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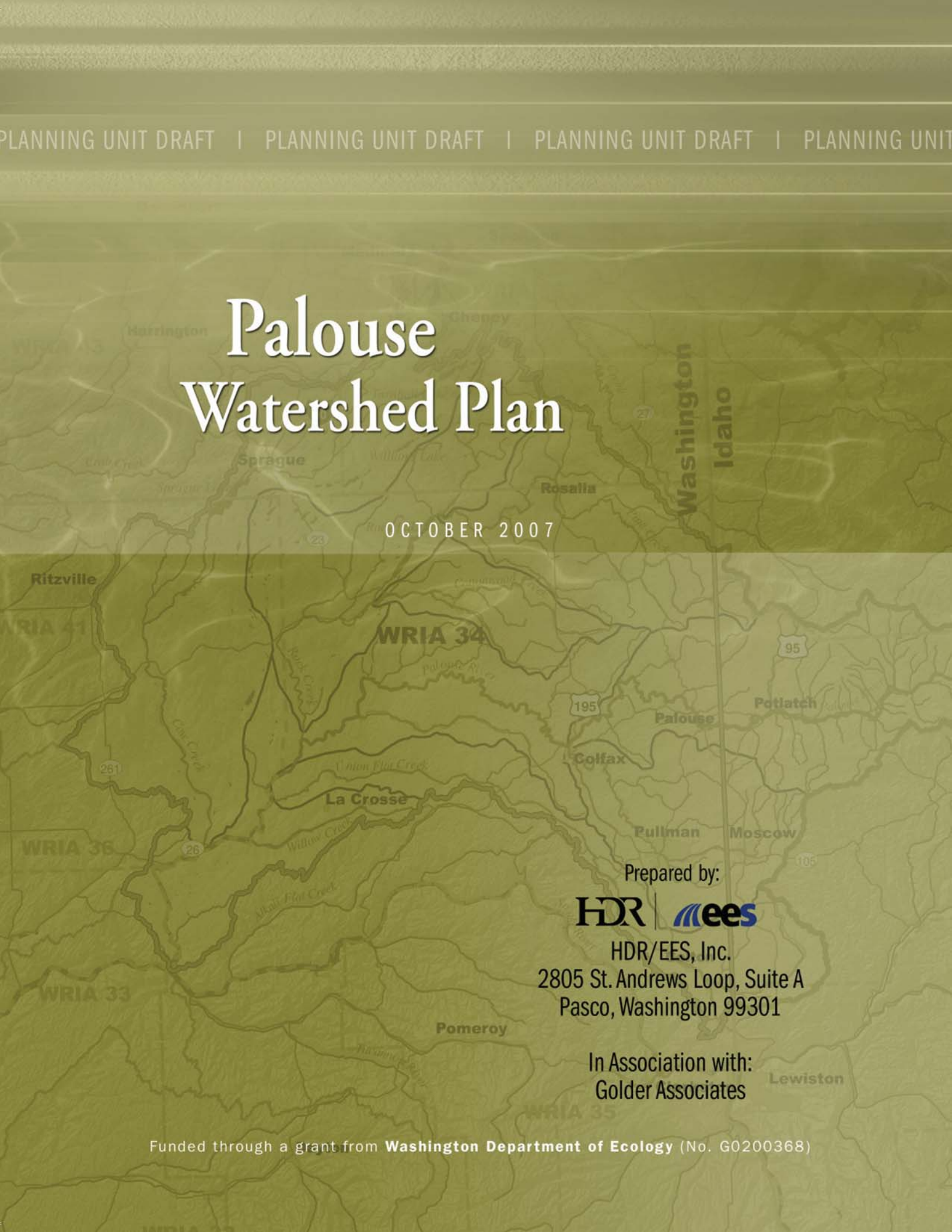
Palouse Watershed Plan

OCTOBER 2007



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Funded through a grant from **Washington Department of Ecology** (No. G0200368)

Participants

From the inception of Palouse watershed planning in 2002, there have been over sixty meetings attended by local and regional stakeholders and agency representatives. The following is a list of Palouse watershed planning participants and the stakeholder groups they represented:

Palouse Conservation District-Lead Agency

- Rob Buchert
- Suzanne Hamada

Planning Unit

- Andy Rogers-Landowner (Flannigan Creek) & City of Colfax
- Ben Barstow-Landowner/Wheat Growers Assoc. (North Fork)
- Bill Wade-Landowner (North Fork)
- Brian Cornelius-Steptoe S&W District #1 (Former)
- Carl Thompson-City of Colfax (Current)
- Cheryl Morgan-Landowner (South Fork)
- Dan Harwood, Palouse-Rock Lake Conservation District
- David Broxson-Sprague Lake Users Group
- David Stueckle-Whitman Co. Farm Bureau
- Dennis Bly-Lincoln County Commissioners
- Dick Coon, Jr.-Landowner (Cow Creek)
- Don Myott-City of Palouse
- Emily Adams-City of Colfax (Former)
- Gary DeVore-Adams Conservation District
- Jack Ensley-Whitman Conservation District
- Janet Schmidt-WSU Extension
- Jean Wardwell-Whitman County Planning Commission
- Joan Harder-Landowner (Cow Creek)
- John Pearson-Landowner (North Fork, South Fork, Palouse River, Cow Creek)
- Kelley Racicot-Palouse Water Conservation Network
- Ken Stinson-Latah Soil & Water Conservation District
- Kevin Gardes-City of Pullman
- Larry Kirkland-Palouse Basin Aquifer Committee (Former)
- Les MacDonald-City of Moscow
- Les Wigen-Whitman County Commissioners (Former)
- Loren Klinke-Steptoe S&W District #1 (Current)
- Mark Storey-Whitman County Public Works
- Mark Workman-City of Pullman
- Meg Foltz-US Forest Service
- Michael Largent-Whitman County Commissioners (Current)
- Mike Holthaus-University of Idaho-Facilities
- Mimi Wainwright-WA Dept. of Ecology
- Nancy Belsby-Landowner (Rock Lake)

- Paul Kraynak/Bobby Hills-Nez Perce Tribe (Watershed Division)
- Randy Baldree-WSU Extension (Former)
- Rex Harder-Landowner (Sprague Lake/Cow Creek)
- Rhod McIntosh-Cattlemen's Association
- Rob Corcoran-WSU-Facilities Operations
- Rob Henderson-Idaho Dept. of Environmental Quality (Former)
- Rob Lindsay-Spokane County Utilities Division
- Royce Johnson-Town of Farmington
- Rudy Plager-Adams County Commissioners
- Scott Haugen-Landowner (Sprague Lake)
- Stephen VanVleet-WSU Extension
- Steve Nelson-Sprague Lake Users Group
- Steve Robischon-Palouse Basin Aquifer Committee (Current)
- Tom Scallorn-City of Moscow
- Tom Stroschein-Latah County Commissioners
- Tracy Brown-Palouse Clearwater Environmental Institute

Abbreviations and Acronyms

AFY	Acre-Foot per Year
APA	Aquifer Protection Areas
ASR	Aquifer Storage and Recovery
BMP	Best Management Practice
BW	Basin Wide
CCRP	Continuous Conservation Resource Program
CD	Conservation District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFS	Cubic Foot per Second
CLP	Central Lower Palouse
CRC	Cow/Rock Creek
CRP	Conservation Reserve Program (Federal)
DIP	Detailed Implementation Plan
DNR	Washington State Department of Natural Resources
DO	Dissolved Oxygen
DOE / Ecology	Washington State Department of Ecology
DOH	Washington State Department of Health
DNR	Washington State Department of Natural Resources
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act (Federal)
FLIR	Forward Looking Infrared Reconnaissance (infrared photography)
GMA	Growth Management Act (Washington State)
GPM	Gallons per Minute
GWMA	Groundwater Management Area
GWMP	Groundwater Management Program
ISDA	Idaho Department of Agriculture
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish & Game
IDHW	Idaho Department of Health & Welfare
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
IG	Initiating Government
ISCC	Idaho Soil Conservation Commission
IWG	Implementation Working Group
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NFP	North Fork Palouse
NPDES	National Pollutant Discharge Elimination System
NPT	Nez Perce Tribe
NRCS	Natural Resource Conservation Service (Federal)
PBAC	Palouse Basin Aquifer Committee
PCB	Polychlorinated biphenyls

Abbreviations and Acronyms

PSA	Public Service Announcement
Qa	Annual Volume of Water
Qi	Instantaneous Rate of Flow
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RM	River Mile
SDWA	Safe Drinking Water Act (Federal)
SEPA	Washington State Environmental Policy Act
SFP	South Fork Palouse
SMA	Shoreline Management Act (Washington State)
SSA	Sole Source Aquifer Program
TCDD	2,3,7,8 tetrachlorodibenzo-p-dioxin
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UIC	Washington State Underground Injection Control Program
USACE	United States Army Corps of Engineers
USFS	U.S Forest Service
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington Department of Ecology
WDOH	Washington Department of Health
WSDA	Washington State Department of Agriculture
WMA	Watershed Management Act (RCW 90.82; ESHB 2514) (Washington State)
WRATS	Water Rights Application Tracking System (Washington State)
WRIA 34	Water Resource Inventory Area (Palouse)
WSCC	Washington State Conservation Commission
WSDOT	Washington State Department of Transportation
WSU	Washington State University
WUA	Weighted Usable Area

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Section 1
Introduction and Background

Water is a limited resource. Given the range of potentially competing demands for water, it has historically been difficult for citizens, business, and public agencies to make water-resource management decisions without some controversy. Watershed planning provides a method to help balance competing demands upon water resources. The State of Washington's Watershed Planning program offers a tool that allows for local decision-making in identifying, prioritizing and developing solutions to water resource management issues within each of the state's watersheds. This document presents the local Watershed Management Plan for Water Resource Inventory Area (WRIA) 34 along the Palouse River, and also includes the Idaho portion of the Palouse as discussed in more detail below.

1.1 Overview of Watershed Planning in WRIA 34

1.1.1 Planning Objectives & Scope

Watershed planning in WRIA 34 provides a method to help achieve a balance among competing water resource demands. Water demands for commercial, industrial, residential and agricultural activities (e.g. out of stream uses) have to be balanced with instream fish habitat needs and water quality goals. Water is a key component of the economic base for the WRIA. Critical habitat for a diversity of fish and wildlife are also dependent upon water resources. The Basin's surface water resources also offer recreational opportunities and natural beauty for citizens and visitors.

1.1.2 Legal Basis for Watershed Planning

In 1998, the Washington State Legislature passed the Watershed Management Act (Chapter 90.82 RCW; ESHB 2514) to provide a framework for citizens, interest groups, and government organizations to join together to develop a management plan for water resources in each of the State's major watersheds as described in Chapter 173-200 WAC. The Watershed Management Act (WMA) enables, but does not require, local groups to form for the purpose of conducting watershed planning. WMA identifies a group of "initiating governments" that are empowered to select a lead agency, apply for grant funding, determine the overall scope of planning, and convene a "Planning Unit." The initiating governments include all counties within the WRIA, the government of the largest city or town (if applicable), the water supply utility obtaining the largest quantity of water from the WRIA, and Indian tribes with reservation lands within the management area. Funding is provided through the WMA for areas in Washington State that wish to undertake planning and specifies ground rules for use of the funding.

The WMA identifies a Planning Unit as the group that develops and initially approves the watershed plan. It calls for either a consensus approval by all members of the Planning Unit, or a consensus of the governmental members and a majority vote by remaining members of the Planning Unit. Following approval by the Planning Unit, and a requisite public meeting held by each county legislative authority, WMA calls for a joint session of the legislative bodies of all counties in the watershed to consider the plan. The authority of the county legislative bodies is

limited to approval or rejection of the watershed plan. If the county legislative body(s) reject the plan as submitted, they can send the plan back to the Planning Unit with recommended changes, but are prohibited from making changes to the plan themselves. If the county legislative body(s) approve the plan, they are obligating themselves to implement applicable plan elements. Once the plan has been approved by both the Planning Unit and the joint session of county legislative bodies, county and State agencies are required to implement plan elements for which they are responsible. The planning process recognizes that implementation of plan elements may be contingent upon further study, actions by other agencies, and available resources, including funding.

1.2 Description of WRIA 34 Planning Area

1.2.1 Palouse River

The Palouse River originates in the mountains northeast of Moscow, Idaho, and flows westerly into eastern Washington, south of Spokane. The River then winds through rolling farm and rangeland in Whitman County before joining the Snake River at the Whitman/Franklin County line. There are no major man-made impoundments, allowing the river to flow freely. Approximately 6 miles from the River's confluence with the Snake River, the Palouse River drops approximately 185 feet into a deep canyon at Palouse Falls. Due to the natural barrier of the falls, the Palouse River above the falls does not support anadromous salmonids and does not provide critical habitat for ESA-listed fish species. The Palouse River drains over 2 million acres, most of which are in Washington. Approximately 17 percent of the Palouse River watershed is within Idaho, primarily Latah County. Major water bodies and drainage area boundaries in WRIA 34 are shown in Exhibit 1-1.

1.2.2 Planning Area Boundaries

The Palouse River Watershed (WRIA 34) occupies approximately 1,755,000 acres in eastern Washington and this plan also includes the western portion of Idaho within the Palouse (approximately 340,000 acres). WRIA 34 is bordered by the Upper Crab/Wilson Watershed (WRIA 43), Lower Spokane Watershed (WRIA 54) and the Hangman Watershed (WRIA 56) to the north, the Lower Crab Watershed (WRIA 41) and the Esquatzel Coulee Watershed (WRIA 36) to the west, and the Lower Snake Watershed (WRIA 33) and Middle Snake River Watershed (WRIA 35) to the southeast and south, respectively.

Exhibit 1-2 shows the regional location of WRIA 34. WRIA 34 encompasses portions of Adams, Lincoln, Spokane and Whitman Counties within Washington. The Cities of Pullman and Colfax are located within WRIA 34. The City of Moscow, Idaho, is within that portion of Latah County, Idaho, drained by the Palouse River. For the purposes of watershed management, the Planning Unit agreed to plan for the entire Palouse Basin, including the Idaho portion, and solicited Idaho participation as formal voting members of the Planning Unit.

(Insert Exhibit 1-1)

(Insert Exhibit 1-2)

The planning area has been divided into four Management Areas, which include the following and are shown in Exhibit 1-3:

- Cow/Rock Management Area
- Central/Lower Palouse Management Area
- North Fork Palouse Management Area
- South Fork Palouse Management Area

Management Areas were formed based on variations in land use, habitat, and hydrologic characteristics within the WRIA. See Section 3 of this Plan for more complete descriptions of the management areas.

1.3 Key Planning Issues in WRIA 34

At the initiation of the watershed assessment and planning process, the WRIA 34 Planning Unit identified major issues for the watershed, including: future water availability (including some water rights issues), declining water levels in the Grande Ronde aquifer in the Moscow-Pullman area, water quality concerns and maintaining important cross-state coordination with Idaho. The WRIA 34 Planning Unit also identified key goals to be addressed in this watershed plan:

- Protect existing water rights and private property rights.
- Emphasize voluntary, incentive-based management solutions.
- Maintain the existing economy associated with the watershed hydrology, including but not limited to potable water, agriculture, industry, recreation and tourism.
- Establish and maintain ongoing educational and public involvement programs.
- Establish a detailed funding plan for implementation, including: projects; programs; long-term monitoring and evaluation of watershed plan implementation.
- Ensure fairness in distributing costs and burdens for water resource management actions.
- Address differences in local and state water resources regulatory and management approaches, and obtain local, state, federal and tribal buy-in and cooperation for recommended management strategies.
- Provide long-term reliable and predictable water supplies for human uses.
- Protect surface and groundwater quality needed for public drinking water supplies and other uses (livestock watering, recreation, fish etc.).
- Improve consistency, certainty, timeliness and efficiency in addressing water right decisions, and in regulatory approaches across state lines for improving water quantity and quality conditions.
- Improve scientific basis for understanding baseline conditions.
- Identify and implement water conservation and efficiency strategies.

As the technical watershed assessment and planning process progressed, these goals were modified and expanded to form specific planning objectives, described in Section 5 (basin wide objectives) and Section 6 (management area objectives). Brief descriptions of specific studies conducted to address some of these goals are provided in Section 2.4.2.

1.4 Relationship to Other Water Resource Programs and Plans

In virtually every basin around the State, a variety of regulatory programs, ongoing water resource management activities, and past or ongoing studies must be factored into watershed planning. A watershed plan under the WMA does not supersede other federal, state, or local requirements but instead provides a framework for state, local, and even federal agencies to modify and coordinate existing or pending actions to reflect documented findings and management direction in each watershed.

Table 1-1 lists a variety of programs at the local, tribal, state, and federal levels that are relevant to watershed planning within the WRIA. In some cases, programs may be viewed as a direct input to watershed planning, such as the parameters established by county or city land use planning documents. In other cases, existing programs may constrain available options for watershed management, or provide valuable data sources. In the long-term, the planning unit may wish to consider how implementation of the watershed plan can dovetail with other planning activities that are funded as part of routine government operations.

1.5 Conformance with SEPA

The State Environmental Policy Act (SEPA) was enacted to ensure that state and local agencies consider the likely environmental consequences of proposed actions during their decision making processes. Under the SEPA Rules (Chapter 197-11 WAC), nonproject actions such as decisions on policies, plans, or programs, are included under SEPA authority. Therefore, a SEPA review is required for both the State's Watershed Planning Program and this WRIA 34 Watershed Management Plan. The State has prepared a statewide watershed planning environmental impact statement (EIS) in conformance with SEPA. This statewide EIS is intended to assist local decision makers in meeting SEPA requirements, but does not eliminate the need for local decision makers to comply with SEPA.

In order to conform with SEPA, this WRIA 34 Watershed Management Plan must be evaluated under the SEPA rules established by the appropriate SEPA lead agency. Based on the lead agency's determinations as to the environmental effects of the plan, the lead agency may adopt the statewide EIS in lieu of preparing a plan-specific EIS, adopt the statewide EIS and prepare a supplement or addendum that addresses plan-specific issues, or prepare a plan-specific EIS. Individual actions and projects recommended within the plan may require further review under SEPA and other federal, state, and local regulations prior to their actual implementation. Appendix A provides an assessment of the adequacy of the statewide EIS to address the environmental issues associated with the actions related to implementation of the Plan.

Insert Exhibit 1-3

Table 1-1
Relationship of Existing Programs to Watershed Planning

Government Level	Programs	Relationship to Watershed Planning			
		Data Availability	Constraint on Mgmt Options	Potential Funding Sources	Implementation Tools
Local	County-wide Planning Policies				X
	Comprehensive Plans	X			X
	Coordinated Water System Plans	X			X
	Drinking Water Source Protection Plans			X	X
	Shoreline Master Plans				X
	Salmon Recovery Plans/Documents	X	X		X
	Non-point Source Control Plans	X		X	X
	Stormwater Plans	X		X	X
	Onsite Septic System Inventory	X			
	Critical Areas Ordinance				X
	Water System Plans	X			X
	Water Conservation Plans				X
	Wastewater Plan	X		X	X
	Groundwater Management Plans	X			X
Tribal	Fishing Rights		X		
	Reserved Water Rights		X		
	Hatchery Plans				X
	Land Use Planning Functions	(See Local)			X
State	Water Rights Records/Adjudications	X	X		
	Instream Flow Regulations/Studies	X	X		
	Salmon Recovery Plans	X	X	X	X
	Wastewater Permit Life Cycle System	X	X		X
	TMDL Studies/Water Quality Plans	X	X		X
	Water Quality Management Needs Assessment	X			
	Designated Use Regulations	X			
	Water Quality Program	X		X	X
	Drinking Water Grants/Loans			X	X
	Water Quality Grants/Loans			X	X

Table 1-1 (continued)

Government Level	Program	Relationship to Watershed Planning			
		Data Availability	Constraint on Mgmt Options	Potential Funding Sources	Implementation Tools
State (cont.)	Forest Practices Watershed Analysis	X	X		
	Limiting Factors Analysis (2496)	X	X		
	Hatchery Plans				X
	DOT Fish Passage Grant Program	X	X	X	X
	Water Resources Program	X		X	X
	NPDES General Permit for Stormwater	X	X	X	X
	Palouse Basin Aquifer Committee (ID/WA)	X		X	X
Regional/ Federal BPA/NPPC NOAA Fisheries USFWS	ESA Listings/ Documentation	X	X		
	Flood Control	X	X		
	Wetlands		X	X	X
	Hydropower	X	X		
	Subbasin Planning	X			
	Species Recovery/Management Plans	X	X	X	X

1.6 Plan Limitations

It is recognized that the documents used in the formation of the watershed plan may not provide complete and detailed information for all water resource management strategies or water quality actions. The collection of existing data has been subject to time and budget constraints. Despite the limitations, the Palouse Watershed Plan has been based upon the best information available and is consistent with the requirements of RCW 90.82.120. Nothing within this plan shall:

- Conflict with existing Washington State statutes[1], federal laws, or tribal treaty rights;
- Impair or diminish in any manner any existing water rights;
- Modify or require the modification of any waste discharge permit issued under Washington State law; and
- The identification and estimation of surface and groundwater rights for various entities and persons referenced within this watershed plan are for the singular purpose of estimating water availability and demand, as well as to provide a general understanding of water resource and management issues within the Palouse Basin. The estimations of water rights are neither an admission nor an opinion on the validity or extent of any respective water right by any participant in the planning process, or any other entity or person identified.

[1] Idaho agencies and jurisdictions are not bound by this plan as a similar legal framework for plan development and implementation does not exist for Idaho as it does for Washington. Accordingly, Idaho jurisdictions must determine how all or portions of this plan might be voluntarily implemented within the Idaho portion of the Palouse.

Section 2
Planning Process

This section presents the planning process followed by the local governments, agencies, and other stakeholders in developing this watershed management plan.

2.1 Initiating Governments

The initiating governments for WRIA 34 are Whitman, Spokane, Lincoln and Adams Counties, the City of Pullman and the Steptoe Water and Sewer District. The City of Pullman is the largest city in WRIA 34, and the Steptoe Water and Sewer District is the largest water purveyor other than City of Pullman. Franklin County, which contains only a small portion of WRIA 34, decided not to participate as an initiating government and deferred all decision-making to the other initiating governments.

In accordance with the Watershed Management Act (WMA), the initiating governments for the WRIA 34 basin designated the Palouse Conservation District (Palouse CD) as the lead agency for watershed planning. As lead agency, Palouse CD received grant funding from the State of Washington and contracted with Ecology to conduct this watershed planning effort. The WRIA 34 planning effort was initiated in the summer of 2002. Work to prepare the Level 1 Assessment, which summarizes existing conditions, began in July 2003. This date is important because RCW 90.82 states that the plan must be completed within four years from the beginning of assessment activities.

2.2 Planning Unit Mission and Participants

The Palouse CD convened organizational meetings and established a core Planning Unit by asking various agencies, organizations and businesses to appoint members, and by inviting individual landowners and others to participate. The mission of the Planning Unit is to treat water as a valuable resource through the development and implementation of a watershed plan consistent with RCW 90.82 for the beneficial management of water resources to balance the present and future needs of local rural and urban communities, agriculture and other industries, and fish and wildlife.

The Planning Committee established several sub-committees, including a Steering Committee, Water Quality committee, Instream Flow/Water Quantity committee, and a Public Information/Outreach committee. The Planning Unit served as the decision-making body for WRIA 34 on both technical and administrative issues, and coordinated efforts among the various sub-committees. The Steering committee developed agenda items and framed key technical and administrative issues. The Water Quality committee focused on identifying areas of water quality degradation, potential causes, and water quality enhancement strategies. The Instream Flow/Water Quantity committee focused on identifying areas with instream and out-of-stream water quantity concerns, and developing flow and water quantity enhancement strategies, including recommendations for setting legal instream flows. The Public Information/Outreach

committee focused on coordinating activities to raise public awareness and participation in the planning process.

Key stakeholders in the WRIA 34 watershed, including local, state, and federal agencies, are represented on the Planning Unit in a voting capacity. The State of Idaho is also represented within the Planning Unit by various agencies that serve as voting members. Those stakeholders involved in watershed planning for WRIA 34 are listed in the Participants List at the front of the plan.
Representatives from several different agencies also provided technical assistance and guidance to the assessment and planning process.

The Palouse CD hired Economic and Engineering Services, Inc. (now part of HDR Inc., and known as HDR-EES) and Golder Associates, Inc. to provide technical support in preparation of the watershed management plan and supporting documentation. The preamble to the plan provides a list of individual Planning Unit members and representatives.

2.3 Planning Process

2.3.1 Planning Phases

Voluntary watershed planning under the WMA occurred in three primary phases:

1) Phase I: Organization
2) Phase II: Conducting Watershed Assessments
   a. Level 1: Summarize Existing Data and Identify Data Gaps
   b. Level 2: Gather Additional Information to Fill Data Gaps
   c. Level 3: Long-term Monitoring (post plan adoption)
3) Phase III: Developing a Watershed Plan

Phase I

Under Phase 1 of the Watershed Planning Process (RCW 90.82), the Planning Unit and Committee Organization for WRIA 34 – Palouse River Basin was formed in 2002. During that process, the Planning Unit also developed its mission and planning goals. The Planning Unit decided to address the required water quantity component of watershed planning along with the optional components of instream flows, water quality, and multi-purpose storage. The issue of fish habitat, while important to the Planning Unit members, was not selected as a component for this plan due to the lack of critical habitat and ESA-listed fish species above the Palouse Falls.

Phase II - Level 1 Assessment

The Phase II Level 1 Assessment (Golder 2005) presents a compilation and review of existing data on the Palouse River watershed. The Level 1 Assessment presents background data on climate and geology, and summarizes information on surface hydrology, and ground water quantity, quality, and water demand.

Phase II – Level 2 Studies

Supplemental studies and assessments were conducted to gather data, evaluate options, and develop recommendations regarding instream flow, water quality, and multi-purpose storage in WRIA 34.

Phase II – Level 3 Long Term Monitoring

Long-term monitoring and adaptive management recommendations are provided in Section 2.4.3 and in Section 7-Implementation.

Phase III: Developing a Watershed Plan

Information from both the Level 1 and Level 2 assessments has been used to support the Phase III – Planning. For purposes of the planning process, the basin has been divided into four "implementation areas" comprised of: Cow and Rock Creek subbasins; Central/Lower Palouse River from Colfax to the mouth, including Union Flat, Pine, and Cottonwood Creek subbasins; North Fork Palouse River subbasin; and the South Fork Palouse River subbasin.. These areas were delineated based on land use, fish habitat and hydrologic characteristics of the different areas in the Basin.

This document represents the culmination of the Phase III planning process, the WRIA 34 Watershed Management Plan.

Phase IV: Plan Implementation

This phase starts after the plan has been adopted, and begins with development of a detailed implementation plan.

2.3.2 Public Involvement Process

The WRIA 34 Planning Unit established a Public Involvement/Outreach Subcommittee to direct the public involvement process. The purpose of this work is to help the WRIA 34 Planning Unit identify issues of concern in each sub-basin of the Palouse River Watershed and to integrate public perception of watershed issues into the early stages of watershed assessment and plan development. Public involvement was sought through direct participation in the Planning Unit and/or one of its subcommittees, attendance at public meetings of the Planning Unit and subcommittees, and through participation in one or more of a series of outreach workshops. Information on ongoing assessments and plan development was made available to

the public through Ecology's web site, the Palouse Conservation District web site, notices in local newspapers, and outreach efforts by individual Planning Unit members.

A series of workshops was held in summer of 2005. These workshops were focused on seeking additional public input on objectives and recommended basin-wide and management area-specific action plans. This was accomplished by conducting workshops in each management area, as follows:

- Cow/Rock Creek – July 13
- Central/Lower Palouse – July 13
- North Fork Palouse – August 9
- South Fork Palouse – August 10

Breaking up WRIA 34 into smaller areas gave the opportunity for conducting focused outreach efforts with local stakeholders in each management area. The primary purpose of the workshops was to review and revise preliminary action plans for the management areas and relevant components of the basin-wide action plan as developed by the Planning Unit.

2.3.3 Problem/Issue Definition

The Planning Unit, on the basis of information developed during the technical assessment (see below) and public input received during the various workshops and meetings, has identified four areas of concern within the Palouse watershed:

- **Insufficient water supply** – The available water supply, both surface waters and ground waters, is insufficient to sustain future demands and objectives. Several of the streams, creeks, and tributaries within the Palouse basin experience periods of low to no flow. During some periods, surface flows in Paradise Creek below Moscow, Idaho, and reaches of the South Fork Palouse River below Pullman, Washington, are sustained primarily by permitted wastewater discharges. Water in this area is being withdrawn from the lower basalt aquifers faster than the aquifers can naturally recharge themselves, resulting in lowering water tables.

- **Poor water quality** - Surface water flows are experiencing increased temperatures, fecal coliform levels, and turbidity associated with spring run off and storm events. The water quality in some reaches does not meet state standards.

- **Loss of riparian and aquatic habitat** - Land use changes have led to the loss of most of the basin's riparian habitat and wetlands, contributing to increased peak flows (and subsequent flooding) and erosion. The loss of the riparian habitats and wetlands has led

to increased sedimentation and higher water temperatures, with less sustainable flow during the late summer and early fall, recognizing low flow conditions exist naturally.

- **Inadequate instream flows** – Sustained surface flows have been reduced due to changes in the basin's land use and vegetative cover. Infiltration to groundwater and subsequent discharge to streams has been reduced, exacerbating low flows in late summer and early fall.

These are the issues the Planning Unit has chosen to address with its technical assessments and watershed plan.

2.4 Technical Assessment

2.4.1 Review of Existing Data

The Palouse River basin is a bi-state watershed, adding to its complexity. The predominant land use in the basin is agriculture, and the urban land use is predominantly rural with few areas of denser urban development. (Pullman/Moscow)

In general, surface hydrology in the forested upper watershed is driven by snowmelt and groundwater discharge, while hydrology in the lower watershed on the agricultural lands is driven by snowmelt and precipitation events. Streams generally have a pattern of low flows in late summer and early fall, and high flows in spring and early summer. Golder (2005) notes that changing land use patterns over the last century have changed the hydrology of the Palouse Basin, including:

- Potentially increased peak flows, with resultant increases in flooding and severe erosion.
- Exacerbated low flows in late summer/early fall due to reduced infiltration.
- Reduced storage potential in riparian and wetland areas.

There are multiple water quality issues within the basin. Fecal coliform bacteria, nutrient (nitrates and phosphorous) levels and water temperatures exceed Washington state standards in the majority of the sampled locations. Turbidity is found in elevated levels in several locations during spring runoff and certain storm events, however, comparative historical data is lacking.

Drinking water in the area is supplied primarily from groundwater, with private wells typically in the upper aquifers and municipal wells drawing from the lower basalt aquifers. Generally, groundwater flow in the uppermost aquifers tends to parallel the land topography, and can be highly localized. Flow in the deeper basalt aquifers is confined, and tends to flow from the outer boundaries of the aquifers towards the Snake and Columbia Rivers. However, the various aquifers are complex and groundwater can flow in different directions in more localized conditions. The relationships between recharge, groundwater levels, and summer baseflows to streams are difficult to investigate and characterize. The Level 1 Assessment found that groundwater levels in many area wells have been declining, leading to concerns about the sustainability of the groundwater resource. In general, water quality of groundwater is acceptable for domestic, agricultural and industrial uses.

Golder (2005) estimates that municipal and domestic water demand will increase from 10,081 acre-feet in 2000 to about 13,400 acre-feet per year by 2025. Current municipal water rights in total for the WRIA exceed the projected demand for water in both the incorporated and unincorporated areas of WRIA 34. Regarding individual communities, the City of Colton is seeking additional water right to meet its projected demands.

No significant changes in agricultural water use are projected by Golder, nor is the total acreage of irrigated and non-irrigated agricultural land expected to increase. The estimated irrigated agriculture demand of 52,750 acre-feet per year is expected to remain constant. Current agricultural water rights exceed the projected demand for irrigation water, with ground water irrigation demand believed to be greater than surface water, although actual irrigation water usage is unknown and water rights data are inconclusive.

2.4.2 New Studies Performed for Watershed Plan

Supplemental studies and assessments were conducted to develop necessary data regarding instream flow, water quality, and multi-purpose storage in WRIA 34. This section briefly describes these studies. The following paragraphs provide a brief background of the purpose and findings from the assessments. Other sections in the Plan provide additional detail on the recommended actions developed from findings in these assessments. Section 5 includes summaries of the findings, while Section 6 includes the specific actions. Section 7 and Appendix B includes specific implementation considerations related to the actions.

Phase II – Level 2 Instream Flow Assessment

The purpose of the Level 2 Instream Flow Assessment was to provide information for the Planning Unit to better evaluate instream flow issues in the Palouse River (North Fork and mainstem) and the Cow Creek tributary. The focus was to evaluate the flow levels necessary for aquatic habitat and to define the relationship between flow and habitat in these streams. The assessment was intended to provide the foundation and science for the Planning Unit to develop instream flow recommendations (including minimum instream flows) for the watershed. The Instream Flow Needs Assessment was submitted to the Planning Unit as a draft in October 2006 (Golder, October 2006).

The instream flow assessment is comprised of three parts:

- Compilation of existing data and scoping of instream flow assessment – scoping sessions were held with the WRIA 34 Planning Unit (Spring 2005), where priority streams/ subbasins were identified for assessing instream flows.
- Instream flow analysis – instream flow analysis involved describing the characteristics of the existing flow regimes and hydrology for the streams of interest, reviewing the fish species of interest and their status, reviewing future out-of-stream needs, and evaluating instream flow needs based on accepted methods (Tennant method and Wetted-width method).
- Recommendations on establishing minimum instream flows – flow values derived from the instream flow methods were compared to the hydrology characteristics to determine

appropriate range of flows for aquatic habitat consistent with seasonally available flows for the stream of interest.

The Planning Unit has developed a general framework for instream flow management based on findings from the Instream Flow Needs Assessment (Golder, October 2006) and discussions among Planning Unit members and Ecology. The framework is based on developing an "instream flow package" for each of the management areas where an instream flow assessment was conducted, namely for Cow/Rock Creek, Palouse River mainstem (Central/Lower Palouse), and North Fork Palouse River.

At the time of this Plan, no specific recommendations for adoption into rule have been developed because the Planning Unit needed additional information before committing to a final instream flow package(s). However, the Planning Unit has accepted working policies to guide the development of the instream flow packages as summarized in Section 5. In addition, Section 6 includes management area-specific recommendations to continue working on the recommendations under Phase IV (implementation phase) of the process. This assumes that the legislature will continue to fund watershed planning and Ecology will continue to have the staff and resources to support the Planning Unit. A letter summarizing the outcomes of the WRIA 34 Instream flow working session held with the Planning Unit on November, 2006 is provided in Appendix C. A statement of community need was prepared and is presented in Section 6.

Phase II – Level 2 Water Quality Assessment

The purpose of the Level 2 Water Quality Assessment is to provide the Planning Unit with baseline information to support development of water quality plans and policies. Water quality issues in the basin are related primarily to development of TMDLs (namely fecal coliform bacteria and temperature), sediment loading and water quality issues related to ASR applications (groundwater-surface water mixing and treatment requirements). The Water Quality Assessment was submitted to the Planning Unit in March 2007 (Golder, 2007).

The water quality assessment is comprised of six parts:

- Summary of the legally established characteristic uses of the non-marine water bodies in WRIA 34.
- Evaluation of the compatibility of surface water quality with groundwater quality for potential use in aquifer storage and recovery (ASR).
- Evaluation of the system potential vegetation in the South Fork Palouse watershed.
- Description of the water quality trading policies and their potential for applications within WRIA 34.
- Develop recommendations for monitoring actions to implement water quality improvements, and determine whether actions to implement improvements in water quality are sufficient to achieve compliance with water quality standards.

The review of beneficial uses provides general context for the water quality issues in the basin and helps evaluate the appropriateness of the State water quality standards in local streams. This component was especially important because of the bi-state nature of the management area. Water quality use designations and numeric water quality standards between Washington and

Idaho were reviewed. This part also reviews legislation affecting water quality including status of the TMDL programs in each state.

The water quality compatibility review provides information for the potential development of ASR to meet potable supply demand and to offset groundwater use. Specifically, evaluations were completed for: (i) the effect of mixing ground water and surface water on recovered water, including an assessment of compliance with federal drinking water standards; and (ii) potential for screen clogging during recharge and recovery due to mineral precipitations reactions. The following is a summary of the findings from the water quality compatibility review:

- Mixing of surface water from the Palouse River and Paradise Creek with ground water from the basalt aquifers is predicted to result in precipitation of few mineral phases (iron mineral).
- Mixing model indicates the iron and manganese may exceed EPA secondary drinking water standards in recovered water.
- Available water quality data indicates temporal and spatial variability in water quality, which was not evaluated.
- Generalized assessment did not reveal significant water quality limitations to the feasibility of ASR using either the Palouse River or Paradise Creek as source water and using either the Grande Ronde or Wanapum aquifers as receiving aquifers.

The system potential vegetation study provides information for use in developing the TMDL for the South Fork Palouse River. This input along with many other measurements and determinations will yield the target water temperature for the TMDL, referred to as system potential temperature. The Planning Unit believes that the State water quality standard for temperature is not achievable due to local background conditions. Therefore, the Planning Unit commissioned the system potential vegetation study to have the greatest impact on the development of the temperature TMDL. Several studies were researched to evaluate the background riparian vegetation. Generally, the literature review combined with the soil survey suggest that woody vegetation and grasses were found along the majority of the mainstem stream areas as natural vegetation in riparian areas in the South Fork Palouse River. However, the assessment could not discern the density of the woody vegetation.

The review of water quality trading was general in nature and included an overview of the benefits and constraints to water quality trading, current policies and guidance for trading, and a review of several case studies where water quality trading has been implemented. Several recommendations were made with respect to moving forward in water quality trading for WRIA 34 (see Section 5). The conclusion is that while there are project proponents, it is uncertain what the overall level of stakeholder readiness is for the process of developing a water quality trading program in WRIA 34 at present. A third party organization would need to be identified to manage the framework and infrastructure of such a program.

In general, the monitoring actions are related to supporting the development of TMDLs, characterizing sediment sources and loads, and stream flow monitoring (also supports the instream flow management actions). The assessment provided a list of near-term and long-term data needs to support the characterization of water quality issues in WRIA 34. Specific water quality monitoring actions are described in Section 6 (Tables 6-1 to 6-4).

Phase II – Level 2 Multi-Purpose Storage Assessment

The purpose of the Level 2 Multi-purpose Storage Assessment is to identify potential site locations for storage projects to assist in satisfying minimum instream flows to improve water supply reliability, enhance baseflows and improve water quality. The Multi-Purpose Storage assessment was submitted to the Planning Unit in November 2006.

The assessment is comprised of the following parts:

- Overview of storage alternatives – a general review of different storage types (including surface storage and ground water storage) for consideration in WRIA 34. Areas of review included design considerations, regulations and permitting, planning level costs, and implementation.
- Inventory of public water system storage – finished water storage owned and operated by the communities in WRIA 34.
- Review of sources and beneficial uses for stored water – a general overview of potential sources of water for storage and the types of uses for stored water.
- Suggested storage strategies fore WRIA 34 (divided into Western Palouse and Eastern Palouse options).

An initial evaluation of general storage alternatives was presented to the Planning Unit in August 2005. Following discussions on the storage options, the Planning Unit decided to conduct more detailed assessments of storage options for the Cow Creek Subbasin and the North and South Fork Palouse Subbasins.

The list of storage concepts reviewed (Golder, 2006a) includes:

- Enhancing existing surface water storage in reservoirs and/or lakes;
- Enhancing baseflows by the use of balancing basins, floodplain storage, wetland restoration and small check dams;
- Enhancing baseflows by infiltrating shallow groundwater withdrawn during the winter months in locations that will result in return flows to streams during summer months;
- Enhance baseflows and aquifer recharge by infiltrating available reclaimed water;
- Enhance natural recharge for long term regional aquifer level recovery; and
- Implement aquifer storage and recovery (ASR) to meet potable supply demand and to offset groundwater use.

Storage options in the Cow Creek management area were identified by the Planning Unit as a way to potentially address the lack of instream flow to meet adjudicated water rights in Cow Creek. The primary approaches considered were: (i) optimize existing adjudicated storage facilities; and (ii) provide for additional storage in Sprague Lake. Specific actions related to these primary storage options in the Cow Creek management area are described in Section 6 (Table 6-1).

Storage options in the North Fork and South Fork Palouse management areas were identified as a way to potentially address the water supply needs (resulting from significant groundwater declines in the basalt aquifer) for the major communities in the area. The primary storage

options considered were: (i) aquifer recharge to recover aquifer levels over the long-term using enhanced surface infiltration; and (ii) ASR to meet water demand and offset groundwater use. Specific actions related to these primary storage options in the North and South Fork Palouse management areas are described in Section 6 (Tables 6-4 and 6-5).

Section 3
Key Planning Issues

This section summarizes available information on the key planning issues and parameters identified for WRIA 34 and the greater Palouse River watershed: water quantity, water quality, aquatic habitat and instream flow. A broad basin-wide overview is provided, followed by a synopsis of information and issues by implementation area. Although there are some variations between subbasins, many of the issues identified affect more than one of the subbasins. The Palouse River basin encompasses portions of Idaho and Washington, with the Washington portion of the watershed comprising WRIA 34. Additional detail can be found in the Phase II Level 1 Technical Assessment for the Palouse Basin (WRIA 34) (Golder 2005), the Palouse Subbasin Management Plan (Resource Planning Unlimited 2005), and other referenced planning documents and studies.

3.1 Palouse Basin Overview

The Palouse River originates in the mountains northeast of Moscow, Idaho, and flows 124 miles in a westerly direction, entering eastern Washington just east of the City of Palouse, before joining the Snake River (see Exhibit 3-1). The Palouse River includes over 398 miles of streams and tributaries; these tributaries drain over 2.1 million acres in Washington and Idaho. The Washington portion of the watershed, primarily Whitman County, with portions of Adams County to the west, Lincoln County to the northwest, and Spokane County to the north, encompasses about 83 percent of the basin. In Idaho, the Palouse River watershed is primarily within Latah County.

The main tributaries of the Palouse River include its North and South Forks, Rebel Flat Creek, Rock Creek, Pine Creek, Union Flat Creek and Cow Creek. However, the amount of runoff from each of these subbasins is not proportional to their size, e.g. the North Fork Palouse River drains 15% of the Basin, but provides 41% of the flow to the Palouse River (at Hooper), while the Cow Creek Subbasin drains 20% of the land area but yields only 7% of the mean annual flow (USDA, 1978). The Palouse River and its main tributaries flow freely, with no major man-made impoundments.

Six miles before its confluence with the Snake River, the Palouse River drops precipitously over the Palouse Falls, falling approximately 185 feet. The Palouse Falls are a natural barrier to fish passage, isolating the upper reaches of the Palouse River from the anadromous salmonids and other aquatic life in the Snake River system. There are no ESA-listed salmonids or other listed aquatic species above the Palouse Falls.

The eastern portion of the watershed in Idaho is characterized by high mountains and deep intermountain valleys, with forested slopes and ridges. Generally, the slopes facing south and west are gentle, while slopes facing north and east are steeper. The eastern intermountain valleys are typically composed of alluvial deposits. Moving east to west as the river crosses from Idaho

into Washington, the central part of the basin has a rolling topography composed primarily of basalt covered with loess (old deposits of wind-blown silt). The far western portion of the basin encompasses the Cow Creek and Rock Creek subbasins, and is part of an area known as the Channeled Scablands. The Channeled Scablands were shaped by massive floods over the past 1 million years, with the most recent occurring approximately 12,000 years ago, which left behind exposed channels of the underlying basalt amongst islands of loess.

The eastern mountains receive as much as 50 inches of precipitation annually, with 60 to 70 % of the precipitation falling as snow. The drier western part of the basin may receive as low as 10 inches of precipitation annually. Precipitation is light during summer, increasing in fall to peak during the winter months. Average flows near the mouth of the Palouse River range from 1,800 cfs in March to 300 cfs in August (not including Cow Creek, which enters just downstream of the gauging station.)

Major land uses in the basin are dryland agriculture (67% of the land area), rangeland (26%), and forested areas (6%) (see Exhibit 3-2) Urban development makes up less than 1% of the basin. Most livestock grazing occurs in the westernmost portion of the basin, within the Channeled Scablands. There are two cities with populations over 10,000 (Moscow, Idaho, and Pullman, Washington), one city with a population over 3,000 (Colfax, Washington), and almost two dozen smaller towns and communities. Agricultural use of water from the Palouse River is limited to supplemental irrigation of hay, pasture, and some grains on lands adjacent to the River and its tributaries, occupying less than 1 % of the basin.

The Palouse River basin has 42 lakes (e.g. lakes containing water throughout the year). In addition, there are numerous seasonal lakes and potholes that dry up during the late summer. Most of the natural lakes occur in the Cow Creek and Rock Creek subbasins. Many of the lakes are natural depressions with basalt bottoms and no outlets. Many of the lakes have managed recreational fisheries.

Groundwater provides most of the basins consumptive water supply, with groundwater pumped from two basalt aquifer systems. Municipal drinking water is generally drawn from the deeper Grande Ronde aquifer. The shallow Wanapum (Priest Rapids and Rosa) aquifer is the primary water source for rural residents, particularly in the eastern portion of the basin. As groundwater withdrawals have increased to meet demands, declining Grande Ronde aquifer levels have been recorded at rates of 1-2 feet per year in some areas (Hashmi, 1995).

Groundwater in the Palouse is generally of good quality. Nitrates have been detected, but are below the EPA maximum contaminant level (MCL) of 10 mg/L in 94% of wells (USGS, 1995). Genesee/Cow Creek, Idaho has been identified as one of 25 top nitrate areas of concern for the state, with 66% of wells sampled greater than 5 mg/L (Mahler 2002). Some nitrate contamination of groundwater has also been identified along the western boundaries of WRIA 34 in Adams County. A Columbia basin Groundwater Management Area (GWMA) has been established for Adams, Franklin and Grant counties west of WRIA34. A GWMA plan has been developed to address nitrates concerns (Kennedy/Jenks, 2001).

(Insert Exhibit 3-1)

(Insert Exhibit 3-2)

Soil erosion resulting from storm water runoff has been a continuing problem throughout WRIA 34 since natural vegetative cover was converted for agricultural purposes over 100 years ago. Crop production, primarily "dry" wheat farming, is the primary economic agricultural activity. An estimated 40% of the topsoil in the Palouse has been lost to erosion during this time (Pimentel, et al., 1995). A variety of efforts are currently underway through local and other programs to address these concerns.

Existing conditions in individual management areas are described in the following subsections 3.2 through 3.5.

3.2 Cow/Rock Creek Management Area

Cow and Rock Creeks are two adjacent subbasins on the western portion of the watershed, each discharging directly into the Palouse River mainstem. Cow and Rock Creeks encompass most of the Channeled Scablands within WRIA 34, as well as most of the existing lakes and wetlands within WRIA 34. These two subbasins share several similarities in conditions, land use and cover types and water resources issues, and are therefore joined together as a management area. The Cow/Rock Creek implementation area is shown in Exhibit 3-3.

The Cow Creek Subbasin comprises the westernmost portion of the Palouse Basin. It encompasses approximately 473,000 acres along the western boundary between WRIA 34 and WRIA 43 (Crab Creek), or approximately 20% of the basin. The upper Cow Creek subbasin includes a confined finger-like area between Medical Lake and Cheney, and shares a watershed boundary with the Latah (Hangman) watershed (WRIA 56). Cow Creek drains from Medical Lake and Cheney through a series of lakes and streams to Sprague and then south to its confluence with the Palouse River mainstem at Hooper Junction. This subbasin includes Turnbull, Silver, Amber, Fishtrap, Hog Canyon, Badger, Williams, Downs, Sprague, Hallin, Cow and Finnell lakes as well as the communities of Sprague and Benge, and a portion of Turnbull National Wildlife Refuge. The adjacent Rock Creek subbasin encompasses 224,141 acres, or 12.1 % of the land area in WRIA 34. (Note that the subbasins of Pine Creek and Cottonwood Creek – both tributary to Rock Creek - are not included herein; they are addressed as part of the Central/Lower Palouse management area.) Most of the readily available data is specific to Cow Creek; however, the resulting planning issues and suggested management approaches are considered applicable to both Cow and Rock creek subbasins.

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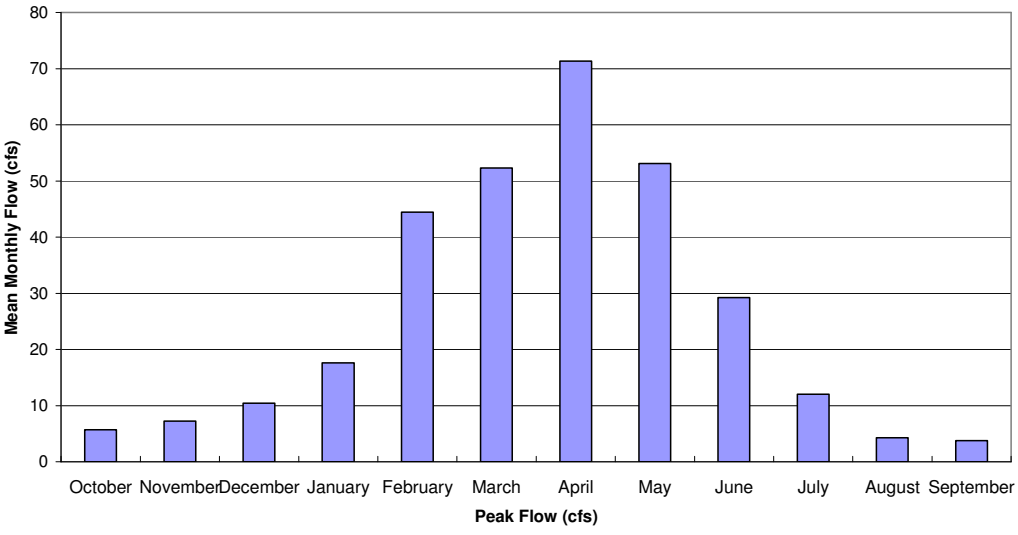
(Exhibit 3-3)

3.2.1 Water Quantity

Characterization

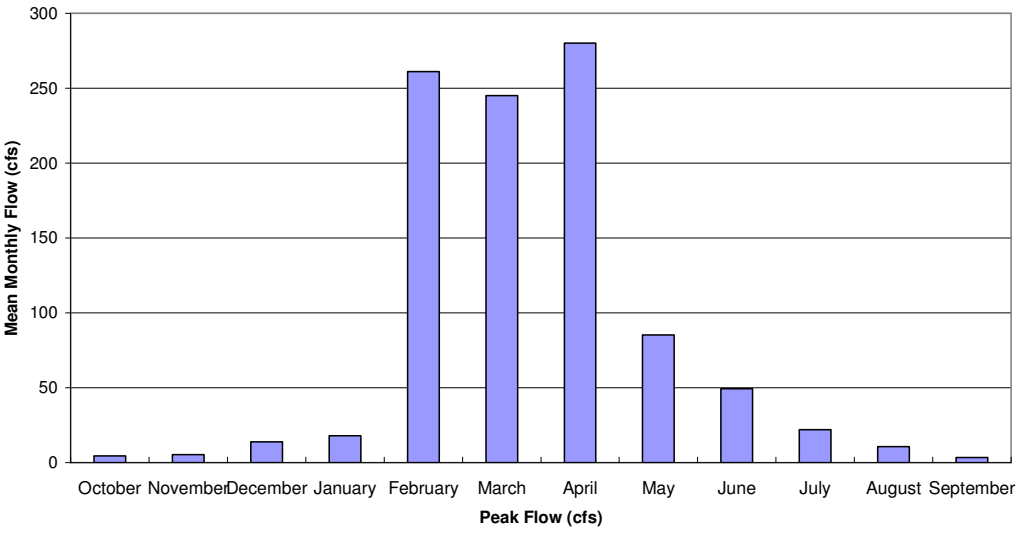
On average, Cow Creek contributes an estimated 7% of the total flow of the Palouse River from an area encompassing approximately 20% of the land mass of the Palouse Basin. However from 2002 to 2005, surface flow in Cow Creek at Hooper has only existed seasonally as a result of drought conditions (Adams CD 2005). Flow conditions improved in 2006 and 2007.

The subbasin is largely undeveloped and rural; over 50 % of the subbasin has a land cover type of "shrub steppe". There is a large acreage classified as "open-water" (over 7,600 acres), reflecting the numerous lakes and ponds in the subbasin. In addition, there are over 7,400 acres of wetlands. There are some developed areas within the subbasin along the I-90 corridor near Sprague and Cheney, and on the outskirts of Cheney. Communities of Sprague and Medical Lake are within the subbasin, Cheney is not. Turnbull Wildlife Refuge is within the Cow Creek subbasin, as well. The refuge covers over 12,800 acres of wetland habitat. Overall, the subbasin contains an extensive complex of drained (2,925 acres) and active (22,377 acres) wetlands. There are also several lakes with inlets and outlets, including Sprague Lake (approximately 2,000 acres), Cow Lake, Hallin Lake, and Finnell Lake. Natural baseflows in Cow Creek are low during summer months, and some areas of Cow Creek can go dry (Adams Conservation District, 2000). Exhibit 3-4 shows the mean monthly flow in Cow Creek at Hooper, Washington.



Legend	Exhibit 3-4:
POR: 1951-1953 & 1962-1970	**Cow Creek at Hooper (USGS gage 13352500)** **Mean Monthly Flow** Figure 3-7v from Palouse Phase II/Level 1 Assessment

The Rock Creek subbasin is also largely undeveloped and rural, with almost 38 % of the subbasin classified as "shrub steppe". There is also a large acreage classified as "open-water" (over 4,431 acres), reflecting the many lakes and ponds in the subbasin. Rock Lake (approximately 2,190 acres), Chapman and Bonnie Lakes are prominent surface water bodies. In addition, there are over 1,324 acres of wetlands. Agriculture is a predominant land use. There are few developed areas within the subbasin. Approximately half of the Turnbull Wildlife Refuge is located in the Rock Creek subbasin (that portion east of the Cheney-Plaza Highway). Turnbull is the headwaters of the Rock Creek subbasin. Earthen levees on Rock Creek east of the Turnbull National Refuge Area serve to control flooding and help maintain flows to Stubblefield Lake (a unique playa lake) on the refuge. Exhibit 3-5 shows the mean monthly flow in Rock Creek at Ewan, Washington.



Legend

POR: 1914-1917

Exhibit 3-5:
Rock Creek at Ewan (USGS gage 13349500) Mean Monthly Flow
Figure 3-7r fromPalouse Phase II/Level 1 Assessment

Many of the Cow/Rock surface waters and wetlands are connected to shallow gravel beds. The hydraulic role of these gravel beds is uncertain although they appear to provide a storage function; the gravel beds act as lakes during wet years and appear to divert water during dry years.

Ground water levels are declining in the deeper aquifers, which provide most of the water supply for municipal, domestic and agricultural irrigation use. Recharge of the aquifers was estimated at 2.3 inches per year pre-development; with current recharge rates estimated at 2.1 inches per year (Golder 2005).

Water Rights

Water rights in the Cow/Rock subbasin are summarized in Table 3-1.

Table 3-1
Cow/Rock Water Rights
(AF/year)

Water Rights	Cow Creek	Rock Creek
Groundwater Qa		
Application	20,835	4,050
Rights and Claims	48,357	9,168
Surface Water Qa		
Applications	8,352	1
Rights and Claims	11,632	208,661

Surface water claims in the Cow Creek subbasin were adjudicated in 1984 (State of Washington v. Bar U Ranch), leaving virtually no surface water allocation that has not been adjudicated within the subbasin. A total of 8,456 ac-ft/year were allocated in the adjudication.

Surface water resources in both Cow and Rock Creek subbasins appear to be fully committed between non-agricultural and agricultural withdrawals. Groundwater in the Cow Creek subbasin is supplying approximately 40% of the existing agricultural use water rights and 13% of the non-agricultural use water rights in WRIA 34 (excluding claims). The Level 1 Assessment (Golder 2005) concluded that the existing water withdrawals are contributing to the reduction in stream flows, and that setting instream flows would limit, and possibly eliminate, future additional consumptive use in the watershed. Water storage has been identified as a potential means to support current and future consumptive use, as low conditions limit exercise of existing water rights.

One issue has been identified regarding the regulation (e.g. storage rights and regulation of flows) of Sprague Lake. The Cow Creek Adjudication requires a minimum stockwater flow of .5 cfs in Cow Creek from its intersection with Danekas Road to Hallin Lake; and a minimum stockwater flow of 1.0 cfs in Cow Creek from the outlet of Cow Lake to its confluence with the Palouse River (Adams County Superior Court 1984). In 1993, the Adams County Superior Court noted the impoundment level of Sprague Lake be 1877.3 feet above mean sea level (MSL), subject to another right for the lake not to exceed 1878.6 feet above MSL and that the private dam on Sprague Lake shall release a minimum flow to Cow Creek of .5 cfs to satisfy the downstream stockwater right at all times that water reaches the face of the dam. According to the Court, the stock water right has an 1868 priority date (Adams County Superior Court 1993). This, in effect, sets a default instream flow requirement for upper Cow Creek, and creates some ambiguities regarding management of lake levels.

Projected Demand

There are no significant increases anticipated in water demands within the Cow/Rock subbasins. Population growth, the primary cause of increased municipal/domestic demands within WRIA 34, is anticipated to largely occur in the existing population centers, largely bypassing the Cow/Rock subbasin. Medical Lake is anticipated to experience slight growth, resulting in an increased water demand of 103 acre feet per year by the year 2025. Agriculture demand is expected to remain stable.

3.2.2 Water Quality

Primary surface water quality parameters of concern include nutrients, suspended sediment, high water temperature, fecal coliform bacteria, and low dissolved oxygen. Eutrophication of lakes in the Cow/Rock subbasin portion of the WRIA due to elevated nutrient inputs has been identified as a concern (Adams Conservation District, 2000). Several of the lakes have also been identified as having problems with sediment (USDA 1978). Cow Creek is listed in the State's 2002-2004 303(d) list of waterbodies not meeting state standards for dissolved oxygen, fecal coliform bacteria, and temperature. Rock Creek was listed on the State's 1998 list of 303(d) waterbodies for exceeding state standards for temperature and pH, but is not listed in the 2002-2004 lists. In addition, Silver Lake is listed on the State's 2002-2004 303(d) list for total PCBs and 2,3,7,8-TCDD, based on Brown trout tissue samples. Sprague Lake is listed on the State's 2002-2004 list for 2,3,7,8-TCDD based on Rainbow trout, walleye, and channel catfish tissue samples; and for PCBs based on channel catfish tissue samples.

The discharge from Sprague Lake into Cow Creek at the Danekas Road bridge continues to exhibit levels of phosphorous, ammonia, and fecal coliform bacteria that consistently exceed standards, although livestock have been excluded from access to this area for more than a decade. Indications are that nutrient and bacteria levels are the result of wildlife or human influence and are the focus of continued study.

Primary threats to ground water quality are failing rural septic systems and agriculture (Palouse-Clearwater Environmental Institute, 1993; Turney, 1986). The potential for contamination from failing septic systems has not been quantified, although this issue is being addressed for newer construction through the Whitman County On-Site Sewage Disposal Permit that has been regularly enforced since the late 1980s (Palouse Conservation District, 2002a. In addition, some recent studies have shown an increase in nitrate concentrations in Adams County, as 25 % of Class B public supply wells exceeded the 10 mg/L nitrate MCL (Williamson et al., 1998). A portion of the Cow Creek subbasin is within Adams County, and could be affected.

3.2.3 Aquatic Habitat

Aquatic habitat use within Cow/Rock is primarily defined by managed fisheries within some of the lakes. Rainbow trout have been stocked in Sprague Lake, Chapman Lake, Rock Lake, and other lowland lakes. Golder (2005) reports that Kokanee (land-locked sockeye salmon) are annually stocked by the Washington Department of Fish and Wildlife (WDFW) into Chapman Lake, and are found downstream as far as Rock Lake. The Kokanee have been observed

spawning in Chapman Lake. Various warm water fish species have also been stocked in Chapman Lake, Rock Lake, and Sprague Lake, many of them likely illegally placed by anglers. WDFW manages Sprague Lake as a mixed species fishery, and continues to stock it with warm water game fish, including crappie, largemouth bass, smallmouth bass, bluegill, walleye, and channel catfish. Carp and various species of catfish also are found in many of the lakes.

Many of the lakes in this subbasin are shallow, relatively high in nutrients, and have high levels of turbidity in the summer, leading to eutrophic conditions and elevated water temperatures. Trout and other cold water fisheries are limited by lack of suitable habitat conditions and adequate zooplankton production outside of Chapman Lake. Basalt shorelines limit suitable spawning areas.

Fish habitat in Cow Creek and Rock Creek is limited by poor water quality, low flows and high summer water temperatures (Adams Conservation District, 2000).

3.2.4 Instream Flow

Cow Creek experiences seasonal low flows as shown in Exhibits 3-4 and 3-5. Some areas of Cow Creek can even go dry. An instream flow study was conducted for Cow Creek and findings are summarized in Section 2.4.2 and Appendix A.

The 1984 surface water rights adjudication, in effect, sets a default instream flow requirement for upper Cow Creek, and creates some ambiguities regarding management of lake levels within the Turnbull Wildlife Refuge.

3.2.5 Baseline Conservation

Multiple projects to protect, enhance, or restore riparian habitat and instream flows have already been completed in the Cow Creek watershed. Many of these projects were accomplished through the support of the Adams Conservation District, Ecology and local landowners. The four primary types of projects are:

- Exclusion fencing
- Off-site water storage for stock watering
- Alteration of direct surface water access to groundwater supply for livestock
- Restoration of riparian areas

The installation of exclusion fencing along Cow Creek has excluded livestock from grazing within the riparian area. Where this exclusion fencing exists, new riparian growth has, or is expected to provide stream shading, supply woody debris for fish habitat, protect the stream banks from erosion, and reduce downstream sedimentation. In some cases, riparian areas have been replanted to speed the benefits to aquatic habitats. Where livestock have been excluded from riparian forage, paddocks and confined crossings were also created to better support the livestock industry.

Excluding livestock from direct surface water access also cuts off the livestock water supply. To counter this, off-site watering systems, or water storage tanks, have been constructed utilizing wells to provide alternate sources of livestock watering.

Federal conservation programs through USDA are also being implemented.

3.3 Central/Lower Palouse River Management Area

At Colfax, the river the North Fork and South Fork Palouse Rivers merge to form the mainstem Palouse. The Central/Lower Palouse River management area encompasses the mainstem Palouse River from Colfax, Washington, to its mouth at the Snake River. A flood control project constructed in 1965 channelized the Palouse River through the City of Colfax. The project includes 3,740 feet of concrete-lined channel, 4,910 feet of revetted channel, and 2,330 feet of unrevetted channel. From an elevation of 1965 feet in Colfax, the Palouse River drops to 550 feet over the course of its 90-mile journey to the Snake River, including the 185-foot drop of the Palouse Falls. Most of this subbasin is located within Washington, with a small portion also in Idaho, and drains 15% of the land area in the Palouse Basin. This reach of the mainstem Palouse River drains approximately 394,592 acres. The Palouse Falls, approximately six miles from the mouth of the river, form a natural barrier to fish passage. The Central/Lower Palouse River management area also includes the subbasins of the Union Flat Creek, Pine Creek, and Cottonwood Creek (see Exhibit 3-6).

The Union Flat Creek subbasin stretches from the Palouse hills of Idaho in a narrow band to its confluence with the mainstem Palouse River a few miles northeast of Hooper, Washington. This subbasin drains approximately 203,466 acres of primarily agricultural land, including the area surrounding Colton (WA), Uniontown (WA), and Genesee (ID). Union Flat Creek mostly lies within Washington, with a small portion of Union Flat and several of its tributaries reaching into Idaho (Palouse Conservation District, 2001).

Pine and Cottonwood Creeks discharge into Rock Creek to the north, draining 228,020 and 88,324 acres respectively. The Pine Creek subbasin extends into Idaho. Although these two subbasins are connected to Rock Creek, they are included within the Central/Lower Palouse management area because they share similar land use characteristics with the mainstem Palouse River and Union Flat Creek subbasins.

Table 3-2 shows some of the major types of land cover within these subbasins. Dryland agriculture is the primary land uses in all of the subbasins within this management area, with some livestock grazing.

(Exhibit 3-6)

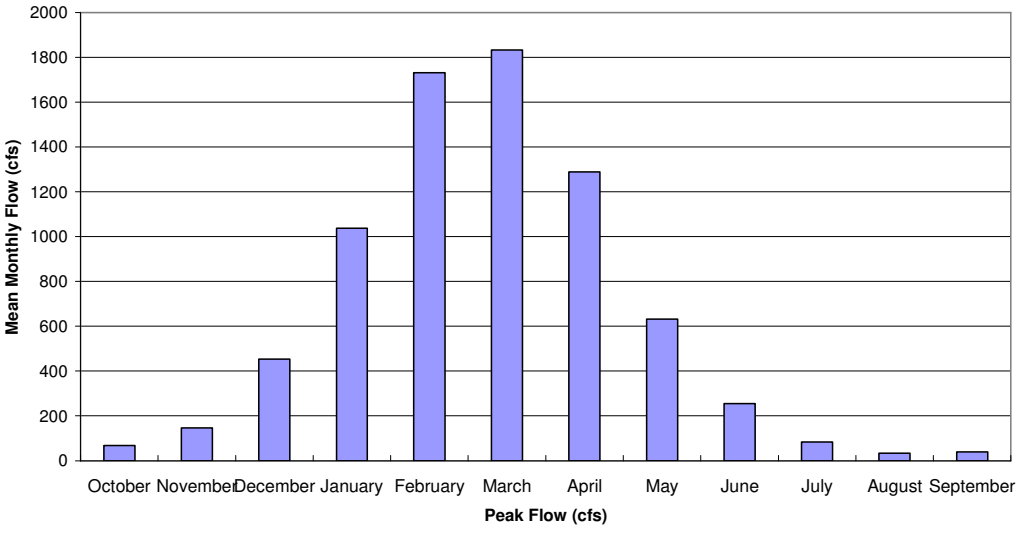
Table 3-2 Major Types of Land Cover in the Central/Lower Palouse Management Area (acres)				
Land Cover Type	**Palouse River mainstem**	**Union Flat Creek**	**Pine Creek**	**Cottonwood Creek**
Low Intensity Residential	313	325	695	185
Commercial/Industrial/Transportation	1,986	1,045	2,575	698
Forest[1]	323	73	3,040	53
Shrub Steppe	115,732	16,197	7,823	2,075
Grasslands/Herbaceous	13,100	1,362	3,055	402
Pasture/Hay	5,144	96	47	361
Dryland Agriculture	255,801	184,174	210,687	84,542
Wetlands[2]	309	2	8	1
Open Water	1,784	119	81	5
TOTAL	394,492	203,393	228,011	88,322
[1] Forest combines evergreen, deciduous, and mixed forest land cover categories				
[2] Wetlands combines woody and emergent herbaceous wetland categories				

3.3.1 Water Quantity

Characterization

There are no major urban areas in this management area, although there are several small communities within the subbasins, including Endicott, Colton, Uniontown, St. John, Oakesdale, Malden, Rosalia, Fairfield, Latah, Genesee and others. Many of these communities operate small public water supply systems. The shallow Wanapum Aquifer is the primary water supply for rural residents in the management area.

Surface water resources are not regularly utilized to meet water needs, although there is some small scale irrigation and livestock watering. Flow in the mainstem Palouse river is dependent upon flows in the North Fork and South Fork rivers. The North Fork Palouse River provides approximately 83% of the flow in the mainstem river at Colfax, and approximately 41% of the flow at Hooper. Exhibit 3-7 shows the mean monthly flow in the mainstem Palouse River at Hooper.



Legend

POR: 1887-1916 & 1951-2002

Exhibit 3-7:
Palouse River at Hooper (USGS gage 13351000)
Mean Monthly Flow
Palouse Phase II/Level 1 Assessment
043-1664.1090

Water Rights

No specific water rights issues were identified for this management area.

Predicted Demand

There are no significant increases anticipated in water demands within the Central/Lower Palouse River subbasin. Population growth, the primary cause of increased municipal/domestic demands within WRIA 34, is anticipated to largely occur in the existing population centers, bypassing the Central/Lower Palouse management area. The City of Colfax is anticipated to experience slight growth, increasing water demand by 74 acre feet per year by the year 2025, which can be accommodated with existing water rights (Golder 2005). Agriculture demand is expected to remain stable.

3.3.2 Water Quality

Water quality concerns are primarily from non-point sources, including erosion, livestock, fertilizers, and septic systems, which contribute sediment, fecal coliforms, and nutrients. Unsightly foam has been observed recently on the mainstem Palouse; possible causes include elevated levels of detergents or organic matter. The frequency of this occurrence is not known. Elevated water temperatures resulting from degradation of riparian areas is also a concern throughout the management area. Washington's Department of Ecology has listed the following streams in its 303(d) listings of waterbodies exceeding State standards:

Table 3-3 303(d) Listed Water Bodies		
Streams	**1998 303(d) list**	**2002-2004 303(d) list**
Palouse River (including the North Fork Palouse River above Colfax)	Dissolved oxygen Fecal coliforms pH temperature heptachlor expoxide PCBs 4,4'-DDE Dieldrin	Dissolved oxygen Fecal coliforms pH temperature heptachlor expoxide PCBs 4,4'-DDE Dieldrin Alpha-
Union Flat Creek	Temperature	*Not listed*
Pine Creek	Dissolved oxygen Temperature	*Not listed*
Cottonwood Creek	*Not listed*	*Not listed*
Rebel Flat Creek	Dissolved oxygen Fecal coliforms	Dissolved oxygen Fecal coliforms

The headwaters of Union Flat Creek are listed by Idaho for exceeding state temperature standards (IDEQ 2004). Cow Creek, Idaho has a TMDL recently established for phosphorous (IDEQ 2005). Rebel Flat Creek flows into the mainstem Palouse River.

Ecology conducted a toxics study involving fish samples from the mainstem, North Fork and South Fork Palouse Rivers. The toxics study determined that Dieldrin and PCB levels still exceed WA State Water Quality Standards (derived from the National Toxics Rule) in the mainstem Palouse and South Fork Palouse Rivers in fish tissue. It should be noted that these levels are not high enough to trigger an advisory from the Department of Health regarding fish consumption and concentrations have been on a decreasing trend over the last 20 years or so.

Erosion and the resulting high sediment loads is a significant water quality concern in the Central/Lower Palouse management area, which experiences greater erosion than the eastern and western portions of the Palouse River basin. Sediment is a concern because of loss of topsoil, streambed siltation, and its transport of toxins, which is how sediment is typically addressed through a TMDL process. The central basin area has moderate precipitation rates (15-18 inches per year), and the primary land use is dryland agriculture. Common dryland agricultural practice is the use of a fallow year to help retain moisture. Leaving the land fallow without a cover crop every other year promotes erosion. Additionally, an estimated 50% of erosion within the area occurs from the steepest 25% of cropland (Steiner, 1987), recognizing this source is dated and improved agricultural land practices have likely reduced erosion in many areas of the basin, including steep slopes.

3.3.3 Aquatic Habitat

Resident fish species include rainbow trout, brown trout, smallmouth bass, sculpin, largescale sucker, northern squawfish, shiner perch & speckled dace (Cook, 2001). Trout can be found in the headwaters of the Palouse River, however fish numbers decline in lower elevations due to water quality and habitat degradation (Steiner, 1987). No anadromous fish species are found upstream of the natural barrier of Palouse Falls. Fish habitat in the lower Palouse River is limited by poor water quality, low flows and high summer water temperatures (Adams Conservation District, 2000).

3.3.4 Instream Flow

The mainstem Palouse River experiences seasonal low flows in late summer and early fall, as shown in Exhibit 3-7.

3.3.5 Baseline Conservation

Multiple projects to protect, enhance, or restore riparian habitat and improve water quality have been already been completed in this portion of the watershed. Many of these projects have been accomplished through the support of the several conservation districts and local landowners. The primary types of projects are:

- Planting of riparian vegetation
- Livestock management plans
- Conservation tillage.

Federal conservation programs through USDA are also being implemented.

3.4 North Fork Palouse River Management Area Characteristics

The North Fork Palouse River flows approximately 62 miles from its headwaters in Latah County, Idaho, to Colfax, Washington, where the North Fork and the South Fork Palouse Rivers merge to form the mainstem Palouse River. From the Washington-Idaho border to Colfax, the North Fork is approximately 34.3 miles long. Major tributaries to the North Fork Palouse River include Silver Creek, Cedar Creek, Duffield Creek, and Clear Creek (all but Clear Creek extend into Idaho) (see Exhibit 3-8). The North Fork Palouse River subbasin encompasses about 81,405 acres in Washington and 234,585 acres in Idaho; combined, the bi-state subbasin accounts for about 15% of the total Palouse River watershed.

The North Fork Palouse River Watershed Characterization (Resource Planning Unlimited 2002) identifies major land cover types within the bi-state subbasin as evergreen forest (125,621 acres) and agriculture (153,244 acres dryland, plus pasture). Most of the forested areas occur in Idaho. The subbasin includes 3,564 acres in residential, commercial and industrial land cover. There are 10,992 acres considered “shrub steppe”, and only 11 acres identified as wetlands. Open water

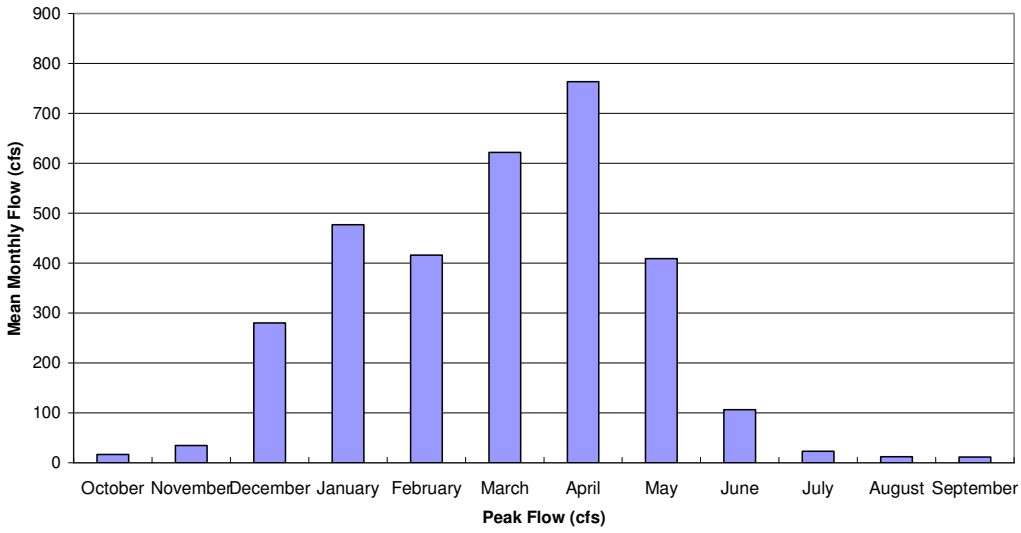
(Insert Exhibit 3-8)

(e.g. lakes and ponds) accounts for 471 acres of the subbasin. There are 15,109 acres considered "transitional:" lands which are between the forest and the agricultural lands. The Washington portion of the subbasin is primarily agricultural land (96%), with limited forest land (2%) and urban land (2%). Riparian and wetland areas are less than 1%, and streams are also less than 1% in Washington. Trans-boundary water management between Washington and Idaho is also an important consideration.

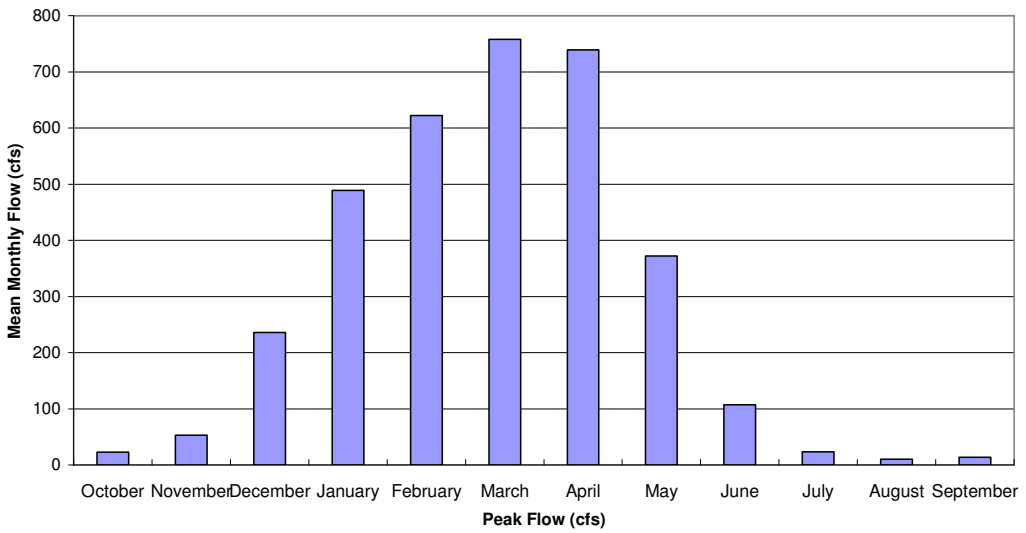
3.4.1 Water Quantity

Characterization

The North Fork Palouse River contributes about 83% of the mean annual flow of the Palouse River at Colfax, below the confluence with the South Fork. The average annual water yield is 188,000 acre feet per year. Exhibit 3-9 shows the mean monthly flow in the North Fork at the City of Palouse, and Exhibit 3-10 shows the mean monthly flow of the Palouse River at Colfax.



Legend	Exhibit 3-9:
POR: 1973-1980	**Palouse River at Palouse (USGS gage 13345300)** **Mean Monthly Flow** Figure 3-7b from Palouse Phase II/Level 1 Assessment



Legend	Exhibit 3-10:
POR: 1963-1973 & 1975-1979	**Palouse River at Colfax (USGS gage 13346100)** **Mean Monthly Flow** Figure 3-7d from Palouse Phase II/Level 1 Assessment

Stream channel alterations from land use and flood and drainage control projects have reduced seasonal water storage capacities within the North Fork subbasin, both in upland areas and riparian zones. The lower reaches of the North Fork Palouse River entering Colfax are confined to a concrete-lined channel, and many of the small tributaries in the subasin have been converted to drainage ditches

The North Fork management area is on the eastern margin of the Columbia Plateau basalt flows, and has a complex geology. Both deep and shallow aquifers have been used for water supply for many years. The shallow Wanapum Aquifer is the primary water supply for rural residents in the management area, while municipal well systems generally pump from the deeper aquifer, the Grande Ronde.

Water Rights

No specific water rights issues were identified for this management area.

Predicted Demand

There are no significant increases anticipated in water demands within the North Fork Palouse River subbasin. Population growth, the primary cause of increased municipal/domestic demands within WRIA 34, is anticipated to largely occur in the existing population centers, bypassing the North Fork. The City of Palouse is predicted to experience some slight growth, resulting in an

increase in water demand of 27 acre feet per year by the year 2025. Agriculture demand is expected to remain stable.

3.4.2 Water Quality

The North Fork was listed on Washington's 1998 and 2002-2004 303(d) lists as exceeding state standards for fecal coliform bacteria, pH, dissolved oxygen, and temperature. In 2000, the Palouse Conservation District initiated a watershed planning effort to address the fecal coliform bacteria problem, which occurs immediately upstream of the town of Palouse near the Idaho border. The Palouse CD conducted water quality monitoring and formed a local watershed committee to develop a water cleanup plan for fecal coliform bacteria. Ecology used the data from the monitoring and the implementation plan developed by the work group to write the final water cleanup plan (TMDL). The U.S. Environmental Protection Agency (EPA) approved the TMDL submittal report on March 2005. Ecology then developed an implementation plan, which was completed in June 2006. This plan expands on the recommendations in the TMDL submittal report. The implementation plan provides information on the activities various agencies and organizations will do to address the bacteria issue, when they plan on conducting these activities, and possible sources to help fund the activities (Ecology 2006).

Ecology conducted temperature studies on the North Fork Palouse River, using thermal infrared radiometry (TIR). TIR is performed by flying a helicopter over the streams to take thermal infrared photographs. This technology has previously been called Forward Looking Infrared Radiometery or FLIR. The flights took place on July 30 and 31, 2005. A final report, detailing the results of the flight, was issued in 2006 (Watershed Sciences).

Ecology studies of fish tissue samples from 1984 and 1994 found toxic compounds 4,4'-DDE, dieldrin, heptachlor epoxide, alpha-BHC, and PCB-1260 above human health criteria. Ecology recently completed an additional toxics study involving fish samples from the mainstem, North Fork, and South Fork Palouse Rivers. The toxics study determined that Dieldrin and PCB levels still exceed WA State Water Quality Standards (derived from the National Toxics Rule) in the mainstem Palouse and South Fork Palouse Rivers in fish tissue. It should be noted that these levels are not high enough to trigger an advisory from the Department of Health regarding fish consumption and concentrations have been on a decreasing trend over the last 20 years or so.

Additional water quality issues identified in the North Fork Palouse River (Resource Planning Unlimited 2002) include:

- Upland and instream soil erosion contributes substantial amounts of sediment.
- Livestock operations (winter-feeding) in close proximity to streams contribute nutrients and fecal coliforms.
- Substandard septic systems may contribute additional fecal coliforms and nutrients.

3.4.3 Aquatic Habitat

Agricultural and land use practices in the subbasin have resulted in degraded riparian areas and a loss of historic wetlands. Most of the wetlands are ephemeral, filled by flooding along streams

rather than ground water recharge. Elevated seasonal temperatures, sedimentation, and limited quantity and quality of pools and cover have led to general declines in fish populations. Water quality conditions in the North Fork also adversely affect aquatic habitat, including elevated water temperature, low dissolved oxygen conditions, elevated pH concentrations, high turbidity, and elevated levels of nutrients and pesticides (Cook 2001)

3.4.4 Instream Flow

The North Fork Palouse River experiences seasonal low flows in late summer and early fall, as shown in Exhibits 3-9 and 3-10. An instream flow study was conducted for the North Fork and findings are summarized in Section 2.4.2 and Appendix A.

3.4.5 Baseline Conservation

In addition to the watershed planning efforts sponsored by the Palouse CD for the North Fork Palouse River, the Palouse CD also has a tree and shrub planting program. The planting program focuses on riparian revegetation and buffer establishment. Approximately 15 miles of streambank have been revegetated within the past five years. Latah Soil and Water Conservation District (SWCD) is pursuing projects that support riparian restoration, rural road improvements, direct seeding and range/pasture improvements. Whitman CD also has conservation programs in place. Federal conservation programs through USDA are also being implemented.

3.5 South Fork Palouse River Management Area Characteristics

The South Fork Palouse River subbasin encompasses 188,736 acres in Washington and Idaho (about 9% of the Palouse basin), with 135,415 acres in Whitman County, Washington and 53,321 acres in Latah County, Idaho. The main stem of the South Fork is approximately 34 miles long. Major tributaries to the South Fork include Paradise Creek, Missouri Flat Creek, Four Mile Creek, and Spring Flat Creek (see Exhibit 3-11). The South Fork joins the North Fork at Colfax, Washington (river mile 89.6), where it forms the mainstem Palouse River. Trans-boundary water management issues between Washington and Idaho play a substantial role in this subbasin.

Although the predominant land use is agricultural, the subbasin includes both of the primary urban areas for the Palouse River basin (Pullman, Washington and Moscow, Idaho). Populations of the two urban areas vary seasonally due to the presence of two universities, Washington State at Pullman[1] and University of Idaho at Moscow. The 2002 South Fork Palouse River Watershed Characterization and Implementation Plan (Palouse Conservation District 2002) identifies 154,764 acres of agricultural land use, 15,100 acres of urban use and roadways, 11,324 acres of forestland, 3,774 acres of rangeland, and 3,774 acres of riparian/wetland. Approximately 50 percent of the agricultural lands are rated highly erosive by the NRCS (Roe 2001).

[1] WSU owns or controls nearly 50 percent of the land in the City of Pullman (City of Pullman, 1999).

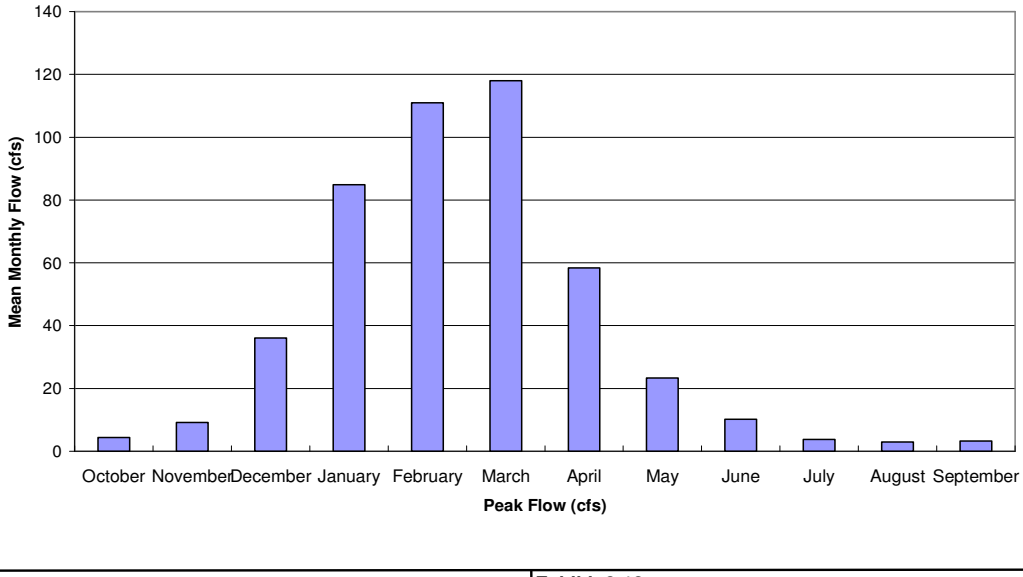
(Exhibit 3-11)

The City of Pullman and the area encompassing Washington State University sit at a critical juncture, where four creeks – Airport Creek, Paradise Creek, Missouri Flat Creek, and Dry Creek – converge into the South Fork Palouse River.

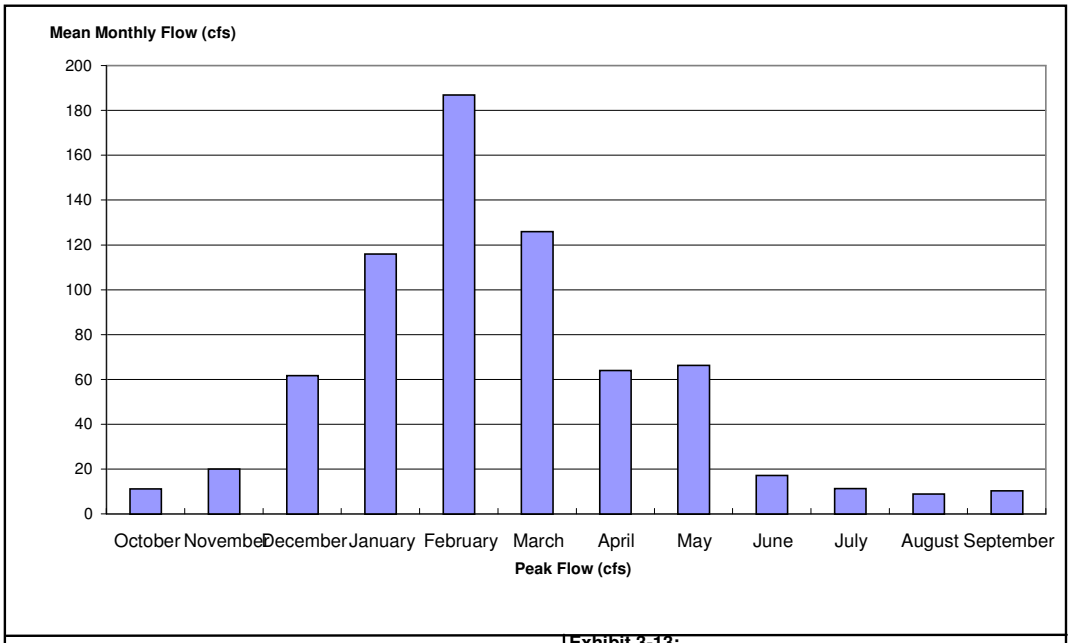
3.5.1 Water Quantity

Characterization

South Fork Palouse River streamflows, particularly summer flows, rely heavily on a combination of municipal wastewater discharges and groundwater discharges. Exhibit 3-12 shows the mean monthly flow of the South Fork at Pullman, and Exhibit 3-13 shows the mean monthly flow of the South Fork downstream at Colfax.



Legend	Exhibit 3-12:
POR: 1934-1942, 1960-1981 & 2001-2002	**S.F. Palouse River at Pullman (USGS gage 13348000)** **Mean Monthly Flow** Figure 3-7i from Palouse Phase II/Level 1 Assessment



Legend

POR:1993-1995

Exhibit 3-13:
S.F. Palouse River at Colfax (USGS gage 13349200)
Palouse Phase II/Level 1 Assessment
043-1064.1030

Municipal wastewater discharges contribute significantly to streamflows in Paradise Creek and the South Fork. The effluent from the City of Moscow WWTP contributes up to 90 percent of the total instream summer flow of Paradise Creek, which provides a significant portion of the summer flow in the South Fork Palouse River.

For the South Fork, the highest mean monthly flow at Pullman occurs in March (just under 120 cfs), with mean monthly flows typically less than 5 cfs from July through October. Downstream from Pullman, the instream summer flow in the South Fork is approximately 40 percent City of Moscow wastewater discharges and 60 percent City of Pullman wastewater discharges (Palouse Conservation District, 1997). Both the cities wastewater discharges are regulated by their respective National Pollutant Discharge Elimination System (NPDES) permits. The NPDES permits set limits on specific pollutant levels within the wastewater discharges and require monitoring and reporting of discharge water quality.

A key issue in the subbasin is the physical availability of ground water in the deep basalt aquifer system under the Pullman/Moscow urban area. The area is on the eastern margin of the Columbia Plateau basalt flows, and has a complex geology. Both deep and shallow aquifers have been used for water supply for many years. The shallow Wanapum Aquifer is the primary water supply for rural residents in the management area, while the municipal well systems generally pump from the deeper Grande Ronde aquifer. Hydrographs for wells in the City of Pullman show declines in the Grande Ronde aquifer of up to 65 feet between 1940 and 1980, with an average rate of decline of 1 to 1.5 feet per year. Total ground water recharge was estimated at 4.13 inches per year in the Pullman-Moscow area prior to development; current

recharge is estimated at 2.8 inches per year as described in the Level I Technical Assessment Report (Golder 2005). It is likely that some of this estimated recharge returns to streams and does not recharge basalt aquifers.

Water Rights

Overall, current municipal water rights on file with Ecology (and Idaho Department of Water Resources) in WRIA 34 exceed the projected demand for water in both the incorporated and unincorporated areas. Similarily, the current agricultural water rights on file exceed the projected demand for irrigation water.

The City of Pullman is exploring opportunities to reuse and/or reclaim their wastewaters prior to discharge to the South Fork; however, downstream surface water rights holders are concerned wastewater reuse could reduce their available water particularly during summer low flow periods. Downstream surface water rights were established based upon, in part, the city's wastewater treatment plant discharge. During summer low flow periods, as much as 60% of the instream flow originates with the City's wastewater return flows.

Predicted Demand

Municipal and domestic water use in the City of Pullman (not including Washington State University) is expected to increase from approximately 2800 acre feet per year in 2006 to 3900 acre feet per year in 2025 (HDR 2007). Water use by the Washington State University at Pullman is expected to increase from approximately 1450 in 2006 to 2000 acre feet per year in 2028 (Taylor 2007). No significant changes in agricultural water use are projected. The total acreage of irrigated and non-irrigated agriculture land is not expected to increase.

3.5.2 Water Quality

Elevated water temperatures are common in the summer (late May – mid September) for the South Fork Palouse River and Paradise Creek. Given the source of most of the instream flow in these streams is almost entirely discharges of treated municipal wastewater, meeting state water quality criteria for temperature in the South Fork Palouse River below Pullman is difficult. The problem of elevated water temperatures is further exacerbated by the loss of riparian vegetation along the South Fork and its tributaries due to land use practices. The combination of low flows and warmer water temperatures adversely affect other water quality parameters, including dissolved oxygen, stream pH, and algal growth.

The South Fork Palouse River was listed on Washington's 1998 303(d) list as exceeding state standards for fecal coliforms, pH, dissolved oxygen, temperature, and ammonia-N, and was listed again in 2002-2004 for exceeding state standards for dissolved oxygen, fecal coliforms, and temperature. Paradise Creek was listed on Washington's 1998 303(d) list for exceeding state standards for temperature, ammonia-N, fecal coliforms, and dissolved oxygen, and again in 2002-2004 for pH and fecal coliforms. In addition, Ecology studies of fish tissue samples from 1984 and 1994 found toxic compounds 4,4'-DDE, dieldrin, heptachlor epoxide, alpha-BHC, and PCB-1260 above human health criteria. Ecology recently completed an additional toxics study

involving fish samples from the mainstem, North Fork and South Fork Palouse Rivers. The toxics study determined that Dieldrin and PCB levels still exceed WA State Water Quality Standards (derived from the National Toxics Rule) in the mainstem Palouse and South Fork Palouse Rivers in fish tissue. It should be noted that these levels are not high enough to trigger an advisory from the Department of Health regarding fish consumption and concentrations have been on a decreasing trend over the last 20 years or so.

A TMDL for ammonia was developed for the South Fork in 1994. Ecology is planning on developing TMDLs for all 303(d) listings in the Palouse River basin, except toxics. TMDLs will be developed through studies addressing fecal coliform bacteria, dissolved oxygen, and pH; and temperature impairments.

Ecology is planning to address temperature problems in the Palouse River in 2006, and has initiated several background studies to assist in this effort. The local Palouse Watershed Planning Unit is also working with Ecology on the basin's water quality issues. A data collection effort is underway to ensure the most complete picture of the natural conditions of the streams is obtained. This work includes evaluating the natural streamside vegetation conditions and the influences groundwater has on the South Fork Palouse River and its tributaries.

A thermal infrared radiometery (TIR) study was also conducted for the South Fork Palouse River watershed. Ecology contracted with Watershed Sciences, Inc. to have a TIR study performed on the North and South Forks of the Palouse River and Paradise Creek. In addition, the City of Moscow, Idaho, had Watershed Sciences, Inc. conduct TIR on the Idaho portions of Paradise Creek and the South Fork Palouse River. TIR is performed by flying a helicopter over the streams to take thermal infrared photographs. This technology has previously been called Forward Looking Infrared Radiometery or FLIR. The flights took place in July 2005, and a final report, detailing the results of the flight was issued in 2006 (Watershed Sciences).

Ecology is also preparing to study pesticides, PCBs, and fecal coliform loadings in stormwater runoff from the City of Pullman. This pilot program, scheduled for 2006, will be used to facilitate TMDL development for the South Fork Palouse River.

See section 2.4.2 for additional information on surface water quality analysis that has been completed on the South Fork as part of watershed planning.

3.5.3 Aquatic Habitat

Most of the South Fork's subbasin riparian areas have been altered by land use, and the remaining riparian habitat is limited and of poor quality. Many small intermittent streams have been converted to drainage ditches, and the riparian vegetation removed. Tillage often occurs up to the edge of the ditch or property, leaving a limited buffer between the waterway and the cropland. Elevated water temperatures in the summer and increased nutrient and sediment loads can adversely affect aquatic habitat.

3.5.4 Instream Flow

The alteration of the landscape in the basin is reflected in changes in flow patterns and water quality. Changes in flow patterns include increased peak flows in winter and spring storm events, and lower sustained summer base flows. The increase in peak flows is partly caused by loss of storage within the riparian zone, leading to a reduction in infiltration, which in turn, lowers the sustained summer base flows. Several significant flood events have been documented in the City of Pullman. The most recent severe flood occurred in 1996, triggered by heavy rainfall on snow on frozen ground. Lower summer base flows also contribute to warmer water temperatures. During low flow summer periods, there is no sustained summer base flow in the South Fork. Downstream from Pullman, the instream summer flow in the South Fork is mainly composed of City of Moscow and City of Pullman wastewater discharges.

3.5.5 Baseline Conservation Efforts

In response to earlier Ecology studies of water quality in the South Fork, which showed elevated levels of ammonia, the City of Pullman upgraded their wastewater treatment plant to reduce ammonia in their permitted discharges to the South Fork River. The City of Moscow also worked to meet new discharge limits to ensure that the South Fork River met Washington state standards at the border. Since these upgrades have been completed, data show that water quality standards within the South Fork are being met for ammonia.

Multiple projects to protect, enhance, or restore riparian habitat and improve water quality have already been completed in this portion of the watershed. Many of these projects have been accomplished through the support of the Palouse Conservation District, Latah SWCD and local landowners. The primary types of projects are:

- Planting of riparian vegetation
- Livestock management plans
- Conservation tillage.

The Paradise Creek TMDL Implementation Plan for Idaho has resulted in riparian restoration, direct seeding, erosion control structures and forest road improvements. Federal conservation programs through USDA are also being implemented.

Section 4
General Strategies and Tools

Key planning issues for WRIA 34 have been identified in the areas of water supply, instream flow and water quality. General strategies or "tool sets" that can be used to address the key planning issues are discussed below, and specific tools (e.g. programs, projects, BMPs, regulations, etc) are described in detail in Appendix D. The strategies and tools include measures that can be implemented by the Planning Unit, federal, state, and local agencies, tribes, conservation districts, individual landowners, and other stakeholders and water users in addressing key planning issues. The inclusion of a specific strategy or tool herein is not intended as a recommendation for its use within WRIA 34, rather, it is provided here as a menu of some of the possible actions or strategies that are available to address key planning issues within the watershed. This listing of possible tools, while extensive, is by no means exhaustive, and the Planning Unit and other stakeholders may identify and select other means to address the key planning issues discussed within this Plan.

A listing of the tools is provided in Appendix D, presented in seven broad categories:

- Water conservation
- Water Storage
- Regulatory / administrative
- Water Quality
- Groundwater management
- Groundwater quality
- Monitoring

Tools within each of these categories may apply to one or more of the key planning issues; many tools can affect multiple planning issues. The Appendix is composed of seven tables identifying the specific tools within each category. Each table provides a description of the tool, the potential benefits normally expected with implementation of the tool, approximate cost range (e.g. low, medium, high), parties responsible for implementation, and other issues (e.g., social, legal, technical) that could be a factor when considering undertaking any of the listed strategies.

This section (and Appendix D) are designed to be used as a general reference for the Planning Unit and other stakeholders and individuals involved in watershed planning activities. The lists are not intended to be exhaustive, but rather to provide a range of options available when considering activities in each Management Area. As such, these strategies and tools are not specific to any of the Management Areas per se; the discussion of recommended strategies per Management Area is provided in Chapter 6.

4.1 Strategies & Tools for Water Supply Issues

Water supply issues arise when there is increased competition for water and a limited supply of the resource. Competition for water is increasing throughout Washington State as population and economic growth occurs and as regions prepare for anticipated future growth. Multiple demands include needs for municipal water, agricultural uses (e.g. irrigation and stock watering), recreation, and commercial/industrial use, and instream flows. Water supply tools are primarily intended to address the demand for water for human-related uses, such as municipal and irrigation use, but may also benefit instream flow. Tools identified under Instream Flow Strategies and Aquatic Habitat Strategies are primarily designed to benefit fish and natural habitats.

When addressing water quantity issues in a WRIA planning process, a number of strategies must be considered, including water conservation, water reuse, water reclamation and reuse, voluntary water transfers, aquifer recharge, additional water allocations, or additional water storage enhancements (Chapter 90.82 RCW).

An index to the strategies and tools that can be used to address water supply issues is provided in Table 4-1. These strategies and tools are described in detail with information on benefits, costs, implementing party, and related social and technical issues in Appendix D.

Table 4-1

Tools to Address Water Supply Issues

Conservation Tools	Water Storage Tools	Regulatory / Administration Tools	Monitoring Tools
■ Municipal-Consumer Demand Management Program for Residential, Business and Public Properties ■ Municipal-Operational Efficiency Management Program for Water Systems ■ Regional agricultural water conservation and irrigation efficiency strategies ■ On-farm agricultural water conservation and irrigation efficiency strategies ■ Industrial Conservation Measures ■ Water reuse facilities by wastewater facilities ■ On-site greywater segregation and use	■ Construct and operate new on-channel storage facilities ■ Raise and operate existing on-channel storage facilities ■ Construct and operate new off-channel storage facilities ■ Raise and operate existing off-channel storage facilities ■ Use existing storage facilities for additional beneficial uses ■ Construct and operate artificial recharge / aquifer storage projects ■ New riparian storage or farm field flood storage ■ New or modified riparian wetlands ■ Modification of existing sediment basins ■ Alternative source for irrigation ■ Direct stream augmentation ■ New water supply	■ Transfer existing water rights for out-of-stream uses to other out-of-stream beneficial uses ■ Transfer water through interties of public water systems or irrigation systems ■ Short-term or long-term allocation ■ Adjudication of water rights ■ Assignment of watermaster ■ Increase enforcement against illegal water use within a basin or subbasin ■ Evaluate existing water rights within a basin or subbasin (without an adjudication) ■ Adopt rules and/or regulations regarding wells ■ Extend public water systems services into areas served by exempt wells	■ Analyze baseline water conditions in the watershed ■ Monitor current water permitting system for the watershed ■ Monitor stored water levels ■ Monitor groundwater use ■ Monitor water meters ■ Monitor existing water rights ■ Analyze outstanding water rights applications on file with state water agency ■ Monitor conservation programs ■ Monitor irrigation efficiency projects

4.2 Strategies and Tools for Instream Flow Issues

The term "*instream flow*" is used to identify a specific stream flow (typically measured in cubic feet per second, or cfs) at a specific location for a defined time, and typically following seasonal variations. Instream flows are usually defined as the stream flow needed to protect and preserve instream resources and values, such as fish, wildlife and recreation.

An index to the strategies and tools that can be used to address instream flow issues is provided in Table 4-2. These strategies and tools are described in detail with information on benefits, costs, implementing party, and related social and technical issues in Appendix D.

Table 4-2

Tools to Address Instream Flow Issues

Conservation Tools	Water Storage Tools	Regulatory / Administration Tools	Monitoring Tools
■ Municipal – Consumer Demand Management Program for Residential, Business and Public Properties ■ Regional agricultural water conservation and irrigation efficiency strategies ■ On-farm agricultural water conservation and irrigation efficiency strategies ■ Industrial conservation measures ■ Water reuse facilities by wastewater utilities ■ On-site greywater segregation and use	■ Construct and operate new off-channel storage facilities ■ Raise and operate existing off-channel storage facilities ■ Use existing storage facilities for additional beneficial uses ■ Construct and operate artificial recharge / aquifer storage projects ■ New riparian storage or farm field flooding storage ■ Alternative source for irrigation ■ Direct stream augmentation ■ New water supply	■ Transfer existing water rights for out-of-stream uses to instream beneficial uses through Trust Water Right Program ■ Short-term or long-term allocation ■ Complete or partial closure of a basin or subbasin from appropriations ■ Assignment of a watermaster ■ Increase enforcement against illegal water use within a basin or subbasin ■ Evaluate existing water rights within a basin or subbasin (without an adjudication) ■ Evaluate tribal water rights claims within a basin or subbasin ■ Extend public water system services into areas served by exempt wells	■ Analyze baseline water conditions in the watershed ■ Monitor current water permitting system for the watershed ■ Monitor stored water levels ■ Monitor groundwater use ■ Monitor water meters ■ Monitor existing water rights ■ Analyze outstanding water rights applications on file with state water right agency ■ Monitor conservation programs ■ Monitor irrigation efficiency projects

4.3 Strategies and Tools for Surface Water Quality Issues

The state's surface water quality standards set limits on pollution in lakes, rivers and marine waters in order to protect water quality. Standards are designed to prevent pollution from chemicals, bacteria, toxics and other sources, as well as protect fish species that are sensitive to factors such as water temperature. The federal Clean Water Act (CWA) requires that the water quality standards protect beneficial uses, such as swimming, fishing, aquatic life habitat, and agricultural and drinking water supplies.

Pollution in a watershed can come from point and nonpoint sources. Point sources, such as direct discharges from wastewater treatment plants, irrigation return ditches, or industrial discharges, are regulated by discharge permits specific to the individual discharge. The discharge permits, regulated under the National Pollutant Discharge Elimination System (NPDES), set limits on the pollutant concentrations allowed in the discharge. Water quality issues attributable to direct discharges are generally addressed by the regulatory agency and the permit holder.

Nonpoint sources of pollution include run-off from land activities such as logging, urbanization, and agriculture. Nonpoint sources of pollution are difficult to identify and control since they are generated by a wide variety of sources, mostly individual actions. There are a variety of federal, state and local tools to assist in implementing projects that will improve nonpoint sources of pollution in a watershed, from changing agricultural, logging, and landscaping practices to collecting and treating runoff.

An index to the strategies and tools that can be used to address surface water quality issues is provided in Table 4-3. These strategies and tools are described in detail with information on benefits, costs, implementing party, and related social and technical issues in Appendix D.

Table 4-3

Tools to Address Surface Water Quality Issues

Conservation Tools	Water Storage Tools	Regulatory / Administration Tools	Surface Water Quality Tools	Aquatic Habitat Tools	Monitoring Tools
■ Regional agricultural water conservation and irrigation efficiency strategies ■ On-farm agricultural water conservation and irrigation efficiency strategies ■ Water reuse facilities by wastewater utilities	■ Construct and operate new off-channel storage facilities ■ Construct and operate artificial recharge / aquifer storage projects ■ New riparian storage or farm field flooding storage ■ New or modified riparian wetlands ■ Modification of existing sediment basins ■ Direct stream augmentation ■ New water supply	■ Transfer existing water rights for out-of-stream uses to instream beneficial uses through the Trust Water Right Program	■ Develop and implement Total Maximum Daily Load (TMDL) Water Cleanup and Implementation Plans ■ Develop a Soil Water Assessment Tool (SWAT) ■ Implement irrigation water management ■ Implement cropland management activities ■ Implement agricultural chemical practices ■ Implement livestock management practices ■ Implement BMPs on State, County, City and private roads ■ Plan/Implement Municipal and Industrial Stormwater Runoff Controls ■ Manage urban landscaping ■ Implement a pollution trading (credit) system for water to facilitate compliance with a Total Maximum Daily Load (TMDL) ■ Comply with Waste Discharge Permits or National Pollutant Discharge Elimination System Permits (NPDES) ■ Increase the level of inspection of commercial dairy operations and enforcement of water quality as appropriate ■ Implement forest management practices	■ Implement applicable federal, state, local and private land conservation measures ■ Implement habitat improvement projects involving construction or placement of instream structures ■ Implement habitat improvement projects involving out-of-stream riparian restoration or enhancement ■ Restore natural floodplain function in channelized stream reaches ■ Move river dikes back from existing river channels to allow for floodplain restoration and channel maintenance ■ Plant native vegetation ■ Manage grazing in riparian areas ■ Relocate campgrounds further from stream edges where assessments show potential for erosion and other adverse effects ■ Develop regulations or programs to control sources of sediment that are not addressed through critical areas ordinances or other regulations ■ Re-establish historic wet meadow complexes	■ Monitor livestock use of riparian areas ■ Monitor efficacy of habitat improvement projects ■ Conduct water quality monitoring ■ Evaluate TMDL implementation ■ Monitor conservation programs ■ Monitor irrigation efficiency projects ■ Conduct flow monitoring

4.4 Strategies and Tools for Groundwater Management Issues

Management of groundwater as a resource is an important component of a watershed planning effort because it is heavily used as a source of water supply and can also affect stream flow where surface water is hydraulically connected to groundwater.

Groundwater management can have a significant effect on management of stream flows. Where groundwater is hydraulically connected with surface water, pumping of wells can reduce baseflows in nearby streams by reducing the water table gradient in the shallow aquifer. This is due to capture of groundwater that otherwise would have discharged to surface water. These types of effects are complex and vary according to many factors including the nature of the local hydrogeology and topography.

Most of the existing programs utilized for groundwater management are based on State and federal legislation designed to provide water quantity and/or quality protection. Regulatory programs such as Sole Source Aquifer Program (SSA), Aquifer Protection Areas (APA), and Growth Management Act Critical Areas, focus primarily on water quality issues and management.

An index to the strategies and tools that can be used to address water quality issues is provided in Table 4-4. These strategies and tools are described in detail with information on benefits, costs, implementing party, and related social and technical issues in Appendix D.

Table 4-4
Tools to Address Groundwater Management Issues

Groundwater Management Tools	Monitoring Tools
■ Develop a Groundwater Management Program (GWMP) ■ Implement water demand reduction strategies ■ Implement recharge enhancement with SAR (shallow aquifer recharge) projects ■ Implement recharge enhancement with ASR (aquifer storage and reovery) projects ■ Implement water rights transfers ■ Pursue regional coordination ■ Conduct a hydrogeologic study	■ Identify land use activities and contaminants to be addressed with technical management strategies ■ Conduct groundwater monitoring program, including development of groundwater model

4.5 Strategies & Tools for Groundwater Quality Issues

A number of federal environmental laws are directly or indirectly designed to protect groundwater from contamination. Examples of these laws include the Safe Drinking Water Act (SDWA); Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and Toxic Substances Control Act (TSCA). In most cases, state agencies are responsible for promulgating regulations in the state of Washington in accordance with these federal laws. Examples of state agencies with regulatory authority to protect groundwater quality under the aforementioned federal laws include the Washington State Department of Health (DOH), Ecology, and Washington State Department of Agriculture (WSDA).

Ecology has several programs related to groundwater quality protection. Examples include the Aquifer Vulnerability Project under the Water Quality Program and the Underground Injection Control Program (UIC). The purpose of the Aquifer Vulnerability Project is to develop a method for identifying areas of the state that are vulnerable to groundwater contamination and assess areas of the state that are relatively more vulnerable to groundwater contamination from pesticides to support the proposed State Pesticide Management Plan. The UIC program protects groundwater quality by regulating the disposal of fluids into the subsurface. Most UIC wells or injection wells are simple devices that allow fluids into the shallow subsurface under the force of gravity.

The potential for groundwater contamination from UIC wells can occur and is dependent on the well construction and location, the volume and quality of the fluids injected and the hydrogeologic setting.

WSDA is currently developing a statewide pesticide management plan to address the potential for pesticide occurrences in groundwater. Development of this plan is being driven by several state and federal initiatives designed to protect groundwater quality from the unintended movement of pesticides resulting from labeled agricultural and urban use.

Existing statewide regulations have limitations, which occasionally fail to protect groundwater from contamination. Local government agencies often need to develop and implement a groundwater management program to address the limitations of the regulations.

An index to the strategies and tools that can be used to address water quality issues is provided in Table 4-5. These strategies and tools are described in detail with information on benefits, costs, implementing party, and related social and technical issues in Appendix D.

Table 4-5 Tools to Address Groundwater Quality Issues	
Groundwater Quality Tools	Monitoring Tools
■ Conduct Level 1 risk assessment ■ Identify land use activities and contaminants to be addressed with technical management strategies ■ Enforce Wellhead Protection Program requirements for all Group A Public Water Systems (PWS) ■ Encourage Group B Public Water Systems to voluntarily establish a wellhead protection program ■ Select and implement technical management strategies based on assessment findings ■ Evaluate the need for greater involvement of stakeholders in cleanup actions at Ecology-regulated facilities and sites ■ Evaluate the need for independent cleanup actions ■ Provide oversight for well decommissions to ensure decommissions consistent with safe practices ■ Assess drinking water supplies that are unprotected and "at risk" of becoming impacted in the future ■ Develop and implement management protocols of unprotected groundwater sources located outside the service areas of large and medium water purveyors	■ Monitor groundwater quality ■ Monitor well levels, yield, drawdown and capacity ■ Conduct periodic susceptibility analysis ■ Monitor potential contaminant sources

4.6 Environmental Considerations for Applying the Strategies and Tools

Implementing any of the tools described in Appendix D will provide both benefits as well as potentially resulting in impacts to the human and natural environment. Prior to implementation of any of the tools provided, the responsible entity should thoroughly evaluate the federal, state, local and/or tribal regulatory and legal requirements involved in site selection, permitting, funding and planning the project. Further, some of the tools will require site specific analyses, assessment, and design prior to implementation, and may require continuous management, maintenance and other controls to be effective.

On July 18, 2003, the Washington Department of Ecology published the Statewide Environmental Impact Statement for Watershed Planning (http://www.ecy.wa.gov/biblio/0306013.html). This environmental impact statement describes the watershed planning process set forth in the Watershed Planning Act, as well as procedures for rule making that may be undertaken by state agencies to support implementation of watershed plans. It describes the existing framework of federal, state, and local laws, regulations, and programs that affect, or are related to management of watersheds. In addition, it evaluates the potential environmental impacts of and identifies mitigation measures, for various types or classes of recommended strategies/tools that may be included in watershed plans.

The information provided in the Statewide EIS or in this document is not intended to replace the requirement for a SEPA or NEPA environmental analysis and proposed mitigation, where applicable, for a site specific project.

Section 5
Basin Wide Management Objectives and Actions

5.1 Introduction

Management objectives have been developed by the Planning Unit for each planning element, including: general objectives for the overall watershed planning and management effort; water quantity (surface and ground water) management; instream flow; water quality (surface and ground water) management; and a multi-purpose storage component. The objectives generally fall into three categories: (1) objectives that enhance the planning and implementation effort itself, such as seeking better data on water resources or identifying specific sources of water quality problems; (2) objectives that address existing issues identified during the planning process; and (3) objectives that address future needs and long range planning and implementation.

Basin-wide actions have also been identified that address or support the basin-wide objectives. These actions apply generally to the entire WRIA 34 and are not specific to a geographic area. Section 6 presents objectives and actions that are specific to the four management areas defined for WRIA 34.

5.2 Basin-Wide Management Objectives

Basin-wide management objectives were identified by Planning Unit members through public workshops, in response to various technical assessments and supporting studies, and as additional concepts and/or issues emerged during the planning process. The basin-wide objectives are those that apply generally to the entire WRIA 34 planning area. Those objectives that apply differently for the four management areas are listed separately in Section 6 for each management area. For convenience, objectives are numbered sequentially with the prefix BW (Basin Wide). The numbers do not imply or assign any priority, ranking, or implementation order to the objectives, and are used strictly for identification purposes.

The purpose of the objectives is to not only to develop specific actions under this plan, but also to guide future planning efforts in the basin that may be undertaken by other planning programs or entities. Therefore, even though not all of the objectives listed below are addressed directly by the actions listed in this plan (Section 5.3 and Section 6), the objectives help define priorities and a common vision for watershed conditions and management of its resources.

General

BW1. Protect existing water rights and private property rights.

BW2. Emphasize voluntary, incentive-based management solutions using available federal, state, local and private land and water conservation programs.

BW3. Maintain the existing economy associated with the watershed hydrology, including but not limited to municipal, residential, commercial, industrial, agricultural, livestock, recreational, and instream water uses.

BW4. Establish a detailed funding plan for implementation, including: projects; programs; long-term monitoring and evaluation of watershed plan implementation.

BW5. Encourage fairness in distributing costs and burdens of water resource management actions.

BW6. Improve consistency in federal, state, and local water resources regulatory and management approaches, and obtain local, state, and federal and tribal support and cooperation for recommended management strategies.

BW7. Review and update land use plans and regulations as necessary to be compatible with and support water resource management goals.

BW8. Encourage and improve coordination of Idaho and Washington water resource management to protect and enhance surface and groundwater supply and quality.

BW9. Support implementation of urban and rural land BMPs.

BW10. Conduct water resource management education and outreach, addressing topics including water use, water quality, conservation, reclamation, reuse, stormwater management and best management practices.

BW11. Restore and enhance natural floodplain, riparian and wetland capacities, where ecologically, economically and socially feasible, to increase aquifer recharge, improve water quality, provide aquatic and riparian habitat, and reduce the duration and severity of flood events.

Water Quantity

BW12. Provide long-term reliable and predictable water supplies for municipal, residential, commercial, industrial, agricultural, livestock, recreational, and instream water uses.

BW13. Ensure adequate long term ground water resource availability to meet existing and future drinking water demand on public water systems and exempt wells, consistent with adopted city and county land use plans.

BW14. Continue and improve instream flow and water quality monitoring through permanent and seasonal gauges providing baseline data needed to manage flows and facilitate future water management decisions. Establish standard protocols for data collection to improve data quality.

BW15. Characterize surface and ground water availability and recharge/discharge balance and connectivity within the sub-basins and surrounding region.

BW16. Encourage stormwater and/or wastewater reclamation and reuse to satisfy other water resource needs.

BW17. Identify and develop opportunities to enhance available water supply, emphasizing out of stream storage, shallow aquifer recharge, deep aquifer storage and recovery, source substitution, reclamation and reuse, and stormwater retention.

BW18. Secure funding for program to promote conservation and efficiency of water use, including but not limited to municipal, residential, commercial, industrial, agricultural, recreational, and instream water uses. Provide education opportunities that can raise public awareness on water quantity options.

Water Quality

BW19. Protect surface and ground water quality needed for public drinking water supplies and other uses (including but not limited to municipal, residential, commercial, industrial, agricultural, livestock, recreational, and instream water uses, including aquatic habitat).

BW20. Improve water quality to the extent practicable given the natural conditions to support the designated uses of the waterbodies (see note below on "natural conditions").

BW21. Manage stormwater in both urban and rural areas to improve water quality, reduce flooding and enhance aquifer recharge where practicable.

BW22. Review surface water quality standards and establish natural (system potential) temperature levels for streams and rivers that reflect conditions within the watershed.

The definition of "natural conditions" with respect to water quality, according to Ecology and the EPA, is the surface water quality that would exist in the absence of human-caused pollution or disturbances. In assessing what constitutes "natural conditions", Ecology use historic data and water quality modeling as appropriate to ascertain what the water quality conditions (e.g. temperature and dissolved oxygen) would be without human sources of degradation. This approach does not infer that Ecology believes that systems can or should be returned to natural conditions. Ecology recognizes that some sources of human degradation cannot be remedied due to technical and/or social (legal) limitations (Ecology, 2005).

5.3 Basin-Wide Management Actions

Through the planning and assessment phases of the Plan development, the Planning Unit identified several basin-wide management actions. In general, the basin-wide management actions involve additional studies, securing funding, or recommended "on-the-ground" actions that apply to more than one management area (e.g. agricultural conservation practices). The basin-wide actions may be modified as a management area-specific action and included in Section 6 because it includes additional detail specific to a given management area. As a result, some of the basin-wide objectives are addressed by both basin-wide and management area-specific actions. Basin-wide management actions are presented in Appendix B**.**

Basin-wide Instream Flow Actions

The Planning Unit has developed a general framework for instream flow management based on findings from the Instream Flow Needs Assessment (Golder, October 2006) and discussions among Planning Unit members and Ecology. The framework is based on developing an "instream flow package" for each of the management areas where an instream flow assessment was conducted, namely for Cow/Rock Creek, Palouse River mainstem (Central/Lower Palouse), and North Fork Palouse River.

At the time of this Plan, no specific recommendations for adoption into rule have been developed because the Planning Unit needed additional information before committing to a final instream flow package(s). However, Section 6 includes management area-specific recommendations to continue working on the recommendations under Phase IV (implementation phase) of the process. This assumes that the state agencies will obligate funding and time for the Planning Unit to work collaboratively with the state agencies and to conduct public outreach. Under the implementation phase (Phase IV), the Planning Unit will continue to develop the instream flow package(s) under the following working policies and understanding:

- The Watershed Plan (and Planning Unit) does not make any specific recommendations regarding existing water rights applications. The Planning Unit is deferring to Ecology to process specific applications.
- A minimum instream flow and/or closure only affects new water rights. Any future instream flows will not impact existing surface or groundwater rights; livestock or otherwise. Instream flows would also not affect existing water rights resolved under an adjudication process (Cow Creek adjudication).
- The Planning Unit believes riparian livestock rights have been and should be recognized as an inherent water right for landowners of streamside parcels and those existing rights should not be conditioned to instream flows.[1]
- Permit-exempt wells included as part of a reservation would not be considered interruptible and therefore will not be subject to a minimum instream flow or closure.
- Sedimentation will be accounted for when determining flushing or channel maintenance flows.

[1] Regarding this statement, Ecology has noted the following: "Riparian stock watering would need to be adjudicated (e.g. Cow Creek) to provide certainty for landowners of stream parcels." (Ecology 2007)

- Habitat needs for ESA listed species below Palouse Falls were not considered because the management point will be above the falls.

Basin-wide Storage Actions

As part of the watershed planning process, the Planning Unit decided to conduct assessments of storage options for the western (Cow Creek and Rock Creek) and eastern (North Fork and South Fork Palouse) portions of the basin. The goal of storage development is to improve water supply reliability, enhance baseflows and improve water quality. The list of storage concepts reviewed (Golder, 2006a) includes:

- Enhancing existing surface water storage in reservoirs and/or lakes;
- Enhancing baseflows by the use of balancing basins, floodplain storage, wetland restoration and small check dams;
- Enhancing baseflows by infiltrating shallow groundwater withdrawn during the winter months in locations that will result in return flows to streams during summer months;
- Enhance baseflows and aquifer recharge by infiltrating available reclaimed water;
- Enhance natural recharge for long term regional aquifer level recovery; and
- Implement aquifer storage and recovery (ASR) to meet potable supply demand and to offset groundwater use.

Storage options in the Cow Creek management area were identified by the Planning Unit as a way to potentially address the lack of instream flow to meet adjudicated water rights in Cow Creek. The primary approaches considered were: (i) optimize existing adjudicated storage facilities; and (ii) provide for additional storage in Sprague Lake. Specific actions related to these primary storage options in the Cow Creek management area are described in Section 6 (Table 6-1).

Storage options in the North Fork and South Fork Palouse management areas were identified as a way to potentially address the water supply needs (resulting from significant groundwater declines in the basalt aquifer) for the major communities in the area. The primary storage options considered were: (i) aquifer recharge to recover aquifer levels over the long-term using enhanced surface infiltration; and (ii) ASR to meet water demand and offset groundwater use. Specific actions related to these primary storage options in the North and South Fork Palouse management areas are described in Section 6 (Tables 6-3 and 6-4).

Basin-wide Water Quality Actions

Water quality issues in the basin are related primarily to development of TMDLs (namely fecal coliform bacteria and temperature), sediment loading and water quality issues related to ASR applications (groundwater-surface water mixing and treatment requirements). Based on these issues, the Planning Unit conducted a water quality assessment with the following objectives:

- Summarize legal beneficial uses of the waters in the management area;
- Provide information on the compatibility of surface water quality with groundwater quality for the potential use in ASR;

- Provide information on the system potential vegetation (for South Fork Palouse area only, where TMDL for temperature is being developed);
- Describe water quality trading policies and potential application within the management area; and
- Recommend monitoring actions to implement water quality improvements.

The review of beneficial uses provides general context for the water quality issues in the basin and helps evaluate the appropriateness of the State water quality standards in local streams. The water quality compatibility review provides information for development of ASR to meet potable supply demand and to offset groundwater use. The system potential vegetation study provides information for use in developing the TMDL for the South Fork Palouse River. The Planning Unit believes that the State water quality standard for temperature is not achievable due to local natural conditions. Therefore, the Planning Unit commissioned the system potential vegetation study to have the greatest impact on the development of the temperature TMDL. Of all these objectives above, basin-wide actions were identified for only the water quality trading and monitoring actions.

The water quality trading program is driven by the TMDL process. To determine the appropriateness of water quality trading for WRIA 34, it is recommended that the following actions be completed:

- Conduct a detailed evaluation of pollutant supply and distribution, financial attractiveness, infrastructure potential, and stakeholder readiness.
- Conduct additional temperature analysis, including quantification of overall supply and demand of temperature credits, distribution of temperature load among point and non-point sources
- Evaluate financial attractiveness including evaluation of point source's temperature load, TMDL target load, future load; and evaluation of cost of non-point source temperature control best management practices.
- Identify a third party organization to manage the framework and infrastructure of the water quality trading program.

In general, the monitoring actions are related to supporting the development of TMDLs, characterizing sediment sources and loads, and stream flow monitoring (also supports the instream flow management actions). Specific water quality monitoring actions are described in Section 6 (Tables 6-1 to 6-4).

Section 6
Management Area Strategies

Management strategies specific to each of the four management areas are presented below. Each management strategy consists of a series of objectives and action items specific to the planning issues identified either at the basin–wide level or at the subbasin or management area level, consistent with the existing conditions and issues described in Section 3. This approach addresses planning needs that are common across the watershed, while also characterizing localized objectives, conditions and specific actions for a geographic area. There is not always a distinct line between basin–wide and management area–specific objectives and actions. Some basin–wide objectives and actions have been further defined into more specific objectives and actions for one or more management areas. Specific actions that meet basin–wide objectives have also been identified where possible.

Specific objectives and actions are identified for four management areas: Cow/Rock Creek, Central/Lower Palouse River, North Fork Palouse River, and South Fork Palouse River. These area-specific objectives and actions are based upon the existing conditions set forth in Section 3 of this Plan and the Level II Assessment, input from the planning workshops, the available management strategies and tools discussed in Section 4, and consideration of basin–wide objectives described in Section 5.

6.1 Cow/Rock Creek Management Area Planning Objectives and Actions

Watershed issues identified for Cow Creek, WA include:

- Riparian areas are degraded from grazing in certain areas.
- Erosion is occurring from cropland fields including conventional summer fallow fields.
- Elevated nitrate concentrations in groundwater in eastern Adams County.
- Sediment deposition in Hallin, Cow, and Finnell Lakes and associated wetland/riparian areas.
- Excessive levels of TSS near the mouth of Cow Creek.
- Excessive nitrogen and phosphorus levels promoting nuisance algae growth throughout the stream.
- pH, fecal coliform, and water temperature levels exceed water quality standards in certain areas.
- Sprague and Cow Lakes are moderately eutrophic.[1]
- Loss of riparian habitat in certain areas, including wetlands.

Similar watershed issues are assumed for Rock Creek.

[1] Having waters rich in mineral and organic nutrients that promote a proliferation of plant life, especially algae, which reduces the dissolved oxygen content and often causes the extinction of other organisms.

Specific objectives for the Cow/Rock Creek Management Area are provided below. The objectives are based primarily on information available for Cow Creek. Additional objectives addressing Rock Creek issues will be added as necessary, as additional information on Rock Creek issues are developed. The objectives shown are in addition to the basin–wide objectives and actions described in Section 5. For convenience, objectives are numbered sequentially with the prefix CRC (Cow/Rock Creek). The numbers do not imply or assign any priority, ranking, or order of implementation to the objectives.

CRC1. Restore and enhance floodplain, riparian and wetland capacities for priority selected areas to store excess runoff during peak flows. Consider water storage options such as wetland storage, off–channel storage, and shallow aquifer storage.

CRC2. Monitor flow and lake levels to evaluate instream flow and water quality enhancement efforts on lakes and streams and to regulate adjudicated water levels and proposed minimum instream flows on Cow Creek.

CRC3. Set minimum instream flow in Cow Creek for senior water rights and aquatic habitat.

CRC4. Improve water quality to the extent practicable given existing watershed conditions. Water quality improvements to be addressed include:

- Fecal coliform levels, particularly in waters leaving Sprague Lake
- Nutrient loading and subsequent algal blooms
- Mean water temperatures in Cow and Rock Creeks

CRC5. Increase base flows in Cow Creek to improve water supply reliability for existing water right holders consistent with the adjudication, emphasizing coordinated water management, increased storage, aquifer recharge, source substitution, reuse, rehabilitation and other techniques.

CRC6. Continue current efforts and identify additional opportunities to reduce erosion particularly from cropland areas and roads, through implementation of BMPs, continuing current programs, and increasing individual farm household planning and implementation assistance.

CRC7. Improve the reliability of municipal water supplies.

CRC8. Develop sustainable water supplies to meet municipal growth demands while continuing to protect existing water rights/users.

CRC9. Rehabilitate and enhance Sprague Lake to address water quality, recreation and aquatic habitat needs. Actions taken should not impair downstream water rights.

Specific projects, actions and additional studies are identified in Table 6-1 organized by planning elements, to meet the area-specific objectives described above and basin–wide objectives provided in Section 5. There are several actions or project types that are applicable across

several objectives, e.g., implementation of these projects could benefit multiple objectives. Such projects include:

- Characterize the hydrology, connectivity and interaction between surface water, ground water, springs, and gravel beds and develop potential recharge and flow enhancement strategies, with specific analysis to be conducted at the following locations:
  - Cow Creek (including characterizing the hydraulic continuity between wells and streams)
  - Turnbull Wildlife Refuge
  - Medical Lake
  - Sheep Springs
  - Cow Lake
  - Finnell Lake
  - Hallin Lake
  - Rock Creek
  - Union Flat Creek
- Establishing or re-establishing gauging stations and/or a network of gauges to monitor/manage water effectively in the following locations:
  - Cow Creek
  - Rock Creek
  - Sprague Lake Outlet
  - Above Rock Lake
  - Below Rock Lake
  - Confluence of Rock Lake and Palouse River
- Prioritizing locations and strategies for reducing fecal coliform levels throughout the management area, including at the Sprague Lake outlet by:
  - Enhancing riparian buffers
  - Managing grazing in riparian areas, including seasonal restrictions
  - Exploring waterfowl management options
- Working with individual landowners to review pesticide and fertilizer use to limit water quality impacts, including the implementation of best management practices, such as:
  - Managing inputs to Sprague Lake to reduce nutrient loading
  - Enhancing riparian areas
  - Conservation tillage
  - Individual urban / rural household planning
- Enhancing riparian functions and habitat, including riparian vegetation, where the landowner is willing. These projects can benefit instream flow by restoring a more natural hydrograph, enhance recharge of ground water, improve water temperature and

quality, reduce sediment loading, and provide habitat for terrestrial and aquatic species. Riparian function enhancement projects should be tailored to landowner needs, and incorporate incentive-based approaches.

- Conducting urban and rural conservation programs targeting individual homeowners and landowners, using incentive and rate-based approaches that encourage reuse, education / conservation and understanding of the individual's role in supporting watershed hydrology.

Where specific projects for each planning element are not identified, refer to the basin–wide management strategies for more general actions on what is intended for a given planning element in the management area. Exhibit 6-1, which follows the actions table, identifies some highlighted management actions within the management area, where proposed actions were able to be readily identified on the map.

Table 6-1
Cow/Rock Creek Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
General (G)						
G-1	BW14, BW15, BW17, CRC5, CRC8	Whitman County	Adams County, Planning Unit	Encourage Whitman County to join GWMA in order to increase support for characterizing the regional hydrogeology and developing sound ground water management strategies.	Near-term	Low
G-2	CRC9	Cow Creek	WDFW	Construct Fish Passage Barrier on Cow Creek below Sprague Lake to prevent repopulation of Sprague Lake with undesirable species.	Mid-term	Medium
Water Quantity Management (QT)						
Hydrology and Hydrogeologic Studies (QT-1)						
QT-1a	BW14, BW15, CRC2	Entire MA Sheep Springs Cow Lake Finnell Lake Hallin Lake Rock Creek	CDs[3], Ecology, USGS, Planning Unit	Characterize the hydrology, connectivity and interaction between surface water, ground water, springs, and gravel beds, and develop potential recharge and flow enhancement strategies, using modeling (including characterization of hydraulic continuity between wells and streams on Cow Creek); study to include review of flow data.	Near-term	High
QT-1b	BW 15, CRC3, CRC5, CRC8	Entire MA	Planning Unit, Ecology, USGS	Hydrogeologic study to understand the impacts of groundwater withdrawal on groundwater levels, streamflow, and long-term trends. Develop appropriate management strategies to address the results. Study to be conducted cooperatively with the other WRIAs (34, 54, and 56) regarding water use and instream flow setting (in an adjudicated basin).	Mid-term	Medium

Table 6-1 Cow/Rock Creek Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-1c	BW13, CRC2, CRC8	Cow Creek subbasin	CDs, Ecology, Planning Unit	Assess the impact of new groundwater withdrawals (e.g., for stockwatering, irrigation, and municipal water supply for Cheney and Medical Lake) on the streamflows of the Cow Creek subbasin and plan for future water supply considering both the hydrogeology of the subbasin and the 1984 adjudication.	Mid-term	Low-Medium
QT-1d	BW15	Cheney Medical Lake	Spokane County, Ecology	Conduct hydrogeologic characterization study of Cheney and Medical Lake areas; remap hydrologic/watershed boundaries in the Cheney and Medical Lake areas.	Mid-term	Medium
QT-1e	CRC8	Entire MA	CDs, Ecology	Determine feasibility of pumping water (at sustainable levels) from deep aquifer wells to enhance surface flows in Cow Creek.	Mid-term	Medium
Flow Measurement Studies (QT-2)						
QT-2a	CRC2	Cow Creek subbasin	CDs, Ecology, Planning Unit	Continue monthly flow measurements at sites throughout the Cow Creek subbasin that are currently monitored by the Adams CD.	Near-term	Medium
QT-2b	BW13, CRC2	Cow Creek Rock Creek Sprague Lake Outlet Above Rock Lake, below Rock Lake, confluence of Rock Lake and Palouse River	CDs, Ecology, USGS	Re-establish gauging stations on lower Cow Creek and Sprague Lake and establish a network of gauges to manage water effectively.	Near-term	Low
QT-2c	BW17	Individual irrigators (throughout area)	Ecology, Individual irrigators	Upgrade diversions to install measuring devices where needed	Mid-term	Medium

Table 6-1
Cow/Rock Creek Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
Instream Flow Package (QT-3)						
QT-3a	BW 14, CRC2	Cow Creek subbasin	CDs, Ecology, Planning Unit, WDFW	Convene a PU Subcomittee to work on an *instream flow package* for the Cow Creek Subbasin. Consider package components: 1. Partial closure to address groundwater use and include along with that closure a reservation for uninterruptible water for domestic, municipal, and stockwater purposes, and storage. 2. Define an acceptable daily use level for permit exempt wells and other single family households. 3. Meter new water uses to verify the water use levels applied to the reservation are accurate.	Near-term	Low-Medium
QT-3b	CRC3, BW14, BW15	Cow Creek	Planning Unit, Ecology	Apply findings on groundwater and surface water interaction (QT-1a - c) to develop instream flow package in Cow Creek.	Near-term	Low-Medium
New/Other Storage Development (QT-4)						
QT-4a	CRC8, BW17	Cow Creek subbasin	CDs, Ecology, Planning Unit	Convene a PU Subcommittee to discuss storage options in the Cow Creek Subbasin during high flows and how they would be implemented. Determine whether this is possible given the Adjudication. If mutually beneficial, discuss a maximum allocation associated with water use during high flows.	Near-term	Low
QT-4b	BW3, BW11, BW16, CRC8	Medical Lake Airway Heights Cheney	Medical Lake, Airway Heights, Cheney, Spokane and Lincoln Counties, Ecology	Analyze how water demands meet growth needs for Medical Lake; how Airway Heights and Cheney will impact Cow Creek and Rock Creek drainage area (surface and groundwater flows)	Near-term	Medium

Table 6-1 Cow/Rock Creek Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-4c	BW15 BW16 CRC1	Entire MA	CDs, Ecology	Conduct a study to identify priority selected areas for storage of excess runoff during peak flows, including aquifer storage in increments on river reaches.	Mid-term	Medium
QT-4d	CRC1	Cow Creek Subbasin	CDs, Ecology, USACE	Optimize the use of existing storage facilities throughout the Cow Creek subbasin when there is water in streams over and above that needed to satisfy senior water rights.	Mid-term	Medium
QT-4e	CRC1, BW15	Cow/Hallin Lake, Finnell Lake, Sheep Springs Reservoir	CDs, Ecology	Assess additional storage feasibility, including surface water losses to groundwater, for Cow/Hallin Lake, Finnell Lake, and Sheep Springs Reservoir.	Mid-term	Medium
Sprague Lake Storage (QT-5)						
QT-5a	BW12, BW17 CRC1, CRC2, CRC9	Key locations between Sprague Lake and Hooper, including: Cow Lake Finnell Lake Sheep Springs)	CDs, Ecology	Collect additional flow and elevation data at the inlet and outlet of Sprague Lake and key locations between Sprague Lake and Hooper and compare to flows throughout the Cow Creek system to establish a reliable data set to confirm when water is likely to be available for storage in Sprague Lake and impacts of storage in Sprague Lake.	Near-term to Long-term	Medium
QT-5b	CRC2, CRC9	Sprague Lake	CDs, Ecology, USGS	Develop monthly water balance estimates for Sprague Lake by installing an evaporation pan and flow monitoring and water level elevation gauges.	Near-term	Medium
QT-5c	BW16, CRC1, CRC9	Sprague Lake	Planning Unit, Ecology, CDs	Study feasibility of storing water in Sprague Lake to rehabilitate lake for recreation.	Mid-term	Medium

Table 6-1
Cow/Rock Creek Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
QT-5d	BW11, BW16	Above Sprague Lake	Ecology, Planning Unit	Determine availability of surface water above Sprague Lake for storage or use downstream; consider granting a storage right for Sprague Lake to store water between the minimum and maximum adjudicated level. Concerns such as flooding, property damage, etc. may need to be addressed along with a cost-benefit analysis and completion of the SEPA process.	Mid-term	Medium
Water Conservation (QT-6)						
QT-6a	BW17	Entire MA	Cities, Towns[6], Public Systems WDOH	Implement WDOH municipal conservation program elements as appropriate.	Near-term	Low to Medium
QT-6b	BW18	Entire MA	CDs, Individual irrigators, NRCS, WSU Extension	Identify and prioritize locations for implementing water conservation and efficiency strategies for agricultural irrigation systems.	Near-term	Low
Other Water Resources Studies (QT-7)						
QT-7a	BW11, CRC1	Entire MA	CDs, Ecology	Conduct a study to identify priority selected areas for enhancement and/or restoration of natural floodplain, riparian or wetland areas.	Near-term	Med
QT-7b	BW10, BW11 CRC6	Every mile on Cow Creeks on both sides	CDs, Ecology	Seek funding sources for off-site stock watering sites (estimated requirement is one supply site per mile for riparian grazing areas).	Mid-term	Low
QT-7c	CRC2, CRC5	West of Cow, Hallin, and Finnell Lakes	Adams CD, Ecology	Cow Creek Well Decommissioning & Casing Project-Locate, case and/or decommission wells that have been identified as cascading from the upper to lower aquifers.	Near-term	High
QT-7d	CRC8	Cheney	City of Cheney, Ecology	Conduct Cheney WWTP Effluent Discharge Relocation Study.	Near-term	Low
QT-7e	BW1, CRC1	City of Sprague	City of Sprague, Ecology, USACE	Further evaluate feasibility, including costs and benefits of flood control for the City of Sprague.	Mid-term	Medium

Table 6-1
Cow/Rock Creek Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
Water Quality Management (QL)						
Bacteria (QL-1)						
QL-1a	BW18, CRC4	Entire MA Sprague Lake Outlet	CDs, Counties, Ecology, Individual landowners, NRCS, WSU Extension	Characterize surface water for potential contamination from fecal coliform; identify sources (e.g., agricultural runoff or natural populations of waterfowl), including Sprague Lake.	Near-term	Medium
QL-1b	BW11, BW18, BW19, CRC4	Entire MA	CDs, Ecology, Individual landowners, NRCS, WSU Extension	Identify and prioritize locations to implement the following strategies to reduce fecal coliform levels: 1. Restore riparian buffers 2. Manage grazing in riparian areas 3. Explore waterfowl management options	Mid-term	Low
Sediment (QL-2)						
QL-2a	BW18, BW19, CRC6	Entire MA	CDs, Counties, Ecology, Individual landowners, NRCS, WSU Extension	Characterize sediment sources, and identify and evaluate potential options to reduce erosion and sediment loads entering surface waters.	Mid-term	Low
QL-2b	BW19, CRC6	Entire MA Hooper	CDs, Individual landowners, NRCS, WSU Extension	Establish and promote the BMPs to reduce erosion and sediment levels for pasture and rangeland	Ongoing	Low
Stormwater (QL-3)						
QL-3a	BW20	Entire MA	Cities, Counties, Ecology, Towns	Implement stormwater management BMPs and plans (such as the Eastern Washington Stormwater Manual) for existing and/or new urban and rural developments and roadways.	Mid-term	Low
QL-3b	BW20, CRC4	1. Drainage facilities on rural roads 2. City of Sprague drainage ditches 3. City of Lamont drainage ditch	Adams County, Whitman County	Adopt the Eastern Washington Stormwater manual and implement the following strategies to improve stormwater management and treatment and increase groundwater infiltration: 1. sediment basins 2. infiltration trenches 3. swales / wetlands 4. rural/urban drainage ditch upgrades	Mid-term	Medium

Table 6-1
Cow/Rock Creek Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
Landowner Practices (QL-4)						
QL-4a	BW20	Entire MA	Ecology, WSDA, WSU Extension	Work with individual landowners to review pesticide and fertilizer use; and to implement the following best management practices to limit water quality impacts: 1. manage Sprague Lake inputs to reduce nutrient loading 2. Enhance riparian areas 3. urban/rural education program 4. conservation tillage	Ongoing	Low
QL-4b	BW9, BW17, CRC6	Entire MA	CDs, Ecology, Washington Conservation Commission	Provide additional resources to CDs to increase individual farm and urban household planning and implementation assistance.	Near-term	Medium
Water Quality Studies (QL-5)						
QL-5a	BW19, CRC4	Sprague Lake	Ecology, WSU Extension	Study the potential use of aquatic plants (e.g., duck weed or native species) that can be used to reduce or eliminate algal blooms in Sprague Lake.	Mid-term	Low
QL-5b	BW18	Rock Creek	CDs, Ecology	Conduct studies of water quality sampling and analysis for temperature, pH, dissolved oxygen, nutrients, phosphorus, etc. (including ongoing Adams CD efforts).	Near-term	Medium
Regulatory Actions (RG)						
RG-1	BW1	Cow Creek	Ecology	Manage water rights/uses consistent with prior adjudication.	Ongoing	Medium
RG-2	BW6, BW7, BW8, BW10, CRC1	Entire MA	Cities, Counties, Towns	Implementation/enforce land use and management regulations by appropriate agencies to protect critical areas and pristine areas of the management area (e.g. critical areas and shorelines programs).	Ongoing	Low

Table 6-1
Cow/Rock Creek Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
RG-3	BW21	Entire MA	Ecology, Planning Unit	Evaluate state water quality and water rights regulations and actions for applicability to local basin conditions.	Mid-term	Low
RG-5	CRC 2, CRC 3, BW 14, BW 15	Entire MA	Ecology	Provide technical assistance in evaluating the Cow Creek instream flow study, establish minimum instream flows for Cow Creek (if warranted), and consider pending water rights applications when setting instream flows.	Near-term	Medium

Notes:

1) Schedule: Suggested dates have been provided or a range, where: Near-term=0-3 years; Mid-term=3-10 years; Long-term=10 years or more beyond date of plan adoption.
2) Estimated costs have been provided where available from feasibility or other studies. Otherwise, a cost range is provided where: Low=<$100,000; Medium=$100,000-$500,000; High= >$500,000
3) Conservation Districts within the Cow/ Rock Creek Management Area include the following: Adams CD, Lincoln County CD, Palouse Rock Lake CD, Pine Creek CD (small area), and Spokane County CD
4) Cities located within the Cow/ Rock Creek Management Area include the following: Medical Lake and Sprague. All cities and towns were cross-referenced between GIS data and the Municipal Research and Services Center: http://www.mrsc.org/cityprofiles/citylist.aspx
5) Counties located within the Cow/ Rock Creek Management Area include the following: Adams, Lincoln, Spokane, Whitman
6) Towns located within the Cow/ Rock Creek Management Area include the following: Lamont

(Insert Exhibit 6-1, Cow/Rock Creek Subbasin)

6.2 Central/Lower Palouse River Management Area Planning Objectives and Actions

Watershed issues identified for Central/Lower Palouse River include:

- Riparian areas are not currently functioning to their potential and need to be restored/ enhanced.
- Erosion is occurring from land use activities (including cropland, roads, etc.).
- pH, fecal coliform, dissolved oxygen, and water temperature levels exceed water quality standards in certain areas.
- Unsightly foam (indicative of elevated levels of organics or detergents) has been observed on the mainstem Palouse River.
- Rural communities (Colton, St. John, etc.) are experiencing water supply and water system issues.

Basin–wide objectives described in Section 5 are directly applicable to the Central/Lower Palouse River Management Area, and address many of the issues and conditions described above. In addition, specific objectives for the Central/Lower Palouse River Management Area are provided below. For convenience, objectives are numbered sequentially with the prefix CLP (Central/Lower Palouse). The numbers do not imply or assign any priority, ranking, or order of implementation to the objectives.

CLP1. Improve water quality to the extent practicable given existing watershed conditions. Water quality improvements to be addressed include:

- Water temperature
- Sediment loading and turbidity
- Natural organic or potential man-made pollutants causing the unsightly foam
- Fecal coliform bacterial loading
- Toxics (e.g., chlorinated pesticides and PCBs)

CLP2. Enhance municipal water systems to improve reliability, drinking water quality, system efficiency, and also meet fire flow needs.

CLP3. Develop sustainable water supplies to meet municipal growth demands, while continuing to protect existing water rights/users.

Projects, actions and additional studies are identified in Table 6-2 organized by planning elements, to meet the area-specific objectives described above and basin–wide objectives provided in Section 5. There are several actions or project types that are applicable across several objectives, e.g., implementation of these projects could benefit multiple objectives. Such projects include:

- Restoration of riparian functions and habitat, including riparian vegetation, where the landowner is willing. These projects can benefit instream flow by restoring a more natural hydrograph, enhance recharge of ground water, improve water temperature and

quality, reduce sediment loading, and provide habitat for terrestrial and aquatic species. Riparian function enhancement projects should be tailored to landowner needs, and incorporate incentive-based approaches.

- Establishing and promoting the following BMPs for pasture and rangeland, cropland, and forest land. The application of these BMPs provides both erosion and sediment control, enhances recharge of ground water, and improves water quality.

    - Conservation tillage
    - Minimize conventional summer fallow
    - Improved grazing management
    - Increased grassed waterways
    - Buffers on waterways and drainage ditches
    - Strip cropping
    - Feedlot placement
    - Conservation plan development and implementation
    - Small, on-farm storage/retention to increase recharge
    - Rural road operations and maintenance
    - Construction BMPs
    - Forest road stabilization and abandonment

- Characterize the hydrology, connectivity and interaction between surface water, ground water, springs, and gravel beds and develop potential recharge and flow enhancement strategies, with specific analysis to be conducted at the following locations:

    - Eastern portion of the Basin (Adams/Whitman County Line to Washtucna)
    - Streams – Palouse River, Union Flat Creek, Willow Creek, Rebel Flat Creek, Pine Creek, Cottonwood Creek

- Conducting urban and rural conservation programs targeting individual homeowners and landowners, using incentive and rate-based approaches that encourage reuse, education / conservation and understanding of the individual's role in supporting watershed hydrology.

Where specific projects for each planning element are not identified, refer to the basin–wide management strategies for more general actions on what is intended for a given planning element in the management area. Exhibit 6-2, which follows the actions table, identifies some highlighted management actions within the management area where actions were able to be readily identified on the map.

Table 6-2
Central/Lower Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
General (G)						
G-1	BW9	Entire MA	CDs[3], Counties[4], DOH, Towns[5]	Develop/promote education programs regarding conservation measures, including: 1. communicate existing efforts basin–wide 2. develop regional workshops that target all water users, focusing on landscape watering, efficiencies, equipment (including installation)	Near-term	Low
G-2	BW8, BW9	Entire MA, including Towns	Counties, CDs, DNR, Idaho Soil Conservation Commission (ISCC), NRCS, WCC, Towns[5]	Provide additional resources to CDs to increase individual farm and urban household BMP planning and implementation assistance.	Near-term	Medium
Water Quantity Management						
Hydrology and Hydrogeology Studies (QT-1)						
QT-1a	BW12, BW14 CLP3	1. Two miles outside of jurisdiction of each town in the management area 2. Region wide	Ecology, IDEQ, PBAC, USGS, Towns[5]	Characterize ground water resources; map approximate location, depth, and geographic extent of aquifers. Also determine regional quantities and movement of ground water.	Mid-term	Medium
QT-1b	BW12, BW14 BW16	Entire MA	Ecology, IDEQ, USGS	Characterize hydrology and connectivity of surface water and springs, and develop potential recharge and flow enhancement strategies at the following locations: 1. Eastern portion of the Basin (Adams/Whitman County Line to Washtucna) 2. Streams – Palouse River, Union Flat Creek, Willow Creek, Rebel Flat Creek, Pine Creek, Cottonwood Creek	Mid-term	Medium
Retention and Restoration (QT-2)						

Table 6-2 Central/Lower Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Organization(s)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-2a	BW8, BW15, BW16	Entire MA	CDs	Identify opportunities and areas and work with individual landowners to construct small storage, infiltration or additional retention/settling basins	Mid-term	Low
QT-2b	BW10, BW11	Entire MA	CDs, Ecology, IDEQ, NRCS	Evaluate needs and identify areas that would benefit from enhancement and/or restoration of riparian vegetation and wetlands	Near-term	Medium
QT-2c	BW10, BW19, CLP1	West of Endicott on Rebel Flat Creek	CDs, Ecology, IDEQ, NRCS	Determine feasibility of stream re-engineering to improve flows and water quality	Mid-term	Medium-High
Public Water Systems (QT-3)						
QT-3a	CLP2	Endicott	City of Endicott, WDOH	Implement City of Endicott water system C.I.P. to improve system storage, fire flow, conservation and reliability (including assistance in securing grant funding)	Mid-term	Medium
QT-3b	BW17, CLP3	Entire MA	Towns[5], Public Systems WDOH	Implement WDOH municipal conservation program elements as appropriate	Near-term	Low to Med
QT-3c	BW13, CLP3	Colton	Colton, Ecology	Secure additional water supply/water rights	Near-term	Medium
Instream Flow Package (QT-4)						
QT-4a	BW13	Entire MA	CDs, Ecology, IDEQ, USGS	Continue instream flow and water quality monitoring through permanent and seasonal gauges and water quality monitoring stations.	Ongoing	Low
QT-4b	BW6, BW8, BW14	Entire MA	Ecology, Planning Unit	In the future Ecology should involve the PU in any future studies, study recommendations and rule-making from instream flow studies in WRIA 34 and should include existing information collected during instream flow needs assessment in future rulemaking.	Long-term	Medium

Table 6-2
Central/Lower Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
QT-4c	BW14, BW17	Entire MA	CDs, Ecology, Planning Unit	Consider the concerns of the Planning Unit in future instream flow rule-making, including: 1. Implementing a partial closure to enable storage 2. Reservation for uninterruptible water rights for domestic and municipal use, and a maximum allocation for potential future storage.	Long-term	Low
Water Quality Management						
Nutrients (QL-1)						
QL-1	BW18, CLP1	Washington and Genesee, ID portions Hand dug / shallow wells (300 ft or above) Proximity to sewer / fertilizer runoff lift stations	CDs, Ecology, IDEQ, NRCS	Conduct further characterization of ground water for potential contamination from nitrates and develop and implement management strategies to reduce nitrate contamination	Mid-term	Medium
Bacteria (QL-2)						
QL-2a	BW11, BW18, BW19, CLP1	Entire MA	CDs, Counties, Individual landowners, NRCS, USFS, Ecology, WSU Extension	Implement strategies to reduce fecal coliform levels.	Mid-term	Low
QL-2b	CLP1	Entire MA	CDs, Ecology, IDEQ	Conduct microbial source tracking (including DNA, RNA ribotyping, and other new techniques) and analysis of bacteria to identify sources.	Mid-term	Medium
Sediment (QL-3)						
QL-3a	BW20, BW23, CLP1	Entire MA	CDs, Counties, Ecology, NRCS, USFS, WSU Extension	Conduct further characterization of sediment sources, and identify and evaluate potential options to reduce sediment loads entering surface waters	Near-term	Medium

Table 6-2
Central/Lower Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
QL-3b	BW19, CLP1	Willow Creek, Rebel Creek (Adams County)	CDs, Ecology	Conduct studies of water quality sampling and analysis for temperature, pH, dissolved oxygen, nutrients, phosphorus, etc. (including ongoing Adams CD efforts)	Mid-term	Medium
Stormwater (QL-4)						
QL-4a	BW7, BW21, CLP1	Entire MA	Counties	Develop updated stormwater management requirements and plans for existing and/or new developments and roadways.	Near-term	Low
QL-4b	BW7, BW21, CLP1	Drainage facilities on rural roads	All development, Towns, CDs, Counties, NRCS, State, Transportation Departments, Whitman County	Implement the following strategies to improve stormwater management and treatment and increase groundwater infiltration: 1. sediment basins 2. infiltration trenches 3. swales / wetlands	Long-term	Medium
Landowner Practices (QL-5)						
QL-5a	BW23	Entire MA	CDs, Individual irrigators, NRCS, WSU extension	Implement the following water quality strategies for agricultural irrigation systems: 1. work with individual landowners to review pesticide and fertilizer use 2.implement the following BMPs to limit water quality impacts: a. cleaning equipment b. buffer zones c. alternative weed control at banks	Near-term	Low
QL-5b	BW23, CLP1	Entire MA	CDs, NRCS, Ecology, WSDA, WSU Extension	Establish and promote BMPs for erosion control for pasture and rangeland, cropland, and forest land.	Ongoing	Low
Water Quality Studies (QL-6)						

Table 6-2 Central/Lower Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Organization(s)**	**Description**	**Schedule [1]**	**Cost [2]**
QL-6a	BW19, BW22, CLP1	Entire MA	Planning Unit	Planning Unit members actively participate in state TMDL process to ensure that PU concerns are reflected, specifically with regard to voluntary management actions to reduce pollutant loads.	Long-term	Low
QL-6b	BW19, CLP1	Mainstem between Colfax and Whitman county line	CDs, Ecology, IDEQ, ISCC	Identify the source(s) of foaming (potential organics or detergent sources) that occurs on the mainstem Palouse River.	Near-term	Low
QL-6c	BW19, CLP1	Mainstem between Colfax and Whitman county line	CDs, Ecology, IDEQ, NRCS	Identify and implement corrective actions to address the cause of the foaming on the mainstem Palouse River	Mid-term	Medium
QL-6d	CLP1	Entire MA	Adams CD, Ecology	Coordinate supporting information with Adams Conservation District water quality monitoring studies for fecal coliform and nutrients on Cow Creek and baseline nutrient and other water quality information on CLP.	Near-term	Low
QL-6e	BW19, CLP1	Palouse River Mainstem	Ecology	Conduct a TMDL study for bacteria, temperature, and dissolved oxygen in the Palouse River mainstem. Include sampling the mouths of the major tributaries.	Mid-term	Medium
Regulatory Actions (RG)						
RG-1	BW6, BW7	Entire MA	Counties, Towns	Implementation/enforcement of land use regulations by appropriate agencies to protect critical areas and pristine areas of the management area (e.g. critical areas and shorelines programs).	Ongoing	Low
RG-2	BW6, BW7	Entire MA	Counties, Towns	Review and update, as needed, best-available-science-based riparian buffer zones and critical areas regulations.	Ongoing	Low
RG-3	BW6	Entire MA	USACE, WDFW, Counties	Improve and streamline permitting process for bank stabilization and other projects	Near-term	Medium
Notes:						

Table 6-2
Central/Lower Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]

1) Schedule is defined as near term (1 to 3 years to implement), mid term (3 to 7 years to implement), and long term (> 7 years to implement).
2) Estimated costs have been provided where available from feasibility or other studies. Otherwise, a cost range is provided where: Low=<$100,000; Medium=$100,000-$500,000; High= >$500,000
3) Conservation Districts located within the Central/ Lower Palouse River Management Area include the following: Adams County (small area), Latah SWCD, Pine Creek, Palouse, Palouse Rock Lake, Spokane County, Whitman
4) Counties located within the Central/ Lower Palouse River Management Area include the following: Whitman, Spokane, Genesee (ID), Latah (ID) (small area), Benewah (ID) (small area), Nez Perce (ID) (small area)
5) Towns located within the Central/ Lower Palouse River Management Area include the following: Colton, Endicott, Farmington, LaCrosse, Malden, Oakesdale, Rosalia, Saint John, Uniontown. No cities according to the Municipal Research and Services Center: http://www.mrsc.org/cityprofiles/citylist.aspx

(Insert Exhibit 6-2 here)

6.3 North Fork Palouse River Management Area Planning Objectives and Actions

Watershed issues identified for North Fork Palouse River include:

- Riparian areas are not currently functioning to their potential and need to be restored/ enhanced.
- Erosion is occurring from land use activities (i.e. cropland, forest, roads, etc).
- pH, fecal coliform, turbidity and water temperature levels are degrading water quality.

Specific objectives for the North Fork Palouse River Management Area are provided below. These are in addition to the Basin–wide objectives and actions described in Section 5. For convenience, objectives are numbered sequentially with the prefix NFP (North Fork Palouse). The numbers do not imply or assign any priority to the objectives.

NFP1. Recommend instream flow minimum and target enhancement flow for North Fork Palouse River.

NFP2. Develop sustainable water supplies to meet municipal and rural growth demands, while continuing to protect existing water rights/users.

NFP3. Support continued implementation of agricultural, livestock, and forest BMPs.

NFP4. Conduct education and outreach on water resource management, including water use, conservation, reclamation and reuse, and water quality protection and improvements.

NFP5. Improve water quality to the extent practicable given existing watershed conditions. Water quality improvements to be addressed include:

- Water temperature (assess existing conditions and change standards to reflect the natural condition)
- Sediment loading and turbidity
- pH
- Nutrient levels
- Toxics
- Dissolved oxygen
- Exotic or non-native aquatic plants/weeds

NFP6. Apply the North Fork Palouse River Fecal Coliform Bacteria TMDL recommendations, targets, and control measures to reduce fecal coliform levels.

NFP7. Encourage and improve coordination of Idaho and Washington water resource management to protect and enhance surface and groundwater supply and quality.

Specific projects, actions and additional studies are identified in Table 6-4 organized by planning elements, to meet the area-specific objectives described above and basin–wide objectives provided in Section 5. There are several actions or project types that are applicable across several objectives, e.g., implementation of these projects could benefit multiple objectives. Such projects include:

- Characterize the hydrology, connectivity and interaction between surface water, ground water, springs, and gravel beds and develop potential recharge and flow enhancement strategies, with specific analysis to be conducted at the following locations:
    - Colfax – evaluate if the proposed well project currently being considered by the City will impact shallow aquifer, springs and streamflows, and identify opportunities to minimize or mitigate impacts (if any).

- Continuing water quality monitoring in the North Fork Palouse management area, with an emphasis on identifying and supporting action plans for reducing impacts from nitrates in ground water, septic system contamination, sediments, fecal coliform levels, and toxics.

- Developing small storage projects, such as wetlands, infiltration basins, city sanitary wastewater storage during high flows, and large and small scale retention/settling basins.

- Enhance riparian functions and habitat, including riparian vegetation, where the landowner is willing. These projects can benefit instream flow by restoring a more natural hydrograph, enhance recharge of ground water, improve water temperature and quality, reduce sediment loading, and provide habitat for terrestrial and aquatic species. Riparian function enhancement projects should be tailored to landowner needs, and incorporate incentive-based approaches.

- Conducting urban and rural conservation programs targeting individual homeowners and landowners, using incentive and rate-based approaches that encourage re-use, education / conservation and understanding of the individual's role in supporting watershed hydrology.

Where specific projects for each planning element are not identified, refer to the basin–wide management strategies for more general actions on what is intended for a given planning element in the management area. Exhibit 6-3 follows the actions table and identifies some highlighted management actions within the management area where actions were able to be readily identified on the map.

6.3.1 Statement of Community Need for Instream Flows

This subsection provides an expression of "Community Need" with respect to instream flows and should be viewed as a jumping off point for further development of an instream flow package for the North Fork Palouse River and negotiations between the Planning Unit and the Departments of Ecology and Fish and Wildlife during Phase IV of Watershed Planning.

Although the North Fork working group is not able to quantify components of the instream flow package at this time, they have come far in understanding the process and developing recommendations. Finalizing the instream flow recommendations will occur during Phase IV of Watershed Planning along with public outreach regarding the recommendations. The development of the ISF package and recommendation for rule in Phase IV will occur assuming that state agencies obligate funding and time to (a) allow a collaborative process with state agencies, and (b) conduct public outreach.

It is the Planning Unit's desire to continue to participate in the flow setting process in cooperation with the Department of Ecology. The Planning Unit continues to be a willing partner that wishes to remain engaged in discussions with the State regarding North Fork flow levels and water allocation. The North Fork working group of the WRIA 34 Planning Unit is currently committed to continue development of an instream flow package for the North Fork Palouse River. This package is to contain negotiated and agreed upon flow regimes, maximum allocation quantities for storage during high flow months and a reservation for uninterruptible water use for municipal, domestic and possibly other purposes of use. The continuation of this process during Phase IV of the Watershed Planning process is dependent on continued funding of the WRIA 34 Planning Unit and active participation by the Departments of Ecology and Fish and Wildlife in the negotiation stages of this process. The statement of Community Need can be considered a starting point in the negotiations to be held in Phase IV. An Expression of Community Need Technical Memorandum (Golder, June 2007) and Final North Fork Water Use Technical Memorandum (Golder, May 2007) were developed and are provided in Appendix C, and findings from these memoranda are summarized below.

Instream Flow Regime

The North Fork workgroup will consider supporting a minimum instream flow regime as recommended by the Departments of Ecology and Fish and Wildlife **if maximum allocation and reservation requests can be agreed upon.** Ecology has recently proposed a minimum instream flow regime that is included as Attachment A to this memorandum. It is also expected that Ecology will recommend a partial closure to new surface water allocation between July and November. The additional minimum instream flows would be used to assist with decisions regarding requests for water right transfers and changes. Further negotiation between the Planning Unit and the agencies regarding other components of the instream flow package is required prior to Planning Unit support of the flow regime.

Reservation for Future Water Use

Estimates of future domestic and municipal water use are provided in Section 4.0 for two future growth scenarios, and members of the workgroup are concerned that these projected future uses be supplied via a reservation for new water allocation (including permit exempt wells). The North Fork work group is not prepared to recommend a reservation quantity or purpose of use at this time. However, the group felt that a future reservation should include the following elements:

- The quantity of water in the reservation should support community water needs over a 25 year timeframe.

- Language that defines the reservation in rule should specify that the reservation "be sufficient for" so as not to allow for any misinterpretation that would limit the reservation's uses.
- Language should ensure that the reservation is uninterruptible (e.g., not subject to minimum instream flows).
- Include language that the reservation can actually be used immediately (and for the timeframe defined) and ensure that it is just not set aside for some "future" use that cannot be justified.
- The uses for which the reservation can be applied should include uses other than municipal and domestic (e.g., agriculture). These need to be further discussed and defined in Phase IV.
- The Planning Unit supports requests to Ecology for water right transfers, and the ability to increase the quantity of water in the reservation utilizing a transfer of an existing water right to the reservation.
- The County, when implementing a program to track reservation water, should consider only that portion of water use which is consumptive in nature. Estimates of consumptive domestic use range from approximately 15 to 25% of total water use on an annual basis (U.S. EPA, 1975-Rural Indoor/Outdoor; USGS, 1995- Indoor/Outdoor; City of Sequim, 2002-Indoor only). Further analysis of purveyor data could be used to more specifically estimate the consumptive portion of water use in the North Fork Palouse Sub-watershed if the North Fork workgroup or Planning Unit chooses.
- Recommend that a future groundwater study be designed and implemented to determine the conditions under which groundwater use should actually apply to an instream flow reservation. If the study indicates that withdrawal from certain hydrogeologic units does not impact a stream, or that wells located greater than a certain distance from a stream have low probability of impacting the stream, allow them to be exempt from debiting the reservation.

Currently the reservation quantities being proposed by the Departments of Ecology and Fish and Wildlife are 1% of the 90% exceedance flow (e.g., habitat loss of 1% during low flow years is considered acceptable by fish biologists at WDFW). On the North Fork of the Palouse this equates to an approximately 0.03 cfs reservation. This is significantly smaller than the estimated future water use required for a reservation over the next 25 years and will need to be further negotiated.

Maximum Allocation

The North Fork workgroup has determined that further discussion is needed before a recommendation for a maximum allocation can be made. The group would also prefer that maximum allocation numbers be negotiated before a reservation is negotiated. The Department of Ecology has recently suggested a maximum allocation equivalent to 10% of the 50% exceedance flow in any month except during months of a proposed closure (likely July through November). Maximum allocations provide for new surface water rights during the time of year when the watershed is not closed, but are capped. The workgroup has not agreed to this methodology of calculating the maximum allocation and would like to explore their options further as part of Phase IV, Implementation.

Mitigation

The WRIA 34 Planning Unit is currently exploring potential recharge and flow enhancement strategies and proposing a study to better understand the hydrogeology of the region to ensure that future withdrawals are not in direct continuity with surface stream flows.

These studies may provide examples of potential mitigation for additional out-of-stream water use. The Planning Unit recognizes that the North Fork (above Colfax) has historically seen very low flows during the summer months. In requesting a reservation for future water use that is not subject to flow, the Planning Unit understands the need to pursue additional flow mitigation such as aquifer recharge, ground water studies, conservation and public education measures, habitat enhancement, and other projects. As part of future negotiations regarding an instream flow package for the North Fork Palouse River, the group is willing to consider and recommend mitigation options.

The objectives NFP 1, 2, 4 and 7 and many of the other general actions described in Section 6.3 are evidence of this commitment to mitigating the impacts of future out-of-stream water use.

Funding the ISF Process

The Planning Unit requests an obligation by the agencies to collaborate with, and assist with identifying and obtaining funding for, the Planning Unit to develop a full instream flow package for the North Fork, and to support quantification of flows, a reservation and maximum allocation. This includes provision of funding to inform and educate the Planning Unit and the community on instream flow setting and the implications of rule making. Without further funding for these activities, the Planning Unit and North Fork working group will be unable to move forward in a collaborative instream flow setting process.

Estimates of Water Use in the North Fork

The following information is excerpted from the Final North Fork Water Use Technical Memorandum (Golder, May 2007). An assessment of water use in the North Fork Palouse Sub-watershed was deemed necessary to support water allocation and availability decisions for an instream flow package that may be developed by the Planning Unit as part of Phase IV of Watershed Planning.

The North Fork Palouse Sub-watershed is located in Washington and Idaho with the majority of the sub-watershed in Idaho. There are three cities/towns in the Washington portion of the North Fork Palouse Sub-watershed that provide municipal water supply: the City of Colfax, the town of Garfield, and the City of Palouse. Colfax is only partly located in the sub-watershed. This analysis presents estimates of current and future water use in the Washington portion of the North Fork Palouse Sub-watershed. Unless otherwise stated, future references to the North Fork Palouse Sub-watershed refer only to the Washington portion of the sub-watershed.

Estimates of current and projected water use for WRIA 34 have previously been presented for the major cities and unincorporated areas within WRIA 34 (Golder, 2005; Golder, 2006a). However population density and water usage are highly variable within the Palouse Watershed, therefore an assessment of water use in the North Fork Palouse Sub-watershed was deemed necessary to support water allocation and availability decisions for that specific sub-watershed.

The available water supply associated with any Group A system is defined by that system's existing water rights. Analysis of existing water rights allocated to Group A systems in the North Fork Palouse Sub-watershed indicates that the Group A systems' (Colfax, Palouse and Garfield) water rights should be able to support the projected 2025 and 2050 water use. Additional water needs that are not currently permitted by an existing water right in the North Fork Palouse Sub-watershed are therefore based on the projected 2025 and 2050 water use by Group B water systems and permit-exempt wells. Based on two potential growth scenarios and a range of household water use factors, an additional 0.17 – 1.45 cfs (42 - 350 AF/yr) would be needed to support future domestic growth through 2025. If the planning horizon is extended to 2050, an additional 0.51 – 6.14 cfs (123-1,483 AF/yr) would be needed to support growth between 2007 and 2050. Table 1 presents the forecast water needs for the two potential growth scenarios in the North Fork Palouse Sub-watershed.

It should be noted that the water use estimates presented in this memorandum represent both that water which is utilized indoors and returned via septic recharge to the river system (non-consumptive use) and that water that is used outdoors that evaporates or evapotranspires and is not returned to the river system (consumptive use). The County, when implementing a program to track reservation water, may choose to consider only that portion which is consumptive in nature. Estimates of consumptive domestic use range from approximately 15 to 25% of total water use on an annual basis (U.S. EPA, 1975-Rural Indoor/Outdoor; USGS, 1995-Indoor/Outdoor; City of Sequim, 2002-Indoor only). Further analysis of purveyor data could be used to more specifically estimate the consumptive portion of water use in the North Fork Palouse Sub-watershed if the North Fork workgroup or Planning Unit chooses.

Table 6-3
Projected Water Needs in 2025 and 2050 - North Fork Palouse Sub-watershed

North Fork Palouse Sub-watershed	**Growth Scenario**	**Projected 2025 Water Needs (2007 - 2025)**			**Projected 2050 Water Needs (2007 - 2050)**		
		Additional Number of Connections	Additional Peak Day Demand cfs[1]	Additional AF/yr	Additional Number of Connections	Additional Peak Day Demand cfs[1]	Additional AF/yr
Group B and single domestic permit-exempt wells	**Growth Scenario 1** (1.6% annual growth rate)[3]	86	0.17 - 0.48[2]	42 - 116[2]	254	0.51 - 1.41[2]	123 - 342[2]
	Growth Scenario 2 (3.93% annual growth rate)[4]	260	0.52 - 1.45[2]	126 - 350[2]	1,103	2.20 - 6.14[2]	532 - 1,483[2]
Group A water service areas	2025 and 2050	*Provided through existing water rights.*					

Notes:
1. Based on peak day demand. The conversion of MDD from mgd to cfs assumes continuous use over 24 hours.
2. The range in projected water use represents the use of two household water use factors: 430 gpd per connection and 1,200 gpd per connection.
3. Growth scenario 1 is based on the high population projection (2000 - 2025) for Whitman County (OFM, 2002).
4. Growth scenario 2 assumes that the population served by Group B and exempt wells doubles between 2007 - 2025.

Two growth scenarios were used to provide a range of future forecast water use by Group B and permit-exempt wells for domestic purposes (Table 6-3). These growth scenarios are considered conservative in that they consider the potential for significant growth. The first growth scenario assumes that the water use increases at a rate equivalent to the high population projection for Whitman County (OFM, 2002). Based on a 1.6% annual growth rate, there would be an additional 86 connections by 2025 or 254 additional connections by 2050. Using a range of per household water use factors, the additional connections would result in an additional 0.17 – 0.48 cfs (42 – 116 AF/yr) by 2025 or 0.51 – 1.41 cfs (123 – 342 AF/yr) by 2050.

The second growth scenario assumes that the population served by Group B and permit-exempt wells in the unincorporated area doubles from 2007 to 2025. Based on this assumption, the annual growth rate would be 3.93% and there would be an additional 260 connections by 2025 or 1,103 connections by 2050. Using a range of estimated water use factors, the additional connections in growth scenario 2 would result in an additional 0.52 – 1.45 cfs (126 – 350 AF/yr) by 2025 or 2.20 – 6.14 cfs (532 – 1,483 AF/yr) by 2050.

Table 6-4
North Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
General (G)						
G-1	BW7, BW8	Early emphasis: Deep Creek, ID Clear Creek, ID	CDs[3], IDFG, NRCS, USFS, WSU Extension	Identify opportunities and implement targeted one-on-one outreach on land management planning and practices	Near-term	Low
G-2	BW6, NFP3	Entire MA	Planning Unit, USFS	Review and evaluate key strategies for water management from Clearwater National Forest Management Plan, state practices and forest practices to use in water management planning throughout the management area	Near-term	Low
G-3	BW8, BW9, NFP4	Entire MA	CDs, ISCC, NRCS, WCC	Provide additional resources to CDs to increase individual farm and urban household BMP planning and implementation assistance.	Near-term	Medium
G-4	BW3, BW11, BW12	Endicott Rosalia	CDs, Counties, Planning Unit	Survey small communities within the watershed for water management / supply issues and projects; query regarding economic development being limited by water availability	Near-term	Low
Water Quantity Management						
Hydrology and Hydrogeology Studies (QT-1)						
QT-1a	BW12, BW14, NFP2	Entire MA	Ecology, IDWR, PBAC, USGS	Characterize hydrology and connectivity of surface water, ground water, and springs within the management area.	Mid-term	Medium

Table 6-4
North Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
Flow Measurements(QT-2)						
QT-2a	BW13, NFP1	Upstream of Colfax	Ecology, IDEQ, USGS, IDWR	Continue instream flow monitoring through permanent and seasonal gauges on North Fork; identify appropriate areas for permanent gauging stations upstream of Colfax	Ongoing	Low
QT-2b	BW13, NFP2	Entire MA	PBAC, IDWR, Ecology	Establish and maintain groundwater monitoring wells	Ongoing	Medium
Instream Flow Package (QT-3)						
QT-3a	BW14, BW18 NFP4	Entire MA	CDs, Ecology, WDFW Planning Unit	Obligate agencies to collaborate with and assist in identifying funding for developing a full instream flow package for the North Fork Palouse to support quantification of flows, a reservation, and maximum allocation. Assist in identifying funding to educate the Planning Unit/community on instream flow setting.	Near-term	Low
QT-3b	NFP1	North Fork Palouse River	CDs, Ecology, WDFW, Planning Unit	Develop instream flow package for North Fork Palouse; establish minimum instream flows for North Fork Palouse River. Consider a partial closure during low flow summer months; along with a reservation for year round domestic and municipal use and a maximum allocation during high flow; consider water reservation for storage	Mid-term	Medium
Retention and Restoration (QT-4)						
QT-4a	BW16	City of Palouse City of Potlatch City of Garfield	Cities and Towns, Ecology, IDEQ, IDWR, PBAC	Develop potential recharge and flow enhancement strategies.	Mid to Long-term	Medium

Table 6-4 North Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-4b	BW15, BW16	Entire MA 1. Outside Harvard 2. Old Mill Site west of Potlatch (flat plane for flood control) 3. Strychnyne Creek (on stream reservoir) Above Laird Creek (dam)	CDs, Ecology, IDEQ, IDWR, NRCS, USFS	Identify opportunities for additional retention/settling basins: small scale and large scale	Near-term	Low
QT-4c	BW10, BW11	Entire MA	CDs, Counties, Ecology, IDEQ, IDWR, Individual landowners, NRCS, WSU Extension	Characterize riparian conditions and identify restoration/enhancement areas where appropriate; implement riparian function enhancement projects with willing landowners, tailored to their strategies and needs, in priority areas where appropriate using incentive-based approaches (using Whitman County Growth Management Plans to assist in identification of critical areas)	Near-term	Medium
QT-4d	BW10	Entire MA	CDs, Ecology, IDEQ, IDWR, Individual landowners, NRCS	Conduct feasibility of and implement potential wetland storage locations	Near-term	Medium
QT-4e	BW10	Entire MA	CDs, Ecology, IDEQ, IDWR, NRCS, USFS	Enhance and/or restore wetlands at the following locations with willing landowners; evaluate incentive-based approaches to wetland restoration: 1. City of Potlatch – old mill site 2. Upper forest meadows (USFS)	Mid-term	Medium
Water Conservation and Reuse (QT-5)						
QT-5a	BW17	Entire MA	CDs, Individual irrigators, NRCS	Identify and prioritize locations to implement water conservation and efficiency strategies for agricultural irrigation systems	Near-term	Low
QT-5b	BW17	Entire MA	Cities and Towns, Public Systems, WDOH	Implement WDOH municipal conservation program elements as appropriate	Near-term	Low to Medium

Table 6-4 North Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-5c	BW9, BW11, BW17	Entire MA	CDs, DOH, Ecology, IDEQ, IDWR, WSU/UI Extensions, Individual landowners, NRCS, Non-profit organizations	Implement management area-wide conservation program, including: 1. Communicating existing efforts and opportunities for funding to individual landowners 2. Increasing funding, methods and outreach of conservation measures to all water users 3. Developing regional workshops that target all water users on the following topics: a. water re-use b. lawn watering c. water efficiencies d. equipment installation and use e. riparian and watershed function f. out of stream livestock watering	Ongoing	Low to Medium
QT-5d	BW15	Entire MA	Cities and Towns, Counties, Ecology, IDEQ, IDWR, Individual landowners, Non-profit organizations	Encourage water re-use systems and stormwater management plans for new construction; investigate legality of use of gray water and evaluate impacts to surface water flows.	Ongoing	Low
Infiltration and Recharge (QT-6)						
QT-6a	BW12, BW17, NFP2	Entire MA	CDs, Ecology, IDWR, Individual landowners	Encourage use of small scale structures by landowners to improve baseflows in the summer, (e.g. those at Laird Park, ID. Consider the Laird Park site as a demo site for local Conservation Districts to show to interested landowners.	Mid-term	Low-Medium

Table 6-4 North Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-6b	BW12, BW17	Kamiak Butte	Palouse CD, PBAC, USGS, Ecology	Further develop the feasibility of enhanced infiltration at the basement – basalt contact at Kamiak Butte, with preference for an infiltration ditch that would follow the contact between the basalt and the basement rocks. Consider the North Fork and Fourmile Creek as potential sources of water for infiltration.	Mid-term	Medium-High
QT-6c	BW12, BW17, SFP2	Entire MA	PBAC, CDs, Ecology, Pullman, WSU, IDWR	Further develop the concept of aquifer recharge using recharge wells to stabilize and recover aquifer levels in both the Wanapum and Grand Ronde basalts. Educate and involve the public in water management options.	Mid-term	Medium-High
Water Quality Management (QL)						
QL-1	BW18, BW19, NFP4	North Fork Palouse River	Planning Unit	Reference 2002 North Fork Palouse River Watershed Management Plan for water quality strategies and measures.	Near-term	Low
QL-2	BW18	Washington portion Idaho portion	Cities and Towns, CDs, Counties, Ecology, IDEQ, WSU Extension	Conduct further characterization of ground water for potential contamination from nitrates; provide opportunities for voluntary water quality sampling on private wells (sample kits)	Mid-term	Medium
Bacteria (QL-3)						
QL-3a	BW18, BW19 NFP4	Entire MA	CDs, Counties, IDEQ, Individual landowners, NRCS, WDOH, Ecology, WSU Extension	Identify sources of fecal coliform (by species) and implement the following strategies to reduce water quality impacts: 1. minimize direct discharge from livestock operations (feedlots and/or grazing) 2. enhance riparian buffers	Mid-term	Low

Table 6-4 North Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QL-3b	BW18, BW19 NFP4	Entire MA City of Palouse	Counties, IDEQ, Individual landowners, NRCS, USFS, Ecology, WDOH, WSU Extension	Conduct further inventory of septic systems, and identify and evaluate potential options to repair systems and reduce waste from entering surface waters and water quality impacts (evaluate opportunities for assistance to landowners for repairs)	Near-term	Low to Medium
QL-3c	BW18, BW19 NFP4	Entire MA City of Palouse	Counties, IDEQ, Individual landowners, NRCS, USFS, Ecology, WDOH, WSU Extension	Increase awareness by development and implementation of an education program targeting septic system issues	Near-term	Low to Medium
QL-3d	BW18, BW19 NFP4	City of Palouse (Fisher Addition)	City of Palouse, Ecology	Evaluate the feasibility, cost and funding sources for a sewer extension for eastside Palouse	Near-term	Low
Sediment (QL-4)						
QL-4a	BW19, NFP4	Entire MA Deep Creek, ID	CDs, Counties, Ecology, IDEQ, IDWR, Latah County Highway District, NRCS, USFS, WADOT, WSU Extension	Conduct further characterization of sediment sources, and identify and evaluate potential options to reduce sediment loads entering surface waters, including: 1. BMPs for agriculture, range, forest (forest road stabilization and abandonment). 2. Rural Roadway BMPs 3. Deep Creek, ID: streambank stabilization, cropping systems, livestock management, and other practices	Mid-term	Medium

Table 6-4 North Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QL-4b	BW8, BW19, BW20, NFP4	Entire MA	CDs, Counties, NRCS, WSU Extension	Establish and promote the following BMPs for erosion control and improved infiltration for cropland: 1. increase opportunities for conservation tillage, when applicable (including long-term incentives) 2. bank stabilization 3. riparian buffers 4. grazing management systems	Ongoing	Low
QL-4c	BW10	Mainstem Palouse River	CDs, Ecology, IDEQ, IDWR, USACE	Conduct bank stabilization activities to minimize water quality impacts from flood events	Mid-term	Low to Med
Stormwater (QL-5)						
QL-5	BW15	Drainage facilities on rural and urban roads	Cities and Towns, Counties	Identify and prioritize areas to implement strategies to improve stormwater management and treatment and increase groundwater infiltration.	Near to Mid-term	Medium
Landowner Practices (QL-6)						
QL-6a	BW8, BW19, NFP4	Entire MA Along length of North Fork (lower elevations)	CDs, Ecology, IDEQ, Individual landowners, NRCS, WSU Extension	Work with individual livestock owners/managers to review management practices, and implement the following BMPs through grants and other programs to limit water quality impacts: 1. livestock BMPs (specific to type of animal) 2. monitoring 3. expanded lagoons / lined aerated lagoons 4. nutrient management plans	Near-term	Low to Medium

Table 6-4 North Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Agency(ies)**	**Description**	**Schedule [1]**	**Cost [2]**
QL-6b	BW18, BW19, NFP4, NFP5	Entire MA	CDs, Ecology, IDEQ, WSDA, WSU Extension	Work with individual landowners to review pesticide and fertilizer use and implement the following BMPs to limit water quality impacts: 1. Implementation of nutrient management plans on agriculture / rangelands 2. Follow labels for appropriate application 3. Evaluate and support opportunities for funding of high precision agricultural systems to reduce pesticide use	Ongoing	Low
TMDL Coordination (QL-7)						
QL-7a	BW9, BW18, BW19	Entire MA	CDs, Ecology, IDEQ	Encourage public participation in the TMDL process	Near-term	Low
QL-7b	BW4	Mainstem Palouse Idaho	CDs, Ecology, Planning Unit	Identify mainstream/alternative funding opportunities for TMDL studies and implementation activities on the mainstem Palouse River and in Idaho	Near to Mid-term	Low
QL-8	BW20, NFP5	Entire MA	CDs, Ecology	Conduct surface water sampling to support assessment of treatment options for water diverted from the North Fork of the Palouse River and Fourmile Creek.	Mid-term	Low-Medium
Regulatory Actions (RG)						
RG-1	BW7	Entire MA	Cities and Towns, Counties, USFS, WDFW, Ecology, IDEQ	Implement/enforce of land use and management regulations by appropriate agencies to protect critical, pristine areas of the management area.	Ongoing	Low

Table 6-4
North Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Agency(ies)	Description	Schedule [1]	Cost [2]
RG-2	BW8, BW11	Entire MA	Cooperative Extension, Cities and Towns, Counties, Ecology, IDEQ, IDFG, IDWR, NRCS, USFS, WDFW	Review and update, as needed, best-available-science-based riparian buffer zones and critical areas regulations.	Ongoing	Low
RG-3	NFP6	Idaho portion of MA	IDEQ, IDL	Evaluate and review the impact of the Idaho Forest Practices Act on water quality.	Near-term	Low
RG-4	BW7	Washington portion of MA	Cities and Towns, Counties, IDEQ, Ecology.	Evaluate effectiveness of critical areas ordinances; modify ordinances to improve effectiveness as necessary.	Near-term	Low
RG-5	BW3, BW8, BW11, BW18	Entire MA	Cities and Towns, Counties, WDFW, Ecology, IDEQ, IDFG	Manage local development to minimize impacts to natural resources	Ongoing	Low to Medium

Notes:

1) Schedule: Suggested dates have been provided or a range, where: Near-term=0-3 years; Mid-term=3-10 years; Long-term=10 years or more beyond date of plan adoption.
2) Estimated costs have been provided where available from feasibility or other studies. Otherwise, a cost range is provided where: Low=<$100,000; Medium=$100,000-$500,000; High= >$500,000
3) Conservation Districts located within the North Fork Palouse River Management Area include the following: Palouse, , Latah SWCD, Whitman (small area), Palouse Rock Lake (small area)
4) Cities and towns located within the North Fork Palouse River Management Area include the following: Palouse, Potlatch (ID), Onaway (ID)
5) Counties located within the North Fork Palouse River Management Area include the following: Whitman, Latah (ID), Benewah (ID) (small area)

(**Insert Exhibit 6-3 North Fork Palouse Management Area**)

6.4 South Fork Palouse River Management Area Planning Objectives and Actions

Watershed issues identified for South Fork Palouse River include:

- Sediment, nutrients, and fecal coliform levels contribute to degraded water quality.
- Riparian areas are not currently functioning to their potential in some areas and need to be restored/ enhanced.
- Erosion is occurring from land use activities (i.e. cropland, urban development, forest, roads, etc).
- Water temperature levels exceed water quality standards in certain areas.
- Surface flows are inadequate to sustain instream flow and aquatic habitat during summer low flow periods. Flow is dependent upon wastewater discharges from Moscow and Pullman.
- Water levels in the deep aquifer appear to be declining and understanding of groundwater systems is incomplete.
- Cross-state management of shared water resources.
- Securing sufficient water resources for sustainable supply and growth.
- Land use activities have changed the hydrology of the system resulting in increased runoff rates and an increased risk of damaging high flows.

Basin–wide objectives described in Section 5 are directly applicable to the South Fork Palouse River Management Area and address many of the issues and conditions described above. In addition, specific objectives for the South Fork Palouse River Management Area are provided below. Objectives are numbered sequentially with the prefix SFP (South Fork Palouse) for convenience. The numbers do not imply or assign any priority, ranking or implementation order to the objectives.

SFP1. Improve water quality to the extent practicable given existing watershed conditions. Water quality improvements to be addressed include:

- Water temperature
- Sediment loading and turbidity
- Nutrient levels
- Fecal coliform bacterial loading
- Toxics
- Dissolved oxygen levels
- pH
- Sustain and seek opportunities to increase base flow

SFP2. Develop additional sustainable water supplies to provide for future needs.

SFP3. Review surface water quality standards and establish natural (system potential) temperature levels for Paradise Creek and South Fork Palouse River that reflect conditions within the watershed.

SFP4. Clarify status and validity of existing water rights, claims, certificates and permits, including place of use, point of diversion and usage information for existing water right holders on South Fork below Pullman, as it relates to wastewater effluent discharge and/or reuse strategies.

SFP5. Encourage and improve coordination of Idaho and Washington water resource management to protect and enhance surface and ground water supply and quality.

SFP6. Continue ongoing efforts to better understand and characterize the area's hydrogeology and basalt ground water conditions.

Projects, actions and additional studies are identified in Table 6-5, organized by planning elements, to meet the area-specific objectives described above and basin–wide objectives provided in Section 4. There are several actions or project types that are applicable across several objectives, e.g., implementation of these projects could benefit multiple objectives. Such projects include:

- Enhance riparian functions and habitat, including riparian vegetation, where the landowner is willing. These projects can benefit instream flow by restoring a more natural hydrograph, enhance recharge of ground water, improve water temperature and quality, reduce sediment loading, and provide habitat for terrestrial and aquatic species. Riparian function enhancement projects should be tailored to landowner needs, and incorporate voluntary incentive-based approaches.

- Establishing and promoting the following BMPs, as applicable, for pasture and rangeland, cropland, and forest land (The application of these BMPs provides both erosion and sediment control, enhances recharge of ground water, and improves water quality):

    - Conservation tillage
    - Minimize conventional summer fallow
    - Improved grazing management
    - Increased grassed waterways
    - Buffers on waterways and drainage ditches
    - Strip cropping
    - Feedlot placement
    - Use of site-based NRCS manuals
    - Conservation plan development and implementation

- Characterize the hydrology, connectivity and interaction between surface water, ground water, springs, and gravel beds and develop potential recharge and flow enhancement strategies, with specific analysis to be conducted at the following locations:

    - Moscow Mountain

- Sand Road area
- Smoot Hill
- Kamiak Butte
- Latah County (eastern basin)
- City of Pullman
- City of Moscow
- Upper reaches of tributaries

- Identify and implement wastewater effluent reuse strategies where practicable, considering legal interpretation of obligation/amount of water to supply and protect water rights, including riparian stockwatering rights, below city discharge points. Conduct tentative determination of status and validity of existing water rights, claims, certificates and permits, including place of use, point of diversion and usage information for existing water right holders

- Conducting urban and rural conservation programs targeting individual homeowners and landowners, using incentive and rate-based approaches that encourage re-use, education / conservation and understanding of the individual's role in supporting watershed hydrology.

Exhibit 6-4, which follows the actions table, identifies some highlighted management actions within the management area, where actions were able to be readily identified on the map.

Table 6-5
South Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
General (G)						
G-1	BW8, BW9	Entire MA	CDs[3], NRCS, Planning Unit	Provide additional resources to CDs to increase individual farm and urban household BMP planning and implementation assistance.	Near-term	Medium
G-2	BW8, SFP5	Entire MA	PBAC	Establish a central and permanent office for storage of geologic/ hydrologic information on the Palouse Basin	Near-term	Low
G-3	BW6, BW8, SFP5	Entire MA	PBAC, Ecology, CDs, Counties[4], Cities[5]	Develop a framework for water resource management decisions in the Palouse Basin Aquifer (PBAC's #1 priority)	Near-term	Low
G-4	BW6, BW8, NFP5	Entire MA	Palouse CD, Cities, U of I, WSU, Counties, Ecology, USGS	Continue the "Palouse Water Summit" as an annual event to discuss Palouse Watershed water resources issues in a public forum.	Near-term to Long-term	Low -Medium
Water Quantity Management						
Hydrology and Hydrogeology Studies (QT-1)						
QT-1a	BW14, SFP2, SFP6	Pullman/Moscow	Ecology, IDWR, PBAC, USGS,	Continue to characterize ground water resources; map approximate location, depth, and extent of aquifers. Also determine regional quantities and movement of ground water. Age-date water to identify young water in shallow and deep aquifer systems.	Mid-term	High
QT-1b	BW15, BW16	Pullman/Moscow	City of Moscow, City of Pullman	Identify and evaluate potential aquifer recharge areas, such as winter flow diversions, ASR, Class A treated effluent, etc.	Mid-term	Medium

Table 6-5 South Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Organization(s)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-1c	BW14, BW16, SFP6	Entire MA	Ecology, IDEQ, PBAC USGS	Characterize hydrology and connectivity of surface water, ground water, and springs, and develop potential recharge and flow enhancement strategies at the following locations: 1. Moscow Mountain 2. Sand Road area 3. Smoot Hill 4. Kamiak Butte 5. Latah County (eastern basin) 6. upper reaches of tributaries	Mid-term	Medium
QT-1d	BW14	Entire MA	PBAC, Ecology, IDEQ, IDWR	Conduct ongoing studies and data collection to monitor groundwater conditions, and to better understand how recharge occurs.	Ongoing	Medium
QT-1e	BW15, SFP6	Entire MA	PBAC, USGS	Completion of 1:24,000 scale geologic maps for the Colfax South, Garfield, and Ewartsville quads	Mid-term	Low-Medium
QT-1f	BW15, SFP6	Entire MA	PBAC, USGS	Completion of 1:48,000 and 1:100,000 scale geologic map of the Palouse Basin Aquifer	Mid-term	Low-Medium
QT-1g	BW15, SFP6	Entire MA	PBAC, USGS	Develop a 3-D model of the geology of the Palouse Basin Aquifer	Mid-term	Medium-High
QT-1h	BW12	Cunningham Farm	PBAC, Ecology	Cunningham Farm Monitoring Field Well Project (PBAC's #2 Priority)	Mid-term	Low-Medium
QT-1i	BW15, SFP6	Kamiak and Four-Mile "gaps"	PBAC, Ecology, USGS	Geologic characterization of the Kamiak and Four-Mile "gaps" by further investigation of well logs and additional test drilling (PBAC's #3 Priority)	Mid-term	Medium
QT-1j	BW17, SFP2	Entire MA	PBAC, Ecology, IDWR, IDEQ	Rainfall/Wanapum well correlation study to determine recharge areas and amounts	Mid-term	Medium
QT-1k	BW17, SFP6	Bovil and Vantage	PBAC	Carbon 14 dating of Sediments of Bovil and Vantage well water	Mid-term	Medium

Table 6-5
South Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
QT-1l	BW15, SFP6	Entire MA	PBAC	Develop more detailed Grande Ronde flow maps by comprehensive basalt sampling/chemistry	Mid-term	Medium
QT-1m	BW12, BW14. SFP6	Entire MA Colfax	Ecology, PBAC, IDWR, USGS, City of Colfax	Characterize hydrology and connectivity of surface water, ground water, and springs within the management area, specifically looking at whether proposed new Colfax well project will impact shallow aquifer, springs and streamflows.	Mid-term	Medium
Flow Measurement (QT-2)						
QT-2a	BW14, 17, SFP2	Fourmile Creek	Palouse CD, Ecology, USGS	Install permanent gauging on Fourmile Creek.	Near-term	Low
QT-2b	BW13	South Fork Palouse River City of Colfax	CDs, Ecology, IDWR, USGS	Continue instream flow monitoring through permanent and seasonal gauges on South Fork.	Ongoing	Low
QT-2c	BW14	City of Pullman	Ecology, City of Pullman	Continue to operate and maintain gauging station in Pullman.	Ongoing	Low
Conservation and Reuse (QT-3)						
QT-3a	BW15, SFP4	Pullman/Moscow	City of Moscow, City of Pullman, WSU, Ecology	Identify and implement wastewater effluent reuse strategies where practicable, considering legal interpretation of obligation/amount of water to supply and protect water rights, including riparian stockwatering rights, below city discharge points.	Mid-term	High
QT-3b	BW17	Entire MA	City of Moscow, City of Pullman, DOH	Continue to implement DOH municipal conservation program elements as appropriate	Near-term	Low to Medium

Table 6-5 South Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Organization(s)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-3c	BW8, BW17	Between Pullman and Colfax	CDs, Individual landowners, NRCS	Continue efforts to implement the following water conservation and efficiency strategies for agricultural systems: 1. conservation tillage 2. irrigation efficiencies	Near-term	Low
QT-3d	BW2, BW4, BW9, BW17	Public Water systems in the MA	Public Water Systems and CDs	Secure funding and implement community education program on water conservation and water quantity management options.	Near-term and on-going	Low
QT-3e	BW16, SFP2	City of Pullman	Ecology	Support Pullman and WSU efforts to obtain funding (Legislature and other sources) for wastewater reuse project.	Ongoing	Low
QT-3f	BW8, BW17	Entire MA	WSU, CDs, NRCS	Pursue trials of various no-till operations (e.g. Cook/Stations – Cunningham farm), and then demonstrate these conservation tillage approaches and results to area growers.	Near-term	Low
Landowner Practices (QT-4)						
QT-4a	BW14, BW16, SFP2, SFP6	Rural lands in MA	CDs, NRCS	Develop and implement Conservation Tillage Aquifer Recharge Program: This program focuses on improving aquifer recharge by changing farming practices on approximately 50,000 acres (35,000 WA & 15,000 ID)	Mid-term	High
QT-4b	BW7, BW8, BW9	Entire MA	Counties, Cities, and Towns[6]	Encourage low impact development and sustainable growth strategies to limit impacts to water resources.	TBD	TBD
Retention and Restoration (QT-5)						
QT-5a	BW15, BW16	Entire MA	City of Moscow, City of Pullman, CDs, Counties[4], NRCS, Whitman County	Conduct study to identify opportunities for additional retention/settling basins to enhance supply. Consider rainfall collection.	Near-term	Low

Table 6-5 South Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Organization(s)**	**Description**	**Schedule [1]**	**Cost [2]**
QT-5b	BW10, BW11	Entire MA; riparian areas and floodplains.	CDs, Cooperative Extension, Counties, NRCS	Conduct study to identify opportunities for wetland creation, restoration and enhancement for storage purposes	Near term	Low
QT-5c	BW14, BW16	Entire MA	PBAC, Ecology, IDWR	Conduct an economic evaluation/feasibility study that addresses, with other new supply options, supply development (i.e. "harvesting") opportunities, and compare costs.	Mid-term	Low
Infiltration and Recharge (QT-6)						
QT-6a	BW17, SFP2	Paradise Creek/Palouse Mall Area	CDs, Ecology, IDEQ, IDWR	Paradise Creek,/Palouse Mall Area Aquifer Recharge Study	Mid-term	Medium-High
QT-6b	SFP2, BW17	City of Pullman	City of Pullman, CDs, Ecology	Pullman ASR Feasibility	Mid-term	Medium-High
QT-6c	BW12, BW17	Kamiak Butte	Palouse CD, PBAC, USGS, Ecology	Further develop the feasibility of enhanced infiltration at the basement – basalt contact at Kamiak Butte, with preference for an infiltration ditch that would follow the contact between the basalt and the basement rocks. Consider the North Fork and Fourmile Creek as potential sources of water for infiltration.	Mid-term	Medium-High

Table 6-5
South Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
QT-6d	BW12, BW17, NFP2	City of Pullman	City of Pullman, PBAC, Ecology, CDs	Complete further study on ASR feasibility in Pullman, beginning with a pre-feasibility document including: 1. identification/examination of existing wells for possible retrotfit to ASR 2. geochemical compatibility screening 3. preliminary operational scenarios and water system compatibility overview 4. proposed observation well network and monitoring plan 5. educate and involve the public in water management options.	Mid-term	Medium
QT-6e	BW12, BW17, SFP2, SFP6	Entire MA	CDs, PBAC, USGS, Ecology	Further develop the preliminary feasibility of enhanced infiltration at the crystalline bedrock – basalt margins as a long-term groundwater level management tool. Conduct an investigation including the use of geophysics and test pits to determine if the contact can be identified and exposed.	Mid-term	Medium-High
QT-6f	BW12, BW17, SFP2	Entire MA	CDs, Ecology, City of Pullman, WSU	Conduct geochemical analysis to confirm compatibility of surface water for use as a source for aquifer storage and recovery (ASR).	Mid-term	Medium
QT-6g	BW12, BW17, SFP2	Entire MA	PBAC, CDs, Ecology, Pullman, WSU, IDWR	Further develop the concept of aquifer recharge using recharge wells to stabilize and recover aquifer levels in both the Wanapum and Grand Ronde basalts. Educate and involve the public in water management options.	Mid-term	Medium-High

Table 6-5
South Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
QT-6h	BW12, BW17, SFP2	City of Pullman	City of Pullman, WSU, Ecology, CDs	Following the pre-feasibility state, and if ASR in Pullman is considered a good potential to improve water supply reliability, develop a pilot scale program(s) using existing wells/water system infrastructure. Educate and involve the public in water management options.	Long-term	High
Water Quality Management						
TMDL Coordination (QL-1)						
QL-1a	BW9	Entire MA	Ecology, IDEQ	Conduct public education program on TMDL and water quality standards	Near-term	Low
QL-1b	BW18, SFP1	Paradise Creek South Fork Palouse	Cities, Ecology, IDEQ	Evaluate pros and cons of conducting Use Attainability Analysis (UAA) for meeting water quality standards	Near-term	Medium
QL-2	BW13, BW18	Recharge areas	Ecology, IDEQ, DOH, PBAC, Planning Unit	Conduct further characterization of ground water for potential contamination from nitrates using existing data (USGS, Dept. of Health, etc), and identify risk areas.	Near-term	Medium
Bacteria (QL-3)						
QL-3a	BW13 SFP1	Entire MA	Ecology, IDEQ, Planning Unit	Conduct further characterization of surface water for potential contamination from fecal coliforms; identify sources (e.g., agricultural runoff or natural populations of waterfowl and/or other species) using best available practices to identify fecal sources.	Near-term	Medium
QL-3b	BW8, BW11, BW18, BW19, SFP1	Entire MA	CDs, Individual landowners, NRCS, USFS, Ecology, WSU Extension, Whitman County	Implement the following strategies to reduce fecal coliform levels: 1. enhance riparian areas 2. livestock/grazing management 3. out of stream watering of livestock 4. identify failing septic systems 5. education/outreach	Mid-term	Medium

Table 6-5 South Fork Palouse River Management Area Actions						
Action (non-prioritized)	**Supported Objectives**	**Location**	**Responsible Organization(s)**	**Description**	**Schedule [1]**	**Cost [2]**
QL-4	BW8, BW10, BW11,BW19, BW20, SFP1	Entire MA	CDs, NRCS, USFS, Ecology, WSU Extension, Whitman County	Implement the following strategies to reduce erosion and sediment levels: 1. Enhance riparian areas 2.Divided slopes 3. Conservation tillage 4. Streambank stabilization 5. Provide incentives to landowners	Ongoing	Medium
QL-5	BW8, BW19, BW20	Entire MA	Cities, Towns, North Latah Highway District, Whitman County	Implement stormwater management BMPs and plans (such as the Eastern Washington Stormwater Manual) for existing and/or new urban and rural developments and roadways.	Ongoing	Low
QL-6	BW8, BW11, BW19	Entire MA	CDs, Ecology, IDEQ, NRCS, WSDA, WSU Extension	Work with urban and rural individual landowners to review pesticide and fertilizer use; and to implement the following best management practices to limit water quality impacts: 1. Enhance riparian areas 2. Urban/rural education program 3. Conservation tillage	Ongoing	Low
QL-7	BW19	Entire MA	Pullman	Palouse Aquifer Water Chemical Analysis Study	Mid-term	Low-Medium
QL-8	BW20, SFP1	Entire MA	CDs, Ecology, IDEQ	Conduct surface water sampling to support assessment of treatment options for water diverted from Paradise Creek and the South Fork of the Palouse River.	Mid-term	Low-Medium

Table 6-5
South Fork Palouse River Management Area Actions

Action (non-prioritized)	Supported Objectives	Location	Responsible Organization(s)	Description	Schedule [1]	Cost [2]
Regulatory Actions						
RG-1	BW1, SFP4	South Fork below Pullman	Ecology, IDWR	Conduct tentative determination of status and validity of existing surface water rights, claims, certificates and permits (including riparian stockwater rights), including place of use, point of diversion and usage information for existing water right holders	Mid- term	Medium
RG-2	BW7, BW18	Entire MA	Cities, Towns, USFS, Whitman County, Latah County, Ecology, IDEQ, WDFW	Implementation/enforcement of land use regulations by appropriate agencies to protect critical areas and pristine areas of the management area (e.g. critical areas and shorelines programs).	Ongoing	Low
RG-3	BW7, BW10, BW11	Entire MA	Cities, Towns, USFS, Whitman County, Latah County, Ecology, IDEQ, WDFW	Review and update riparian buffer zones and critical areas regulations as needed, using best available practices and science.	Ongoing	Low
RG-4	BW2	Entire MA	Ecology, IDWR, Planning Unit, State Legislature	Consider supporting legislation to provide incentives to water rights holders to conserve water.	Mid-term	Medium
RG-5	BW1, BW2	Entire MA	Ecology, IDEQ, Planning Unit, State Legislature	Consider water banking, allowing unused water to be sold/leased to other users commensurate with current statutory and case law.	Mid-term	Medium

Notes:

1) Schedule: Suggested dates have been provided or a range, where: Near-term=0-3 years; Mid-term=3-10 years; Long-term=10 years or more beyond date of plan adoption.
2) Estimated costs have been provided where available from feasibility or other studies. Otherwise, a cost range is provided where: Low=<$100,000; Medium=$100,000-$500,000; High= >$500,000
3) Conservation Districts located within the South Fork Palouse River Management Area include the following: Palouse, Whitman and Latah SWCD
4) Counties located within the South Fork Palouse River Management Area include the following: Whitman and Latah (ID)
5) Cities located within the South Fork Palouse River Management Area include the following: Colfax, Pullman, Moscow (ID)
6) Towns located within the South Fork Palouse River Management Area include the following: Albion

(Insert Exhibit 6-4, South Fork Palouse Management Area)

Section 7
Plan Implementation Considerations

7.1 Introduction

This plan identifies a range of recommended basin-wide and management area-specific actions concerning water supply, stream flow management, surface water quality and groundwater quality. This section addresses overall implementation needs necessary for providing a foundation for individual actions. Implementation considerations for these actions include identifying the organizations that would have implementation responsibilities, implementation timeframe, and potential sources of funding. This section also builds on information and recommendations presented in a Report to the Legislature prepared by the Phase 4 Watershed Plan Implementation Committee in 2002. These recommendations have been reshaped to match local circumstances in the WRIA 34. Information in this section will be refined and updated during Phase IV, where a detailed implementation plan will be developed.

7.2 Plan Adoption Process and Resulting Obligations

The Watershed Management Act prescribes a specific process for adoption of a watershed plan, and voluntary acceptance of obligations under the plan (Section 90.82.130 RCW). This is a two-stage process. First, the Planning Unit considers the plan for approval, and individual members of the Planning Unit consider what actions they will commit to carrying out. Once this is completed, the plan is sent to the Boards of County Commissioners of Adams, Lincoln, Spokane and Whitman Counties for their consideration. If the Commissioners approve the plan, the voluntary commitments/obligations made by members of the Planning Unit become binding to entities within Washington State, recognizing funding and staffing limitations (see discussion below).[1]

Through this process, no organization or person is required to take on a commitment outlined in the plan. However, once an organization has formally agreed to implement actions identified in the plan, the Planning Unit expects these commitments/obligations to be honored, again, recognizing funding and staffing limitations. The Planning Unit recognizes that obligations agreed to by state and local government agencies in the Watershed Plan may need to be further refined. Consideration should be given for entering into MOAs (to be developed in Phase IV Implementation), as appropriate.

This watershed plan does not create any obligations for private businesses, citizens or landowners. However, there are recommendations identified for *voluntary* action in the private sector.

[1] [1] Idaho agencies and jurisdictions are not bound by this plan as a similar legal framework for plan development and implementation does not exist for Idaho as it does for Washington. Accordingly, Idaho jurisdictions must determine how all or portions of this plan might be voluntarily implemented within the Idaho portion of the Palouse.

Actions recommended in this plan are intended to be specific enough to clearly identify the actions and results; yet general enough to permit some flexibility in carrying them out. The Planning Unit recognizes that some actions require further investigation prior to full implementation. The Planning Unit also recognizes that many actions can only be carried out if funding is provided by the State Legislature or other funding agencies, and that funding decisions will be made over a period of months or years following plan adoption. The recommendations made in this plan have been crafted to recognize these limitations.

It is important that any rules adopted by the State of Washington to implement this watershed plan be fully considered in the context of the intent expressed by the Planning Unit in this watershed plan. The strategies presented in this watershed plan are intended to provide a balanced suite of actions to manage water resources in the WRIA 34 planning area. In the event that a State rule-making process, legislative action, or court decision substantially alters implementation of the provisions outlined in the plan, the other organizations with implementation responsibilities reserve the right to re-visit their implementation commitments in light of these changed conditions. If changes in commitments are being considered that would substantially alter the plan strategies and actions, then these changes would go through a watershed plan amendment process to update the plan to reflect changed conditions or new information, depending upon available funding. This is particularly true for County governments, which have the role of adopting the plan through the approval process under Chapter 90.82.130 RCW.

7.3 Grant Funding for Implementation Phase

In 2003 the Washington State Legislature amended the watershed planning grants program to provide Phase 4 grants to support implementation of watershed plans (Section 90.82.040 RCW). Application for the grants can be made following approval of the watershed plan by both the Planning Unit and Counties, following the procedure described in Section 90.82.130 RCW.

As an example of grant funding, the WRIA 34 Planning Unit is eligible for up to $100,000 per year in each of the first three years of implementation. Following this, $50,000 per year can be awarded in the fourth and fifth years of implementation. A match of ten percent is required, which can include either financial or in-kind contributions.

It is not expected that this limited amount of funding will cover implementation of the projects and programs discussed in this watershed plan. Instead, these funds should be considered "seed money" to strengthen the organizational foundation for plan implementation and to pursue more substantial funding for the many activities recommended in this plan.

The Legislature also provided that the Planning Unit must complete a detailed implementation plan within one year of accepting the Phase 4 funding. Disbursements of Phase 4 funding for subsequent years is conditioned upon completion of the implementation plan. The implementation plan must contain strategies, timelines and milestones; define coordination and oversight responsibilities, any needed interlocal agreements, rules or ordinances; any needed state or local administrative approvals and permits, and specific funding mechanisms. The timelines and milestones, according to RCW 90.82.048 (1), must address the planned future use of existing water rights for municipal water supply purposes that are inchoate, including how

these rights will be used to meet the projected future needs identified in the watershed plan, and how the use of these rights will be addressed when implementing instream flow strategies identified in the watershed plan. In addition, the Planning Unit must consult with other organizations developing plans in the same area, and identify and seek to eliminate activities or policies that are duplicative or inconsistent.
The Planning Unit anticipates applying for the Phase 4 grant funding once this watershed plan is adopted. The discussion of implementation considerations in the plan provides a starting point for eventual development of the detailed implementation plan described above.

The Planning Unit anticipates that full implementation of plan recommendations will require a time frame on the order of five to twenty years. Many actions can be carried out in the first five to ten years; while others will require more time to obtain funding, permits, and other necessary approvals. As noted above, the current grant funding program is designed only for the first five years of this time frame.

7.4 Overall Coordination of Plan Implementation

The recommendations and obligations presented in this watershed plan span a range of natural resources, activities, and organizations. Recommendations and obligations as appropriate are identified for county governments, public water systems, several state agencies, private industry, landowners and others.

With a range of organizations involved, and an implementation period spanning many years, it will be important to put in place some mechanism for coordination and oversight. Some of the activities included under coordination and oversight are:

- Tracking implementation of plan actions by the many organizations involved to ensure actions are being carried out in a timely fashion, that the balanced nature of the plan is retained as actions are implemented, and that the most important priorities defined by the Planning Unit are being addressed.
- Coordinating efforts to seek funding for plan actions to avoid duplication of effort and ensure the State legislature and funding agencies see well-organized and unified support for funding requests on an ongoing basis.
- Providing information to the public on plan implementation and resulting improvements in watershed conditions.
- Providing early warning systems and joint responses to changing conditions, including physical conditions in the watershed, new regulatory developments, and new project proposals that may emerge from time to time.
- Monitoring of watershed conditions across jurisdictional boundaries, data management, and providing data access.
- Annual review of the plan detailing accomplishments from the previous year and priorities for the upcoming year. A comprehensive evaluation of the plan will initially take place after the third year, and then every five years thereafter to review and update the plan as necessary.
- Other consideration and oversight activities will be added as necessary.
- In order to provide a venue for these activities, it is recommended that the Palouse River Watershed Planning Unit transition from planning functions to coordination and

oversight functions as listed above. The purpose is to foster an organized and collaborative approach as many individual organizations carry out specific actions under their jurisdictions, and to secure funding for implementation.

To support the Planning Unit and its subcommittees during implementation, the Planning Unit and Initiating Governments are encouraged to develop a strategy to maintain funding for the Palouse Conservation District to continue its efforts as lead agency, recognizing Phase IV funds will provide funding for the first five years of implementation. Continuing the lead agency role is vital to maintaining momentum into plan implementation.

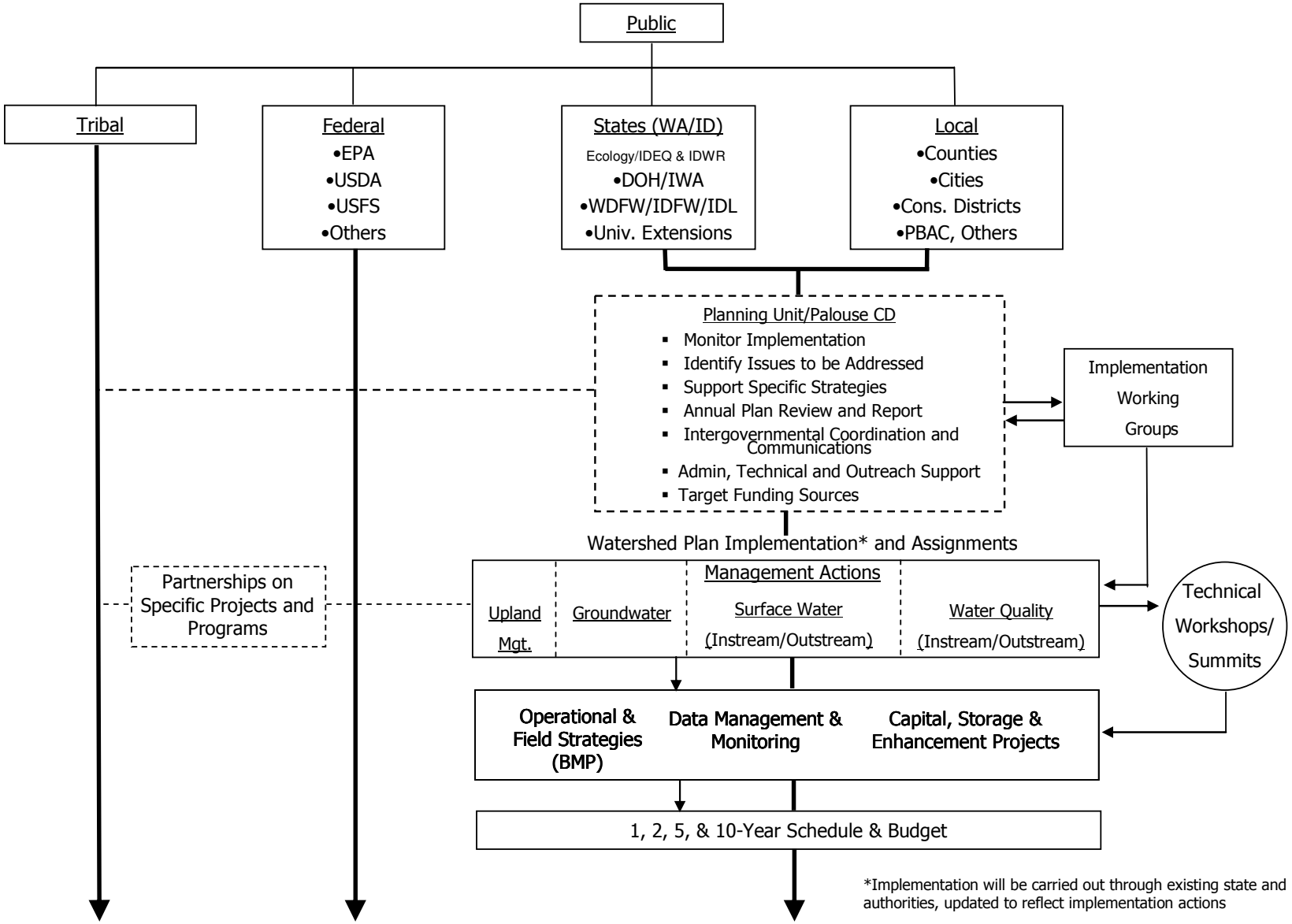
The Planning Unit requests all state and local government agencies consider and voluntarily accept all applicable obligations and recommendations and consider taking action on a template MOA to be developed during Phase IV – implementation. A summary of recommended actions and obligations is provided in Appendix B. Such an agreement will be beneficial in further defining other implementation commitments among the organizations involved, beyond the level of detail presented in this plan.

The Planning Unit is not obliged or authorized to take on any regulatory responsibilities or authorities. Regulatory activity will continue to be the responsibility of state or federal agencies and local governments, consistent with existing laws and regulations.

For the Planning Unit to be effective in the coordination and oversight role, local jurisdictions such as Adams, Lincoln, Spokane and Whitman Counties, cities and conservation districts, along with state, federal and other agencies will need to make staff resources available. Other groups such as the Sprague Lake Users Groups, PBAC and the Palouse-Clearwater Environmental Institute, as well as private landowners and land managers, need to participate in order to maintain a balanced approach to watershed management. Exhibit 7-1 identifies a conceptual organization approach. This approach will be refined during the development of the implementation plan (Phase IV of watershed planning).

Exhibit 7-1

Palouse Watershed Plan Organization and Implementation



7.4.1 Detailed Implementation Planning

Washington State watershed planning (RCW 90.82) includes the development of Detailed Implementation Plans (DIP). The DIP provides a framework for how to implement projects, programs, monitoring and assessment for water quantity, instream flow and water quality within the WRIA 34 watershed. The DIP addresses specific requirements for watershed planning.

Within one year of receiving funding for watershed implementation, each WRIA is required to complete a detailed implementation plan (DIP) in order to receive grants for the second, three and fourth years of the grant.

Per RCW 90.82.043, the DIP must:

- Contain strategies to provide sufficient water for: (a) production agriculture; (b) commercial, industrial, and residential use; and (c) instream flows;
- Timelines to achieve strategies and milestones to measure progress;
- Define coordination and oversight;
- Describe any needed interlocal agreements, rules or ordinances;
- Describe any needed state or local administrative approvals and permits that must be secured; and
- Describe specific funding mechanisms.

In addition, the Planning unit must consult with other watershed planning entities to reduce duplication and ensure consistency.

Per RCW 90.82.048, the DIP also "must address the planned future use of existing water rights for municipal water supply purposes, as defined in RCW 90.03.015, that are inchoate, including how these rights will be used to meet the projected future needs identified in the watershed plan, and how the use of these rights will be addressed when implementing instream flow strategies identified in the watershed plan." Table 7-1 provides an initial draft list of Group A water systems within WRIA 34 that may be involved in the municipal water supply planning effort during development of the DIP. This list will need to be reviewed in detail to ensure these systems are all within the WRIA 34 boundary. It is suspected that several on the list are in other WRIAs, and will be eliminated from this list.

Table 7-1
Group A Water Systems

System Name	County	Description	Residential Connections	Total Connections	Address	City	State	Zip Code
FOUR SEASONS CAMPGROUND	ADAMS	Investor	1	43	2384 N BOB LEE RD	SPRAGUE	WA	99032
TEMPLINS INC	ADAMS	Private	1	2	2008 N DURRY RD	SPRAGUE	WA	99032
SPRAGUE, CITY OF	LINCOLN	City/Town	258	258	PO BOX 264	SPRAGUE	WA	99032
FISHTRAP LAKE RESORT	LINCOLN	Investor	1	26	8308 JACK BROWN RD N	SPRAGUE	WA	99032
SPRAGUE LAKE RESORT	LINCOLN	Private	0	17	1999 SPRAGUE LAKE RESORT RD	SPRAGUE	WA	99032
WILLIAMS LAKE BEACH CLUB	SPOKANE	Association	30	30	19014 W BUNKER RD	CHENEY	WA	99004
TURNBULL WILDLIFE REFUGE SYSTEM 1	SPOKANE	Federal	0	1	26010 S SMITH RD	CHENEY	WA	99004
WILLIAMS LAKE RESORT	SPOKANE	Private	1	62	18617 W WILLIAMS LAKE RD	CHENEY	WA	99004
CLEAR LAKE PINES BEACH CLUB	SPOKANE	Association	0	151	PO BOX 653	MEDICAL LAKE	WA	99022-0653
MEDICAL LAKE, CITY OF	SPOKANE	City/Town	1269	1,269	PO BOX 369	MEDICAL LAKE	WA	99022
PICNIC PINES TRAILER COURT	SPOKANE	Investor	64	92	9212 S. SILVERLAKE RD	MEDICAL LAKE	WA	99022

Table 7-1
Group A Water Systems

System Name	County	Description	Residential Connections	Total Connections	Address	City	State	Zip Code
CLEAR LAKE WATER USERS ASSN	SPOKANE	Private	69	69	14110 S CLEAR LAKE RD	MEDICAL LAKE	WA	99022
SILVER LAKE CAMP	SPOKANE	Private	65	70	PO BOX 430	MEDICAL LAKE	WA	99022-0430
STRATHVIEW WATER DISTRICT 16	SPOKANE	Special District	99	101	PO BOX 369	MEDICAL LAKE	WA	99022
CONSOLIDATED SUPPORT SERVICES	SPOKANE	State	470	1,214	PO BOX 500	MEDICAL LAKE	WA	99022-0500
ALBION WATER DEPT	WHITMAN	City/Town	330	330	PO BOX 38	ALBION	WA	99102
COLFAX WATER DEPARTMENT, CITY OF	WHITMAN	City/Town	959	959	PO BOX 229	COLFAX	WA	99111-0229
STEPTOE WATER/SEWER DISTRICT	WHITMAN	City/Town	70	71	SR 23 #281	COLFAX	WA	99111
KAMIAK BUTTE COUNTY PARK	WHITMAN	County	1	9	N 310 MAIN	COLFAX	WA	99111
KLEMGARD COUNTY PARK	WHITMAN	County	1	10	N 310 MAIN	COLFAX	WA	99111

Table 7-1
Group A Water Systems

System Name	County	Description	Residential Connections	Total Connections	Address	City	State	Zip Code
PALOUSE EMPIRE FAIRGROUNDS	WHITMAN	County	1	96	N 310 MAIN	COLFAX	WA	99111
COLTON WATER DEPARTMENT	WHITMAN	City/Town	164	185	PO BOX 157	COLTON	WA	99113
ENDICOTT WATER DEPT	WHITMAN	City/Town	173	173	PO BOX 418	ENDICOTT	WA	99125
FARMINGTON WATER DEPT	WHITMAN	City/Town	66	76	PO BOX 65	FARMINGTON	WA	99128
GARFIELD WATER DEPARTMENT	WHITMAN	City/Town	260	290	PO BOX 218	GARFIELD	WA	99130-0218
LACROSSE, TOWN OF	WHITMAN	City/Town	186	214	PO BOX 228	LACROSS	WA	99143
DUSTY CAFE	WHITMAN	Investor	1	2	122 DUSTY RD	LACROSSE	WA	99143
DUSTY COUNTRY STORE	WHITMAN	Private	0	1	PO BOX 324	LACROSSE	WA	99143
LAMONT WATER SYSTEM	WHITMAN	City/Town	39	41	302 8TH STREET	LAMONT	WA	99017
LAMONT SCHOOL DISTRICT #264	WHITMAN	Special District	0	1	602 MAIN ST	LAMONT	WA	99017
COLFAX LDS CHURCH	WHITMAN	Private	0	1	3810 16TH ST	LEWISTON	ID	83501
OAKESDALE, TOWN OF	WHITMAN	City/Town	204	234	PO BOX 246	OAKESDALE	WA	99158-0246

Table 7-1
Group A Water Systems

System Name	County	Description	Residential Connections	Total Connections	Address	City	State	Zip Code
PALOUSE WATER DEPT, CITY OF	WHITMAN	City/Town	465	465	PO BOX 248	PALOUSE	WA	99161-0248
PULLMAN WATER DEPARTMENT, CITY OF	WHITMAN	City/Town	4158	4662	325 SE PARADISE ST	PULLMAN	WA	99163
SUNSET MOBILE COURT	WHITMAN	Investor	35	35	2652 PULLMAN-ALBION RD A10	PULLMAN	WA	99163
TULA YOUNG HASTINGS FARM - WSU	WHITMAN	State	5	9	PO BOX 641172	PULLMAN	WA	99164-1172
WASHINGTON STATE UNIVERSITY	WHITMAN	State	2163	2,413	PO BOX 641172	PULLMAN	WA	99164-1172
ROSALIA, TOWN OF	WHITMAN	City/Town	312	321	PO BOX 277	ROSALIA	WA	99170
ST JOHN, TOWN OF	WHITMAN	City/Town	263	278	PO BOX 298	ST. JOHN	WA	99171
UNIONTOWN WATER WORKS	WHITMAN	City/Town	163	163	PO BOX 87	UNIONTOWN	WA	99179-0087
Systems below need additional research to determine if they are in the WRIA								
STAHL HUTTERIAN BRETHREN	ADAMS	Private	22	30	1485 N HOFFMAN RD	RITZVILLE	WA	99169
VALLEY OF THE HORSES WATER DIST #12	SPOKANE	Association	21	21	5012 W PINTO RD	CHENEY	WA	99004

Table 7-1
Group A Water Systems

System Name	County	Description	Residential Connections	Total Connections	Address	City	State	Zip Code
MALLARD BAY RESORT	SPOKANE	Investor	2	42	PO BOX 420	CHENEY	WA	99004-0420
BUNKERS RESORT 1	SPOKANE	Investor	2	47	36402 S BUNKER LANDING RD	CHENEY	WA	99004
LEWIS BROTHERS INC	SPOKANE	Private	37	49	PO BOX 330	CHENEY	WA	99004-0330
WHITE BLUFF - JPRA	SPOKANE	Federal	0	5	92ND CES/CEOIB	FAIRCHILD AFB	WA	99011
CLEAR LAKE REC AREA	SPOKANE	Federal	1	31	92ND CES/CEOIB	FAIRCHILD AFB	WA	99011

Many of the elements and requirements cited above will be addressed in individual sections of the DIP. To avoid duplication of information, some elements or requirements will be demonstrated as being met by referencing sections of the watershed plan.

The DIP will include information on the implementation approach and framework, including:

- Watershed Coordination – This section discusses the role of the Planning Unit in coordinating with regional and other local watershed efforts, individual organization responsibilities, funding strategies, incorporation of monitoring and adaptive management in plan implementation, public involvement and how the plan will be maintained and updated.
- Implementation Funding Sources and Prioritization Approaches. Included will be a template that outlines application processes, screening criteria and deadline dates for various funding mechanisms.
- Watershed priorities
- Planned Future Water Use per RCW 90.82.043, and 048.

The Planning Unit should consider establishing Implementation Working Groups (IWGs) or subcommittees to the larger Planning Unit in each of the watershed management areas. The purpose of the IWGs is to coordinate implementation of the Watershed Plan. The IWGs could assume the following activities:

- Outline a schedule of planning and implementation activities for the next two years;
- Identify associated funding needs for these projects;
- Identify roles and responsibilities for securing additional funds needed to implement the two-year plan, and which organization(s) are responsible for implementing these projects; and
- Identify opportunities for coordination and collaboration among basin organizations and individuals.

More details on IWG responsibilities will be developed during Phase 4.

7.4.2 Summary of Prioritization Process

The prioritization of watershed projects was completed at the May 9, 2007 Palouse Watershed Planning Unit Meeting. Members participated in a priority identification exercise, beginning with the generation of the following criteria for selection of high priority projects:

- Measurable cost versus benefits (practicality)
- Will it benefit our future generations (grandchildren)?
- Protection of existing rights – property and water (value)
- Will it support the ability for long-term sustainable water supply (municipal, domestic, agriculture, other)?
- Benefit to the most people
- Supports multiple use/or benefits
- Public Acceptance/Support

- Low potential for alternative funding outside the WRIA project
- Will improve water quality – (temperature, etc.)

The Planning Unit then broke out into smaller groups representing the four Management Areas where the top three priority projects were identified and ranked for each sub-watershed. These projects were brought forth to the larger group for consideration of the top priority projects for the entire Palouse Watershed. The Planning Unit agreed by consensus on the top five, high priority, early implementation actions/projects for submission to Ecology for Implementation Funding. Lead persons for each project were identified and agreed to develop and submit a proposal to Ecology by June 11, 2007 for the current funding cycle. Meeting minutes and the session notes of the priority projects that were identified are available in Appendix E.

7.5 Implementation Actions by Individual Organizations

The involvement of individual organizations in carrying out their commitments is vital to this plan. The Planning Unit has no independent capability to implement plan actions. It is the individual landowners, counties, cities, conservation districts, water purveyors and State agencies, among others, that will ultimately carry out plan elements. Therefore, it is critical that management and governing elected bodies take note of responsibilities recommended by the Planning Unit. Also, it is important to recognize that the mix of actions in this plan results in a sharing of commitments. This will help to spread the burden of carrying out plan actions, and will also deliver real benefits across the region's jurisdictions.

Specific actions have been identified in Section 6 of the watershed plan. Detailed implementation plans for completing these actions will be developed in Phase 4 – Implementation. Section 6 contains recommended actions for each management area, and also identifies recommended responsible agencies. Appendix B includes an actions summary by agency for basin-wide and management area recommended actions and obligations. These assigned actions were based on Planning Unit understanding of existing roles and responsibilities for the various federal, state and local agencies, tribal government, and other organizations that may be participating in plan implementation. The actions summary designates whether the action is a recommendation or an obligation, and designates the implementation organization as the lead or supporting organization for each action, as defined below:

- Recommendations as defined by the Planning Unit are desirable actions intended to help meet or address one or more of the planning objectives (see Section 5.2 and Section 6).
- Obligations as defined by the Planning Unit are actions which the Planning Unit, or its designee, has committed to or has a responsibility to complete.
- An agency that leads an action is primarily responsible for the completion of the action and guides other agencies collaborating on the action. The lead agency may provide the majority of the necessary funding or obtain funding from another source.
- An agency that is in support of an action collaborates as needed on action items, taking direction from the lead agency, and dedicates funding if possible.

There may be some cases, where additional discussion may be needed to determine lead and supporting organizations responsible for recommended actions. These discussions will occur during Detailed Implementation Plan development.

For each organization carrying out actions under the plan, several steps will be needed. First, it is critical that landowners, elected decision-makers and top managers of the organizations understand the recommended or obligated actions they have been assigned to implement. Second, after the plan is adopted by the Counties, organizations will need to begin budgeting annually for actions and/or identify and pursue targeted funding sources for actions that cannot be funded through existing sources. This should be incorporated in each organization's budget process each year (or biennium for State agencies). Third, it is important to identify staff that will be responsible for carrying out specific actions. Finally, depending on the action and how the organization operates, there may be a need for work plans to be prepared to define actions and schedule. Coordination with the Planning Unit should occur regarding funding or staffing issues that arise during implementation, and coordinated funding strategies developed to secure funding to implement priority actions.

Budgeting of actions, identification of funding sources and implementation of actions has occurred throughout the planning process. This will also continue after plan adoption, as the plan is implemented over time. Plan adoption is not contingent upon secure funding. See Section 7.2 for funding caveats on recommended actions. It is recognized that actions cannot be implemented without commensurate funding. Also, the Planning Unit requests each organization consider its recommended role(s) and responsibilities, and consider entering into an MOA (referenced in Section 7.2) accepting these, and also generally describe capacity and intent to carry out these actions.

7.6 Funding Strategy

Tables have been presented in earlier sections of this watershed plan that summarize implementation considerations[2]. These tables include a preliminary estimate of the magnitude of costs and suggested time frame. A mix of potential funding sources has been identified for different activities in the plan. These sources include:

- Appropriations from the Washington State Legislature for state agency budgets (Ecology, WDFW, DOH, DNR, and Conservation Districts). This would provide funding and/or staffing that could be utilized under existing state programs to implement elements of the plan.
- Direct appropriations from the Washington State Legislature for specific projects in the Palouse basin, based on requests to be formulated as the plan is implemented;
- Appropriations from the U.S. Congress for federal agency budgets (USACE, NRCS, USGS, USFS) under existing programs;
- Grants or low interest loans from existing funding programs, such as the Public Works Trust Fund, the salmon recovery funds (state and federal), the State Revolving Fund for drinking water and many other sources may be used for funding management actions.

[2] Tables listing implementation considerations for specific actions appear in Section 6.

See Appendix F for a more detailed listing of grant and loan programs and descriptions of the types of watershed management actions that can be funded through these sources.

- Rates and hookup charges collected from customers by public water systems
- County permitting fees or general fund revenues;
- Assessments on property through local improvement districts, for projects that benefit those properties (subject to local approval);
- Private industry funds, for voluntary projects at selected industrial facilities (supplemented by public funds where possible); and
- Landowners, for voluntary projects at selected sites (supplemented by public funds where possible).

While not called out for any specific actions under the plan, Public Utility Districts and Washington Conservation Districts have authority under State law to levy property taxes up to certain limits. If this source of funding is desired, it must be subjected to a vote of the affected public. This is a potential supplementary source of funding, particularly for activities that cross local jurisdictional boundaries.

Many agencies and jurisdictions are currently funding programs that align closely with the objectives and recommendations of this plan. In many cases, existing expenditures can be effectively integrated with this plan, reducing the overall financial impact.

7.7 Monitoring and Adaptive Management

Implementing an adaptive management program for the watershed plan is an important part of plan implementation. Adaptive management has been defined in State law as "reliance on scientific methods to test the results of actions taken so that the management and related policy can be changed promptly and appropriately" (RCW 79.09.020). Adaptive management is a continuing attempt to reduce the risk arising from the uncertainty associated with information used to develop the management actions.

Three general components of an adaptive management program include validation, implementation and effectiveness monitoring,

7.7.1 Validation Monitoring

Validation monitoring determines whether the assumptions used to develop the plan recommendations are valid. Many of the general recommendations were developed based on certain assumptions about population trends, land use trends, and flow information, among other information. The recommendations may need to be changed if it is determined that some of these assumptions are not valid.

7.7.2 Implementation Monitoring

Implementation monitoring involves tracking whether the recommendations and commitments adopted in the watershed plan are being implemented and whether or not these activities have been properly completed (i.e., yes or no). Implementation monitoring generally involves

measures whose results or benefits are fairly certain and do not require complex study designs, e.g., confirmation of whether a flow monitoring gauge has been installed at the proper location.

7.7.3 Effectiveness Monitoring

Effectiveness monitoring is commonly applied in those cases where the benefit of a management action is less certain. For those commitments where the benefit is less certain, scientific study is needed to make a judgment of their effectiveness. The study can then also be used in developing or updating management responses that are appropriate. For example, the effectiveness of reconnecting a floodplain through removal of a levee may provide some flow benefits, but the magnitude of the benefit would require some further study. Once the actual benefit is measured, then a judgment can be made whether similar projects are worthwhile and should be continued or whether other options may be more beneficial. Effectiveness monitoring is commonly applied in those cases where the benefit of a management action is less certain.

7.7.4 Adaptive Management Implementation Considerations

General recommendations to consider during plan implementation include:

- Build upon existing monitoring efforts and have agencies and organizations fill assigned data gaps;
- Adopt monitoring protocols to provide a consistent means for comparing information across geographical and temporal scales;
- Continue efforts to develop the basin-wide database with a universal interface from which to share the database, and share data; and
- Conduct all three types of monitoring (implementation, effectiveness, and validation).

7.8 Public Involvement for Plan Implementation

As the watershed plan is implemented, continued stakeholder involvement and public communications, like those that have occurred during plan development, will be necessary to provide final shaping, support and effective execution of recommended management strategies and actions.

The WRIA 34 Planning Unit has encouraged public involvement throughout the planning process. The purpose of these efforts is to:

1) Raise the community's awareness on the planning process and water resource related issues.
2) Gain community involvement and input, and
3) Facilitate the exchange of information between the community and the Palouse Watershed Planning Unit.

Public involvement was sought through direct participation in the Planning Unit meetings and participation in one or more of a series of outreach workshops. Information on ongoing assessments and plan development was made available to the public through the Palouse Conservation District web site (www.palousecd.org) and notices in local newspapers.

A series of workshops was held in summer of 2005. These workshops were focused on seeking additional public input on objectives and recommended basin-wide and management area-specific action plans. This was accomplished by conducting workshops in each management area (Cow/Rock Creek – July 13; Central/Lower Palouse – July 13; North Fork Palouse – August 9; South Fork Palouse – August 10).

In addition, the Palouse Basin Water Summit was held on October 3, 2006. The meeting aimed to improve understanding of local water resource issues and to raise awareness of local efforts currently underway in the Basin. Attendees were given an opportunity to discuss current issues and provide feedback on the management of water resources. The 2006 Palouse Basin Water Summit Summary Report is provided in Appendix G.

Other Planning Unit efforts included:

- Providing public comment period at the beginning of Planning Unit meetings
- Scoping meeting prior to beginning Phase 1.
- Public information workshop at the beginning of Phase 1.
- Targeted mailing and phone calls to over 100 key stakeholders identified by initiating governments and initial scoping group to solicit participation.
- A current mailing list of 111 individuals and groups who currently receive PU meeting notes, agendas and announcements.
- An email distribution list of 65 individuals.
- Several newspaper articles generated in both local newspapers (Moscow-Pullman Daily News and Whitman County Gazette).
- Articles in conservation district newsletters and information shared at district sponsored meetings.
- Presentation to area community leaders at Regional Leadership Breakfast.
- Dozens of Planning Unit meetings.
- WRIA 34 Web Pages developed and hosted by Palouse Conservation District (www.palousecd.org) and Ecology (http://www.ecy.wa.gov/watershed/index.html).
- Current Planning Unit roster of over 40 individuals representing different interests within the watershed, 30 of whom (on average) have consistently participated at meetings.

These and other measures should be continued to maintain and enhance stakeholder support for the plan during implementation. Outreach activities should be sustained during plan implementation by a coordinated group of knowledgeable, committed individuals.

Additional examples of useful outreach tools and activities that may be considered during implementation include:

- Facilitation of an email information distribution list to communicate periodic status reports or provide notification on forums dealing with specific issues;
- Hosting public conferences or forums, targeting both technical and non-technical audiences, to facilitate discussion among stakeholders and communicate watershed plan issues and successes; and
- Production of television and radio Public Service Announcements (PSAs).

- Development and distribution of watershed newsletters to advertise participation opportunities, provide updates on implementation efforts, and highlight the success in the watershed.
- Distributing information and educational materials, such as brochures, through a portable information booth at public events (County Fairs, community events, etc).

Communication efforts should continue to target stakeholders with implementation responsibilities and others whose water practices may be impacted, but also include a broader range of citizen groups with vested interests in the planning area and process. Information conveyed to the public may include: management strategy needs and priorities; status of plan implementation and associated performance measures; successful management actions and projects; innovative water management BMPs; and/or a summation of on-going monitoring programs. These outreach efforts should be closely coordinated with established communication efforts, such as Conservation Districts and Washington State University's Cooperative Extension programs in all counties.

Involving stakeholders in the basin is the key to executing management strategies and actions. Examples of organizations to contact in targeted outreach efforts during implementation include:

- County Conservation Districts;
- Washington State University Cooperative Extension;
- Nez Perce Tribe (NPT);
- Agricultural commodity groups and trade associations;
- Environmental organizations and civic organizations;
- County Commissions and City Councils;
- State Legislators;
- Hunting, fishing and outdoor recreation interest groups;
- Irrigation districts and organized ditch irrigators;
- Agri-businesses and timber companies;
- Economic development organizations, including Port Districts;
- Colleges
- Individual landowners.

Finally, implementing organizations will periodically encounter difficult management strategies and/or particularly complex projects that may require specialized communication functions. To tackle these difficult issues, issue-specific work groups can be formed to address issues and provide for specific outreach or education efforts.

7.9 Future Plan Updates

This watershed plan has been developed over a four year period, with input from dozens of local leaders, state and federal agency staff, and citizens. It is a vast effort to assemble a comprehensive portrait of water resource needs, issues and solutions. The actions recommended in this plan were devised given current understanding of conditions as they exist at the time the plan was developed. Over the next several years, new data will be collected, conditions may change, regulatory and funding programs may change, and new projects affecting water

resources may be proposed within the region. In addition, the implementation process may result in some modifications of the recommended actions as they are actually carried out.

To accommodate this ongoing evolution of information and events in the region, it is recommended that the watershed plan be reviewed from time to time to determine whether an update is needed. This review should be carried out by the Planning Unit or its successor, as one of its implementation responsibilities. The first review should occur within three years of the date this plan is adopted by the Boards of County Commissioners for the Initiating Governments.

The Phase 4 Committee Report to the Legislature identified the following questions for a review of this type:

- Have the actions listed in the plan been implemented?
- Are the desired results being achieved?
- Is the overall intent of the plan being met?
- Are there new information gaps or changing conditions that require review?
- Are there new issues that were not considered during plan development, and that need to be addressed?

The strategies listed in this plan were designed to function as a combined whole. If any key element is struck down by legislative or court action, or becomes otherwise infeasible to implement, the remainder of the plan should be revisited to determine whether other elements need to be modified.

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