

**Addendum to
Quality Assurance Project Plan:

South Prairie Creek
Total Maximum Daily Load
Phase II Evaluation**

January 2009

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Addendum

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DEPARTMENT OF ECOLOGY
Environmental Assessment Program

January 19, 2009

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THROUGH: George Onwumere, Unit Supervisor, Environmental Assessment Program
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FROM: James Kardouni, Environmental Assessment Program

SUBJECT: **ADDENDUM TO QUALITY ASSURANCE PROJECT PLAN FOR:
South Prairie Creek Total Maximum Daily Load Phase II Evaluation**

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South Prairie Creek has a watershed cleanup plan designed to reduce bacteria loading. The cleanup process began in 2006. In order for South Prairie Creek to meet water quality standards, additional bacteria data collection is necessary on two of its tributaries as stated in the water cleanup plan. The tributaries of concern are Spiketon Ditch, and Tributary 1 (Inglis Creek).

This addendum to the original Quality Assurance (QA) Project Plan describes the 2008-2009 bacteria sampling plans for Spiketon Ditch and Inglin Creek. Sampling procedures will adhere to the protocols stated in the original QA Project Plan. Included in the addendum are: sampling locations, sampling schedule, lab budget, literature references, and project schedule.

cc: Mindy Roberts, Environmental Assessment Program
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Sampling Locations

Sampling on Spiketon Ditch and Inglin Creek will occur at sites previously established by the Pierce County Conservation District (CD) and Washington State Department of Ecology (Ecology). Figure 1 provides an overview of the sampling locations. In addition to the previously monitored sites, three more have been confirmed for sampling (Table 1). A more detailed depiction of the sampling locations can be found in Figure 2 and Figure 3.

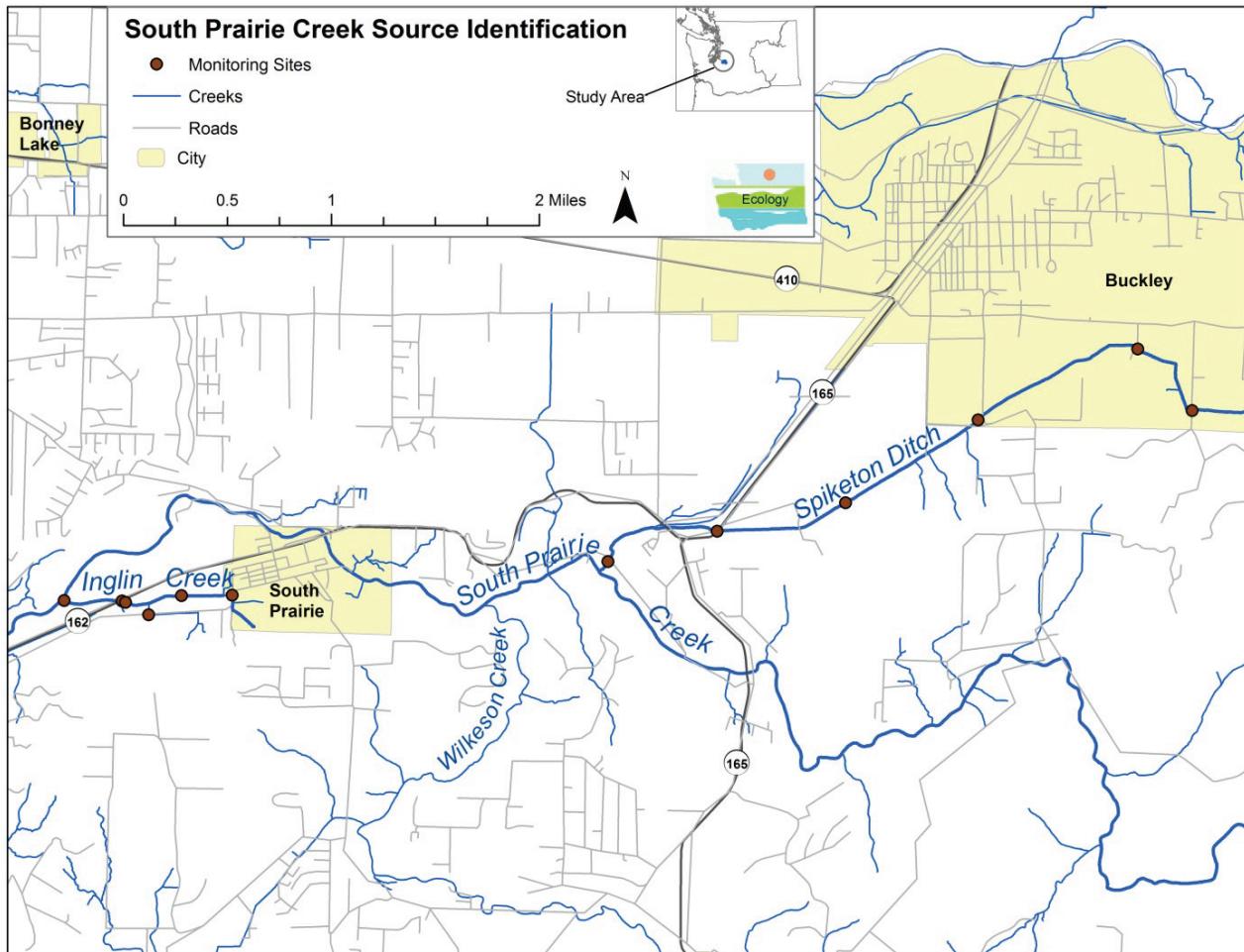


Figure 1. Overview of sampling sites for the South Prairie Creek Source Identification Study.

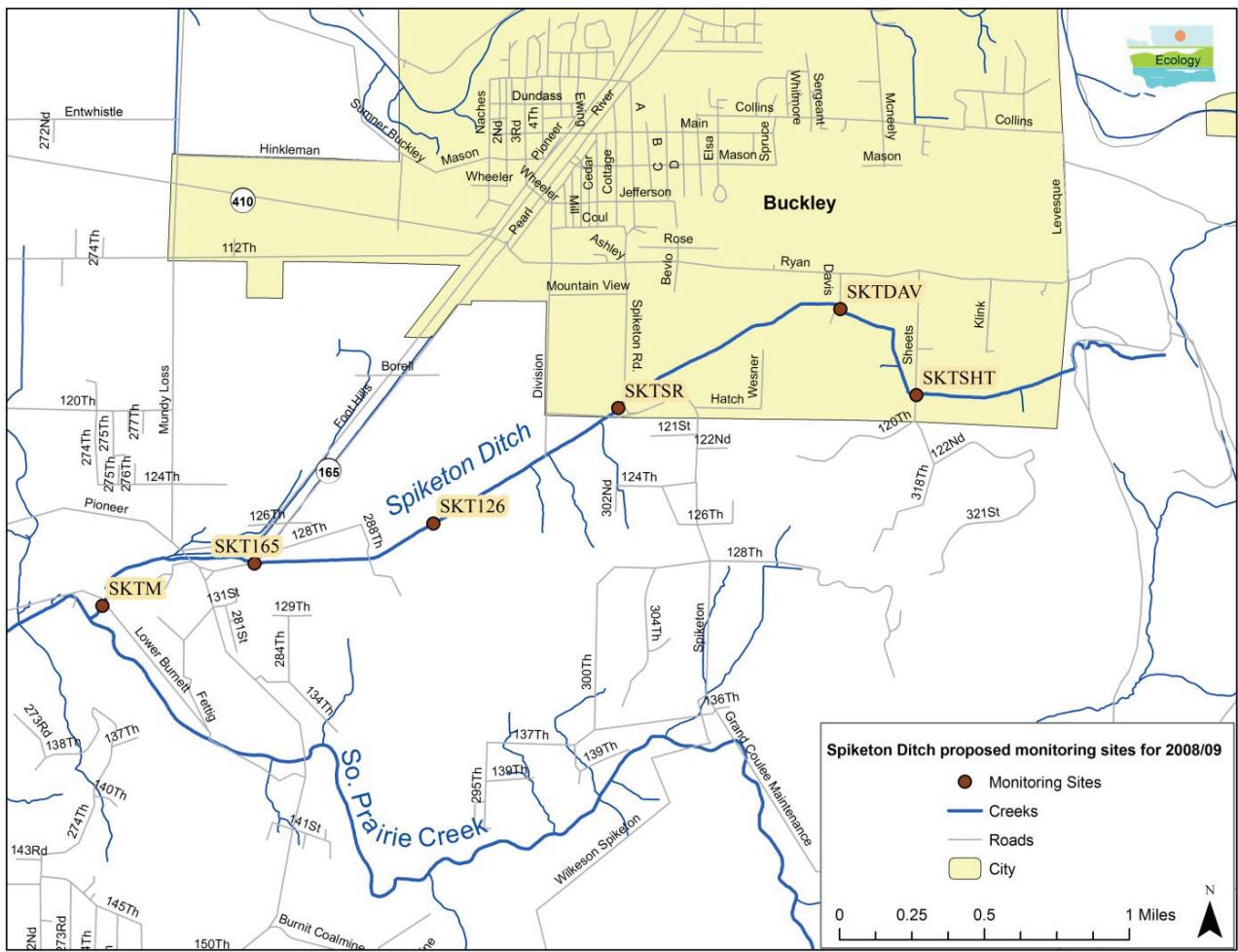


Figure 2. Detailed view of Spiketon Ditch sampling locations including study identification.

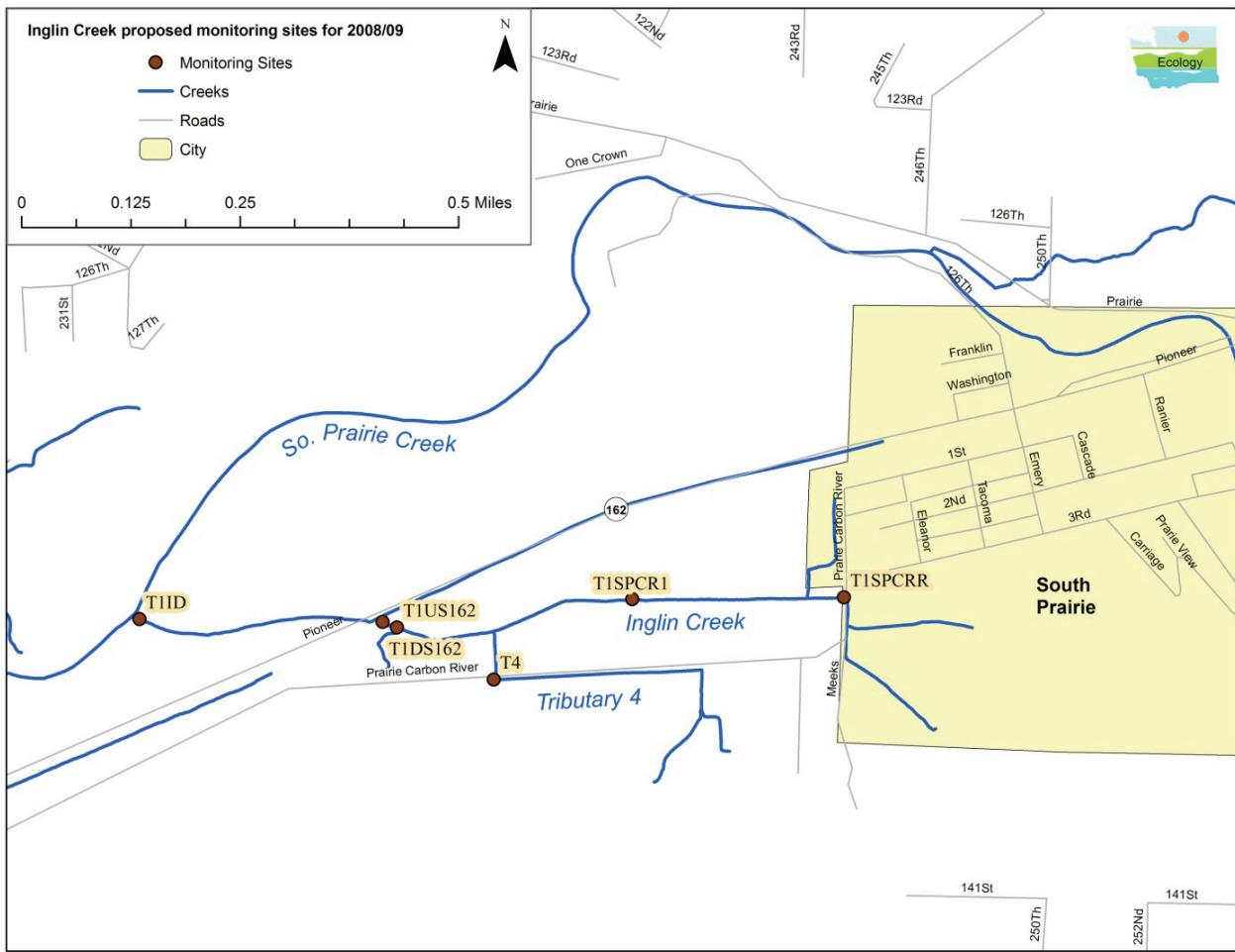


Figure 3. Detailed view of Inglin Creek sampling locations including study identification.

Sampling Schedule and List of Sites

Currently, the Pierce County CD samples once per month at certain locations in the South Prairie Creek watershed for recovery monitoring purposes. Starting in November 2008, the sites will be sampled once every two weeks on an alternating schedule shared by Ecology and the Pierce County CD (Table 1). Sampling will begin November 19, 2008 and end November 4, 2009 (see Table 2). Sampling will also take place as necessary from flowing culverts/ditches that empty into the two creeks of concern.

Table 1. Sampling locations for Spiketon Ditch and Inglin Creek.

Site ID	Location description	Latitude	Longitude
SKTM	Spiketon near mouth at lower Burnett Rd	47.13898	-122.06362
SKT165	Spiketon at Hwy 165	47.14124	-122.05255
SKT126*	Spiketon at the end of 126th	47.14340	-122.03950
SKTSR	Spiketon at Spiketon Rd	47.14934	-122.02615
SKTD	Spiketon at Davis Rd	47.15455	-122.01002
SKTSHT*	Spiketon at Sheets Rd	47.15033	-122.00435
T1ID	Tributary 1 at mouth	47.13552	-122.11898
T1DS162	Tributary 1 downstream of Hwy 162	47.13556	-122.11307
T1US162	Tributary 1 upstream of Hwy 162	47.13547	-122.11272
T1SPCR1*	Tributary 1 off S Prairie Carbon R Rd	47.13604	-122.10701
T1SPCRR	Tributary 1 at S Prairie Carbon R Rd culvert	47.13612	-122.10187
T4	Tributary 4 at S Prairie Carbon R Rd	47.13464	-122.11034

* Additional monitoring sites to those established by Pierce County CD and Ecology.

Table 2. Sampling schedule for Spiketon Ditch and Inglin Creek.

Year	Month	Day
2008	November	19
	December	3,17
2009	January	14, 28
	February	10, 25
	March	10, 25
	April	7, 22
	May	5, 20
	June	2, 17, 30
	July	15, 29
	August	12, 26
	September	9, 23
	October	7, 21
	November	4

Field Procedures

Field standard operating procedures (SOPs) will be similar to those of the original South Prairie Creek TMDL Quality Assurance Project Plan (Roberts, 2001). The most up-to-date SOPs are Mathieu (2006) and Ecology (2006).

Laboratory Procedures

The laboratory will follow protocols described in the Manchester Environmental Laboratory (MEL) User's Manual (2008). These protocols are similar to the original South Prairie Creek TMDL QAPP. Fecal coliform bacteria analysis will be conducted according to the following specifics.

- Method: membrane filter (MF), standard method 9222D
- Detection limit: 1 colony forming unit (cfu)/100 mL
- Duplicate samples relative standard deviation (RSD): 30%

Quality Control

Total variability for field sampling and laboratory analysis will be assessed by collecting replicate samples. Replicate samples are a type of quality assurance/quality control (QA/QC). Sample precision will be assessed by collecting replicates for 20% of samples in each survey. MEL routinely duplicates sample analyses in the laboratory to determine laboratory precision. The difference between field variability and laboratory variability is an estimate of the sample field variability. In general, the study will adhere to QC procedures for sample collection outlined in the TMDL QA Project Plan (Roberts, 2001).

Laboratory Budget

Table 3 displays the laboratory budget for the South Prairie Creek Source Identification study. The budget is calculated by multiplying the total number of samples by the analytical cost for fecal coliform bacteria. An additional 10% is added to the total cost as a margin of safety and stormwater sampling events. The laboratory budget accounts for 13 sites. For QA purposes, 20% of the samples will be duplicated.

Table 3. Laboratory budget for the South Prairie Creek Source Identification study.

Parameter	Cost/ Sample (\$)	Number of Sites, including Quality Assurance	Subtotal Cost (\$)	Number of Surveys	Total Number of Samples	Total Cost (\$)
Fecal Coliform	23	15	345	26	390	8970
Additional stormwater sampling						897
					Total:	9867

Project Organization and Schedule

The organization, roles, and responsibilities are presented in Table 4.

Table 4. Organization of project staff and responsibilities.

Staff	Title	Responsibilities
Cindy James Water Quality Program SWRO (360) 407-6556	Overall Project Lead	Acts as point of contact between EAP staff and interested parties. Coordinates information exchange. Forms technical advisory team and organizes meetings. Reviews the QAPP addendum and technical section of the joint TMDL report. Prepares and implements the joint TMDL report for submittal to EPA.
Kim McKee Water Quality Program SWRO (360) 407-6407	Unit Supervisor of Project Lead	Approves TMDL report for submittal to EPA.
James Kardouni Directed Studies Unit WOS/EAP (360) 407-6517	Project Manager/ Field Lead/ EIM Engineer	Responsible for overall project management. Defines project objectives, scope, and study design. Writes the QAPP addendum. Develops bacteria TMDLs and writes technical report. Manages data collection program. Coordinates and conducts field surveys. Collects data, enters data into EIM, and conducts data quality review.
George Onwumere Directed Studies Unit WOS/EAP (360) 407-6730	Unit Supervisor of Project Manager	Reviews and approves the QAPP addendum, staffing plan, technical study budget, and the technical sections of the joint TMDL report.
Bob Cusimano WOS/EAP (360) 407-6596	Section Manager of Project Manager	Approves the QAPP addendum and technical sections of the joint TMDL report.
Stuart Magoon Manchester Environmental Laboratory, EAP (360) 871-8801	Director	Provides laboratory staff and resources, sample processing, analytical results, laboratory contract services, and QA/QC data.

SWRO	Southwest Regional Office
WOS	Western Operations Section
EAP	Environmental Assessment Program
QAPP	Quality Assurance Project Plan
TMDL	Total Maximum Daily Load
EPA	U.S. Environmental Protection Agency
EIM	Environmental Information Management database

Table 5 outlines the proposed project schedule.

Table 5. Proposed schedule and assignments for completing EIM data entry and reports.

Environmental Information System (EIM) Data Set	
EIM Data Engineer	James Kardouni
EIM User Study ID	JKAR0001
EIM Study Name	South Prairie Creek Source ID
EIM Completion Due	March 2010
Final Data Summary	
Author Lead	James Kardouni
Schedule	
Draft Due to Supervisor	January 2010
Draft Due to Client/Peer Reviewer	January 2010
Draft Due to External Reviewer	February 2010
Final Report Due	March 2010

Literature References

Ecology, 2006. Determination of Instantaneous Flow Measurements of Rivers and Streams. Environmental Assessment Program, Washington State Department of Ecology, Olympia, WA.

Mathieu, N., 2006. Standard Operating Procedure for Sampling Bacteria in Water, Version 1. Washington State Department of Ecology, Olympia, WA. SOP No. EAP012.
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