DEPARTMENT OF
ECOLOGY
State of Washington

Quality Assurance Project Plan

Supplemental:
South Fork Palouse River Basin
Dissolved Oxygen and pH
Total Maximum Daily Load Study

September 2010

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Supplemental Quality Assurance Project Plan

This supplemental plan is available on the Department of Ecology's website at www.ecy.wa.gov/biblio/1003111.html.

Data for this project will be available on Ecology's Environmental Information Management (EIM) website at www.ecy.wa.gov/eim/index.htm. Search User Study ID, JICA0000.

Ecology's Activity Tracker Code for this study is 05-008-05.

Waterbody Numbers: South Fork Palouse River: WA-34-1020; Paradise Creek: WA-34-1025.

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Quality Assurance Project Plan

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Approved by:

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WQP - Water Quality Program
EOS - Eastern Operations Section
EAP - Environmental Assessment Program
EIM - Environmental Information Management system

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Abstract

The South Fork Palouse River and several of its tributaries have been listed by Washington State under Section 303(d) of the federal Clean Water Act for non-attainment of Washington State dissolved oxygen and pH water quality criteria since 1996. The U.S. Environmental Protection Agency requires the states to set priorities for cleaning up 303(d) listed waters and to establish a total maximum daily load (TMDL) water cleanup plan for the watershed.

The Washington State Department of Ecology (Ecology) conducted a TMDL assessment in the South Fork Palouse watershed in 2006 and 2007. Paradise Creek was included in the TMDL study.

The city of Moscow, Idaho operates a wastewater treatment facility that discharges to Paradise Creek near the Washington State border. The Moscow treatment facility is the principal discharge to Paradise Creek during the summer. Since Ecology's TMDL study in 2006, the city of Moscow has installed advanced filtration to meet their TMDL requirements established in an earlier Paradise Creek TMDL (IDEQ, 1997). As a result, Ecology's Eastern Regional Office requested additional monitoring for Paradise Creek.

This Supplemental Quality Assurance Project Plan describes additional monitoring that will:

- Characterize the effluent at the Moscow wastewater treatment facility after advanced filtration.
- Assess the effect advanced filtration can have on the water quality in Paradise Creek and possibly further downstream.
- Provide a data set to refine and confirm a water quality model calibration.
- Possibly locate any additional nonpoint (diffuse) pollutant loading.

Ecology's Environmental Assessment Program will conduct the study.

Each study conducted by Ecology must have an approved Quality Assurance Project Plan. The plan describes the objectives of the study and the procedures to be followed to achieve those objectives. After completing the study, Ecology will post the final report of the study to the Internet.

Introduction

In 2006, the Washington State Department of Ecology (Ecology) published the *Quality Assurance Project Plan: South Fork Palouse River Dissolved Oxygen and pH Total Maximum Daily Load* (Carroll and Mathieu, 2006). The Quality Assurance (QA) Project Plan described monitoring activities to address federal Clean Water Act 303(d) listings for dissolved oxygen and pH in the watershed.

Ecology sampled the South Fork (SF) Palouse watershed from May 2006 through April 2007 to better understand the dissolved oxygen and pH water quality impairments. Paradise Creek, the main waterbody of interest for this supplemental QA Project Plan, is one of the tributaries to the SF Palouse that was monitored. For total maximum daily load (TMDL) background information and the watershed description, refer to the original QA Project Plan (Carroll and Mathieu, 2006).

Ecology's 2006-07 dissolved oxygen and pH TMDL study showed dissolved oxygen and pH impairments in Paradise Creek and the SF Palouse River (analysis in progress). Since the 2006-07 TMDL study, the city of Moscow has begun providing advanced filtration of their effluent prior to discharge to Paradise Creek. The Moscow Wastewater Treatment Plant (WWTP) employed advanced filtration to meet phosphorus permit limits set by an earlier TMDL in Idaho for Paradise Creek (IDEQ, 1997). Because of the changed boundary conditions, Ecology's Eastern Regional Office requested additional monitoring.

The objectives of the additional monitoring are to provide the following:

- Characterize the effluent at the Moscow WWTP after advanced filtration.
- Assess the effect advanced filtration has on the water quality in Paradise Creek and downstream.
- Provide a data set to refine and confirm a water quality model calibration.
- Possibly locate any additional nonpoint pollutant loading.

Two synoptic surveys during low streamflow conditions are planned for the summer of 2010. These surveys include the monitoring and sampling of Moscow WWTP effluent, Paradise Creek, the SF Palouse River, and tributaries in the study area.

Sampling Design

The surface water monitoring will include two synoptic surveys during Paradise Creek baseflow conditions, one in late June 2010 and the other in mid-August 2010. The synoptic surveys will include 30 sites (Table 1; Figures 1 and 2). All of the sites were established and sampled during the 2006 TMDL study. Surface water parameters measured during the synoptic surveys will include instantaneous streamflow, temperature, pH, dissolved oxygen, and conductivity. Each site will be visited once in the morning and once in the afternoon during each synoptic survey. Wastewater from the WWTP will also be sampled with an automatic composite sampler for a 24- hour period.

Additional data will be collected to help determine the effects of nutrients on Paradise Creek and the SF Palouse River:

- Hydrolabs will be deployed for at least 24 hours at critical locations to characterize diel fluctuations in pH, dissolved oxygen, conductivity, and temperature. Critical site locations are designated in Table 1.
- Prior to the synoptic surveys, periphyton (chlorophyll a) may be sampled at 11 locations on Paradise Creek and the SF Palouse.

Ecology may also collect data from additional sites during the synoptic surveys to supplement data sets used for computer model calibration, confirmation, and refinement.

Sample collection methods, described in more detail in the original QA Project Plan (Carroll and Mathieu, 2006), will be consistent with the TMDL and Ecology's current Environmental Assessment Program (EAP) standard operating procedures (www.ecy.wa.gov/programs/eap/quality.html). Grab samples and composite samples will be shipped and analyzed at Manchester Environmental Laboratory (MEL).

Table 1. Proposed site list for the Paradise Creek - SF Palouse River synoptic surveys.

User Location ID	Location Description	Hydrolab Location	Periphyton Location
34Para08.1	Paradise Creek above Moscow WWTP	X	X
34MoscPOTW	Moscow WWTP outfall	X	
34UnkPara(07.5)	Unknown drainage from horse farm at Moscow WWTP		
34C100	Paradise Creek at state line (aka 34Para06.6)	X	X
34UnkPara(06.3)	Unknown drainage to Paradise at Airport Rd near Moscow		
34Para03.8	Paradise Creek below gravel company (below Sunshine)	X	X
34Para01.1	Paradise Creek at Airport Road	X	X
34Air00.0	Airport Road Creek		
34ParaWSU3	WSU storm drain outfall #3		
34C060	Paradise Creek at confluence (aka 34Para00.1)	X	X
34B130	SFPR above Paradise Creek (aka 34SFPR24.3)		
34SFPR-SD290	SFPR storm drain outfall #290		
34SFPR-WSU1	SFPR storm drain outfall WSU#1		
34SFPR-SD260	SFPR storm drain outfall #260		
34SFPR23.6	SFPR at South Street bridge	X	X
34SFPR-WSU2	SFPR storm drain outfall WSU#2		
34SFPR-SD180	SFPR storm drain outfall #180		
34SFPR-SD170	SFPR storm drain outfall #170		
34SFPR-SD140	SFPR storm drain outfall #140		
34SFPR-SD120	SFPR storm drain outfall #120		
34M070	Dry Creek at end of tunnel (aka 34Dry00.0)		
34B110	SFPR at State Street (aka 34SFPR22.8)	X	
34N070	Missouri Flat Creek at confluence (aka 34Miss00.1)		
34SFPR22.0	SFPR above Pullman WWTP	X	X
34PullPOTW	Pullman WWTP outfall	X	
34Hadl00.1	Hatley Creek near mouth		
34SFPR21.5	SFPR below Pullman WWTP	X	X
34SFPR19.2	SFPR at Armstrong Road	X	X
34B080	SFPR above Albion (aka 34SFPR15.8)	X	X
34SFPR11.5	SFPR above Four Mile Creek confluence	X	X

aka - also known as.
WSU - Washington State University.
SFPR - South Fork Palouse River.

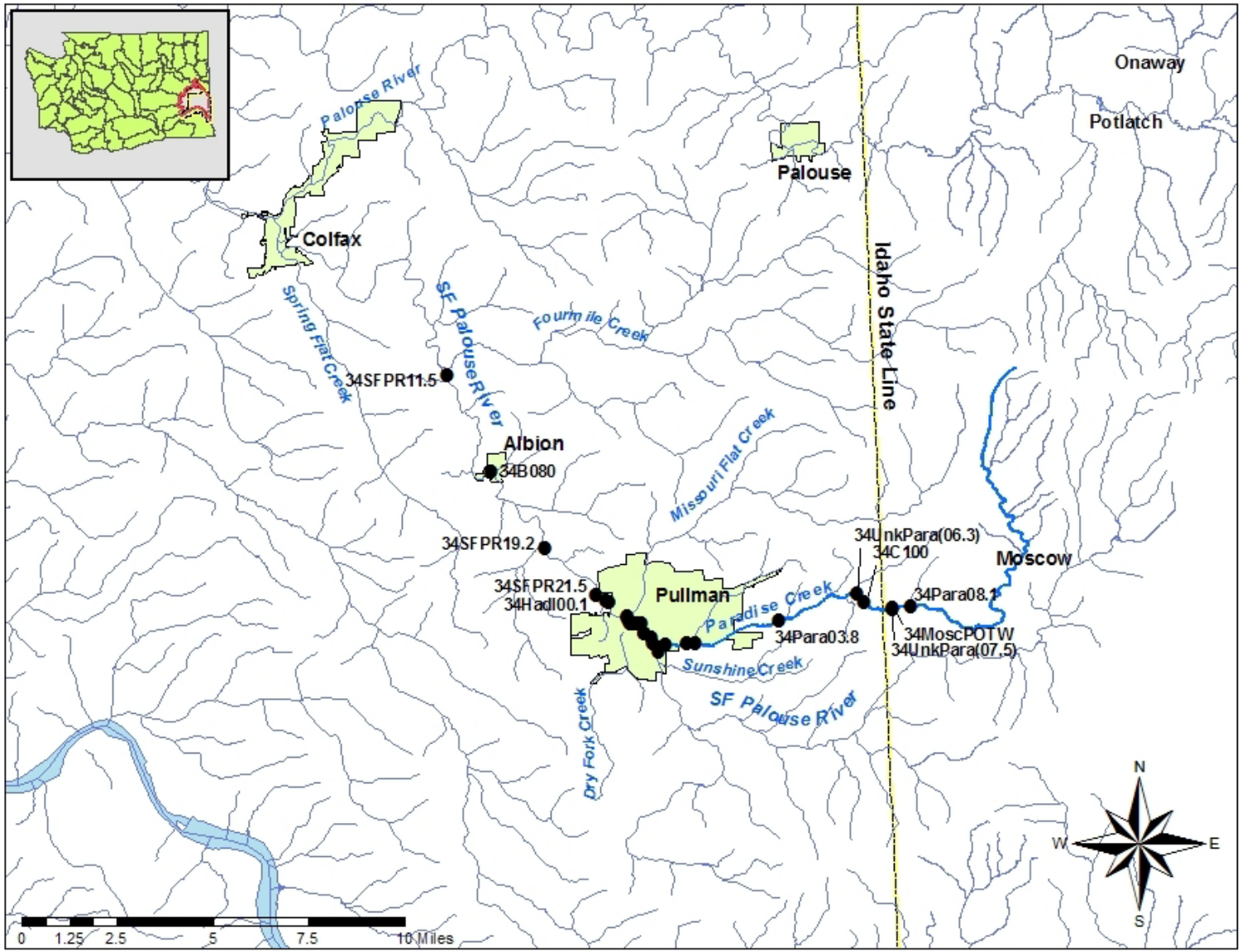

Figure 1. Proposed 2010 sampling sites.

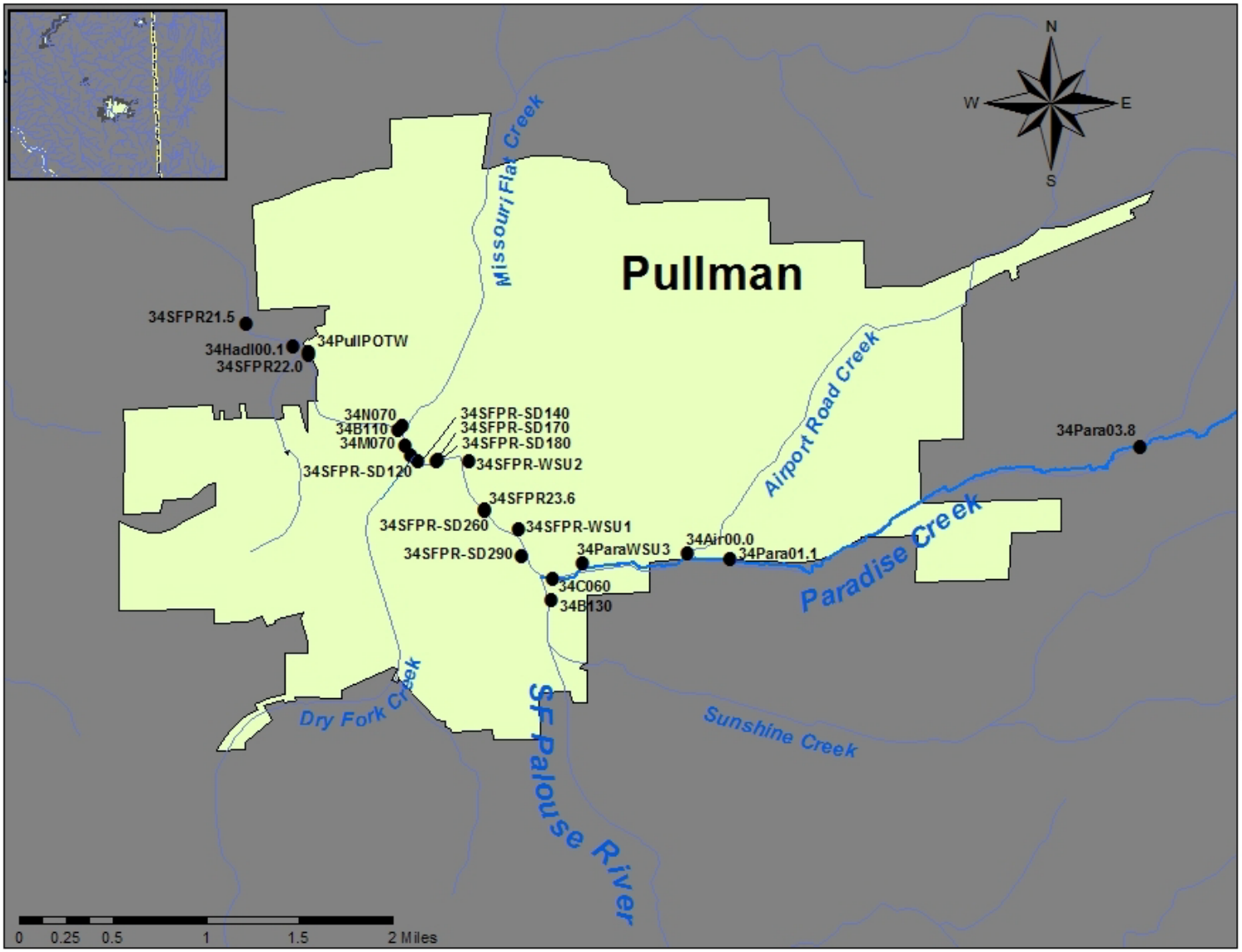

Figure 2. Proposed 2010 sampling sites within Pullman city limits.

Organization, Schedule, and Laboratory Budget

The following is the project's staff organization (Table 2), time schedule (Table 3), and laboratory budget (Table 4).

Organization

Table 2. Staff organization for the 2010 supplemental study.

Name	Organization	Role	Phone Number
Elaine Snouwaert	WQ-ERO	Client	509-329-3503
Jim Carroll	EAP-EOS	Project Manager/QA Project Plan Author	360-407-6196
Scott Tarbutton		Principal Investigator/EIM Data Engineer	509-329-3453
Tighe Stuart		Field Assistant	509-329-3476
Gary Arnold		Section Manager	509-454-4244
Stuart Magoon	MEL	Lab Director	360-871-8801
Dean Momohara		Lab Unit Supervisor/Sample Transport	360-871-8808
Nancy Rosenbower		Sample Scheduling/Receipt	360-871-8827
Bill Kammin	EAP	Quality Assurance Officer	360-407-6964

WQ-ERO - Water Quality – Eastern Regional Office.
EAP-EOS - Environmental Assessment Program – Eastern Operations Section.
MEL - Manchester Environmental Laboratory.

Schedule

Table 3. Proposed schedule for completing field and laboratory work, data entry into EIM, and reports.

Field and laboratory work	Due date	Lead staff
Field work completed	August 2010	Jim Carroll
Laboratory analyses completed	October 2010	
Environmental Information System (EIM) database		
EIM user study ID	JICA0000	
Product	Due date	Lead staff
EIM data loaded	October 2010	Scott Tarbutton
EIM quality assurance	November 2010	Tighe Stuart
EIM complete	December 2010	Scott Tarbutton
Final report		
Author lead / Support staff	Jim Carroll	
Schedule		
Draft due to supervisor	May 2011	
Draft due to client/peer reviewer	July 2011	
Draft due to external reviewer(s)	July 2011	
Final (all reviews done) due to publications coordinator (Joan)	September 2011	
Final report due on web	May 2012	

Laboratory Budget

Table 4. Laboratory budget for each 2010 synoptic survey.

Parameter	Cost per Sample ($)	Total Number of Field and QA Samples	Cost ($)
Chlorophyll a	57.10	12	685
Ash Free Dry Weight	22.84	12	275
Total Organic Carbon (solid)	43.60	12	523
Total Persulfate Nitrogen	17.65	80	1412
Ammonia	13.50	80	1080
Nitrate/Nitrite	13.50	80	1080
Orthophosphate	15.57	80	1246
Total Phosphorus	36.34	80	2907
Total Organic Carbon	34.26	80	2741
Dissolved Organic Carbon	37.34	80	2987
Alkalinity	17.65	80	1412
Chloride	13.50	80	1080
Total Non-Volatile Suspended Solids and Total Suspended Solids	24.92	80	1994
15% contingency			2913
Total Cost:			22,335

The laboratory costs include a 50% discount for MEL.

Sampling and Measurement Procedures

Grab samples will be collected with pre-cleaned containers supplied by MEL and described in the MEL's *Lab Users Manual* (2008). Samples will be collected under EAP standard operating procedures (www.ecy.wa.gov/programs/eap/quality.html). Sample parameters, containers, volumes, preservation requirements, and holding times are summarized in Table 5. All samples for laboratory analysis will be stored on ice and delivered to MEL within 48 hours of collection via Horizon Air and MEL courier.

Field measurements will include conductivity, temperature, pH, and dissolved oxygen using a calibrated Hydrolab MiniSonde®. Dissolved oxygen will also be measured and analyzed using the Winkler titration method. The accuracy of the 24-hour deployment Hydrolabs will be checked with an additional Hydrolab and the Winkler titration method. A minimum of three accuracy checks will be performed for each deployed Hydrolab over the course of the deployment. The field measurement methods will follow EAP standard operating procedures (www.ecy.wa.gov/programs/eap/quality.html).

Estimation of instantaneous flow measurements will follow the EAP protocol (Ecology, 2009). During the field surveys, streamflow will be measured at selected stations, or staff gage readings will be recorded.

Periphyton field sampling protocols were adapted from the U.S. Geological Survey protocols (Porter et al., 1993).

Table 5. Containers, preservation requirements, and holding times for the 2010 samples.

Parameter	Sample Matrix	Container	Preservative	Holding Time
Chlorophyll a	Surface water and periphyton	1000 mL amber poly	Cool to 4 °C; 24 hrs to filtration	28 days after filtration
Total Organic Carbon	Surface water, WWTP effluent, and runoff	60 mL clear poly	1:1 HCl to pH<2; Cool to 4 °C	28 days
Dissolved Organic Carbon	Surface water, WWTP effluent, and runoff	60 mL poly with Whatman Puradisc™ 25 PP 0.45 µm pore size filters	Filter in field with 0.45 µm pore size filter; 1:1 HCl to pH<2; Cool to 4 °C	28 days
Total Suspended Solids	Surface water, WWTP effluent, and runoff	1000 mL poly	Cool to 4 °C	7 days
Alkalinity	Surface water, WWTP effluent, and runoff	500 mL poly - no headspace	Cool to 4 °C; Fill bottle completely; Don't agitate sample	14 days
Chloride	Surface water, WWTP effluent, and runoff	500 mL poly	Cool to 4 °C	28 days
Total Persulfate Nitrogen	Surface water, WWTP effluent, and runoff	125 mL clear poly	H_2SO_4 to pH<2; Cool to 4 °C	28 days
Ammonia	Surface water, WWTP effluent, and runoff	125 mL clear poly	H_2SO_4 to pH<2; Cool to 4 °C	28 days
Nitrate/Nitrite	Surface water, WWTP effluent, and runoff	125 mL clear poly	H_2SO_4 to pH<2; Cool to 4 °C	28 days
Orthophosphate	Surface water, WWTP effluent, and runoff	125 mL amber poly with Whatman Puradisc™ 25PP 0.45µm pore size filters	Filter in field with 0.45 µm pore size filter; Cool to 4 °C	48 hours
Total Phosphorus	Surface water, WWTP effluent, and runoff	125 mL clear poly	1:1 HCl to pH<2; Cool to 4 °C	28 days

Data Quality Objectives

The majority of measurement methods and quality objectives will be consistent with the original QA Project Plan (Carroll and Mathieu, 2006). Any alterations and additions in 2010 to methods and quality objectives reflect recommendations made in *Replicate Precision for 12 TMDL Studies and Recommendations for Precision Measurement Quality Objectives for Water Quality Parameters* (Mathieu, 2006).

Table 6 is a summary of the measurement quality objectives for the field and laboratory parameters. The required reporting limits are also included.

Table 6. Summary of measurement quality objectives for the synoptic measurements and analysis of samples.

Parameter	Method	Precision Relative Standard Deviation (RSD)	Bias (deviation from true value)	Required Reporting Limits
Field				
Velocity*	Marsh McBirney Flow-Mate® Flowmeter	± 0.1 ft/s	N/A	0.01 ft/s
pH*	Hydrolab MiniSonde®	± 0.05 s.u	± 0.10 s.u	1 - 14 s.u.
Temperature*	Hydrolab MiniSonde®	± 0.1 °C	± 0.05 °C	1 - 40 °C
Dissolved Oxygen	Hydrolab MiniSonde®	5%	10%	0.1 - 15 mg/L
Specific Conductivity	Hydrolab MiniSonde®	10%	5%	1 µmhos/cm
Laboratory				
Chlorophyll a	SM 10200H(3)M	20%	N/A	0.05 µg/L
Total Organic Carbon	SM 5310B	10%	10%	1 mg/L
Dissolved Organic Carbon	SM 3510B	10%	10%	1 mg/L
Total Suspended Solids	SM 2540D	15%	N/A	1 mg/L
Alkalinity	SM 2320	10%	N/A	5 mg/L
Chloride	EPA 300.0	5%	5%	0.1 mg/L
Total Persulfate Nitrogen	SM 4500-NO_3^- B	10%	10%	0.025 mg/L
Ammonia Nitrogen	SM 4500-NH_3^- H	10%	5%	0.01 mg/L
Nitrate & Nitrite Nitrogen	SM 4500-NO_3^- I	10%	5%	0.01 mg/L
Orthophosphate	SM 4500-P G	10%	5%	0.003 mg/L
Total Phosphorus	SM 4500PF	10%	5%	0.005 mg/L

* As units of measure, not percentages.
NA – not applicable.
s.u. – standard unit.
SM – standard method.
EPA – U.S. Environmental Protection Agency.

Quality Control

The 2010 collection of replicates, sample preservation, and sample transport time will be consistent with the original QA Project Plan and EAP standard operating procedures to produce credible data. Table 7 is a summary of field and laboratory quality control procedures.

Table 7. Summary of field and laboratory quality control procedures for the synoptic surveys.

Parameter	Field Blanks	Field Replicates	Lab Control Sample	Lab Method Blanks	Lab Replicates	Matrix Spikes
Field						
Velocity	N/A	1/10 samples	N/A	N/A	N/A	N/A
pH	N/A	1/10 samples	N/A	N/A	N/A	N/A
Temperature	N/A	1/10 samples	N/A	N/A	N/A	N/A
Dissolved Oxygen	N/A	1/10 samples	N/A	N/A	N/A	N/A
Specific Conductivity	N/A	1/10 samples	N/A	N/A	N/A	N/A
Laboratory						
Chlorophyll a	N/A	1/10 samples	N/A	N/A	1/20 samples	N/A
Total Organic Carbon	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples
Dissolved Organic Carbon	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples
Total Suspended Solids	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	N/A
Alkalinity	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	N/A
Chloride	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/10 samples
Total Persulfate Nitrogen	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples
Ammonia Nitrogen	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples
Nitrate & Nitrite Nitrogen	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples
Orthophosphate	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples
Total Phosphorus	1/survey	1/10 samples	1/batch	1/batch	1/20 samples	1/20 samples

N/A - not applicable.

Data Management Procedures

Field measurement data will be entered into a field book with waterproof paper in the field and then entered into EXCEL® spreadsheets after returning from the field. This database will be used for preliminary analysis and to create a table to upload data into Ecology's Environmental Information Management (EIM) System.

Sample result data received from MEL by Ecology's Laboratory Information Management System (LIMS) will be exported prior to entry into EIM and added to a cumulative spreadsheet for laboratory results. This spreadsheet will be used to informally review and analyze data during the course of the project.

All monitoring data will be available in EIM, via the internet, once the project data have been validated. The URL address for this geospatial database is: www.ecy.wa.gov/eim/index.htm. All data will be uploaded to EIM by the EIM data engineer after the data have been reviewed for quality assurance and finalized.

All spreadsheet files, paper field notes, and Global Information System device products created as part of the data analysis will be kept with the project data files.

Data Verification and Validation

Laboratory-generated data reduction, review, and reporting will follow the procedures outlined in the MEL *Lab Users Manual* (MEL, 2008). Lab results will be checked for missing and/or improbable data. Variability in lab duplicates will be quantified using the procedures outlined in the *Lab Users Manual*. Any estimated results will be qualified and their use restricted as appropriate. MEL will send a standard case narrative of laboratory quality assurance/quality control results for each set of samples to the project manager.

Field staff will check field notebooks for missing or improbable measurements before leaving each site. The field assistant will check data entry against the field notebook data for errors and omissions. Missing or unusual data will be brought to the attention of the project manager for consultation.

The field lead will check data received from LIMS for omissions against the "Request for Analysis" forms by the field lead. Field replicate sample results will be compared to quality objectives in Table 6. The project manager will review data requiring additional qualifiers.

After data validity and data entry tasks are completed, all field, laboratory, and flow data will be entered into EIM. EIM data will be independently reviewed by another EAP field assistant for errors at an initial 10% frequency. If significant entry errors are discovered, a more intensive review will be undertaken.

Audits and Reports

MEL conducts performance and system audits for its procedures. Results of these audits are available upon request.

Project results will be included in TMDL documents written for the SF Palouse River TMDL and will contain at a minimum:

- Map of sampling locations.
- Discussion of data quality analysis.
- Summary table of data, as well as pertinent field notes.
- Evaluation of significant findings and recommendations for further action.

The principal investigator is scheduled to prepare a draft final report by July 2011.

References

Carroll, J. and N. Mathieu, 2006. Quality Assurance Project Plan: South Fork Palouse River Dissolved Oxygen and pH Total Maximum Daily Load Study. Washington State Department of Ecology, Olympia, WA. Publication No. 06-03-112. www.ecy.wa.gov/biblio/0603112.html.

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Mathieu, N., 2006. Replicate Precision for 12 TMDL Studies and Recommendations for Precision Measurement Quality Objectives for Water Quality Parameters. Washington State Department of Ecology, Olympia, WA. Publication No. 06-03-044. www.ecy.wa.gov/biblio/0603044.html.

MEL, 2008. Lab Users Manual. Ninth Edition. Manchester Environmental Laboratory, Washington State Department of Ecology, Manchester, WA.

Appendix A. Glossary, Acronyms, and Abbreviations

Glossary

Baseflow: Groundwater discharge. The component of total streamflow that originates from direct groundwater discharges to a stream.

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

Conductivity: A measure of water's ability to conduct an electrical current. Conductivity is related to the concentration and charge of dissolved ions in water.

Diel: A 24-hour period, usually encompassing 1 day and 1 night.

Dissolved oxygen: A measure of the amount of oxygen dissolved in water.

Effluent: An out flowing of water from a natural body of water or from a man-made structure. For example, the treated outflow from a sewage treatment system.

Grab sample: A discrete sample from a single point in the water column or sediment surface.

Nutrients: Substance such as carbon, nitrogen, and phosphorus used by organisms to live and grow. Too many nutrients in the water can promote algal blooms and rob the water of oxygen vital to aquatic organisms.

Parameter: Water quality constituent being measured (analyte). A physical, chemical, or biological property whose values determine environmental characteristics or behavior.

Periphyton: Microscopic plants and animals that are firmly attached to solid surfaces under water such as rocks, logs, pilings, and other structures.

pH: A measure of the acidity or alkalinity of water. A low pH value (0 to 7) indicates that an acidic condition is present, while a high pH (7 to 14) indicates a basic or alkaline condition. A pH of 7 is considered to be neutral. Since the pH scale is logarithmic, a water sample with a pH of 8 is ten times more basic than one with a pH of 7.

Synoptic surveys: Surveys in which data are collected simultaneously or over a short period of time.

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 for point sources, (2) the load allocations 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.

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.

303(d) list: Section 303(d) of the federal Clean Water Act requires Washington State to periodically 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.

Acronyms and Abbreviations

EAP	Environmental Assessment Program
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management database
EPA	U.S. Environmental Protection Agency
MEL	Manchester Environmental Laboratory
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
SF	South Fork
SFPR	South Fork Palouse River
TMDL	Total Maximum Daily Load (water cleanup plan)
UI	University of Idaho
WWTP	Wastewater treatment plant

Units of Measurement

°C	degrees Celsius
cfs	cubic feet per second
dw	dry weight
mgd	million gallons per day
mg/L	milligrams per liter (parts per million)
mL	milliliters
s.u.	standard units
µS/cm	microsiemens per centimeter, a unit of conductivity

Appendix B. Response to Public Comments

The following are Ecology's responses to a stakeholder's comments.

From: Cheryl Morgan, 102 Hayward Rd, Pullman, WA. 99163.

Comment

Page 3: (Abstract) ---first paragraph. It is of importance to list the date/s when the SFPR and its tributaries were first listed on the 303(d) list. The SFPR Watershed Committee process started Dec. 17, 1997. This was when I and others within the basin became involved in the process of watershed planning of the Palouse Basin. At that time the SFPR and its tributaries were on the Federal Clean Water Act section 303(d) list published May 29, 1996. Citizens need to be made aware that [enforceable clean-up mandates] to the Palouse Basin water bodies have been very slow in coming, thus continued significant impairments are continuing to enter these listed Palouse Basin water bodies on a daily basis.

Response

Date added to abstract to reflect that the SFPR has been listed since 1996.

Comment

Page 4: (Introduction)---"Paradise Creek, is the main waterbody of interest for this supplemental QAPP...." It has been noted within this supplemental QAPP that " two synoptic surveys during low flow conditions are planned for the [summer of 2010] for Paradise Creek.

I agree that the surveys need to take place during the low flows (summer months), however, during the summer there is less population because the UI is not in full swing, thus the [sanitary sewer flows] to the WWTP are much lower than the flows would be when the UI is in session. I believe surveys should also be planned during Sept. and Oct., etc. to make sure that the WWTP can effectively treat the higher sewer flows during other months of the year before discharging to Paradise Creek. The population is much higher in the Moscow/Pullman area for 9 months out of the year, thus more population to an area causes treatment plants to fail in the treatment process during which time more pollutants enter the receiving waters. This is always evident by the added odors. It is a [common] occurrence with the Pullman WWTP.

Response

Sampling is being limited to the planned dates due to budgetary and time constraints. Sampling in 2006 included a time when the universities (University of Idaho in Moscow and Washington State University in Pullman) were in session.

Comment

Page 5: (Sampling Design)--- "Surface water monitoring.....one in late June 2010 and the other mid-August 2010". Planned surveys need to be planned for other months of the year when the area is more populated**. [**Low flows] of the SFPR and its tributaries are a common occurrence during Sept. and Oct. as well as into the winter months.

Response

Sampling is being limited to the planned dates due to budgetary and time constraints. Sampling in 2006 included a time period when the universities were in session.

Comment

Page 6: (Table 1.) 34Hadley Creek near mouth. Hadley needs to be changed to Hatley Creek.

Response

Name of creek was corrected in Table 1, but the station name remains the same.

Comment

Page 7: (Figure 1 Map) 34 Hadley to Hatley Creek.

Response

Name of creek is not listed on map. Only the station name is listed.

Comment

Page 8: (Map) 34 Hadley to Hatley Creek. (I thought *all* of Hadley had been corrected during the TMDL fecal process) I requested during the fecal TMDL process a "footnote" be entered if there was a technical reason Hadley couldn't be corrected to read Hatley Creek. Please enter a "footnote" to this process if it can't be corrected.

Response

Name of creek is not listed on map. Only the station name is listed.