative impacts of this alternative are addressed in the EIS's environmental justice discussion.

The forecast decrease in net long-term employment under Alternative A3 signifies that population trends may not continue to increase at current or historical rates.

4.2.6 Umatilla, OR

The socioeconomic impacts of the three alternatives on the community of Umatilla would include the effects of irrigation, navigation/transportation, recreation activity, power costs, power production, implementation, and anadromous fish recovery. Table 47 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would affect Umatilla through the siting of power plants to replace the lost hydroelectric power generated by the four lower Snake River facilities. The loss of Ice Harbor irrigated agriculture may adversely affect food processors in Umatilla who obtain a portion of their product from the Ice Harbor farms. Beneficial economic impacts may result from the siting of new power plants in the region and increased operations and maintenance employment and related spending. Although not predicted in the Corps

transportation model, the Port of Umatilla may see increased activity due to the presence of grain loading facilities and the projected shortages of these facilities in the Tri-Cities area. Overall, the community would experience both increases and decreases in employment, with a small projected net loss in employment. This net loss may change to a significant net increase if the replacement power plants were sited in Umatilla or in close proximity. Aside from the expected physical and economic changes in Umatilla, a significant impact may be the fear that the successful breaching of the lower Snake River facilities would jeopardize the future viability of the Columbia Waterway and in particular John Day Dam.

Table 47
Umatilla Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		--	--
A3	New Powerplant Operation	Increase in Employment <1 percent		+	+
A3	New Plant Construction	Increase in Regional Employment <5 percent		+	+
A3		Within 50 Miles of Potential Plant Siting		-	-
Recreation					
A3	Non-Fishing River Recreation	Short-Term Crowding		-	
A3	Anadromous Fishing Recreation	Short-Term Crowding		-	
		Local Fishing Opportunities			+
A3	Site Access	Decrease in Site Access <25 percent		-	-
A3	Site Services	Decrease in Site Services <25 percent		-	-
A3	Elderly Recreationists	Over 65 years <20 percent		-	-
Water Supply					
A3	Dislocated Ag Workers/Spending	Decrease in Employment >1 percent		--	--
A3		Decrease in Employment <1 percent		-	-
A3	ST Pump Modifications	Increase in Employment >1 percent		++	
A3		Increase in Employment <1 percent		+	
	Effects on Food Processors	Decrease in Agricultural Products		-	-
Implementation/Avoided Costs					
A3/A2c	Implementation Employment	Increase in Employment <1 percent		+	
A3/A2c	Operations Employment				
A3		Decrease in Employment <1 percent		-	-
A2c		Increase in Employment <1 percent		+	+
Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty/Risk	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		

Other Social Effects					
A3	Population Impacts	Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Increase Net Employment <1 percent		+	+
A3	Total Short-Term Employment	Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Decrease Net Employment <1 percent		-	-

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Jobs & Wealth

Overall, Alternatives A2a and A2c have a higher degree of certainty about the economic future and would not adversely affect jobs and wealth directly. Alternative A3 adversely affects future economic certainty and increases future economic risks because not all of the indirect and induced effects of these changes are known.

Negative indirect impacts on Umatilla's employment from Alternative A3 result from the loss of Ice Harbor irrigated agriculture and increased residential electrical rates. The water supply analysis concluded that the cost to modify the Ice Harbor pumps would cost more that the total land value or the value of the crops produced. The effect would be that Ice Harbor Irrigated farm owners would not be able to make the necessary modifications and operations would cease. The effects of this economic loss to the region would indirectly impact the agricultural sector in Umatilla and the food-processing sector. The magnitude of these effects on the food-processing sector are unknown. It is not, however, anticipated that sediment from the lower Snake River would adversely affect irrigators out of the John Day pool. Overall employment losses are estimated to be approximately 1 percent of total employment. The effects of increased residential electrical rates are estimated at below one percent.

Positive impacts on community employment from Alternative A3 would result from the operations and maintenance of new power plants in the region. Short-term increases in employment would result from power plant construction, transportation infrastructure upgrades, recreation activities, and implementation. The long-term gains are estimated to be less than a one percent increase in Umatilla's total employment but may be significantly higher if the new power plants were to be sited in the Hermiston/Umatilla/Boardman area. Total net employment changes are estimated to be less than a one percent decrease.

Overall, the most significant economic effect of Alternative A3 would be the heightened uncertainty about the fate of the Columbia River and the local irrigated agriculture that depends on river water.

Place

Umatilla's natural and built environment would not change significantly under Alternative A3 unless the new power plants were sited in close proximity to the community. It is beyond the scope of this report to analyze the effects of a proposed power plant but adequate environmental and socioeconomic assessments would be required. Adverse impacts on recreation sites within 50 miles of Umatilla would include the elimination of the North Shore Ramp. Umatilla would also lose some developed recreational site services at Charbonneau Park, Levy Landing, and Fishhook Park. Although this represents a small fraction of the slack water recreational sites in the region, a more significant impact may be the short-term crowding at Columbia River sites from lower Snake River displaced recreationists. The identity of the community as the Walleye capital of the world would not be adversely affected by this alternative.

Long-term benefits of Alternative A3 would include the revegetation and restoration of the normative Snake River and the shoreline. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen would continue to pursue this element of Umatilla's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely affect future community quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 all adversely affect Umatilla's vision and vitality by increasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. One significant impact on the vision and vitality of Umatilla of each of the alternatives, but primarily Alternative A3, is the fear that successfully breaching the dams or the continued listing of the salmon and steelhead as endangered will lead to the eventual breaching of the Columbia River projects. The proposed alternatives of this study are seen by community members as a first step to the removal of dams that provide the navigable waterway and recreational benefits to the community.

If the replacement power plants are sited in the vicinity of Umatilla or within Umatilla County, the community may achieve increased tax revenues to support essential county and community services.

People

Changes in the physical and economic human environment would affect distinct populations in Umatilla. A relatively high level of poverty for families exists in Umatilla and these families would be expected to expend a larger of their income on increased electrical bills. The small forecast decrease in net long-term employment under Alternative A3 signifies that population trends may not continue to increase at current or historical rates. It is likely that in both the short-term and long-term, population would increase if the replacement power plants are sited in close proximity to the community.

4.2.7 Lewiston, ID

The socioeconomic impacts of the three alternatives on the community of Lewiston would include the effects of power costs, recreation activity, navigation and transportation, M&I water supply, implementation, and anadromous fish recovery. Table 48 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would have significant effects on the specific populations of Lewiston. It would create both winners and losers through the loss of a navigable waterway, loss of power produced at the four projects, a shift in transportation modes, a change in recreational opportunities and access, and an increased chance of anadromous fish recovery. In addition, the community would experience a dramatic short-term change in the character of the community as the reservoir is drained and a new shoreline is formed around the city with the existing levees left high above the new water line. It is expected that Lewiston would realize short-term increases in implementation and M&I water supply modification related employment as well as a temporary influx of outside workers. Overall, the community would experience both increases and decreases in employment, with a projected net gain in employment. Perhaps the most significant effect on the community would be the stranded social energy and costs of developing activities and plans centered around the continued existence of the four lower Snake River facilities, a navigable waterway, and an inland port.

Table 48
Lewiston Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		-	-
Recreation					
A3	Non-Fishing River Recreation	Increase in Employment <1 percent		+	+
A3		Short-Term Displacement		-	
A3	Anadromous Fishing Recreation	Increase in Employment >1 percent			++
A3		Short-Term Displacement		-	
		Local Fishing Opportunities		-	+
A3	Site Access	Decrease in Site Access >25 percent		--	--
A3	Site Services	Decrease in Site Services >25 percent		--	--
A3	Elderly Recreationists	Over 65 years <20 percent		-	-
Transportation					
A3	Transportation-Related Employment	Increase in Employment <1 percent		+	+
A3	Farm Spending Related Employment	Decrease in Employment <1 percent		-	-
A3	Dryland Farm Income	Decrease in Total Cty Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue <2%		--	--
A3		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrastructure Const	Increase in Employment <1 percent		+	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
A3	Grain Transportation Costs	Increase in Cost >15 cents/bushel		-	-
A3	Farm Consolidation	Increased Rate of Farm Consolidation		-	-
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transportation Capacity Uncertainty	Increase in Transportation Uncertainty	-		
A3	Highway Congestion	Increase in Traffic Volume <2 percent		-/+	-/+
A3	Highway Safety	Decrease in Highway Safety		-	-
Water Supply					
A3	ST Pump Modifications	Increase in Employment >1 percent		++	
A3		Increased costs for well irrigators/users		-	
Implementation/Avoided Costs					
A3/A2c	Implementation Employment	Increase in Employment <1 percent		+	
A3	Outside Workers				
A3		Increase in Outside Workers <10 percent		-	
A3	Operations Employment	Decrease in Employment <1 percent		-	-
A2c		Increase in Employment <1 percent		+	+

Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Decreased Social Cohesion	-	-	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty/Risk	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		
Other Social Effects					
A3	Population Impacts	Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Increase Net Employment >1 percent		++	++
A2c/A3	Total Short-Term Employment	Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Increased Net Employment >1 percent		++	++
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Overall, Alternatives A2a and A2c would not adversely affect jobs and wealth directly and have a higher degree of certainty about the economic future. Alternative A3 would adversely affect future economic certainty and increase future economic risks because not all of the indirect and induced effects of these changes are not known. For example, it is unclear how the increased capital costs of pump and well modifications would affect Potlatch operations, the Lewiston Golf Club, or Atlas Sand and Rock.

Negative impacts on Lewiston employment from Alternative A3 would result from increased residential electrical rates, reduction in county-wide farm income, loss of Corps-related jobs, loss of water-related port operations, loss of tour boat-related employment, and short-term decreased recreational opportunities. Farmers and other shippers currently utilizing the waterway to ship bulk products would experience increased costs to ship their goods and this may have a negative effect on employment in those and related economic sectors. None of the changes in the resource areas studied are projected to decrease employment in Lewiston by more than one percent.

Positive impacts on community employment from Alternative A3 would result from trucking transportation, post-implementation increases in river recreation-related activities, increased anadromous fishing opportunities, road maintenance, and the short-term increases in employment from implementation activities and modifications to water pumps.

The effects of these changes on the largest employer demonstrate the degree of economic uncertainty associated with Alternative A3. Potlatch is the largest employer in the valley and would be negatively affected by higher shipping costs for some of their products and by requirements to modify effluent and water intake systems. It is unknown how they would respond to these increased operational and capital costs.

Place

Lewiston's natural and built environment would change dramatically under Alternative A3 much like it did 25 years ago when the levees were built, the Lower Granite pool filled, and slackwater reached Lewiston. Adverse impacts from the loss of the Lower Granite pool include the short-term exposure of shoreline and mudflats and the isolation of the levee parks from the water. The community would lose recreational access sites at Chief Lookinglass Park and Nisqually John Landing as well as the loss of some recreational site services at Chief Timothy State Park, Hells Canyon Resort, Swallows Park, Clearwater Ramp, Southway Park, and Hells Gate State Park. In addition, the community would have some short-term displacement from steelhead and salmon fishing as well as displacement from other river-related recreation. The identity of the community as a working water port and the only inland water port in Idaho would also be adversely affected although it would still retain its identity as a Snake River community surrounded by extensive natural features.

Another adverse affect of Alternative A3 would be the financial pressures exerted on local farmers from higher transportation costs. This may lead to a greater consolidation of farms and a change in the agricultural-urban identity of Lewiston.

Long-term benefits of Alternative A3 would include the revegetation and restoration of the normative Snake River and the community shoreline. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where salmon continue to exist and local fishermen would continue to pursue this element of Lewiston's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely affect future community quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 all would adversely affect Lewiston's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. The city council has debated the issue and been split in their position. Adverse effects of a change in the economic direction and identity of the community under Alternative A3 may seriously challenge the leadership and vision of the community. The community has worked to successfully develop the facilities at the Port of Lewiston and to diversify the local economy by developing recreational

opportunities associated with the lower Snake River pools, Hells Canyon, and surrounding natural areas. They have also successfully developed green areas along the waterway, providing local recreational opportunities. The port serves as a vehicle for manufacturing and industrial growth through its industrial properties and loading facilities. Many of these plans and achievements would be significantly affected under this alternative. The Port of Lewiston is in a good position to continue to act as a development mechanism, utilizing both rail and highway access, but this is not the current direction of the port's activities. Additionally, the negative short- and long-term effects on both local and county property values and property tax revenue may create difficulties in obtaining sufficient funding to pursue new avenues of economic development and maintain the current level of community services.

People

Changes in the physical and economic human environment would affect distinct populations in the community, although not to the degree of Clarkston. Families, including those on fixed incomes, would be required to pay a larger proportion of their income to power bills. In addition, the influx of short-term outside workers may disrupt traditional community patterns although the number of forecast workers is relatively small compared to the workforce required to construct the lower Snake River facilities.

The forecast increase in long-term employment under Alternative A3 signifies that population trends should continue to increase but given the uncertainties associated with the business climate, overall population may remain stable or decrease slightly given short-term job losses and uncertain responses from businesses.

4.2.8 Orofino, ID

The socioeconomic impacts of the three alternatives on the community of Orofino would include the effects of power costs, recreation activity, navigation and transportation, M&I water supply, implementation, and anadromous fish recovery. Table 49 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c affect the probability of anadromous fish recovery while having minimal effect on the physical or economic human environment. Alternative A3 would have significant effects on specific populations in Orofino. It would create both winners and losers through an increased chance of anadromous fish recovery, a change in recreational opportunities and access, loss of a navigable waterway, loss of power produced at the four projects, and a shift in transportation modes. It is expected that Orofino would realize short-term increases in implementation, infrastructure

improvements, and M&I water supply modification-related employment. Overall, the community would experience both increases and decreases in employment, with a projected net gain in employment. Perhaps the most significant effect on the community would be from the increased chance of wild salmon and steelhead runs on the Clearwater River and the enhanced status of Orofino as "Steelhead Capital of the World."

Table 49
Orofino Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		-	-
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Investor-Owned Utility		-	-
A3	Fixed Income Ratepayers	Poverty Rate <10 percent of all families		-	-
Recreation					
A3	Anadromous Fishing Recreation	Increase in Employment >1 percent			++
A3		Short-Term Displacement		-	
A3		Short-Term Crowding		-	
		Local Fishing Opportunities			+
A3	Site Access	Decrease in Site Access <25 percent		-	-
A3	Site Services	Decrease in Site Services <25 percent		-	-
A3	Elderly Recreationists	Over 65 years <20 percent		-	-
Transportation					
A3	Transportation-Related Employment	Increase in Employment <1 percent		+	+
A3	Farm Spending Related Employment	Decrease in Employment <1 percent		-	-
A3	Dryland Farm Income	Decrease in Total Cty Farm Income <10%		-	-
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2%		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
A3	Road, Rail, & Infrastructure Const	Increase in Employment <1 percent		+	
A3	Road, Rail, & Infrastructure Maint	Increase in Employment >1 percent		++	++
A3		Increase in Employment <1 percent		+	+
	Grain Transportation Costs	Increase in Cost >15 cents/bushel		--	--
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transportation Capacity Uncertainty	Increase in Transportation Uncertainty	-	-	
A3	Highway Congestion	Decrease in Traffic Volume		+/-	+/-
A3	Highway Safety	Increase in Highway Safety		+	+
Water Supply					
A3	ST Pump Modifications	Increase in Employment >1 percent		++	
Implementation/Avoided Costs					
A3	Implementation Employment	Increase in Employment >1 percent		++	
A2c		Increase in Employment <1 percent		+	

Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
		Decreased Social Cohesion	-	-	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A2c	Business Uncertainty/Risk	Lower Economic Uncertainty/Risk		+	+
A3		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		
Other Social Effects					
A3	Population Impacts	Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Employment Losses <5 percent		-	-
A3		Increase Net Employment >1 percent		++	++
A3	Total Short-Term Employment	Increase in Employment <5 percent		+	
A3	Total Subregional Employment	Increase Net Employment >1 percent		++	++
A3	Aesthetics	Exposed Shoreline		-	
A3		Revegetated Shoreline			+

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Jobs & Wealth

Overall, Alternatives A2a and A2c would not adversely affect jobs and wealth directly and would provide a lower degree of certainty about the economic future. It is not anticipated that these alternatives would significantly improve fish returns and therefore the planned development of the tourism sector of the economy may not grow as anticipated. Alternative A3 would adversely affects future economic certainty in the forestry and agricultural sectors and increases future economic risks because not all of the indirect and induced effects of these changes are known. For example, it is unclear how the increased transportation costs would affect the timber industry's ability to sell wood chips and if this increased cost would decrease the already unstable timber industry in Orofino. Alternative A3 beneficially affects the future economic certainty of the tourism sector.

Negative impacts on community employment from Alternative A3 would result from increased transportation costs, reduction in countywide farm income, residential electrical rates, loss of Corps-related jobs, and short-term decreased recreational opportunities. Farmers and other shippers currently utilizing the waterway to ship bulk products would experience increased costs to ship their goods and this would have a

negative effect on employment in those economic sectors. A small volume of grain currently moves from Clearwater County on the lower Snake River while a larger volume of wood products move to Lewiston for eventual shipment down the waterway. These decreases are not expected to be larger than one percent although the magnitude of the effect on forest product manufacturers is unknown.

Positive impacts on community employment from Alternative A3 would result from increased truck transportation, increased anadromous fishing opportunities, and the short-term increases in employment from implementation activities and modifications to water pumps. The projected increases in wild fish returns after 20 years are expected to increase employment by approximately 2 percent. Given the established sport fishing industry and strong retail trade sector in Orofino, the magnitude of this increase may be much greater given the potential future fish harvests.

Potlatch and Konkolville Lumber Company are two of the largest employers in Orofino. The effects of increased transportation costs are unknown but the increased financial obligations may adversely affect these employers.

Place

Orofino’s natural and built environment would not be significantly changed under Alternatives A2a, A2c, and A3. Flow augmentation water currently withdrawn from the Dworshak Reservoir would continue under each of the proposed alternatives and continue to have negative effects on the local reservoir recreational opportunities and reservoir tourism. The loss of the Lower Granite pool would adversely affect the community's access to recreation sites on the lower Snake River within 50 miles of Orofino. The community would lose recreational access sites including Chief Lookinglass Park and Nisqually John Landing, as well as some recreational site services at Chief Timothy State Park, Hells Canyon Resort, Southway Park, and Hells Gate State Park. The short-term displacement of Snake River recreationists may create crowding on the Dworshak Reservoir and at sites on the Clearwater River. This may also provide a short-term economic benefit to the community. Finally, the financial pressures exerted on local farmers from higher transportation costs may lead to a greater consolidation of farms and a change in the rural land-use patterns around Orofino.

One long-term benefit of Alternative A3 would be the decrease in truck traffic along US 12 as grains from Montana and North Dakota move to new transportation corridors. This would have a positive effect of lessening traffic congestion and improving highway safety but it may also decrease the existing economic benefits of truck traffic.

Other long-term benefits of Alternative A3 would include the revegetation and restoration of the normative Snake River. Additionally, the increased chance of salmon recovery would benefit the identity of the community as a place where wild salmon continue to exist and local fishermen would continue to pursue this element of Orofino's quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may then adversely community quality of life. The identity of the community as the Steelhead Capital of the World would be enhanced by Alternative A3 and would be adversely affected by alternatives A2a and A2c.

Vision & Vitality

Alternatives A2a, A2c and A3 all adversely affect Orofino's vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. In addition, all of the alternatives continue with flow augmentation over the protests of Orofino residents. The community has worked to develop recreation and tourism alternatives in steelhead fishing and reservoir recreation to diversify their predominately timber-dependent economy. Those plans specific to the Dworshak Reservoir would continue to be adversely affected by continued flow augmentation. Alternatives A2a and A2c would adversely affect development for the steelhead fishery and sportfishing industries. Alternative A3 would provide support these development efforts. Additionally, the negative effects of decreased farm income on both local and county property values and property tax revenue may create difficulties in obtaining sufficient funding to pursue new avenues of economic development and maintain the current level of community services.

People

Changes in the physical and economic human environment would affect distinct populations in the community. The high number of fixed income families would be required to pay a larger proportion of their income to power bills.

The forecast increase in long-term employment under Alternative A3 suggests that recent population trends should continue to increase but, given the 10 to 20 year horizon for increased salmon populations, population may increase slightly.

4.2.9 Riggins

The socioeconomic impacts of the three alternatives on the community of Riggins would include the effects of power costs, recreation activity, navigation and transportation, and anadromous fish recovery. Table 50 presents a matrix of the various impacts and the effects of the proposed alternatives. Alternatives A2a and A2c would affect the probability of anadromous fish recovery while having negative indirect effects on the physical or economic human environment. Alternative A3 would have significant effects on specific populations in Riggins and create both winners and losers through an increased chance of anadromous fish recovery, a change in recreational opportunities and access, loss of a navigable waterway, loss of power produced at the four projects, and a shift in transportation modes. Overall, the community would experience both increases and decreases in employment, with a projected net gain in employment. Perhaps the most significant effect on the community would be the effects of the increased chance of wild salmon and steelhead runs on the Salmon River and the potential economic benefits of increased sportfishing.

Table 50
Riggins Evaluation Matrix of Impacts

Alt	Indicators/Impact Measure	Evaluation Criteria	Planning and Decision Making	Short-Term Effects	Long-Term Effects
Power					
A3	Residential Rate Increases	Residential Rate Increase >5 percent		--	--
A3	Rate Employment Impacts	Decrease in Employment <1 percent		-	-
A3	Power Provider Risk Rate	Public-Owned Utility		--	--
A3	Fixed Income Ratepayers	Poverty Rate >10 percent of all families		--	--
Recreation					
A3	Anadromous Fishing Recreation	Increase in Employment >1 percent			++
A3		Local Fishing Opportunities			+
Transportation					
A3	Farm Spending Related Employment	Decrease in Employment <1 percent		-	-
A3	Dryland Farm Income	Decrease in Total Cty Farm Income >10%		--	--
A3	County Property Tax Revenue	Decrease in Property Tax Revenue >2%		--	--
A3		Decrease in Tax Revenue <2 percent		-	-
A3	County Sales Tax Revenue	Increase in Sales Tax Revenue		+	+
A3		Decrease in Sales Tax Revenue		-	-
	Grain Transportation Cost	Increase in Cost >15 cents/bushel		--	--
A3	Transport Costs (Other Shippers)	Increase in Transportation Cost		-	-
A3	Transport Capacity Uncertainty	Increase in Transportation Uncertainty	-	-	
A3	Highway Congestion	Decrease in Traffic Volume		+/-	+/-
A3	Highway Safety	Increase in Highway Safety		+	+

Anadromous Fish Recovery					
A3/A2c	Social Cohesion	Increased Social Cohesion	+	+	
A3	Recovery Uncertainty/Risk	Lower Uncertainty of Salmon Recovery		+	+
A2c		Higher Uncertainty of Salmon Recovery		-	-
A3	Business Uncertainty/Risk	Lower Economic Uncertainty/Risk		+	+
A2c		Higher Economic Uncertainty/Risk	-	-	-
A2c	Extinction Risk/Existence Value	Higher Extinction Risk	-		
A3		Lower Extinction Risk	+		
Other Social Effects					
A3	Population Impacts				
A3		Increase in Population <5 percent		+	
A3	Total Long-Term Employment	Increase Net Employment >1 percent		++	++
A3	Total Subregional Employment	Increase Net Employment >1 percent		++	++

++ = very positive
+ = positive
(blank) = no impact
- = negative
-- = very negative

Jobs & Wealth

Overall, Alternatives A2a and A2c would not adversely affect jobs and wealth directly and would provide a higher degree of certainty about the economic future. It is not anticipated that these alternatives would significantly improve fish returns and therefore the planned development of the tourism sector of the economy may not grow as anticipated. While Alternative A3 would adversely affect future economic certainty and the health of the agricultural sector, it is expected that it would beneficially affect the future economic certainty of the tourism sector.

Negative impacts on community employment from Alternative A3 would result from increased transportation costs, reduction in countywide farm income, and increased residential electrical rates. Farmers in the county currently utilizing the waterway to move grains would experience increased transportation costs. This may have a negative effect on employment. A large volume of grain currently moves from Idaho County on the lower Snake River and the county's farmers are expected to see the highest increase in shipping costs in the region. The reduction in total county farm income is expected to be greater than 10 percent. These are significant impacts for the grain producing regions of Idaho County on the Camas Prairie but are not expected to significantly affect the economy of Riggins. Decreases in employment are expected to be smaller than one percent.

Positive impacts on community employment from Alternative A3 would result from increased anadromous fishing opportunities. The projected increases in wild fish returns after 20 years are expected to increase employment by approximately 2 percent. Given the established sport fishing industry and the strong retail trade and service sectors in Riggins, the magnitude of this increase may be much greater given the potential future fish harvests.

Place

Riggins's natural and built environment would not be significantly changed under Alternatives A2a, A2c, and A3. The short-term displacement of lower Snake River recreationists may create crowding at sites on the Salmon River. This may provide a short-term economic benefit to the community. The financial pressures exerted on local farmers from higher transportation costs may lead to a greater consolidation of farms and a change in the rural land-use patterns around Riggins.

One long-term benefit of Alternative A3 would be the decrease in truck traffic along US 95 as grains from Southern Idaho move to new transportation corridors. This would have a positive effect of lessening traffic congestion and improving highway safety but it may also decrease the existing economic benefits of through traffic. Another long-term benefit of Alternative A3 would be the increased chance of salmon recovery. The increased chance of salmon recovery would benefit the identity of the community as a place where wild salmon continue to exist and local fishermen would continue to pursue this element of Riggins' quality of life. Alternatives A2a and A2c have higher risks associated with salmon recovery and may adversely community quality of life.

Vision & Vitality

Alternatives A2a, A2c, and A3 would affect Riggins' vision and vitality by decreasing the social cohesion of the community over the issue of salmon recovery and the best way to achieve that goal. The community has worked to develop recreation and tourism alternatives in steelhead fishing and whitewater rafting after the community sawmill burned down. Alternatives A2a and A2c would adversely affect the development of tourism related to anadromous fish. Alternative A3 would provide support for these development efforts. Additionally, the negative effects of decreased farm income on both local and county property values and property tax revenue may create difficulties in obtaining sufficient funding to pursue new avenues of economic development and maintain the current level of community services.

People

Changes in the physical and economic human environment would affect distinct populations in the community. The high number of fixed income families would be required to pay a larger proportion of their income to power bills.

The forecast increase in long-term employment under Alternative A3 suggests that recent population trends should continue to increase, but given the 10 to 20 year horizon for increased salmon populations, population may increase slightly in the interim.

5. Mitigation Analysis

5.1 Summary of Mitigation

This mitigation analysis examines the potential employment impacts and community social impacts identified in this report and in the regional impact analysis. Based on these projected impacts, similar Federal mitigation programs for natural resource policy changes were reviewed to determine the scope and budgetary outlays of these programs. Based on the review of the types of impacts and potential measures that might serve to mitigate or minimize negative impacts, estimates were made of total mitigation for employment and community level impacts.

Total long-term employment losses across the Pacific Northwest forecast by the regional study indicate that between approximately 5,338 and 6,008 jobs might be lost as a result of Alternative A3. Total jobs gained are forecast at between 3,796 and 4,722 after 20 years. Some of these job losses represent identifiable dislocated or displaced workers while others are dispersed and difficult to identify. Of these losses, approximately 4,000 might be classified as dislocated. (This should, however, be considered preliminary as the Regional Study Team still has outstanding and unresolved issues that may significantly change these estimates.)

Employment losses based on middle estimates are distributed throughout the three subregions: upriver -320 jobs, reservoir -2803, downriver -856. The state distribution of employment losses based on middle estimates are approximately -4332, -549, and -507 for the states of Washington, Idaho and Oregon, respectively.

Approximately 67 communities in the lower Snake River subregion would be adversely affected by increased transportation costs. An additional 15 communities outside the designated study area would also be significantly affected by increased transportation costs. These affected communities are primarily smaller than 1,000 inhabitants but also include the larger cities of Lewiston, Clarkston, Pasco, Kennewick, Richland, and Walla Walla.

Overall adverse community level social impacts identified through the Community Forums and the community based impact assessment include the following:

1. Decreased net farm income and increased financial pressure on dryland farmers throughout the region.
2. Increased consolidation of family farms and a decrease in rural farm population.
3. Decreased county property tax base in 20 regional counties.
4. Dislocated workers from Ice Harbor Irrigated agricultural lands and loss of a source of local school revenue.
5. Shifted economic base of communities and changed potential for future growth.

Many of these significant community level and employment impacts are caused by the increased transportation costs of trucking grain and by the loss of irrigated agriculture on the Ice Harbor Reservoir. These impacts could be minimized in part by mitigation spending to modify the irrigation pumps and direct upgrades to expand rail capacity in the region. Another strategy would be to directly subsidize the farms currently shipping on the lower Snake River. The costs of these mitigation measures have been discussed in the Transportation and Irrigation reports. In the absence of direct mitigation, employment and community level impacts could be mitigated or minimized as described below.

Potential mitigation expenditures for 4,000 dislocated workers have been estimated at between $45.1 million and $48.1 million to address employment losses. Potential mitigation for 82 affected communities has been estimated at between $4.3 million and $12.9 million based on previous mitigation expenditures described below.

Under Alternative A2, the lower probability of salmon recovery and eventual increased or resumed harvest would affect approximately 10 communities in the lower Snake River region, an unknown number of CRITFIC member tribal communities, as well as an unknown number of coastal fishing communities. No estimate for future mitigation under this alternative is given. One proxy might be the opportunity cost of foregone fishing revenue as forecast by the Recreation Team and the Anadromous Fish Economic Team.

5.2 Potential Mitigation for Employment Impacts

To identify possible strategies for mitigating potential adverse social and employment impacts caused by salmon recovery alternatives, a literature review was conducted on existing rural development programs in the states of Washington, Idaho, and Oregon, as well as programs specifically targeting workers dislocated as a result of the spotted owl legislation. Both federal and state programs were reviewed. The following programs were identified to provide a benchmark of potential mitigation.

5.2.1 Conservation Reserve Program (CRP)

The USDA initiated the CRP in 1985 to conserve highly erodible croplands through retiring agricultural lands for 10-year periods and converting these lands to soil-conserving grasses or trees. In addition to reducing soil erosion, the CRP also provides habitat for wildlife and protects water quality. The program is achieved through paying incentives to farmers who volunteer to leave a portion of their land fallow for up to 10 years. Over $27,000,000 dollars were paid out in 1995 through this program to farmers in the lower Snake River study area (approximately $5,400 per harvested farm, on average).

5.2.2 The Timber Retraining Benefits Program

The Timber Retraining Benefits (TRB) Program was initiated in 1991 and is a Washington state-based program based out of the Employment Security Department funded in part under Title III of the Job Training Partnership Act (JTPA). The TRB program’s principle purpose is to serve timber-dependent communities. The program provides funding for retraining efforts for dislocated natural resource workers who have been impacted by changes in the economy. Workers impacted by the downturn in natural resource jobs and who participated in this program have an 81 percent employment rate and have recovered 91 percent of their former wage. Benefits are usually for timber-related losses, although it has been recently proposed to have TRB include salmon-dislocated workers as well. To date, the TRB program has spent approximately $161,694,794 for worker retraining. Approximately 13,942 individuals have been served, at a cost of $11,597.67 per worker.

5.2.3 Trade Adjustment Assistance Program

The Trade Adjustment Assistance (TAA) Program targets workers who lose their jobs or experience wage reductions due to foreign import competition. It provides vocational and academic training, income support, and reimbursement. In Washington State, 1997 spending on this program was approximately 6 million dollars or $2,598 per worker.

5.2.4 NAFTA Trade Adjustment Assistance

The NAFTA Trade Adjustment Assistance program grew out of the TAA and targets jobs impacted by trade with Canada and Mexico after implementation of the North American Free Trade Agreement. In 1998, support to 507 dislocated workers in Washington State was $257,794 or $508 per worker.

5.2.5 Dislocated Workers Program of Washington State

The Dislocated Workers Program of Washington State is intended to assist workers who have been terminated from employment and are unlikely to return to work in the industry or occupation due to diminished demand for their skills. The program has had 4,439 workers complete training, 3,714 have been placed in jobs, and the average wage earned is $12.35 per hour. No cost was obtained for this program.

5.2.6 Community Recommendations for Mitigation A1 -- A3

[This will be completed based on the University of Idaho Final Report]

5.3 Potential Mitigation Examples for Community Social Impacts

The Northwest Economic Adjustment Initiative is part of President Clinton’s Northwest Forest Plan and is aimed at providing economic stability to Northwest timber dependent communities by developing new economic opportunities for year-round, family-wage, high-skilled jobs. The Initiative brings together nine federal agencies as well as state and local governments to fund and assist projects that have been identified as priorities by local communities or counties. The Initiative provides four categories of assistance: workers and families, business and industry, communities and infrastructure, and ecosystem investment. Congress initially authorized the program for 5 years with an allocation of 1.2 billion dollars. The program has been extended for two years to the year 2000. Funding for the Initiative was channeled through State Community Economic Revitalization Teams (SCERTs) established in the states of Washington, Oregon and Idaho.

The goal of the Initiative is to provide seamless access to technical support and funding through leading and supporting local communities through interagency coordination. One example of this program is the work coordinated by the USFS through the Oregon CERT in the Columbia River Gorge. The target communities were those identified as timber-distressed. Fourteen grants worth $496,655 have been appropriated for this project ($35,475 per community plus $16,979 cost sharing). These awards have been matched by $237,715 of funds from the project's proponents. Projects have been channeled through counties, communities, and non-profit groups for projects such as infrastructure development, comprehensive plans, and leadership development training. Other types of projects eligible for funding include feasibility studies, marketing and tourism, business development, downtown beautification, education and training, and job skill development.

5.4 Compensation Potential

The employment impacts identified in the regional analysis could be addressed by providing targeted job retraining and education credits to dislocated workers. The effects on net farm income due to increased transportation costs could be mitigated through a program similar to the Conservation Reserve Program whereby farmers would receive compensation equal to the transportation cost increases. Community level impacts could be addressed by providing block grants to affected communities in the region for economic diversification activities. For example, to mitigate farm communities most affected by the loss of river transportation, economic development programs similar to those mentioned above could be utilized to create more local value added products and decrease dependency on the export of unprocessed grains to foreign markets.

Under Alternative A2, the lower probability of and higher degree of risk associated with anadromous fish recovery may lead to negative economic and social impacts to sport fishing dependent communities. These communities may lose an important component of their economic base and may need assistance to transition to another non-fishery dependent job base.

6. Literature Cited

References will be provided in the Final Social Analysis Report.

Annex A:
Regional Information

Annex B:
The Effects of Socioeconomic Changes on Rural Agricultural Communities: A Review of the Literature