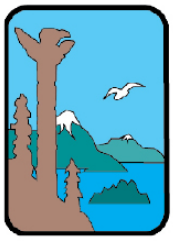
Addendum 1

Quality Assurance Project and Sampling Plan

Water Quality Evaluation of the

Lower Little Susitna River

(Revision Number 2.0)



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A2. Table of Contents

Introduction

This document is the first addendum to the Quality Assurance Project and Sampling Plan for Water Quality Evaluation of the Little Susitna River. The QAPP and sampling plan for this project was signed by the Alaska Department of Environmental Conservation, Quality Assurance Officer, on August 14, 2008. This addendum updates the distribution list to include new personnel involved in the project, and describes modifications to the sampling plan. These modifications increase the number of sampling dates, and the frequency and number of sampling locations for BTEX and turbidity.

A3. Distribution List

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A6. Project/Task Description Total Aromatic Hydrocarbons

This Addendum modifies Task 2 by describing additional sampling locations and increased sampling frequency.

TASK 2: TAH Sampling and Analyses

Start and end date: July 1, 2009 – June 30, 2010

Description: Water samples for TAH analyses will be collected at locations above and below the PUF during peak use times that coincide with the fall coho and spring Chinook salmon fisheries. Fall sampling will begin in late July of 2009 and spring sampling in mid May of 2010. Samples will be collected weekly on weekends, for eight weeks with more frequent sampling to coincide with peak use. Sampling locations will be at 1.0 km upstream of the PUF, 0.5 km upstream, at the PUF, 0.5 km downstream, 1.0 km downstream, 2.0 km downstream, and 4.0 km downstream. Sampling will occur from approximately 13:00 to 16:00 during the most active time at the launch. During peak use, intensive sampling events will occur every three hours from 06:00 to 21:00 on Saturday, Sunday, and 06:00 to 15:00 on Monday, and at three additional sampling locations added at 8.0 km, 16 km, and 32 km downstream. Water samples will be collected in containers provided by a commercial laboratory. We will use the sampler and methods developed by the U.S.G.S. Samples will be preserved and shipped immediately to the laboratory for analyses. One duplicate sample and one field blank will be collected and submitted on each sampling date. A portion of each sample will be held by the laboratory for repeat analyses if necessary. The laboratory will use EPA method 624 or as directed by ADEC. The exact methodology will be described in detail within the QAPP and approved by ADEC prior to beginning sample collection.

Resulting TAH concentrations will be standardized by changes in discharge.

Product: Concentration of TAH and BETX during heavy use times at multiple locations surrounding the PUF. Data will be presented within the draft and final reports or as requested by the ADEC project manager.

A7. Quality Objectives and Criteria for Measurement of Data

The total number of samples to be analyzed including trip blanks, field blanks, duplicates, and laboratory surrogates is provided in Table 1.

Table 1. Summary of samples by date with field and laboratory quality assurance measures. Asterisks denote multiple dates for a single sampling trip with increased sampling frequency and locations.

Sample Date	ARRI				AM Test		
	Water Samples	Trip Blanks	Field Duplicates	Field Blanks	BTEX Surrogates	Matrix Spikes	Matrix Spike Duplicates
7/19/2009	7	1	1	1	10	4	2
7/26/2009	7	1	1	1	10	4	2
8/2/2009	7	1	1	1	10	4	2
8/8/2009*	6	1	1	1	9	4	2
8/9/2009*	13		2	2	17	8	4
8/10/2009*	4		1	1	6	1	1
8/16/2009	7	1	1	1	10	4	2
8/23/2009	7	1	1	1	10	4	2
8/30/2009	7	1	1	1	10	4	2
9/6/2009	7	1	1	1	10	4	2
Fall 2009 Sub-Total	72	8	11	11	102	41	21
5/16/2010	7	1	1	1	10	4	2
5/23/2010	7	1	1	1	10	4	2
5/30/2010	7	1	1	1	10	4	2
6/5/2009*	6	1	1	1	9	4	2
6/6/2009*	13		2	2	17	8	4
6/7/2009*	4		1	1	6	1	1
6/13/2010	7	1	1	1	10	4	2
6/20/2010	7	1	1	1	10	4	2
6/27/2010	7	1	1	1	10	4	2
Spring 2010 Sub-Total	65	7	10	10	92	37	19
Total	**137**	**15**	**21**	**21**	**194**	**78**	**40**

B1. Sampling Process Design

This Addendum to modifies sampling locations by adding three additional downstream sites and sampling frequency on select sampling dates.

Sampling Locations
TAH sampling locations are shown in Figure 1. These sites extend from 1 km upstream of the Public Use Facility boat launch to 32 km downstream.

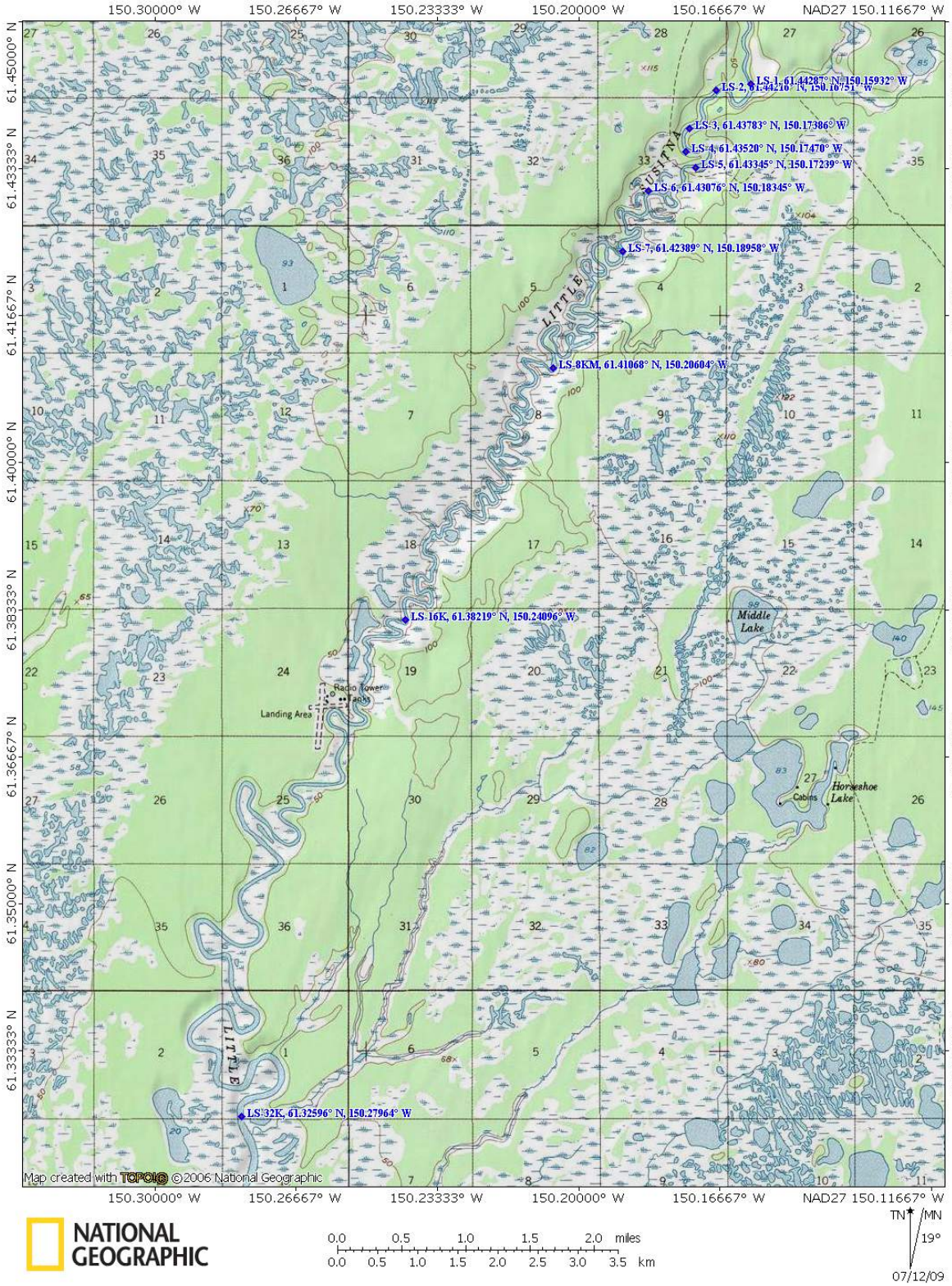

Figure 1. Map of the Little Susitna River in the vicinity of the Public Use Facility and boat launch showing sampling locations.

Sampling Frequency
Water sample collection dates and times for TAH analyses for each sampling site are shown in Table 2. Boat use surveys will be conducted at the boat launch to coincide with all water sample collection times.

B2. Sampling Methods Requirements

Field Data Collection

Turbidity

Field data collection methods for turbidity will be modified to include measures to describe the cross-sectional variability. On each sampling date at site LS-7, water samples will be collected at 0.10, 0.25, 0.50, 0.75, and 0.90 times channel width. Turbidity of these samples will be measured using a LaMotte TC-3000e turbidimeter.

Table 2. Dates and times water samples will be collected for TAH analyses for each sampling location.

Date	Time	LS-1	LS-2	LS-3	LS-4	LS-5	LS-6	LS-7	LS-8	LS-16	LS-32
7/19/09	15:00	X	X	X	X	X	X	X			
7/26/09	15:00	X	X	X	X	X	X	X			
8/2/09	15:00	X	X	X	X	X	X	X			
8/8/09	06:00			X							
8/8/09	09:00			X							
8/8/09	12:00			X							
8/8/09	15:00			X							
8/8/09	18:00			X							
8/8/09	21:00			X							
8/9/09	06:00			X							
8/9/09	09:00			X							
8/9/09	12:00										
8/9/09	15:00	X	X	X	X	X	X	X	X	X	X
8/9/09	18:00			X							
8/9/09	21:00			X							
8/10/09	06:00			X							
8/10/09	09:00			X							
8/10/09	12:00			X							
8/10/09	15:00			X							
8/16/09	15:00	X	X	X	X	X	X	X			
8/23/09	15:00	X	X	X	X	X	X	X			
8/30/09	15:00	X	X	X	X	X	X	X			
9/6/09	15:00	X	X	X	X	X	X	X			
5/16/10	15:00	X	X	X	X	X	X	X			
5/23/10	15:00	X	X	X	X	X	X	X			
5/30/10	15:00	X	X	X	X	X	X	X			
6/5/10	06:00			X							
6/5/10	09:00			X							
6/5/10	12:00			X							
6/5/10	15:00			X							

Date	Time	LS-1	LS-2	LS-3	LS-4	LS-5	LS-6	LS-7	LS-8	LS-16	LS-32
6/5/10	18:00			X							
6/5/10	21:00			X							
6/6/10	06:00			X							
6/6/10	09:00			X							
6/6/10	12:00			X							
6/6/10	15:00	X	X	X	X	X	X	X	X	X	X
6/6/10	18:00			X							
6/6/10	21:00			X							
6/7/10	06:00			X							
6/7/10	09:00			X							
6/7/10	12:00			X							
6/7/10	15:00			X							
6/13/10	15:00	X	X	X	X	X	X	X			
6/20/10	15:00	X	X	X	X	X	X	X			
6/27/10	15:00	X	X	X	X	X	X	X			