October 27, 2004

Mr. John Rendall
Maine Yankee
321 Old Ferry Road
Wiscasset, Maine 04578

RE: Project No.: Maine Yankee Soil/sediment Samples
Lab Name: Katahdin Analytical Services, Westbrook, Maine
Site Name: Maine Yankee Nuclear Power Plant, Wiscasset Maine
Samples Collected: 8/31/04 and 9/1/04
6 soil/sediment samples
2 aqueous equipment rinsate blanks
Data package: MY155

Method 8270 SIM PAH

Samples Collected: (Client IDs)

MY06SD403(DL)	MY06SD420(DL)	MYRSSD401(REDL)	MY06SD402(EB)
MY06SD405(DL)	MYRSSD401(DL)	MYRSSD402(REDL)	MYRSSD401(EB)

EB-Equipment Rinsate Blank DL = diluted
FD- Field Duplicate Samples RE = re-extracted

Dear Mr. Rendall:

A Tier II data validation was performed on the polyaromatic hydrocarbon (PAH) analytical data samples collected at the Maine Yankee Nuclear Power Plant, Wiscasset Maine. The laboratory, Katahdin Analytical Services, Westbrook Maine, prepared and analyzed the samples in accordance with US EPA SW-846 method 8270, modified for Simultaneous Ion Monitoring(SIM). Sediment samples were processed following US EPA SW-846 method 3550 (sonication). Aqueous samples were processed following US EPA SW-846 method 3510 (separatory funnel).

The data validation was conducted in accordance with *Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses (12/96*) and the *QAPP for Maine Yankee Decommissioning Project (rev01)*, and in conjunction with the individual methods and the laboratory established criteria. The following items were validated:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness*
- Chain of custody documents *
- Sample log in documents

- Preservation and Technical Holding Times
- Instrument Performance Check (Tuning)*
- Initial Calibrations
- Continuing Calibrations
- Laboratory and Field Blank Analyses
- System Monitoring Compounds (Surrogate Recoveries)
- Internal Standards
- Matrix spike/Matrix Spike Duplicate Results
- Field Duplicate Results
- Laboratory Control Samples (blank spikes)/Sensitivity Check
- PE Samples/Accuracy Check (NA)
- Target Compound Identification (NA)
- Compound Quantitation and Reported Quantitation Limits *
- Tentatively Identified Compounds (NA)

* - All Criteria met

The following information was used to generate the Data Validation Memorandum:

Attachments:

Table I — Recommendation Summary Table - summarizes validation recommendations: 8270 SIM.

Table II — Overall Evaluation of Data - summarizes site DQOs and potential usability issues: 8270 SIM.

Data summary tables to be provided in an electronic format.

Overall Evaluation of Data and Potential Usability Issues

Data Use- To determine the nature and extent of potential contamination, to identify any potential contaminant source areas requiring further evaluation, to support any remedial activities that may be necessary to minimize potential risk to human health and environment.

Accuracy and precision acceptance criteria are specified in the *QAPP for Maine Yankee Decommissioning Project, (rev 01).*

No sediment percent solids were below 30%.

All SIM PAH results for the re-extraction MYRSSD401(REDL) and MYRSSD402(REDL) are qualified as estimated (J positives, UJ non-detects) due to holding time exceedence and the potential for low bias.

Samples MY06SD403(DL) and MY06SD420(DL) were diluted by a factor of 10 for analysis. Samples MY06SD405(DL) and MYRSSD401(DL) were diluted by a factor of 4 for analysis. Samples MYRSSD401(REDL) and MYRSSD402(REDL) were diluted by a factor of 3 for analysis. Only the results of the diluted sample aliquots were reported in this data package.

All sediment LCS and LCSD recoveries were not within the QAPP acceptance criteria. The phenanthrene results for samples MY06SD405(DL), MYRSSD401(DL), MY06SD403(DL), and MY06SD420(DL) are qualified as estimated (J) due to the potential for high bias indicated by the 9/3/04 LCS recovery. The 2-methylnaphthalene results for MYRSSD401(REDL) and MYRSSD402(REDL) are qualified as estimated (J) due to the potential for high bias indicated by the 9/24/04 LCSD recovery.

The surrogates used for this analysis are not the QAPP specified surrogates. Nitrobenzene-d_5 (14-107%), 2-fluorobiphenyl (32-109%), and terphenyl-d_{14} (26-116%) are the QAPP surrogates. The surrogates used for analysis were 2-methylnaphthalene-d_{10}, fluorene-d_{10}, and pyrene-d_{10}. No data were qualified due to the substitution of the QAPP surrogates.

Results were reported to the laboratory's PQLs and adjusted for sample mass and total solids. Positive results may be reported to the MDL. Positive results between the PQL and the MDL are qualified estimated (J).

No MDL study was submitted; laboratory fortified blanks were used to determine sensitivity. All criteria were met. Additionally, the lowest standard for the initial calibration curves is at 0.125 ug/mL, equivalent to many of the reported method PQL (Practical Quantitation Limit).

Chain of Custody Documents

The sampling chain of custody documents were properly signed and dated. Internal custody documents were not submitted. Review of internal custody documents is not part of a Tier II validation for this project.

The laboratory provided sample pick-up. Custody seals were present and intact.

Sample MY06SD403 was identified on the COC as the sample for MS/MSD analysis.

Sample Log-in Documents

Laboratory Sample Receipt Condition Reports (SRCR) indicate that all samples were received in good condition. The cooler temperatures for the 3 coolers is as follows:

	Cooler Temp.	Temperature Vial Temp.	Action
Cooler #1	26.1° C	None recorded	None, benthic community samples, subcontracted to another laboratory and not included in this work order.
Cooler #2	Not applicable	1.2° C	None, within criteria
Cooler #3	4.5° C	14.2° C	None, air temp. within criteria, insufficient time to cool samples.

The last sample collected on 9/1/04 was collected at 7:45 and samples were received at the laboratory on 9/1/04 at 13:15. The samples may not have had time to cool down during transport. No results are qualified based upon the sample cooler temperatures.

There were no additional deviations indicated on the SRCRs. The validation memo is consistent with the laboratory data package sample IDs.

Preservation and Technical Holding Times

All sample preservation requirements for SVOA PAH were met. All samples were initially prepared and analyzed within holding time criteria.

The laboratory narrative states that due to a laboratory error, sample MYRSSD402 was extracted incorrectly and could not be analyzed. Sample MYRSSD402 was re-extracted 9/24/04, 23 days after sample collection and 9 days outside the holding time. Additionally, the laboratory narrative states that the initial extract of sample MYRSSD401 was biphasic and was re-extracted 9/24/04, 23 days after sample collection and 9 days outside the holding time. All SVOA and SIM results for the re-extraction MYRSSD401(REDL) and MYRSSD402(REDL) are qualified as estimated (J positives, UJ non-detects) due to the potential for low bias. The same extract was used for both analyses.

Instrument Performance Check (Tuning)

All tuning criteria were met.

Initial Calibration

There were five initial calibration curves used for this data package. The laboratory analyzed 5 point standard curves. The low point of the calibration curve is equivalent to the laboratory's practical quantitation limit (PQL). All minimum RRF criteria for SPCC and %RSD for CCC compounds were met. All RRF for target compounds exceeded 0.05. All %RSD for target compounds were less than 30%, except for dibenzo(a,h)anthracene (31.245%) on 10/1/04. Only laboratory method blanks and one set of LCS/LCSD were calibrated using the 10/1/04 standard

curve. No field sample data are qualified due to %RSD results. The re-extractions of samples MYRSSD401(REDL) and MYRSSD402(REDL) are the only samples associated with the LCS/LCSD analyzed 10/1/04.

It should be noted that the sediment samples were analyzed on different dates than the associated blanks and LCS/LCSD, and calibrated against different calibration curves. The initial analyses of Blank WG9627 and LCS WG9627 were not reported by the laboratory; only the results of the re-analyses were reported. Additionally, the laboratory analyzed the aqueous blank and LCS/LCSD on 9/4/04 on instrument U, and the associated samples were analyzed on 9/21/04 on instrument X. The blank was re-analyzed on 9/21/04 on instrument X, but the LCS/LCSD were not analyzed.

No field sample data are qualified due to initial calibration results.

Continuing Calibration

There were 2 continuing calibration standards analyzed for this data package. The continuing calibration standard concentration was 1.00 ug/mL standard. All minimum RRF criteria for SPCC and %D for CCC compounds were met. All RRFs for target compounds exceeded 0.05. All %D for target compounds were less than 25%, except 2-methylnaphthalene (38.12%) for the 10/7/04 continuing calibration. Only the re-analyses of one laboratory method blank and one LCS are associated with the 10/7/04 calibration standard. The initial extractions of all sediment samples are associated with the blank and LCS analyzed 10/7/04. No field sample data are qualified due to continuing calibration results.

Laboratory and Field Blank Analyses

One laboratory method blank was extracted with the aqueous samples. No contamination was detected in the original or re-analysis of the aqueous laboratory method blank. Two field equipment blanks were reported in this data package, MY06SD402(EB) and MYRSSD401(EB). No other aqueous samples were reported in this data package. No contamination was detected in the equipment rinsate blank samples.

There were two sets of laboratory method blank results reported with this data package, WG9627 (9/3/04) and WG10210 (9/24/04). Phenanthrene was detected in the laboratory method blank for the 9/3/04 soil extraction batch at a concentration of 7.5 ug/Kg. No contamination was detected in the 9/24/04 laboratory method blank.

No data are qualified due to laboratory method blank contamination. Although some of the sample results for phenanthrene are below the blank action level due to sample dilution, the phenanthrene results of sample MYRSSD401 from the 9/3/04 extraction (170 mg/Kg) and from the 9/24/04 extraction (160 mg/Kg) show good agreement. No phenanthrene results are qualified as non-detected (U) due to blank contamination.

System Monitoring Compounds (Surrogate Recoveries)

The surrogates used for this analysis are not the QAPP specified surrogates. Nitrobenzene-d5 (14-107%), 2-fluorobiphenyl (32-109%), and terphenyl-d_{14} (26-116%) are the QAPP surrogates. The surrogates used for analysis were 2-methylnaphthalene-d_{10}, fluorene-d_{10}, and pyrene-d_{10}. The laboratory acceptance criteria in the data package for these three surrogates are 30-150%. The surrogates used are polyaromatic hydrocarbons. No data were qualified due to the substitution of the QAPP surrogates.

All aqueous surrogate recoveries met the laboratory acceptance criteria. All sediment surrogate recoveries met the laboratory acceptance criteria, except for samples MY06SD403 and MY06SD420. The surrogates for samples MY06SD403 and MY06SD420 were diluted out and could not be evaluated. No data are qualified due to surrogate recoveries.

Internal Standards

All internal standard retention time and area count acceptance criteria were met for the field samples, except the 1,4-dichlorobenzene-d_4 area count for MY06SD402(EB). The 1,4-dichlorobenzene-d_4 area count for MY06SD402(EB) (49424) is above the acceptance range (11717-46868). All results for MY06SD402(EB) were reported by the laboratory as non-detected (U). No data are qualified due to internal standard results.

Matrix Spike/Matrix Spike Duplicate Results

Sample MY06SD403 was identified on the COC as the sample for MS/MSD analysis. No SIM MS/MSD pair was reported in this data package. Accuracy in the sample matrix for the SIM PAH analyses could not be evaluated. Precision in the sample matrix was evaluated from field duplicate results.

A MS/MSD was analyzed for the SVOA analysis of sample MY06SD403. The SVOA MS/MSD were spiked with all PAH target analytes. The QAPP acceptance criteria for SVOA are available for the CLP short list of 11 compounds, only 2 of which are SIM PAH analytes (acenaphthene and pyrene). The QAPP acceptance criteria for SIM PAH and Scan SVOA of acenaphthene and pyrene do not show good agreement. No SIM PAH results are qualified due to SVOA MS/MSD results.

Analyte	PAH SIM analyses	SVOA Scan analyses
acenaphthene	22-107%	31-137%
pyrene	40-121%	35-142%

Field/Laboratory Duplicates

One set of field duplicates was reported in this data package, MY06SD403 and MY06SD420. All positive results met the ≤ 50% RPD acceptance criteria or were reported below 2X the SQL. All acceptance criteria were met. No data were qualified due to the field duplicate results.

Laboratory Control Sample Results

One LCS and two LCS/LCSD pair were reported in this data package. It should be noted that the sediment LCS acceptance criteria reported by the laboratory are not the QAPP acceptance criteria. The laboratory has been notified. QAPP acceptance criteria were used for this validation report.

All sediment LCS and LCSD recoveries were not within the QAPP acceptance criteria. The 2-methylnaphthalene recovery for the LCS associated with the 9/3/04 sediment extraction was 137%, outside the 21-133% QAPP acceptance criteria. The phenanthrene recovery for the LCS associated with the 9/3/04 sediment extraction was 123%, outside the 40-120% QAPP acceptance criteria. Samples MY06SD405DL, MYRSSD401DL, MY06SD403DL, and MY06SD420DL are associated with the 9/3/04 sediment LCS. The phenanthrene results for MY06SD405DL, MYRSSD401DL, MY06SD403DL, and MY06SD420DL are qualified as estimated (J) due to the potential for high bias indicated by the LCS recovery. The 2-methylnaphthalene results for samples MY06SD405DL, MYRSSD401DL, MY06SD403DL, and MY06SD420DL were reported by the laboratory as non-detected and are not qualified.

The 2-methylnaphthalene recovery for the LCSD associated with the 9/24/04 sediment extraction was 137%, outside the 21-133% QAPP acceptance criteria. All sediment % RPDs are within QAPP acceptance criteria. Samples MYRSSD401RE and MYRSSD402RE are associated with the 10/1/04 sediment LCS/LCSD. The 2-methylnaphthalene results for MYRSSD401RE and MYRSSD402RE are qualified as estimated (J) due to the potential for high bias indicated by the LCSD recovery.

There are no QAPP acceptance criteria for aqueous SIM analyses. The laboratory acceptance criteria of 30-150% recovery and ≤30% RPD were used for this evaluation. All aqueous LCS/LCSD recoveries and %RPD met laboratory acceptance criteria.

PE/Accuracy Check

Performance evaluation results were not submitted. The LCS/LCSD were from an independent, referenced source.

Compound Quantitation and Reported Quantitation Limits

Results were reported to the laboratory's PQLs and adjusted for sample mass and total solids. Positive results may be reported to the MDL. Positive results between the PQL and the MDL are qualified estimated (J).

The following results are qualified as estimated due to reported concentrations between the PQL and the MDL:

- acenaphthene, fluorene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene for sample MY06SD403DL;
- acenaphthene, fluorene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results for sample MY06SD405DL;
- acenaphthene, phenanthrene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results for sample MY06SD420DL;
- acenaphthylene, phenanthrene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results for sample MYRSSD401DL; and
- 2-methylnaphthalene, acenaphthylene, fluorene, phenanthrene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results for sample MYRSSD401REDL and MYRSSD402REDL.

Results that exceed the calibration range are qualified as estimated (J). . No reported results exceeded the calibration range of the instrument. Samples MY06SD403 and MY06SD420 were diluted by a factor of 10 for analysis. Samples MY06SD405 and MY06SD420 were diluted by a factor of 4 for analysis. Samples MYRSSD401 and MYRSSD402 were diluted by a factor of 3 for analysis. Only the results of the diluted sample aliquots were reported in this data package.

No MDL study was submitted; laboratory fortified blanks were used to determine sensitivity. All criteria were met. The lowest standard for the initial calibration curves is at 0.125 ug/mL, equivalent to many of the reported method PQL (Practical Quantitation Limit).

Please contact Kestrel Environmental Technologies, Inc. with any questions regarding this information.

Sincerely,
Kestrel Environmental Technologies, Inc.

Deborah Smith
Validator

Attachments:
Table I: Validation Recommendation Summaries Worksheet

Table II: Overall Evaluation of Data for 8270SIM

Maine Yankee Samples
MY155

Table I - Method 8270 SIM PAH Recommendation Summary

Sample ID	Matrix	Qualifier
MY06SD403(DL)	Soil/sediment	J^2 J^4
MY06SD405(DL)	Soil/sediment	J^2 J^5
MY06SD420(DL)	Soil/sediment	J^2 J^6
MYRSSD401(DL)	Soil/sediment	J^2 J^7
MYRSSD401(REDL)	Soil/sediment	J^1 J^3 J^8
MYRSSD402(REDL)	Soil/sediment	J^1 J^3 J^8
MY06SD402(EB)	Aqueous	A
MYRSSD401(EB)	Aqueous	A

A Accept all data.

J^1 Report all results as estimated (J positives, UJ non-detects) due to holding time exceedence for sample extractions.

J^2 Report the phenanthrene results as estimated (J) due to the potential for high bias indicated the by the LCS recovery.

J^3 Report the 2-methylnaphthalene results as estimated (J) due to the potential for high bias indicated the by the LCS recovery.

J^4 Report acenaphthene, fluorene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

J^5 Report acenaphthene, fluorene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

J^6 Report acenaphthene, phenanthrene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

J^7 Report acenaphthylene, phenanthrene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

J^8 Report 2-methylnaphthalene, acenaphthylene, fluorene, phenanthrene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

TABLE II

EPA NE-Data Validation Worksheet
Overall Evaluation of Data **MY155 Katahdin Analytical Services**

8270 SIM					
DQOs	Sampling/ Analytical	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical	Sampling		

To determine the nature and extent of potential contamination, to identify any potential contaminant source areas requiring further evaluation, to support any remedial activities that may be necessary to minimize potential risk to human health and environment.	Sediment samples prepared by 3550, analyzed by 8270 SIM. Aqueous samples prepared by 3510, analyzed by 8270 SIM.	A J[1] J[2] J[3] J[4] J[5] J[6]			Accept all results. Report all results as estimated (J positives, UJ non-detects) due to holding time exceedence for sample extractions. Report the phenanthrene results as estimated (J) due to the potential for high bias indicated the by the LCS recovery. Report the 2-methylnaphthalene results as estimated (J) due to the potential for high bias indicated the by the LCS recovery. Report acenaphthene, fluorene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL. Report acenaphthene, fluorene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL. Report acenaphthene, phenanthrene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

TABLE II (continued)

EPA NE-Data Validation Worksheet
Overall Evaluation of Data **MY155 Katahdin Analytical Services**

8270 SIM					
DQOs	Sampling/ Analytical	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical	Sampling		
To determine the nature and extent of potential contamination, to identify any potential contaminant source areas requiring further evaluation, to support any remedial activities that may be necessary to minimize potential risk to human health and environment.	Sediment samples prepared by 3550, analyzed by 8270 SIM. Aqueous samples prepared by 3510, analyzed by 8270 SIM.	J[7] J[8]			Report acenaphthylene, phenanthrene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL. Report 2-methylnaphthalene, acenaphthylene, fluorene, phenanthrene, anthracene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results as estimated (J); results were between the MDL and the PQL.

Validator: _____ Date: _____