UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM FOR MICROBIOLOGICAL ANALYSES

DATE: May 5, 2010

TO: Curt Black, Project Manager
Office of Environmental Assessment, Risk Evaluation Unit, US EPA Region 10

From: Stephanie Bailey, Microbiologist
Office of Environmental Assessment, Laboratory, US EPA Region 10

SUBJECT: Quality Assurance Review of the Yakima Nitrate Study, Phase 3

Project Code: ESD-163C
Account Code: 1011B10P201B53C

The following is a quality assurance review of the results for the bacterial analyses (fecal coliform and *E. coli*) of samples from the Yakima Nitrate Study, Phase 3. The analyses were performed by EPA microbiologists following US EPA and Laboratory guidelines. This report is the second for this project.

The review was conducted for the following samples, inclusive: 10154254- 4259, 10154272 – 4274. Please note a third set of results for this project (microbial source tracking) will be provided at a later date.

1. Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method's Standard Operating Procedure

All measures of quality control met Laboratory/QAPP criteria. All positive culture control measures demonstrated correct responses for this set of analyses. The sterility controls in this analytical batch showed no growth of organisms. The transfer blank did not contain coliform bacteria. No qualification was required based on sterility controls or blank analyses.

Duplicate analysis was performed on sample 10154254. No qualification was required based on duplicate analysis.

The Region 10 Laboratory's Quality System has been accredited to the standards of the National Environmental Laboratory Accreditation Conference (NELAC).

The data provided for *E. coli* analysis in this project is reliable. The method used (SM 9221F) is recognized in Standard Methods for the Examination of Water and Wastewater (SM) 21st edition, as an applicable method to detect *E. coli* in drinking water, surface water, ground water, and wastewater samples. The *E. coli* data was qualified because the most recent version of the CWA (Clean Water Act) does not recognize this method in regulation.

2. Sample Transport and Receipt

During transport and upon sample receipt, no conditions were noted that would impact data quality for this project.

3. Sample Holding Times

For Clean Water Act water samples (such as dairy lagoons and influent waste water), a holding time of 6 hours must be

met. The holding time requirement was achieved for these water samples. No qualification was required based on holding time.

4. Laboratory Quality Control

All laboratory equipment and supplies used in this analytical procedure met the criteria as set forth in methods SM9221B, E and F.

5. Reporting Limits

All sample results that exceed the upper limit for microbial estimates are assigned the value of the upper limit with the ">" symbol attached.

6. Changes from Preliminary Data

No preliminary data was provided.

7. Data Qualifiers

The *E. coli* data for the waste water samples (dairy lagoons and waste water treatment plants) using SM9221F is qualified as an estimate. The Clean Water Act (CWA) has not approved this method for reporting of *E. coli* in wastewater. [See statement under **Data Qualifications**]

J	The identification of the analyte is acceptable; the reported value is an estimate.

8. Definitions:

Negative controls - Sterility controls and transfer blanks prepared and analyzed with samples to assess whether there was any contamination introduced throughout the procedure. Results must show no bacterial growth.

Negative culture control - Test that demonstrates that the medium does not support the growth of a non-target organism or allow a reaction by a non-target organism which could be interpreted as a false positive result.

Positive culture controls - Tests that demonstrate the medium can support the growth of the target organism and produce the expected reaction when the organism is present.