

Data Quality Assurance Plan for NRDA Water Column Chemistry Cruise

Purpose

This document provides general guidance for field sampling data quality assurance for the collection of NRDA field samples for planned sampling cruise on May 6 and May 7, 2010 to assist in the validation of 3-dimensional modeling of subsurface plume structure aboard the M/V Green Provider,

The current sampling plan involves sampling 4 depths at 4 stations for BTEX, THC, PAHs and free oil droplet size. Sampling requirements as outlined for basic sampling to address field program objectives for adequate description of locations are presented in Table 1. This sampling scheme is derived from the Field Plan and Sampling Protocol documents.

Table 1: Required Analytical Samples for 3-dimensional modeling data support

Sample Type	Volume Needed	Minimum # of samples per location
BTEX	40 mL	2 per depth
THC and PAH	1 gallon	1
Oil Droplet distribution	10 mL	10 per sample depth

In addition to basic site description, additional sampling requirements for data verification and validation, as well as equipment and procedural validation are required. These samples and the suggested frequency are described below.

Laboratory Notebook

All errata and observations that do not have a logical spot on the Chain of Custody form shall be documented in a bound lab notebook with numbered pages. Additional notation shall be written in black or blue ink. Entry errors shall be crossed out with a single line, initialed, and dated.

Blank Samples

Laboratory Grade de-ionized (DI) water in certified clean glass containers will be provided by Pace Laboratories. 5 DI water samples shall be collected, where practical, using the laboratory provided water, according to the described methodology for BTEX and THC/PAH analyses (including filtration) at each sample location. These samples shall be handled and stored in accordance with the accepted methodology for each sample type. At stations where two DI samples are collected, one shall be collected before Go-Flo bottle sample collection, and one shall be collected after the last seawater sample is collected.

Guided by fluorescence measurements from the upwind site (which is presumed to be representative of seawater not impacted by oil) the depth of minimum fluorescence will be used for the collection of a volume of background seawater. This seawater will be stored in sealed amber glass jars. Background sample blank collection shall be done in the same manner as outlined for DI sample blanks above.

Storage Procedure Monitoring

Aqueous samples shall be refrigerated to 4 °C (+/- 0.5 °C). DO NOT FREEZE. Refrigeration temperature shall be recorded when samples are stored, and periodically monitored and recorded to ensure proper refrigeration. A thermometer will be available to remain with the aqueous samples in storage for monitoring purposes.

Filter samples shall be frozen for storage. Storage temperature shall be kept at 0 °C or below. Refrigeration temperature shall be recorded when samples are stored, and periodically monitored and recorded to ensure proper refrigeration. A thermometer will be available to remain with the filter samples in storage for monitoring purposes.

Methods for sample replicates/splits

To accomplish sample splits, two methods can be employed during the cruise. Method One will be simultaneous deployment of two 5 L Go-Flo bottles which will be closed at the same depth in order to collect sample water as similar as practical. Method Two involves deploying a single 10 L Go-Flo bottle and collecting samples in series from the same bottle upon retrieval. Method One will be the preferred method. Method choice must be documented on the Chain of Custody form as **Replicate** (Method One) or **Split** (Method Two).

Sampling Equipment Monitoring

All tubing and shall be visually inspected before sampling. Sampling tubing shall be changed when contamination is visually obvious. Tubing changes shall be documented in a separate laboratory notebook (date, time, location).

Sample Depth Determination and Verification

Where practical, sample depths shall be chosen to best elucidate modeling data needs. For all samples except ROV collected samples (where depth is distance from the bottom (is fixed by the tethering equipment apparatus), depths must be preset and the depth selections recorded. Verification of triggering sequence of the CTD shall be made and documented in order to verify samples were collected as expected. Go-Flo bottles shall be numbered and numbers documented with sample station and on Chain of Custody forms. Any malfunction of the triggering of the Go-Flo bottle operation shall be documented.

General Sampling Plan for Shipboard Execution

Plan, by station and depth, to ensure the acquisition of sufficient samples, replicates, DI blanks, and seawater blanks.

Station 1 is designated as the collection point for additional background seawater samples. A 10 L Go-Flo bottle shall be used to collect seawater which will be stored in the refrigerator between uses. Additional seawater shall be collected after rosette deployment as needed.

Table 2: Sampling Schedule for NRDA Cruise May 2010

		Station 1		Station 2		Station 3		Station 4		Total
		VOA	THC/PAH	VOA	THC/PAH	VOA	THC/PAH	VOA	THC/PAH	
Surface	NRDA	2	1	2	1	2	1	2	1	
	Entrix Rep			2	1			2	1	
	DI Blank	2	1			2	1	2	1	
	Seawater Background			2	1	2	1	2	1	
Mixed Layer	NRDA	2	1	2	1	2	1	2	1	
	Entrix Dupe/Split	2	1			2	1			
	DI Blank									
	Seawater Background									
Mid Depth	NRDA	2	1	2	1	2	1	2	1	
	Entrix Dupe/Split							2	1	
	DI Blank									
	Seawater Background					2	1			
Deep	NRDA	2	1	2	1	2	1	2	1	
	Entrix Dupe/Split	2	1			2	1	2	1	
	DI Blank					2	1	2	1	
	Seawater Background							2	1	
	NRDA Samples		4		4		4		4	16
	BP/Entrix Samples		2		1		2		3	8
	DI Water Blank Samples		1		0		2		2	5
	Seawater Background Samples		0		1		2		2	5