WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

North Fork Palouse River Fecal Coliform Total Maximum Daily Load

Water Quality Implementation Plan

June 2006
Publication Number 06-10-028

Printed on Recycled Paper

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Prepared by:

Elaine Snouwaert
Washington State Department of Ecology
Water Quality Program
4601 N. Monroe Street
Spokane, Washington 99205-1295

June 2006
Publication Number 06-10-028

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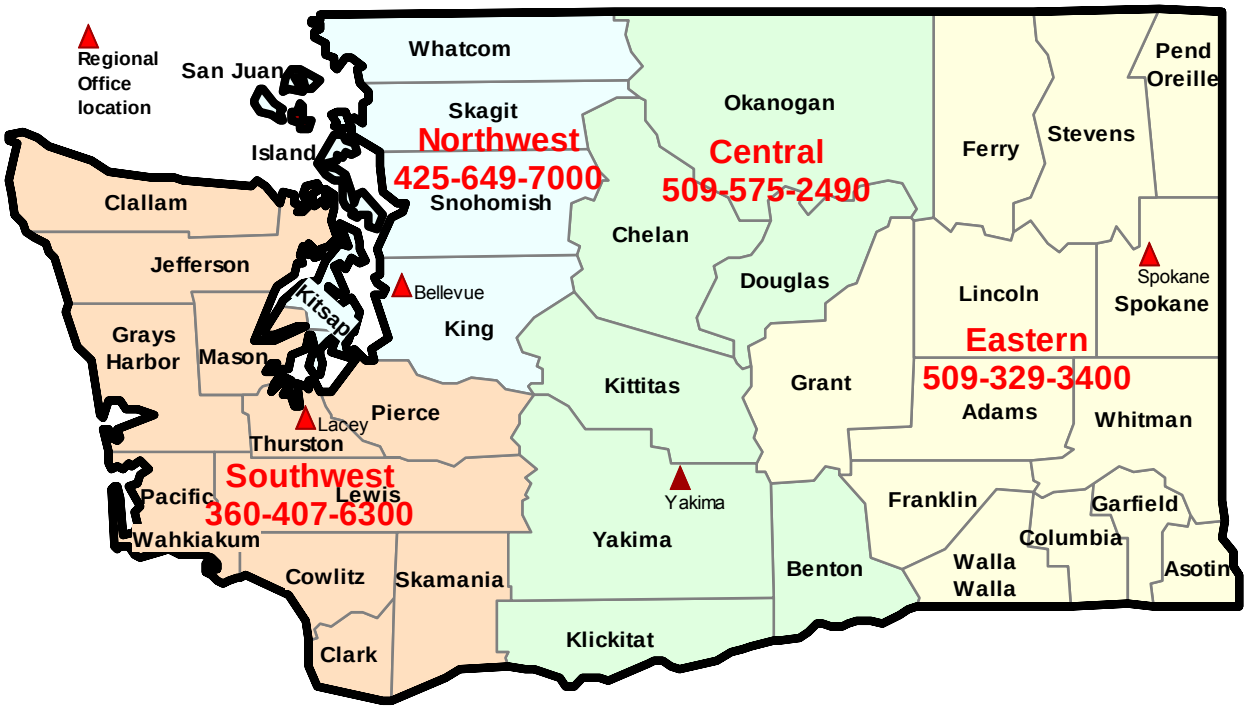
For more information contact:

Department of Ecology
Water Quality Program
Eastern Regional Office
N 4601 Monroe, Suite 202
Spokane, WA 99205-2395
Telephone: *509-329-3557*

Headquarters (Lacey) 360-407-6000



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Introduction

The federal Clean Water Act requires the United States Environmental Protection Agency (EPA) or delegated states to develop water quality improvement plans (also called total maximum daily loads or TMDLs) for rivers, lakes, and streams that fail to meet water quality standards. In addition, the settlement agreement to a lawsuit filed on behalf of Northwest Environmental Advocates and the Northwest Environmental Defense Center requires the Washington Department of Ecology to complete over 1500 TMDLs by 2013 for all the impaired water bodies identified as of 1996 (U.S. EPA 1997). The list of impaired water bodies is named the 303(d) list after the section in the Clean Water Act that mandated its creation.

TMDLs establish goals, objectives, and strategies for achieving water quality standards. The TMDL also determines the loading capacity, which is the amount of the pollutant that can be discharged to the water body and still meet standards. The loading capacity is then allocated among the various sources.

A water quality implementation plan (WQIP) is a required element of TMDLs in accordance with an agreement between Ecology and EPA (U.S. EPA, 1997). Implementation plans include information on the activities that will be used to improve water quality, when those activities will occur, who will do them, and how to measure progress. This document is the WQIP for the North Fork Palouse River to address fecal coliform bacteria impairments. This plan is based upon the *North Fork Palouse River Fecal Coliform Total Maximum Daily Load Submittal Report* (Snouwaert & Ahmed, 2005; from hereon referred to as the "Submittal Report") and the *North Fork Palouse River Fecal Coliform Bacteria Total Maximum Daily Load Recommendations* (Ahmed, 2004; from hereon referred to as the "TMDL Study").

Purpose

In Washington, Ecology divides rivers into segments by using section lines as the dividing point. Therefore segments average approximately 1-mile long. The Washington portion of the North Fork Palouse River is 34.3 miles long. The TMDL study found that six segments of the North Fork of the Palouse River and three of its tributaries (Cedar Creek, Silver Creek, and Clear Creek) violated the state water quality standards for fecal coliform bacteria. The bacteria standards are set to protect people recreating in and on the water (swimming, boating, and fishing) and to provide healthy water for livestock watering.

In order to bring these streams into compliance with the water quality standards, the TMDL submittal report set targets for how much the fecal coliform needs to be reduced and it suggests activities that may help achieve this goal. The purpose of this document is to expand on those recommendations by outlining when those activities will occur, who will do them, and how the progress will be measured. The activities described in this document are a result of multiple discussions with the agencies and organizations responsible for their implementation.

Maintaining the economic stability of the region, while protecting the multiple uses of the North Fork Palouse Watershed such as recreation, agriculture, aesthetics, fish, and wildlife, is of utmost importance to the entities involved in this plan.

Background

The Palouse Conservation District (Palouse CD) initiated the development of this TMDL with funding obtained from the Washington State Legislature, the Washington State Conservation Commission, and the Washington State Department of Ecology. In November 2000, the Palouse CD formed the North Fork Palouse River Watershed Committee and the Technical Advisory Group. This committee is made up of local stakeholders who live, work, or otherwise have an interest in the watershed. Members met regularly to develop the *North Fork Palouse River Water Quality Improvement Plan* (RPU 2002). The committee members expressed their desire to see improvements realized in the watershed through voluntary efforts, not mandated changes.

From June 2001 to September 2003, the Palouse CD also collected water quality data on the North Fork of the Palouse and its tributaries. The TMDL study was an analysis of this data and data from Ecology's ambient monitoring stations. The study, which made recommendations for how much the bacteria needed to be reduced to meet water quality standards, was published in May 2004.

The recommendations of the watershed committee outlined in the water quality improvement plan (RPU 2002) and the targets set in the TMDL study were integrated in the TMDL submittal report that was published in February 2005. The EPA approved fecal coliform TMDLs for four water bodies in the North Fork Palouse Watershed on March 21, 2005 (Table 1).

Table 1 Water bodies approved in the North Fork Palouse River Fecal Coliform TMDLs

Stream Name	Waterbody Identification number
North Fork of the Palouse River	WA-34-1030
Cedar Creek	VB90TS
Silver Creek	WA-34-1032
Clear Creek	RZ29MS

WATERSHED DESCRIPTION

The North Fork of the Palouse River is a sub-watershed (Figure 1) within the larger 2.1 million acre Palouse River Basin. This sub-watershed makes up 15 percent of the Palouse River Basin. The North Fork of the Palouse River sub-watershed begins at its headwaters in Latah County, Idaho. From the Hoodoo Mountains of Idaho, the watershed continues west through timbered uplands towards the Idaho/Washington state line. Bordered on the north by the North South Ski Bowl and Mary Minerva McCroskey State Park in Benewah and Latah counties, and the Palouse Range (Moscow Mountain) to the south, the watershed extends westward toward lower elevations. As the drainage crosses into Washington, the river flows through pasture and farmland towards Colfax where the North and South Forks of the Palouse River merge.

This segment from the Idaho state line to Colfax is locally referred to as the "North Fork Palouse River" and will be referred to as such throughout the remainder of this document.
The entire North Fork Palouse River watershed encompasses 316,910 acres (including acres in Idaho and Washington). The watershed encompasses 81,405 acres within its Washington State boundaries (Figure 1). Nearly 96 percent of the watershed in Washington is agricultural land; approximately 2 percent is in forest land, cliff areas, and rock outcrops; less than 2 percent is occupied by urban uses such as towns, railway lines, and roadways; riparian/wetland areas occupy less than 1 percent; and perennial and intermittent streams occupy less than 1 percent (RPU, 2000b).

The North Fork Palouse River contributes about 83 percent of the mean annual flow of the Palouse River at Colfax, below the confluence with the south fork. Major tributaries of the North Fork Palouse River are Duffield, Cedar, Silver and Clear creeks. All creeks except Clear Creek originate in Idaho.

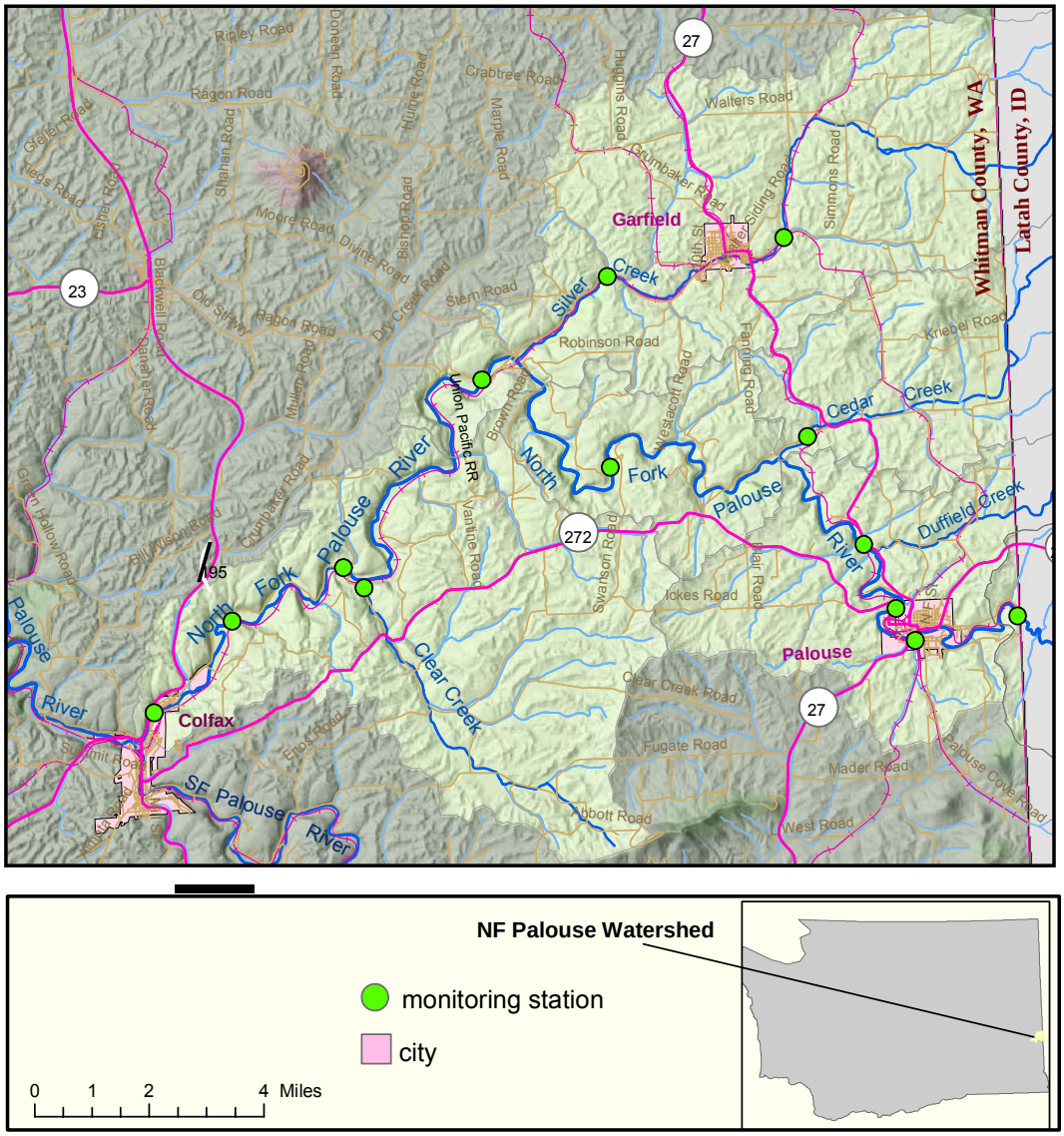

Figure 1. The North Fork Palouse Watershed in Washington State

The Approach

This plan is meant to be a reasonable approach to achieving water quality within a realistic timeframe under difficult physical, political, and economic circumstances. It is based on the belief that encouraging voluntary actions is the best way to achieve sustainable improvement in water quality in the watershed.

In general, this plan incorporates outreach to let watershed residents know about the bacteria problem, its potential harmful effects, and practices on their land that can help. It reduces barriers to cooperation by providing, where possible, technical assistance and cost-share incentives and it identifies programmatic changes that will help improve and sustain water quality.

The North Fork Palouse River Watershed Committee and Technical Advisory Group identified individual on-site septic systems, livestock, and wildlife as the primary contributors of fecal coliform bacteria to the North Fork Palouse River and its tributaries. These issues will be addressed through further monitoring, education, and the implementation of best management practices. The various agencies and organizations in the watershed will work collaboratively to ensure these actions are realized. There are many funding sources that can be accessed to support work in the watershed to address water quality issues. In addition, Ecology will support and assist agencies and organizations seeking funding.

While every effort will be made to achieve voluntary compliance, this plan also acknowledges that enforcement is another tool. Under the Revised Code of Washington (RCW) 90.48 it is illegal to pollute the waters of the state. Ecology is charged with enforcing that law and will exercise its enforcement responsibility if required to do so in order to meet water quality standards.

If the activities outlined in this plan are carried out, it is expected that the North Fork Palouse River will achieve water quality standards for fecal coliform bacteria by 2014. If the targets outlined in this report are not met but water quality standards are achieved, then this TMDL will be considered satisfied.

Total Maximum Daily Load Targets

All streams can take on a certain amount of a pollutant, called the loading capacity, and still meet water quality standards. When the loading capacity is exceeded, targets are set. These targets address both nonpoint sources and point sources of fecal coliform bacteria. Load allocations are the nonpoint source reductions, which need to be achieved in each segment of the river, for the loading capacity to be met. Wasteload allocations are effluent limits recommended for point

sources for meeting water quality standards either at the end-of-pipe or at the edge of an authorized mixing zone.
The submittal report for this TMDL established targets that if met, would bring the North Fork Palouse River and several of its tributaries into compliance with water quality standards.

Nonpoint Sources
Individual load allocations for the tributaries and mainstem are summarized in Table 2. The amount of bacteria in the stream needs to be at or below the loading capacity to meet water quality standards. The target reduction is how much the current load needs to be reduced to meet the loading capacity and therefore the water quality standards.

Table 2. Target load reductions

Reach	Loading capacity (cfu/day)	Target reduction (%)	Basis[1]	Critical period[2]
Upper Mainstem Segment (Border to Duffield Creek), RM 123.9 – RM 116.1				
Mainstem RM 123.9: Station 11 (WA/ID State line)	no reduction required*			
Mainstem RM 121.2: Station Ecology A	6×10^{10}**	80**	90th % std	August
Mainstem RM 118.5: Station 1	3.6×10^{12}	30	90th % std	Dec-Mar
Duffield Creek at mouth (NFPR RM 116.3)	no reduction required*			
Mainstem RM 116.1: Station 2	4.4×10^{12}	21	90th % std	Dec-Mar
Middle Mainstem Segment (Duffield Creek to Silver Creek), RM 116.1 – RM 102.7				
Cedar Creek at mouth (NFPR RM 113.1): Station 3	1.9×10^{10}	72	90th % std	June-Sept
Mainstem RM 107.8: Station 4	no reduction required			
Silver Creek (mouth at NFPR RM 103.5)				
RM 5: Station 5	3.7×10^{11}	54	90th % std	Mar-June
RM 2.3: Station 6	1.9×10^{11}	79	90th % std	Mar-June
Mainstem RM 102.7: Station 7	no reduction required			
Lower Mainstem Segment (Silver Creek to mouth of NFPR), RM 102.7 – RM 89.6				
Clear Creek at mouth (NFPR RM 96.2): Station 9	7×10^{9}	92	90th % std	July-Oct
Mainstem RM 96: Station 8	6.8×10^{12}	47	90th % std	Dec-Mar
Mainstem RM 92.7: Station 10	6.9×10^{12}	54	90th % std	Dec-Mar
Mainstem RM 90.2: Ecology Station B	2.9×10^{12}	36†	90th % std	Annual

NFPR – North Fork Palouse River
[1]The part of the water quality standard that is not currently being met
[2] The time of year that violates the water quality standards
* based on limited data, further monitoring recommended
** based on long-term data
† annual average basis

Point Sources
Two point sources exist in the North Fork Palouse Watershed. The city of Palouse's wastewater treatment plant (WWTP) discharges to the North Fork Palouse River. The city of Garfield's WWTP discharges to Silver Creek, a tributary of the North Fork Palouse River. Ecology issues

National Pollutant Discharge Elimination System permits (NPDES) to point sources discharging to waters of the state.

The existing water quality based effluent limits, contained in NPDES permits for the cities of Palouse and Garfield, were deemed protective of the water quality standards. The existing effluent limits for the point sources in the North Fork Palouse River watershed are summarized in Table 3. These effluent limits also represent the wasteload allocations established in the submittal report.

Table 3. Effluent limitations for fecal coliform bacteria in NPDES permits for point sources.

Point Sources	Geometric Mean (cfu/100 mL)	
	Monthly	Weekly
City of Palouse WWTP	100	200
City of Garfield WWTP	100	100

Pollution Sources and Corresponding Organizational Responsibilities

Improved water quality will be achieved through the combined efforts of many organizations and residents. Local involvement and commitment to resolving fecal coliform problems in the North Fork Palouse River watershed are substantial as evidenced by the dedication of the people and organizations involved in the development of the water quality improvement plan (RPU, 2002). To support this TMDL, Ecology will work cooperatively with all interests to promote the implementation of activities contained in this plan. Ecology is obligated to implement the approved TMDL through this implementation plan.

This section of the WQIP outlines the entities involved in implementation, the activities that will be carried out, and the schedule for implementation. Table 4 provides a summary of this implementation plan's components.

Current and On-going Activities

Many organizations and agencies have responsibilities and commitments under existing laws, rules, and programs that address bacteria problems in the watershed. These are described below.

Washington Department of Ecology: Ecology has authority under the federal Clean Water Act to establish water quality standards, administer the NPDES wastewater permitting program, and develop and implement TMDLs. Ecology also has authority to enforce state water quality regulations under Chapter 90.48 RCW. Ecology addresses water quality regulations by responding to complaints, providing education and technical assistance, offering grant and loan funding opportunities, conducting inspections, and issuing NPDES and state discharge permits. In cooperation with conservation districts, Ecology will pursue implementation of best management practices (BMPs) for agricultural and other land uses. Ecology may also use formal enforcement, including fines, if voluntary compliance is unsuccessful.

Ecology will respond to agricultural complaints in accordance with the Water Quality Program Policy 1-05 (Guidance for Implementation of the Agricultural Compliance Memorandum of Agreement). This agreement recognizes the working relationship between the Washington Conservation Commission, Ecology and individual conservation districts in protecting water quality of the state. Complaints made to Ecology will be verified and if valid, Ecology will refer the landowner or operator to the Palouse Conservation District for technical and financial assistance to correct the problem.

Palouse Conservation District: Conservation districts have authority under Chapter 89.08 RCW to develop farm plans to protect water quality and provide animal waste management information, education, and technical assistance to residents on a voluntary basis.
When developing farm plans, the district uses guidance and specifications from the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS).

The Palouse CD received a Centennial Clean Water Fund grant (G0400216) from Ecology in 2004. This grant provides funds for the Palouse/Snake River Riparian Buffer Project. This project will assist landowners to install BMPs that improve riparian health and protect water quality to Snake River tributaries and the Palouse River watershed, including the North Fork Palouse River. The grant will help implement BMPs by supplementing federal cost-share programs. In addition, education materials will be developed to recruit participants and explain the importance of riparian health. This grant expires in 2008. The District also has resources obtained through the Washington State Conservation Commission to implement livestock BMPs that will reduce fecal coliform bacteria contributions. These resources are set to expire in 2007.

Washington State University (WSU) - Whitman County Extension: Washington State University Extension engages people, organizations, and communities to advance knowledge, economic well-being, and quality of life by fostering inquiry, learning, and the application of research. The Whitman County WSU Extension office provides education to county residents on a variety of topics including agricultural and livestock best management practices and water quality. This education is provided through workshops, tours, and a library of publications.

Whitman County Health Department: The Whitman County Health Department regulates small on-site sewage systems in the North Fork Palouse River watershed in accordance with Chapter 246-272 Washington Administrative Code (WAC). There are existing systems that have drainfields with pipes discharging directly to the river but the existence of such systems is sparse and not well documented. When the county road department finds pipes discharging to a roadside ditch they report them to the health department (J. Skyles, Whitman County Health Dept. 2005, pers. comm., Oct. 14). When the department receives a complaint about a failing system, the department verifies the failure and assists the landowner with coming into compliance with Chapter 246-272 WAC. The department also refers people to the following informative website for more information: http://www.whitmancounty.org/PubHealth/Index_Pages/index.htm.

In addition, the department has been involved in the investigation of complaints about agricultural animal waste.

Whitman County and City of Palouse (with the Department of Ecology): The North Fork Palouse River falls under the requirements of the Shoreline Management Act (SMA) (RCW 90.58). The SMA is administered principally by local governments through locally developed Shoreline Master Programs (SMPs) and Ecology provides technical and financial assistance for the development and implementation of the SMPs.

Ecology reviews and approves the SMPs and with the local governments has the authority for compliance and enforcement of the SMA and SMPs. Through a permit process, local governments review projects in their jurisdiction for compliance with local SMPs and the SMA. The SMA specifically lists protecting water quality as one of its purposes (RCW 90.58.020). Local governments must periodically update their SMPs and must integrate them with their Growth Management Act provisions, including critical area ordinances.

State of Idaho: Since the North Fork Palouse River originates in Idaho, work underway in Idaho has the potential to positively affect water quality in the Washington portion of the river. In Idaho, the water quality standards program is a joint effort between the Idaho Department of Environmental Quality (IDEQ) and the EPA. IDEQ is responsible for developing and enforcing water quality standards that protect beneficial uses such as drinking water, coldwater fisheries, industrial water supply, recreation, and agricultural water supply. The EPA develops regulations, policies, and guidance to help Idaho implement the program and to ensure that Idaho's adopted standards are consistent with the requirements of the Clean Water Act and relevant regulations. The EPA has authority to review and approve or disapprove state standards and, where necessary, to promulgate federal water quality rules. IDEQ has the authority and the responsibility to ensure that TMDLs are completed and submitted to EPA.

TMDLs were developed for Idaho's tributaries to the North Fork Palouse River. These include Flannigan Creek, Deep Creek, Gold Creek, West Fork Rock Creek, Big Creek, and Hatter Creek. The final *Palouse River Tributary Sub-basin Assessment and TMDL* (Henderson, 2005) was approved by EPA in March 2005. These creeks will be monitored a minimum of every five years. Bacteria sampling will analyze for both *E. coli* (Idaho's indicator measurement) and fecal coliform (Washington's indicator measurement). It is important to note that the Palouse River (North Fork in WA) in Idaho is not currently listed as impaired for bacteria (K. Steele, IDEQ 2006, per comm. March 6).

The Idaho water quality standards require that:

> *Waters designated for primary or secondary contact recreation are not to contain E. coli bacteria in concentrations exceeding a geometric mean of one hundred twenty-six (126) E. coli organisms per one hundred (100) ml based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period* (IDAPA 58.01.02; See Section 200).

Latah Soil and Water Conservation District (LSWCD): The LSWCD currently has two EPA Section 319 grants for implementation activities in the North Fork Palouse River watershed (referred to as the Palouse River watershed) in Idaho. One grant is to implement riparian restorations projects on the tributaries included in IDEQ's TMDL *Palouse River Tributary Sub-basin Assessment and TMDL* (Henderson, 2005). The second grant funds livestock related BMPs on 303(d) listed water bodies. Currently the North Fork Palouse River is not listed on the 303(d) list in Idaho. LSWCD is trying to have the restriction limiting implementation to listed water bodies lifted. If this occurs and they implement projects along the North Fork Palouse River LSWCD will report the number of projects to Ecology's TMDL coordinator to document work in Idaho that may benefit Washington's goals to meet water quality standards.

City of Palouse: The city of Palouse's wastewater treatment plant discharges treated municipal wastewater to the North Fork Palouse River downstream of the city of Palouse. This discharge is permitted under their NPDES permit (WA0044806C) which was issued on June 30, 2005 and expires June 29, 2010. The permit establishes limits for fecal coliform and requires the city to monitor bacteria levels in the effluent and report any exceedances to Ecology.

As part of their maintenance operation, the city flushes the sewer lines in the spring and summer to inspect the pipes.

Approximately 50 manholes are flushed annually and others are visually inspected. At the time of publication the city had installed approximately 9,900 feet of PVC pipe, most of which replaced clay pipe. Seventy service connections and 20 manholes have also been replaced.

To address stormwater, the city cleans catch basins annually in the fall. They also sweep the streets to reduce the amount of debris entering the catch basins.

City of Garfield: The city of Garfield's wastewater treatment plant discharges treated municipal wastewater to Silver Creek, which is a tributary to the North Fork Palouse River. This discharge is permitted under their NPDES permit (WA0044822C) which was issued on July 29, 2005 and expires June 30, 2010. The permit establishes limits for fecal coliform and requires the city to monitor bacteria levels in the effluent and report any exceedances to Ecology. When it is discovered that a sewer line is blocked by roots, the line is replaced.

Washington Department of Fish and Wildlife (WDFW): WDFW encourages and promotes the establishment of healthy functioning riparian areas to protect water quality. Animals, especially waterfowl, may congregate along streams if there are not shrubs or trees in the area. Practices that remove natural vegetation, such as farming to the stream's edge or unmanaged grazing, invite waterfowl use. Healthy functioning riparian areas will not only discourage wildlife from concentrating along streams, they will also help filter any runoff before it enters the stream.

Palouse Clearwater Environmental Institute (PCEI): The Palouse Clearwater Environmental Institute has a Watersheds Program. The Watersheds Program is dedicated to increasing public awareness about watershed conservation and increasing public involvement in watershed decisions. Staff and volunteers work to preserve, protect, and restore ecosystems in the Palouse-Clearwater region. This work includes riparian and wetland restoration, watershed planning, water quality protection, and biological monitoring with a focus on native plants and wildlife. Projects are collaborative in nature and are always science-based and community-centered. PCEI is currently working with landowners in Idaho to restore riparian areas on tributaries to the North Fork Palouse River.

USDA Natural Resources Conservation Service (NRCS): The Natural Resources Conservation Service administers several programs which provide funding to producers to implement practices that protect water quality. These programs include the Continuous Conservation Reserve Program (CCRP), the Conservation Reserve Program (CRP), the Environmental Quality Incentive Program (EQIP), the Wildlife Habitat Incentive Program (WHIP), the Wetland Reserve Program (WRP), and the Conservation Security Program (CSP). Additional information about each of these programs is located under the "Funding Opportunities" section later in this document. NRCS will continue to promote and administer these programs. NRCS, Palouse Conservation District, and Ecology staff will meet annually to estimate the number of contracts awarded in the North Fork Palouse River watershed.

Community Action Center (CAC): The Community Action Center in Pullman, Washington administers the Housing Rehabilitation Loan Program for residents of Whitman County. This program provides zero-interest and low-interest loans to residents to repair and improve the quality and safety of their homes. These loans can be used to repair and replace failing septic systems. The CAC will track and report the number of loans given to residents in Palouse, Garfield and Colfax zip codes for septic system repair or replacement.

Potential Future Activities

Several organizations have expressed an interest in implementing new activities not currently included under existing laws, rules, and programs and/or initiating projects that would help address the bacteria pollution. However, these new activities will be dependant on obtaining management and legal authorization, funding, and the feasibility of these actions.

Washington Department of Ecology: Ecology will hold annual meetings with the organizations implementing activities as part of this plan. At these meetings the organizations will discuss their progress and plan next year's activities. Ecology will also work with the organizations to ensure this plan is carried out. In addition, Ecology will look for ways to establish a regular monitoring station in Colfax prior to the North Fork Palouse River's confluence with the South Fork Palouse River.

The Palouse Conservation District: The Palouse CD intends to apply for several grants, which would address bacteria pollution in the North Fork Palouse River. These projects may be funded through Ecology's grant programs or through other grant opportunities. The following are possible projects for which the CD may apply for funding:

- North Fork Palouse River Bacteria TMDL Implementation – This project would include educating residents of the North Fork Palouse River watershed about the bacteria problem and the importance of addressing the problem. It would also educate people about practices that can be used to address various sources of pollution. Only 11 sites were monitored for the TMDL study, so while river segments that violate and meet the standards are known, the exact source of the bacteria is unknown. To better narrow down the causes and locations of sources, the CD would do further monitoring in areas where the fecal coliform levels exceeded the standards, especially in areas when the river goes from meeting the water quality standards in one segment to not meeting the standards in the next downstream segment. Included in this grant proposal would also be funds to implement BMPs (both urban and rural) that would improve water quality, including addressing fecal coliform bacteria. The district would also like to pursue funding to conduct microbial source tracking (MST) to determine the species of animals contributing fecal coliform bacteria to the streams.

- Livestock BMP/Riparian Buffer Program – Phase 2 – The Palouse CD has been using the existing grant mentioned previously to implement livestock BMPs such as fencing, off-stream watering, and installing riparian buffers. A large portion of these grant funds will be exhausted due to work in the South Fork Palouse Watershed.

Therefore, the Palouse CD intends to apply for an additional grant to continue similar implementation activities along the North Fork Palouse River. This grant would include assisting both agricultural and non-agricultural landowners with riparian enhancement.

Washington State University (WSU) - Whitman County Extension: In addition to Whitman County Extension's current educational activities, they will also hold three livestock oriented workshops in the North Fork Palouse Watershed by 2011. These workshops will focus on livestock management practices that help prevent animal waste from reaching streams. These activities are dependent on staff and funding resources; however, Whitman County WSU Extension is committed to conducting these workshops. In addition, Whitman County WSU Extension may also provide presentations on septic system maintenance in cooperation with the Whitman County Health Department.

Whitman County Health Department: The Whitman County Health Department currently distributes educational information with septic system permits. In addition to this educational outreach, the health department will also produce a brochure about septic system maintenance and hold two septic system maintenance workshops in the North Fork Palouse Watershed by 2009. These workshops may be held in cooperation with the Whitman County Extension Office and will cover proper septic system maintenance, signs of failing systems, and information on programs to help fund replacement or repair of failing systems. The brochure, which will be mailed to all residences in the North Fork Palouse Watershed that are not connected to a sewer system, will describe acceptable on-site sewer systems, proper maintenance, signs of failure, and who to contact for assistance or to report problems. The health department will also track the number of complaints they receive about failing septic systems in the watershed along with the results of the complaint investigation and report those to the TMDL coordinator. They will also track and report the number of repairs that have been made to existing septic systems.

City of Palouse: Homes in the "Breeding Addition" and the "Fisher Addition" are currently on septic systems. Inside the Palouse city limits there are 13 homes in the Breeding Addition that are on septic systems. In the Fisher Addition there on 24 homes on septic systems; 11 of these homes are outside the city limits. The depth of soil over rock in both additions makes it probable that conventional on-site treatment systems are likely to fail. To address sub-standard septic systems, the town of Palouse has explored opportunities to hook the Fisher and Breeding additions up to the existing sewer system. The cost for this project is estimated to be approximately $520,000. The city of Palouse will continue to pursue funding for this project which does not cause economic hardship to the residents of these additions or the city of Palouse.

To improve their current sewer line maintenance program the city would like to obtain a vehicle mounted camera system. This camera would be used to detect infiltration and broken sewer lines.

The city would also like to address pet waste within the city, especially at the city park. The city will investigate methods to educate residents about the importance of proper pet waste disposal. The city will consider installing pet waste dispensers and educational signs at the city park. This will help keep bacteria from pet waste from entering the river through runoff or storm drains.

City of Garfield: The city of Garfield currently has a camera to use to inspect the sewer lines but they are limited by the length of the cable. The city will continue to investigate funding sources to purchase a longer cable. The city has also had discussions with the Palouse Conservation District regarding livestock management practices they can implement to lessen the impact livestock have on the city's property along Silver Creek.

Washington Department of Fish and Wildlife (WDFW): WDFW will provide education about maintaining riparian areas for the purpose of discouraging wildlife concentration. WDFW will make a presentation at a minimum of one of the workshops hosted by WSU Extension.

Palouse Clearwater Environmental Institute (PCEI): In addition to PCEI's current efforts, the institute is also interested in working to educate people about septic system maintenance, riparian health and maintenance, pet waste, and general watershed stewardship. PCEI would like to partner with the Whitman County Health Department and Whitman County WSU Extension on their workshops. PCEI will also conduct a pipe survey on the North Fork Palouse River if funding for the effort can be secured. The survey will look for pipes that may drain human or animal waste to the river. In addition, PCEI will send a "project contact letter" to landowners in the watershed to let them know about the services PCEI can provide. If other entities need assistance, PCEI is also willing to place volunteers on their projects if enough funds can be provided to cover the overhead cost of the volunteer.

Table 4. Activities to Reduce Fecal Coliform Contributions & Resources to Achieve Targets

Source	Action Item	Milestones	Organization	Performance Measures	
				What	When
Unknown	Identify sources through water quality sampling	Monitor upper mainstem segments to narrow sources within 4 years	Palouse CD	Obtained funding	By FY2008
				Completed QAPP and begin monitoring	2009
				Report describing findings	By 2010
		Monitor middle and lower mainstem segments to narrow sources within 7 years	Palouse CD	Obtained funding	By FY2010
				Completed QAPP and begin monitoring	2011
				Report describing findings	By 2013
	Identify sources through microbial source tracking (if necessary)	Investigate MST labs and methods for identifying any remaining unknown sources	Palouse CD and Ecology	Keep informed on current research	Ongoing
				Reconvene advisory & technical committees to learn about methods	2011
		Conduct selected MST method	To be determined by step above	Conduct in areas of unknown sources	2012
Wastewater treatment plants	Monitor fecal coliform in effluent	Meet required NPDES limits	City of Palouse & City of Garfield	Submit Discharge Monitoring Reports (DMR)	Monthly
	Report limit violations and correct problem	As required in NPDES permits	City of Palouse & City of Garfield	Report violations and their resolution to Ecology	As they occur
Sewer lines	Maintain sewer lines	Monitor for and repair any sewer line leaks or blockages	City of Palouse	Flush and inspect sewer lines at least annually and report findings	Annually
				Clean manholes	Annually
				Obtain camera/vehicle for improved monitoring	2010
			City of Garfield	Replace blocked or broken sewer lines	Track number and report annually
				Obtain longer cable for camera	2010

Source	Action Item	Milestones	Organization	Performance Measures	
				What	When
On-site septic systems	Information and education program	Partner with Whitman County Extension & Whitman County Health Dept.	Palouse CD	Participate in workshops and assist with information dissemination	2009
			Palouse Clearwater Environmental Institute	Participate in workshops and assist with information dissemination	2009
		Inform all rural residents about septic system maintenance	Whitman Regional Health Department	Produce and mail brochure	2009
				Hold two septic system workshops	2009
	Identify failing septic systems	Locate and map the locations of all pipes on the North Fork Palouse River	Palouse Clearwater Environmental Institute	Secure funding	2008
				Conduct pipe survey	2009
	Address failing septic systems through technical assistance and recommending financial assistance programs	Address all known failing septic systems	Whitman Regional Health Department	Track & report number of complaints & results of investigation	Annually
				Track & report number of repairs to existing septic systems	Annually
	Financial assistance for septic system repair and replacement	Provide zero-& low-interest loans to landowners	Community Action Center	Track & report number of loans awarded for septic system repair or replacement in Garfield, Palouse and Colfax zip codes	Annually
	Explore funding opportunities to hook Fisher and Breeding additions up to existing sewer system	Find funding in 7 years	City of Palouse	Track & report attempts to secure funding	Annually
				Obtain funding for sewer hook-up	2013

Source	Action Item	Milestones	Organization	Performance Measures	
				What	When
Livestock	Information and education program	Increase awareness among livestock owners	Palouse CD	Newsletter articles (minimum 1 per year)	Report number annually
				Minimum of 1 watershed tour highlighting livestock BMPs	2009
				Participate in workshops	By 2011
			WSU-Whitman County Extension	Hold 3 livestock oriented workshops	By 2011 (report progress annually)
				Track number of attendees	Annually (as workshops are held)
	Implement livestock best management practices (BMPs)	Obtain funding to develop farm plans and install BMPs	Palouse CD	Obtain funding to develop farm plans and install BMPs	By FY2008
				Conservation farm plans developed for 100% of willing livestock owners	By 2020 (report number annually)
				Work with landowners to ensure 50% install a minimum of one BMP that addresses fecal coliform bacteria.	By 2013 (report number annually)
				Continue to work with rest of above landowners to install fecal coliform BMPs	Report progress annually
		Contact landowners about riparian restoration assistance	Palouse Clearwater Environmental Institute	Send letter to landowners in the watershed to explain the services they can provide	2007
		Respond to and follow up on all complaints	Ecology	Track number of complaints	Annually
				Track actions taken	Annually

Source	Action Item	Milestones	Organization	Performance Measures	
				What	When
Livestock (continued)		Protect riparian area on city property along Silver Creek	City of Garfield	Work on a plan to protect riparian area	2007
				Secure funding for planting or other best management project	2007
				Plant riparian vegetation or implement project	2008
				Maintain vegetation and report survival rate	Annually
		Provide funding to landowners to implement livestock BMPs	USDA NRCS	Track & report number of contracts awarded (with Palouse CD)	Annually
			Ecology	Track & report number of Ecology grants and loans awarded to conservation organizations	Annually
				Track the results of the grants and loans	Annually
	Encourage innovative BMPs and demonstration projects that promote new technology	Pursue funding that evaluates and implements "non-traditional" BMPs for reduction of fecal coliform	Palouse CD	Obtain funding	FY2010
				5 demonstration projects implemented	2015 (report on projects annually)
Pet waste	Reduce the amount of pet waste contributing bacteria to the river	Educate residents about the impact of improper disposal of pet waste	City of Palouse	Provide educational materials to city residents	2007
				Place pet waste receptacles in city park	2009
Wildlife	Develop and implement wildlife BMPs and management approaches	Educate landowners about how healthy riparian areas lessen impacts from wildlife	WDFW	Number of landowners requesting technical assistance	Report annually
				Number of presentations made at education workshops	Report annually

Source	Action Item	Milestones	Organization	Performance Measures	
				What	When
Stormwater	Reduce bacteria sources to stormwater	Clean catch basins and sweep streets	City of Palouse	Clean catch basins annually	Annually
				Sweep streets as needed	Report frequency annually
All	Recruit volunteers	Have volunteers assist with various projects that are part of this implementation plan	Palouse Clearwater Environmental Institute	Contact the other entities involved in implementation to ensure they know about available volunteer assistance	2007
				Track & report the number of volunteers used on various projects	Annually
	Issue NPDES and state permits	Issue permits for all discharging facilities with limits to protect water quality	Ecology	Issue permits	As needed
	Conduct TMDL effectiveness monitoring	Demonstrate fecal coliform reductions are occurring	Ecology or others	Monitor and report water quality data	Five years after implementation begins and as needed
	Hold implementation progress meetings	Track implementation progress and coordinate efforts between organizations	Ecology	Implementation progress meeting	Annually
	Pursue a long term monitoring station prior to the confluence with the South Fork Palouse River	Demonstrate fecal coliform reductions are occurring and establish long term data trends	Ecology	Report on attempts to add monitoring station	Annually

Measuring Progress Toward Goals

The North Fork Palouse River watershed consists of six segments and tributaries that do not meet the Washington State water quality standard for fecal coliform bacteria. To address the listings in a comprehensive manner, the following strategy for implementation is recommended:

- Begin workshops and educational efforts for residents within the first two years and continue throughout implementation and beyond to maintain water quality.
- Workshops and educational events should set targets for attendance, technical assistance requests, etc. Then the success of these efforts should be measured against these targets and if necessary the format revised.
- All activities listed in Table 4 should begin as soon as possible to ensure they are completed in time to ensure that the North Fork Palouse River reaches water quality standards for fecal coliform bacteria by 2014.
- Organizations listed in Table 4 should continually track the activities listed in this plan to ensure simple annual reporting.
- Prioritize on-the-ground implementation projects in the following order: 1) highest fecal coliform reductions targets, 2) sources visibly apparent, 3) furthest upstream sites 4) demonstration projects.

Ecology's TMDL coordinator will work with the organizations outlined in this document to track the progress of this implementation plan. Each organization should track its performance measures and report its progress to the TMDL coordinator annually. The TMDL coordinator will schedule an "implementation progress" meeting each year for the organizations and any interested residents. At this meeting the organizations will be able to share the results of any events, implementation projects, and monitoring activities. The organizations will review water quality data and determine whether progress is being made or if adaptive management is needed. This meeting will also serve as an opportunity for the organizations to plan the following year's activities.

The TMDL coordinator will keep a record of the implementation progress by recording activities completed in the tracking tables found in Appendix A.

Monitoring Plan

Future monitoring activities will be essential to the success of this implementation plan. Monitoring should be designed to assess where BMPs should be applied, the specific effects of individual management actions, and the overall cumulative effect of this plan's implementation. Monitoring water quality trends and improvements are necessary to:

- Show where water quality is improving
- Help locate sources of pollution

- Help indicate effectiveness of cleanup activities
- Document achievement of water quality standards

Monitoring for the North Fork Palouse River Fecal Coliform Bacteria TMDL can be classified into four categories: 1) continuous, 2) source identification, 3) implementation effectiveness, and 4) effectiveness monitoring. Each monitoring category and a plan for how to approach the monitoring, is described below.

Continuous

Ecology has one ambient monitoring station on the North Fork Palouse River located at the Highway 27 bridge in the city of Palouse. Monitoring data are collected monthly at this station. When fecal coliform counts exceed the water quality standards the results are reported to the Eastern Regional Office. This monitoring should continue to track any changes in water quality at this location. In addition, it would be beneficial to have regular monitoring in Colfax prior to the North Fork Palouse River's confluence with the South Fork Palouse River.

As required by their NPDES permits, the cities of Palouse and Garfield currently monitor their WWTP effluent for fecal coliform bacteria once per week. The results of this monitoring are included in their discharge monitoring reports (DMRs) and are submitted monthly to Ecology. The permit manager follows up with the WWTP if there are violations of their effluent limits.

Implementation Effectiveness

Each agency included in this TMDL implementation plan should monitor the success of their implementation activities. Each action implemented should be evaluated to assess the effectiveness of the effort. On-the-ground implementation projects should also be monitored for success. For example, riparian restoration projects should include a monitoring plan to access the survivability and growth of the plantings.

Source Identification

Where ambient or other water quality monitoring identifies persistent hot spots or sub-basins of concern, additional sampling to track the bacteria source should be conducted. Although there has been interest in applying microbial source tracking (MST) methods to the source identification in this watershed, the first approach to source identification should be to collect fecal coliform water quality samples using the same methods as those used in the TMDL study. Fecal coliform water quality grab samples should be attempted first because:

1) The results of the monitoring would be comparable to the fecal coliform counts used to set the targets for this TMDL.
2) This method of source identification is more economical than MST methods.
3) MST methods are qualitative not quantitative. In other words, they may determine what animal species are sources but not how much each is contributing.

In areas of persistent hot spots the sampling plan should be designed to geographically narrow down the length of the stream segment where increases in fecal coliform counts rise (Figure 2).

If this sampling does not identify sources that could be reduced through various activities and BMPs, then MST should be investigated.

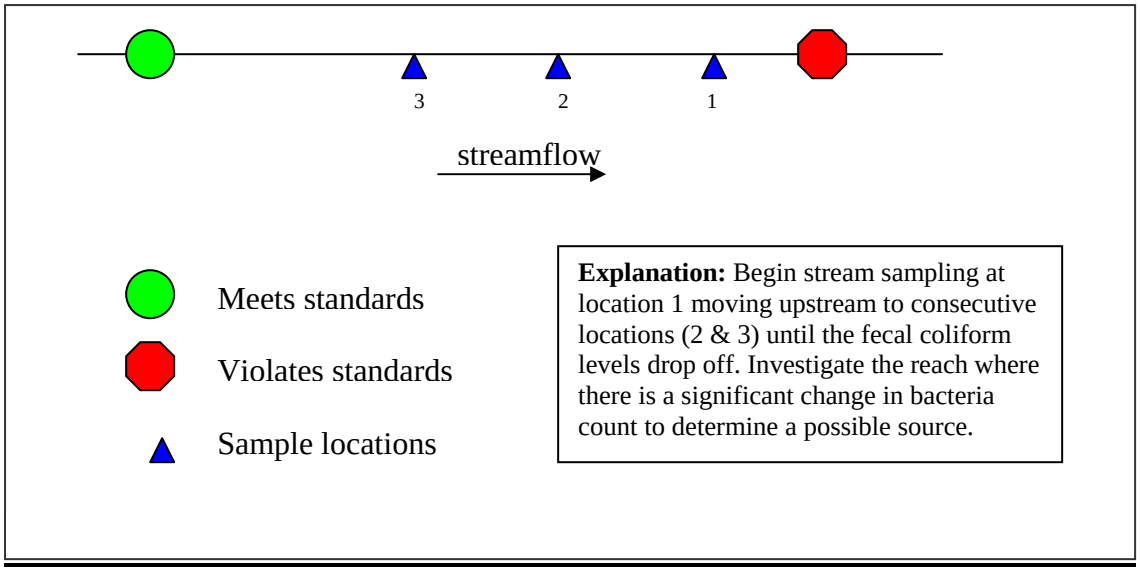

Figure 2. Schematic example: how to approach source identification monitoring.

To ensure that the selected microbial source tracking (MST) method will produce the most useful data and is the most economical choice, the various methods and new technologies should be investigated before selecting an MST method to apply to this watershed. The North Fork Palouse Watershed Committee and Technical Advisory Group should reconvene to learn about the different MST methods and select the best choice for source identification. MST and fecal coliform bacteria experts should be invited to the committee meetings to present information on the various technologies including the benefits and restrictions of each method. The watershed committee should then select the most appropriate MST method through a consensus-based decision making process. Funding and researchers to conduct the chosen MST method will need to be secured prior to beginning the study. Currently EPA, the USGS, and Ecology do not support or conduct monitoring using MST methods. At this time these methods are neither quantitative nor reliable. As these methods are improved, agencies may begin to accept the results they provide for identifying the sources of fecal coliform bacteria.

TMDL Effectiveness Monitoring

The purpose of effectiveness monitoring is to provide assurance that control measures put in place during TMDL implementation achieve the expected load reductions and result in the streams meeting water quality standards. Ecology is responsible for determining, through effectiveness monitoring analysis, the status of water bodies subsequent to the development and implementation of each TMDL. The timing of such monitoring will depend upon the time period after which positive results should be identifiable and the availability of resources. Effectiveness monitoring priorities will be selected and scheduled by Ecology. Typically, Ecology strives to conduct the initial effectiveness monitoring five years after implementation

activities begin. If at this time the streams still do not meet water quality standards, future effectiveness monitoring will need to be scheduled along with implementation of adaptive management.

Monitoring personnel will consult with the Ecology regional office TMDL coordinator to develop the effectiveness monitoring plan and schedule. The TMDL coordinator will provide the monitoring personnel with the results of implementation monitoring and the status of the TMDL implementation plan.

General Monitoring Considerations

The following recommendations should be considered for all types of monitoring related to this TMDL effort.

Mouths of tributaries should be monitored so that the overall effects of BMPs implemented in the tributary can be evaluated.

- Clear Creek should be monitored from June through October and from February through March.
- Cedar Creek should be monitored from May through September.
- Duffield Creek should be monitored initially for one year for both flow and fecal coliform bacteria.
- Silver Creek should be monitored from March through September. Concentrations of fecal coliform bacteria measured at Silver Creek river mile (RM) 5 (Station 5) likely reflect contributions by nonpoint sources. However, the increase in fecal coliform bacteria between RM 5 (Station 5) and RM 2.3 (Station 6) is likely from urban sources. The city of Garfield is between these two stations. Lack of flow may also play a role in the elevated fecal coliform concentrations at Station 6. Flow at Station 6 is lower than the flow at Station 5. Both Stations 5 and 6 should be monitored during and following BMP implementation.

Mainstem North Fork Palouse River monitoring locations should be sampled during the critical periods as presented in Table 2. However, Station 11 (RM 123.9 at the Washington/Idaho border) should continue to be monitored monthly. Data collected at this station should be evaluated to establish the need for BMP implementation above the state line.

The number of monitoring stations can be reduced. For example, only one station (Ecology Station B, RM 90.2) is needed between Clear Creek and the mouth of the North Fork Palouse River in Colfax, unless there are reasons for establishing additional stations. Stations where no reductions have been required (Stations 4 and 5) may be eliminated from future monitoring.

Adaptive Management

This implementation plan assumes that the activities outlined in it, coupled with water quality monitoring and implementation tracking will yield the necessary water quality improvement. It is only when water quality targets are not being met that adaptive management is required.

The feedback loop concept is a mechanism for evaluating the success of this plan and whether the goal of improving water quality is being achieved. The feedback loop occurs in five steps (presented graphically in Figure 3):

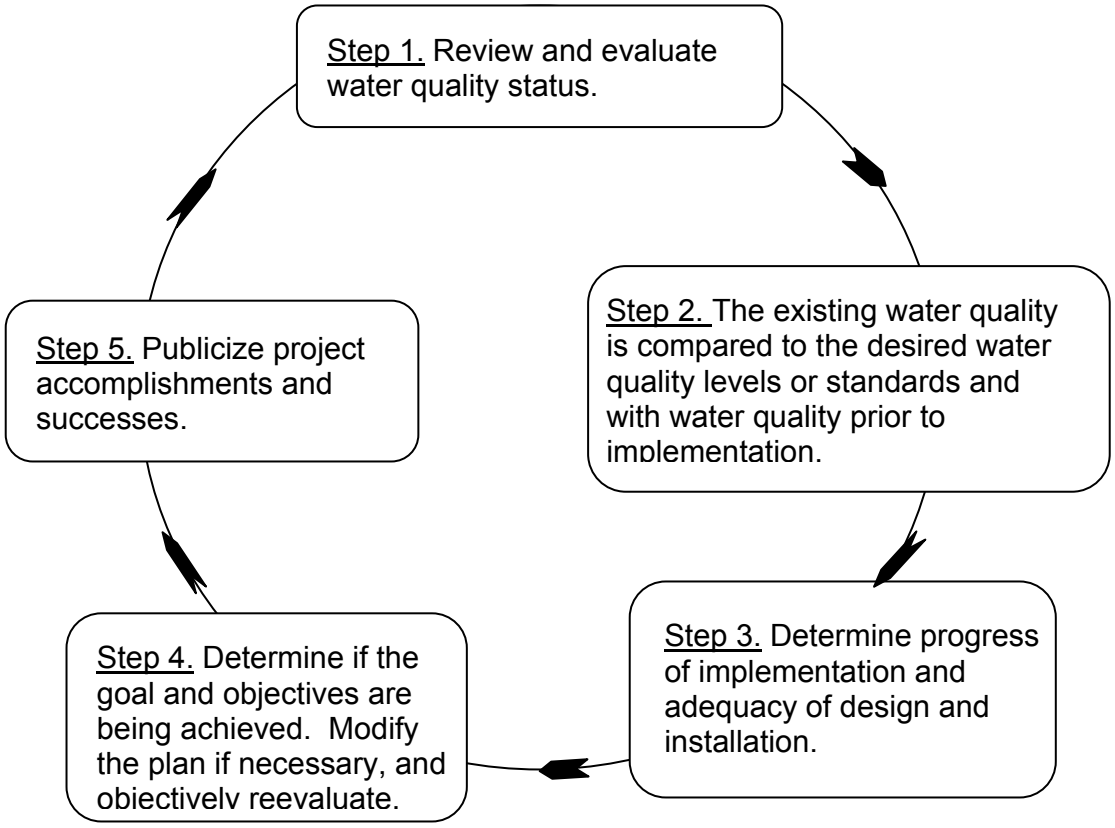

Figure 3. Feedback Loop

Step 1. The process begins by reviewing and evaluating current water quality status.

Step 2. The existing water quality is compared to the desired water quality levels or standards and with water quality prior to implementation.

Step 3. The water quality improvement plan and associated action items are reviewed to determine implementation status. Programs and on-site BMPs are evaluated for technical adequacy of design and installation.

Step 4. The effectiveness of the water quality improvement plan in achieving the goal and objectives is evaluated by comparison to water quality monitoring data. If the goal and objectives are achieved, the implementation efforts are adequate as designed, installed and maintained. If not, the plan is modified and objectively reevaluated.

Step 5. Project success and accomplishments should be publicized and reported to continue project implementation and support.

Effectiveness monitoring data will be presented at annual implementation progress meetings. If the data indicate that it is necessary to modify the plan, the TMDL coordinator will ask the organizations involved and any interested citizens to brainstorm new methods to address the pollution. A review of the tracking tables in Appendix A will be made to ensure progress is being made on the activities listed in this plan. Future meetings may need to be held to refine an adaptive management plan to accelerate meeting water quality standards.

Reasonable Assurances

Improved water quality will be achieved through the combined efforts of all interested parties in the watershed. All entities included in this implementation plan will work collaboratively to determine the bacteria sources, promote activities needed to reduce the bacteria levels, and meet the TMDL targets.

The activities outlined under "Pollution Sources and Corresponding Organization Responsibilities" demonstrate the entities' commitment to address fecal coliform bacteria problems in the watershed. Each entity will report its progress on the activities to the TMDL coordinator yearly. If progress is not being made the TMDL lead and collaborating entities will discuss options to further progress or brainstorm new methods to address bacteria levels.

The innovative ideas, commitment, and spirit of the entities involved in this implementation plan provide reasonable assurance that fecal coliform levels will decline to meet water quality standards.

Funding Opportunities

Ecology's Centennial Clean Water Fund, Section 319, and State Revolving Fund loans can provide funding resources to help implementation of the TMDL (water quality improvement plan). In addition to Ecology's funding programs, there are many other funding sources available for watershed planning and implementation, point and nonpoint source pollution management, fish and wildlife habitat enhancement, stream restoration, and education. Public sources of funding include federal and state government programs, which can offer financial as well as technical assistance. Private sources of funding include private foundations, which most often fund nonprofit organizations with tax-exempt status. Forming partnerships with other government agencies, nonprofit organizations, and private businesses can often be the most effective approach to maximize funding opportunities. Some of the most commonly accessed funding sources for TMDL implementation efforts are shown in Table 5 and are described below. In addition, there is an even more extensive list of funding sources available in Appendix B of the *North Fork Palouse River Water Quality Improvement Plan* (RPU, 2002).

Table 5 Potential Funding Sources for Implementation Projects

Fund Source	Type of Project Funded	Maximum Amounts
Centennial Clean Water Fund	Watershed planning, stream restoration, & water pollution control projects.	$500,000
Section 319 Nonpoint Source Fund	Nonpoint source control; i.e., pet waste, stormwater runoff, & agriculture, etc.	$500,000
State Water Pollution Control Revolving Fund	Low-interest loans to upgrade pollution control facilities to address nonpoint source problems; failing septic systems.	10% of total SRF annually
Coastal Zone Protection Fund (also referred to as Terry Husseman grants)	Stream restoration projects to improve water quality.	~$50,000
Conservation Reserve Program (CRP)	Establishes long-term conservation cover of grasses, trees and shrubs on eligible land.	Rental payments based on the value of the land; plus 50% - 90% cost share dependant on practices implemented

Fund Source	Type of Project Funded	Maximum Amounts
Environmental Quality Incentives Program (EQIP)	Natural resource protection.	Dependent on practices implemented
Wildlife Habitat Incentive Program (WHIP)	Provide funds to enhance and protect wildlife habitat including water.	$25,000 dependent on practices implemented
Conservation Security Program (CSP)	Provides financial assistance for conservation on private working lands	Dependent on practices implemented
Community Action Center (CAC) Housing Rehabilitation Loan Program	Loans to low-income homeowners for safety & sanitation.	0-6% interest dependent on household income
Wetland Reserve Program (WRP)	Wetland enhancement, restoration, and protection by retiring agricultural land.	Dependent on appraised land value

Centennial Clean Water Fund (CCWF)
A 1986 state statute created the Water Quality Account, which includes the Centennial Clean Water Fund (CCWF). Ecology offers CCWF grants and loans to local governments, tribes, and other public entities for water pollution control projects. The application process is the same for CCWF, 319 Nonpoint Source Fund, and the state Water Pollution Control Revolving Fund.

Section 319 Nonpoint Source Fund
The 319 Fund provides grants to local governments, tribes, state agencies and nonprofit organizations to address nonpoint source pollution to improve and protect water quality. Nonpoint source pollution includes many diffuse sources of pollution, such as stormwater runoff from urban development, agricultural and timber practices, failing septic systems, pet waste, gardening, and other activities. Non-governmental organizations can apply to Ecology for funding through a 319 grant to provide additional implementation assistance.

State Water Pollution Control Revolving Fund
Ecology also administers the Washington State Water Pollution Control Revolving Fund. This program uses federal funding from U.S. Environmental Protection Agency and monies appropriated from the state's Water Quality Account to provide low-interest loans to local governments, tribes, and other public entities. The loans are primarily for upgrading or expanding water pollution control facilities, such as public sewage and stormwater plants, and for activities to address nonpoint source water quality problems.

Coastal Zone Protection Fund
Since July 1998, water quality penalties issued under Chapter 90.48 RCW have been deposited into a sub-account of the Coastal Protection Fund (also referred to as Terry Husseman grants). A portion of this fund is made available to regional Ecology offices to support on-the-ground projects to perform environmental restoration and enhancement. Local governments, tribes, and state agencies must propose projects through Ecology staff. Stakeholders with projects that will reduce bacterial pollution are encouraged to contact their local TMDL coordinator to determine if their project proposal is a good candidate for Coastal Zone Protection funding.

Conservation Reserve Program (CRP)
The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, landowners can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. Included under CRP is the Continuous Conservation Reserve Program (CCRP), which provides funds for special practices for both upland and riparian land. Landowners can enroll in CCRP at anytime. There are designated sign up periods for CCRP.

The Commodity Credit Corporation (CCC) makes annual rental payments based on the agriculture rental value of the land, and it provides cost-share assistance for 50 to 90 percent of the participant's costs in establishing approved conservation practices. Participants enroll in CRP contracts for 10 to 15 years.

The program is administered by the CCC through the Farm Service Agency (FSA), and program support is provided by Natural Resources Conservation Service, Cooperative State Research and Education Extension Service, state forestry agencies, and local Soil and Water Conservation Districts. (Farm Service Agency, 2006)

Environmental Quality Incentives Program (EQIP)
The federally funded Environmental Quality Incentives Program (EQIP) is administered by NRCS. EQIP is the combination of several conservation programs that address soil, water, and related natural resource concerns. EQIP encourages environmental enhancements on land in an environmentally beneficial and cost-effective manner. The EQIP program:

- Provides technical assistance, cost share, and incentive payments to assist crop and livestock producers with environmental and conservation improvements on the farm.
- Has 75 percent cost sharing but allows 90 percent if producer is a limited resource or beginning farmer.
- Divides program funding 60 percent for livestock-related practices, 40 percent for cropland.
- Has contracts lasting five to ten years.
- Has no annual payment limitation; sum not to exceed $450,000 per farm.

Wildlife Habitat Incentive Program
The Wildlife Habitat Incentive Program (WHIP) is administered by NRCS. WHIP is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land.

Through WHIP, NRCS provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from five to ten years from the date the agreement is signed.

Conservation Security Program
The Conservation Security Program (CSP) is a voluntary program that provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on tribal and private working lands. Working lands include cropland, grassland, prairie land, improved pasture, and range land, as well as forested land that is an incidental part of an agriculture operation. The program provides equitable access to benefits to all producers, regardless of size of operation, crops produced, or geographic location. CSP is administered by NRCS (NRCS, 2006).

Each year different watersheds are selected for CSP enrollment. It is not known when this program will come to the North Fork Palouse watershed. However, since the program rewards producers who already have conservation practices in place, producers are encouraged to use other federal, state, and local funding sources to prepare their land for enrollment (R. Riehle, NRCS 2006, per comm. March 17).

Community Action Center Housing Rehabilitation Loan Program
The Housing Rehabilitation Loan Program provides zero-interest and low-interest loans to residents to repair and improve the quality and safety of their homes. These loans can be used to repair and replace failing septic systems. Interest rates are based on household income. To qualify for this funding, homeowners must have an inspection performed for there residence and upgrade any other potential health risks that are identified.

Rural Housing Repair and Rehabilitation Loans
The Rural Housing Repair and Rehabilitation Loans are funded directly by the federal government. Loans are available to low-income rural residents who own and occupy a dwelling in need of repairs. Funds are available for repairs to improve or modernize a home, or to remove health and safety hazards such as a failing on-site system. This loan is a one percent loan that may be repaid over a 20-year period.

To obtain a loan, homeowner-occupants must have low income (defined as under 50 percent of the area median income), and be unable to obtain affordable credit elsewhere. They must need to make repairs and improvements to make the dwelling more safe and sanitary. Grants (up to $7,500) are available only to homeowners who are 62 years old or older and who cannot repay a Section 504 loan (USDA, 2006).

Wetland Reserve Program (WRP)
The Wetland Reserve Program (WRP) is a voluntary program administered by NRCS to restore and protect wetlands on private property (including farmland that has become a wetland as a result of flooding). The WRP provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands.

The program offers three enrollment options: permanent easement, 30-year easement, and restoration cost-share agreement. Landowners receive financial incentives to enhance wetlands in exchange for retiring marginal agricultural land.

Under WRP, the landowner limits future use of the land, but retains ownership, controls access, and may lease the land for undeveloped recreational activities and possibly other compatible uses. Compatible uses are allowed if they are fully consistent with the protection and enhancement of the wetland.

Public Involvement

This water quality improvement plan was derived from the "summary implementation strategy" in the submittal report. The activities included in the summary implementation strategy were a result of the recommendations of the North Fork Palouse River Watershed Committee and Technical Advisory Group. The entire submittal report went through a 30-day public comment period at the end of 2004. Three reviewers submitted multiple comments. The report was updated to correct several errors and clarify language as a result of these comments.

At the last meeting of the North Fork Palouse River Watershed Committee and Technical Advisory Group on September 22, 2004, the group decided the water quality improvement plan should be developed through individual meetings between the TMDL coordinator and the implementing organizations and agencies. The activities, performance measures, and schedule included in this water quality improvement plan resulted from those conversations.

The implementing organizations and agencies and the North Fork Palouse River Watershed Committee and Technical Advisory Group reviewed and commented on the draft version of this plan. In addition, a 30-day public comment period was held from May 15 to June 14, 2006. Two reviewers submitted multiple comments. The comments and responses to the comments are located in Appendix B.

Glossary and Acronyms

303(d) list: Section 303(d) of the federal Clean Water Act requires Washington State periodically to prepare a list of all surface waters in the state for which beneficial uses of the water – such as for drinking, recreation, aquatic habitat, and industrial use – are impaired by pollutants. These are water quality limited estuaries, lakes, and streams that fall short of state surface water quality standards, and are not expected to improve within the next two years.

Ambient Monitoring Station: A monitoring location that is sampled on a regular time schedule, usually once per month.

Best Management Practices (BMPs): Physical, structural, and/or operational practices that, when used singularly or in combination, prevent or reduce pollutant discharges.

Clean Water Act (CWA): Federal Act passed in 1972 that contains provisions to restore and maintain the quality of the nation's waters. Section 303(d) of the CWA establishes the TMDL program.

EPA: The United State Environmental Protection Agency

Fecal coliform bacteria: A family of bacteria found in the guts of warm-blooded animals. The presence of this bacteria can indicate the presence of pathogens and/or untreated sewage.

IDEQ: The Idaho Department of Environmental Quality.

Load Allocation (LA): The portion of a receiving waters' loading capacity attributed to one or more of its existing or future sources of nonpoint pollution or to natural background sources.

Loading Capacity: The greatest amount of a substance that a waterbody can receive and still meet water quality standards.

Microbial Source Tracking (MST): Scientific approach or approaches used to identify the species of animal contributing fecal matter to a waterbody.

National Pollutant Discharge Elimination System (NPDES): National program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements under the Clean Water Act. The NPDES program regulates discharges from wastewater treatment plants, large factories, and other facilities that use, process, and discharge water back into lakes, streams, rivers, bays, and oceans.

Nonpoint Source: Pollution that enters any waters of the state from any dispersed land-based or water-based activities, including but not limited to atmospheric deposition, surface water runoff from agricultural lands, urban areas, or forest lands, subsurface or underground sources, or discharges from boats or marine vessels not otherwise regulated under the National Pollutant Discharge Elimination System Program.

Generally, any unconfined and diffuse source of contamination. Legally, any source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act.

NRCS: The Natural Resources Conservation Service.

Point Source: Sources of pollution that discharge at a specific location from pipes, outfalls, and conveyance channels to a surface water. Examples of point source discharges include municipal wastewater treatment plants, municipal stormwater systems, industrial waste treatment facilities, and construction sites that clear more than 5 acres of land.

Pollution: Such contamination, or other alteration of the physical, chemical, or biological properties, of any waters of the state, including change in temperature, taste, color, turbidity, or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the state as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to the public health, safety, or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish, or other aquatic life.

RCW: Revised Code of Washington (the laws for Washington state).

Riparian: The transition zone between land and water environments which have unique plant and soil characteristics. These areas are important to the health of waterbodies.

River mile (RM): A section of river as measure by mile. Mile 0 is the mouth of the river.

Stormwater: The portion of precipitation that does not naturally percolate into the ground or evaporate but instead runs off roads, pavement, and roofs during rainfall or snow melt. Stormwater can also come from hard or saturated grass surfaces such as lawns, pastures, playfields, and from gravel roads and parking lots.

Submittal Report: Refers to the *North Fork Palouse River Fecal Coliform Total Maximum Daily Load Submittal Report* by Snouwaert & Ahmed, 2005. See references.

Total Maximum Daily Load (TMDL): A distribution of a substance in a waterbody designed to protect it from exceeding water quality standards. A TMDL is equal to the sum of all of the following: 1) individual wasteload allocations (WLAs) for point sources, 2) the load allocations (LAs) for nonpoint sources, 3) the contribution of natural sources, and 4) a Margin of Safety to allow for uncertainty in the wasteload determination. A reserve for future growth is also generally provided.

TMDL Study: Refers to *North Fork Palouse River Fecal Coliform Total Maximum Daily Load Recommendations* by Ahmed, 2004. See references.

USGS: The United States Geological Survey.

USDA: The United State Department of Agriculture.

WAC: Washington Administrative Code.

Wasteload Allocation (WLA): The portion of a receiving water's loading capacity allocated to existing or future point sources of pollution. WLAs constitute one type of water quality-based effluent limitation.

Water Quality Implementation Plan (WQIP): A plan detailing how a total maximum daily load will be implemented.

Watershed: A drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation.

WWTP: A wastewater treatment plant.

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Appendix A

Tables to Measure Progress

Appendix A. Tables to measure progress

	Palouse Conservation District	Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Obtain funding for monitoring										
	Complete QAPP										
	Findings report										
	Keep informed on current MST research										
	Reconvene advisory committees to learn about MST methods										

Palouse Conservation District	Timeline									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Participate in septic system workshops & disseminate information										
Newsletter articles about livestock										
Watershed tour that highlights livestock BMPs										
Participate in livestock workshops										
Obtain funding to develop farm plans and install BMPs										
Develop farm plans										

Palouse Conservation District	Timeline									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Install BMPs										
Obtain funding to evaluate and implement non-traditional BMPs										
Implement Non-traditional demonstration projects										

Department of Ecology		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Respond to and follow up on all complaints										
	Keep informed on current MST research										
	Reconvene advisory committees to learn about MST methods										
	Track & Report number of grants & loans award to conservation organizations										
	Track results of grants and loans										

Department of Ecology		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Issue NPDES and state permits										
	Conduct TMDL effectiveness monitoring										
	Hold implementation progress meetings										
	Pursue a long term monitoring station prior to the confluence with the South Fork Palouse River										

City of Palouse		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Submit discharge monitoring reports										
	Report permit violations and resolution to Ecology										
	Flush and inspect sewer lines annually and report findings										
	Clean manholes										
	Obtain camera/vehicle for improved sewer monitoring										

City of Palouse		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
	Track and report attempts to secure funding to hook Fisher and Breeding additions to sewers										
	Obtain funding for sewer hook-up and begin pre-construction										
	Provide education materials about pet waste to city residents										
	Place pet waste receptacles in city park										

City of Garfield		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Submit discharge monitoring reports										
	Report permit violations and resolution to Ecology										
	Work on a plan to protect riparian area										
	Secure funding for planting or other best management project										
	Plant riparian vegetation or implement project										
	Maintain vegetation and report survival rate										

Whitman County Health Department		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Produce and mail brochure about septic system maintenance										
	Hold two septic system workshops										
	Track & report number of septic system complaints & results of investigation										
	Track & report number of repairs to existing septic systems										

Palouse Clearwater Environmental Institute		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Participate in septic system workshops and assist with information dissemination										
	Secure funding for pipe survey										
	Conduct pipe survey										
	Contact the other entities about providing volunteer assistance										
	Track & report the number of volunteers used on various projects										

WSU – Whitman County Extension		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Hold 3 livestock workshops										
	Report number of people attending livestock workshops										

Washington Department of Fish and Wildlife		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Number of landowners requesting technical assistance										
	Number of presentations made at education workshops										

Natural Resources Conservation Service		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Track & report number of contracts awarded (with Palouse CD)										

Community Action Center		Timeline									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	Future
Performance Measures	Track & report number of loans awarded for septic system repair or replacement in Garfield, Palouse and Colfax zip codes										

Appendix B

Response to Comments

Comments from Sid Houpt, Pullman, WA:

Re: Comments on the Draft North Fork Palouse River Fecal Coliform Total Maximum Daily Load Water Quality Implementation Plan

If this document is intended to invite general public comments, it should be written in a more reader friendly manner. See http://www.ecy.wa.gov/quality/plaintalk/principles.htm. There should be less: (1) undefined technical jargon (ambient monitoring station, microbial source tracking, loading capacity, basis (Table 2), critical period (Table 2), qualitative, quantitative, etc- a glossary might help) (2) acronyms and (3) complex sentences with multiple thoughts interspersed. In other words, it should not be similar to what I have just written

As a retired federal land management agency employee, the agencies (USFS, BLM) regularly produce 'activity plans" which have purposes similar to the Draft NFPR plan. These "activity plans" cover a specific area and focus on one particular land use (or activity) while also including the coordination with other land uses. Some of these plans are: forest mgt. plans, fire mgt. plans, livestock allotment grazing mgt. plans, OHV mgt. plans, wild horse area mgt. plans, etc. Each of these plans shares a common format, generally as follows:

(1) Introduction, Background, Purpose
(2) Description of Existing Environment (topography, vegetation, hydrology, land uses, etc)
(3) Objectives (Goals)
(4) Planned Actions (on ground projects, monitoring)
(5) Monitoring Plan, Evaluation (timing, location, etc)

The Draft NFPR plan primarily contains items 1, 3,4, and 5 of those listed above, however, apparently most of item 2 (the "foundation information") were included in prior documents i.e. the "Submittal Report" or "TMDL Study".

To summarize, as presently written, substantive comments on the plan will only come from people who have (1) a personal stake in the outcome and/or (2) most importantly, prior involvement in the NFPR TMDL process.

The reasons others (myself included) will not make specific substantive comments are: (1) the reader unfriendly nature of the document (see previous discussion of this topic) and (2) "the piece meal approach" i.e. not giving the reader an overall picture of the situation, unless the prior documents are reviewed. If the reviewer has concerns with the adequacy of these prior documents, the response will most likely be "That has been previously decided."

When "activity plans," in federal agencies were first developed (in the 1960's), a " piece meal approach" was sometimes used. However, for over the past 30 years, the general format (described previously) has been used, which generally flowed from the requirements of NEPA. In summary, the process has been, the " public" has only one formal opportunity to comment, which is on the entire "draft" plan.

On page 20, the draft plan discusses the possible use of undefined MST methods to identify sources of bacteria. Then, on page 21, the MST method is dismissed by saying: "these methods (MST) are neither quantitative nor reliable." *The unstated assumption is that the only methods* which are reliable are quantitative. I strongly disagree with the implication that the only reliable scientific methods are quantitative. There are many aspects in the field of natural resource management which cannot realistically be reduced to a series of numbers, computer models, etc. Therefore, in some cases, qualitative methods, based on the best professional judgement of qualified people, in the specific situation, is the only realistic approach.

Having participated on all sides of the public comment process (as a commentor, reviewer, response writer), I have the following observation:
Unless there are massive numbers of comments, all of the written comments should be published verbatim. Then, respond, point by point to all substantive comments. This approach allows the commentor (and other readers) to readily see the actual comments and the response.

Some additional comments (mainly editorial) are written on the enclosed copy of the draft plan (see pages 1,3,7,10,19,20,and 29).

Response:

Thank you for your comments. The Department of Ecology is working to improve the readability of its documents. Specifically, the Water Quality Program has adopted a "Plain Talk" policy and attempts to apply it to our documents. In addition we have revised the format of TMDL documents to be more reader friendly. One of these changes reduces the number of TMDL documents from 3 to 2 reports. We hope this change will help address the piece meal approach you referred to. Unfortunately, we made these changes after the majority of this document was written. To aid the reader, this report now contains a glossary and acronym list.

Ecology agrees that there can be a great deal of value to qualitative research methods. However, to show progress in attaining water quality standards we need to be able to compare water quality data to the water quality standards. This requires us to use quantitative methods.

Per your request, several portions of this document were revised to address readability issues and editorial comments.

Comments from Richard Perry, Garfield, WA:

Problems:

1. There are no limitations on chemicals put into the ground for farming operations.
2. There are farmers getting money for farm programs, that are not practicing proper buffers and conservation in or on protected water way and creeks and streams.
3. There are no watchdogs for Fertilizer Company's to regulate there over selling of chemicals to farmers.
4. There is no one in this area at the state level to prosecute environmental violations
5. There is a loss of revenue at state level. [Fines].
6. The farmers are using protected waterways to water their cattle, [cattle in the water], making bacteria factories to travel thought the state and into the ocean.

Solutions:

1. Set state limitations.
2. Stop giving farmers money from programs, when they are not practicing proper conservation and clean water laws.
3. Appoint some one with the authority to communicate with the local fertilizer companies, to insure they are at set limits, [if state limits are set in the future].
4. Appoint state level prosecutors to fine and prosecute environmental violations.
   A. Work with them to educate and develop a plan.
   B. Then if they were not practicing the plan set, they would be fined.
   C. Then if they continue with noncompliance, they would be prosecuted in court at state level.
5. The revenue income of the environmental violators and lawsuits, could go toward the [WQIP].
6. Farmers should use a solar water pump setup to pull water from the protected waterways, and keep their cattle out of the water.

Thank you for all your help and the great job that your team is doing, and I wanted to let you know that the great team players are Paul Turner, Art Jonson, Jim Carrol, and yourself Elaine Snouwaert.

I hope this helps you, and if you need any help in this area, please let me know,
Thank you again,

Response:

Thank you for your comments.

1. This report only addresses fecal coliform bacteria. However, the state's water quality standards include both acute and chronic criteria for toxic substances. Please see our water quality standards website for more information: http://www.ecy.wa.gov/programs/wq/swqs/rev_rule.html
2. Most farm programs are administered jointly by the United States Department of Agriculture's Natural Resources Conservation Service and Farm Services Agency. There are specific requirements that landowners must meet to quality for funding. There is also a new Conservation Security Program that rewards farmers who apply conservation measures.
3. An agricultural pesticide applicator's permit is a required before a farmer can purchase pesticides. These permits are issued and regulated by the Washington State Department of Agriculture. In order to obtain a private pesticide applicator's license, the farmer must pass a written test. The farmer must accumulate enough educational credits to keep the license active. Credits are earned through grower meetings, generally held during the winter. Following manufacturer's label instructions as to the use and rates of the particular pesticide is stressed during these meetings.
4. The state departments of Ecology, Health and Fish and Wildlife all have the authority to enforce environmental laws and when appropriate issue fines.
5. The Department of Ecology may fine organizations and people that contribute to water quality problems. These fines are collected and used to implement projects that will protect or improve water quality.
6. The Farm Services Agency, Natural Resources Conservation Service, Conservation Districts, Department of Ecology and other conservation organizations provide funding and technical assistance to help farmers install best management practices that will improve water quality. These practices often include fencing and off-stream watering.