



forensics

ERP-52 Site 18 Gambell RIFS Product Sampling

Report Prepared for:

U.S. Army Corps of Engineers
P.O. Box 6868
Anchorage AK 99506

Report Prepared By:
Alan Jeffrey, PhD

ZymaX forensics 71 Zaca Ln San Luis Obispo CA 93401

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TABLE OF CONTENTS

INTRODUCTION	3
METHODOLOGY	3
PRODUCT CHARACTERIZATION	4

Introduction

One sample labeled Site 18 was received at Zymax on 29 July, 2004 for petroleum fuel characterization. It was anticipated that free product would be present. However, Zymax was unable to separate enough free product, and the sample was treated as a water sample, and analyzed as TPH diesel by low resolution GC/MS.

The complete laboratory data report is presented as an Appendix to this report.

Methodology

TPH (Total Petroleum Hydrocarbons) as diesel by GC/MS Combination

Water samples are extracted with methylene chloride solvent and the solvent extract concentrated. Soil samples are sonicated with methylene chloride solvent and the solvent extract concentrated.

The extract is injected into a GC equipped with a 30 meter narrow bore DB5 capillary column to separate the hydrocarbon, which are detected with a mass spectrometer (MS) interfaced to the GC. TPH concentrations are calculated by comparison with a standard diesel fuel.

Product Characterization

The sample contained 22 mg/L of TPH, the chromatogram of which is shown below. A chromatogram of a #2 diesel standard is shown for comparison. The Site 18 extract has a narrower distribution with less of the higher boiling hydrocarbons. This is characteristic of a light diesel such as Arctic Diesel. The ratio of nC₁₇/pristane (Pr) is around 2, which is similar to many fresh diesels dispensed in the US. This indicates that the diesel in the Site 18 water has experienced, at most, mild degradation from environmental exposure.

