	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

Sampling and Analysis Plan

Volume 2 - Quality Assurance Project Plan

Niagara Falls Storage Site Building 401 Demolition Lewiston, New York

Contract No. W912P4-07-D-0003-0002

Prepared by:
TPMC-EnergySolutions Environmental Services, LLC




Prepared for:
U.S. Army Corps of Engineers (USACE)
Buffalo District
Buffalo, New York



**US Army Corps
of Engineers®**
Buffalo District

August 2010

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------


Sampling and Analysis Plan
Volume 2 –Quality Assurance Project Plan
Niagara Falls Storage Site
Building 401 Demolition
Lewiston, New York

Authored By: [Redacted] 16 August 2010
[Redacted], CQCM Date

Reviewed By: [Redacted] 16 August 2010
[Redacted], PMP Date

Approved By: [Redacted] 16 August 2010
[Redacted], PM / CQM System Manager Date

- ☒ New Plan
- ☐ Title Change
- ☐ Plan Revision
- ☐ Plan Rewrite

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

COMPLETION OF INDEPENDENT TECHNICAL REVIEW

TES, LLC (TES) has DRAFTED the *Quality Assurance Project Plan (Volume 2 of the Sampling and Analysis Plan)* for the Niagara Falls Storage Site Building 401 Demolition Project located in Lewiston, New York. Notice is hereby given that an independent technical review has been conducted that is appropriate to address all regulatory and compliance issues appropriate to ensure management of sampling, analysis and characterization tasks for the Niagara Falls Storage Site Building 401 demolition, as defined in the TES NFSS Sampling and Analysis Plan. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with existing USACE policy.

Signature/TES Report Preparer



Date 20 JULY 2010

Signature/TES Independent Technical Reviewer




Date 20 JULY 2010

Signature/TES Independent Technical Reviewer



Date 20 JULY 2010

Signature/TES Independent Technical Reviewer



Date 20 JULY 2010

Independent Technical Review Team Members:

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

Item	Technical Concerns	Possible Impact	Resolutions
1	See attached sheets		


As noted above, all concerns resulting from independent technical review of the plan have been resolved.



Signature/



Date 20 JULY 2010

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

INTRODUCTION

The Sampling and Analysis Plan (SAP) describes activities to be completed during the demolition of Building 401 at the Niagara Falls Storage Site (NFSS), Lewiston, New York. The SAP is prepared by TerranearPMC-EnergySolutions Environmental Services, LLC (TES) in partial fulfillment of the requirements of Contract W912P4-07-D-0003-0002, Task Order 002. Technical oversight responsibilities for the tasks described in this document will be provided by the U.S. Army Corps of Engineers (USACE), Buffalo District.

The SAP consists of two components: the Field Sampling Plan (FSP) and the Quality Assurance Project Plan (QAPP).

The FSP covers the overall objectives of the investigation, outlines the tasks to be completed, and provides survey and sampling protocols to be followed while completing the effort.

The QAPP describes the applicable analytical methods and measurements, quality assurance and quality control protocols, and the data assessment procedures for the evaluation and identifications of any data limitations.

This document is consistent with the requirements and elements identified in EM-200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans*, EM 200-1-6, *Chemical Quality Assurance for HTRW Projects*, and USEPA Requirements for QAPPs QA/R-5, *EPA Requirements for Quality Assurance Project Plans*, and USEPA QA/G-5, *Guidance for Quality Assurance Project Plans*.

Appendix A, *QAP Applicability Form*, and Appendix B, *Project Quality Plan*, are used to determine the graded approach associated with the implementation of the TES Quality Program.

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

Table of Content

1.0	INTRODUCTION.....	5
2.0	PROJECT MANAGEMENT AND DATA ASSESSMENT ORGANIZATION AND RESPONSIBILITIES	5
2.1	PROJECT ORGANIZATION AND RESPONSIBILITIES	5
2.2	DATA ASSESSMENT RESPONSIBILITIES	5
2.3	COMMUNICATIONS.....	5
2.4	PROJECT AND TASK DESCRIPTION	6
2.5	SPECIAL TRAINING AND CERTIFICATIONS	6
3.0	DATA QUALITY OBJECTIVES (DQO)	7
3.1	PROBLEM STATEMENTS	7
3.2	IDENTIFY THE DECISION.....	8
3.3	INPUTS TO THE DECISION	8
3.4	BOUNDARIES OF THE SURVEY	10
3.5	DECISION RULES.....	10
3.6	LIMITS ON DECISION ERRORS	11
3.7	DESIGN FOR DATA COLLECTION	12
4.0	PROCEDURES	13
5.0	FIELD SAMPLING OPERATIONS	14
5.1	SAMPLE METHODS	14
5.1.1	<i>Sample Containers.....</i>	<i>14</i>
5.2	SAMPLE HANDLING AND CUSTODY.....	16
5.2.1	<i>Sample Labeling.....</i>	<i>16</i>
5.2.2	<i>Sample Custody.....</i>	<i>16</i>
5.2.3	<i>Sample Packaging and Shipping</i>	<i>16</i>
5.2.4	<i>Sample Storage</i>	<i>16</i>
6.0	ANALYTICAL PROCEDURES	16
6.1	METHODS AND DETECTION LIMITS	18
6.2	STANDARD OPERATING PROCEDURES.....	18
6.3	DOCUMENTATION OF SURVEYS AND FIELD ACTIVITIES.....	18
7.0	CALIBRATION PROCEDURES AND FREQUENCY	19
8.0	QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES.....	19
8.1	FIELD SAMPLES.....	19


	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

9.0	CALCULATION OF DATA QUALITY INDICATORS	19
9.1	PRECISION.....	19
9.2	ACCURACY	20
9.3	REPRESENTATIVENESS	21
9.4	COMPLETENESS	21
9.5	COMPARABILITY	21
9.6	SENSITIVITY	21
10.0	DATA QUALITY ASSESSMENT	21
11.0	CORRECTIVE ACTION PROCEDURES.....	22
11.1	CORRECTIVE ACTION METHODS	22
11.2	CORRECTIVE ACTION REPORTS AND REVIEW	22
12.0	DATA COLLECTION, REDUCTION, AND REPORTING.....	23
12.1	FIELD MEASUREMENTS AND SAMPLE COLLECTION	23
12.2	LABORATORY SERVICES	23
13.0	PREVENTATIVE MAINTENANCE	25
13.1	FIELD INSTRUMENTS AND EQUIPMENT.....	25
14.0	REFERENCES.....	25
15.0	APPENDICES	25
	APPENDIX A, QAP APPLICABILITY FORM.....	26
	APPENDIX B, PROJECT QUALITY PLAN	27
	ATTACHMENTS	28
	ATTACHMENT 1 PLANS AND PROCEDURES.....	29


	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

Acronyms

AEC	Atomic Energy Commission
ASTM	American Society for Testing and Materials
BOD	Biological Oxygen Demand
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC(s)	Contaminant(s) of concern
COR	Contracting Officer's Representative
cpm	Counts per minute
cps	Counts per second
CQC	Contractor Quality Control
Cs-137	Cesium-137
DQO	Data Quality Objective
DQCR	Daily Quality Control Report
FSP	Field Sampling Plan
ft	Feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
IAW	in accordance with
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCL	Maximum Contaminant Level
MDC	Minimum Detectable Concentration
MDCR	Minimum Detectable Count Rate
MDL	Method Detection Level
MS	Matrix Spike
MSD	Matrix Spike Duplicate
μR/h	MicroRoentgens per hour
μg/L	Micrograms per liter
mg/L	Milligrams per liter
mg/kg	Milligrams per kilogram
Nal	Sodium Iodide
PAH	Polynuclear Aromatic Hydrocarbons

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

pCi/g	picocuries per gram
PM	Project Manager
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
Ra-226	Radium-226
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
SOW	Scope of Work
SVOC	Semi-Volatile Organic Compound
TES	TPMC-EnergySolutions Environmental Services, LLC
Th-230	Thorium-230
U-234	Uranium-234
U-237	Uranium-237
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

1.0 INTRODUCTION

TerranearPMC-EnergySolutions Environmental Services, LLC (TES project team) will perform activities associated with Building 401 demolition at the Niagara Falls Storage Site (NFSS) under this Quality Assurance Project Plan (QAPP), the Field Sampling Plan (FSP), the project Accident Protection Plan (APP), the Demolition Plan, and the applicable TES project team procedures that are compliant with the above plans. The resources of the TES project team, including professional engineering and quality assurance (QA) staff, will support the Project Manager (PM), the Site Safety and Health Officer, the Radiation Safety Officer and the onsite team to ensure successful survey execution and completion.

TES project team plans and procedures are listed in Attachment 1 to this QAPP. The listed plans and procedures will be available on-site for use by TES field personnel and review by the United States Army Corps of Engineers (USACE) Contracting Officer's Representative (COR). In addition, the listed plans and procedures will be provided electronically to the USACE for operational awareness and review prior to initiating any field activities.

2.0 PROJECT MANAGEMENT AND DATA ASSESSMENT ORGANIZATION AND RESPONSIBILITIES

2.1 PROJECT ORGANIZATION AND RESPONSIBILITIES


TerranearPMC-EnergySolutions Environmental Services, LLC (TES) has established an integrated team for implementation of the Niagara Falls Storage Site Building 401 demolition and preparation of project deliverables. The roles and responsibilities of the key personnel who have been identified for the implementation of the remediation activities of the site are displayed and discussed in the Quality Control Plan (QCP) and FSP.

2.2 DATA ASSESSMENT RESPONSIBILITIES

The Project Manager (PM) with support from the Radiation Safety Manager (RSM) and the Hazardous Materials Specialist (and/or offsite support as needed) is responsible for ensuring data review and validation. Upon receipt of each data package from the laboratory, calculations using the equations presented for precision accuracy, and completeness will be performed. Results will be compared to quantitative DQOs, where established, or qualitative DQOs. The data validation parameters are outlined in Section 10 of this QAPP.

2.3 COMMUNICATIONS

TES has established clear lines of authority and responsibility for disseminating information and for providing direction throughout the project organization. Specific individuals have also been designated to provide interface and coordination with the Buffalo District and other outside

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

organizations as required assuring that clear, accurate communications and information transfer are achieved. The lines of communications are discussed in the QCP and FSP.

2.4 PROJECT AND TASK DESCRIPTION


The services to be performed under this project involve characterization and packaging. The project scope includes engineering, procurement, building radiological release surveys, waste characterization, building demolition, and waste transportation and disposition. Work under this contract includes, but is not limited to, the following activities:

- Development of required work plans.
- Demolition of Building 401 and adjacent silos.
- Characterization, segregation, volume reduction, and appropriate packaging of the wastes generated during the performance of demolition activities.
- Loading, transportation, and disposal of packaged wastes at licensed/permitted disposal facilities.
- Performance of pre- and post-demolition radiological surveys of all work areas, including 15 meters outside of actual work areas, to ensure that the Contractor's activities did not radiologically contaminate the work areas. The Contractor shall also conduct radiological surveys to determine the appropriate disposal method for demolition debris and materials.

2.5 SPECIAL TRAINING AND CERTIFICATIONS

This project requires the following special training and certifications:

- Personnel conducting the ACM survey shall be a New York State (NYS) certified and licensed asbestos inspector
- Confirmed ACM shall be removed by NYS certified and licensed abatement contractor
- The structural integrity engineering assessment shall be performed by a licensed NYS professional engineer specializing in structural engineering and experience in demolition
- The Certified Industrial Hygienist (CIH) shall be certified by the American Board of Industrial Hygiene (ABIH)
- Field personnel must complete HAZWOPER training.
- The Radiation Safety Program shall be developed by a Certified Health Physicist with at least two years experience in radioactive waste handling and disposal.
- The Site Safety and Health Officer must complete a 30-hour OSHA Construction Safety Class and have five years of construction industry safety experience unless is a Certified Safety Professional or degree in health safety, then three years of experience required.
- All laboratories will have a DOD ELAP Accreditation and analytical laboratories shall have a National Environmental Laboratory Accreditation Conference (NELAC)

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---


Accreditation.

3.0 DATA QUALITY OBJECTIVES (DQO)

Data Quality Objectives (DQOs) are qualitative and quantitative statements that provide the basis for establishing the quantity and quality of the data needed to support the decisions. The seven steps to the DQO process for the surveys, sampling, demolition, segregation of wastes, and disposal of Building 401 debris described below follows the guidance in EPA QA/G-4, *Guidance on Systematic Planning Using the Data Quality Objectives Process*.

3.1 PROBLEM STATEMENTS

- Since the site has a history of radiological storage and characterization data indicates the presence of isolated locations with residual radioactive contamination, radiological surveys are needed to define the radiological status of remediated and non-remediated areas. These radiological surveys are needed to ensure each area meets the site unrestricted release criteria, that waste is appropriately segregated, and that the waste meets the WAC for the disposal facility.
- A survey using the MARSSIM protocols is needed on building surfaces to be released prior to demolition. Historical characterization data (ORISE 1995) surveys with a one (1) meter grid spacing on the floors and lower walls, provides documentation of the absence of contamination in most areas. Some drains, ventilation equipment (ducts, fans, etc.) and horizontal surfaces (such as I beams) are noted to be impacted and may contain surface activity greater than the unrestricted release criteria defined in Section 1.3 of this FSP. Building surfaces and equipment need to be surveyed in accordance with the applicable guidance contained in the MARSSIM.
- Some surfaces with residual radioactive contamination may not be able to be decontaminated or removed prior to demolition. The site has documented information to the presence of asbestos, lead, PCBs, and other chemical constituents.
- The waste streams generated from demolition, segregation, and decontamination need to be characterized prior to shipping to the waste disposal facility to ensure the waste is acceptable per the specific disposal facility's Waste Acceptance Criteria (WAC).
- For NYS regulated disposal sites, the regulations in 6 NYCRR 360 do not allow FUSRAP or radioactive material to be disposed of or used for recycling.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

3.2 IDENTIFY THE DECISION

Cost effective decontamination methods will be used for some surfaces to reduce the contamination to levels that meet the unrestricted release criteria.

Areas will be surveyed in accordance with MARSSIM protocols prior to demolition. The areas that are below the unrestricted release criteria will be demolished and segregated for disposal as non-radioactive.

The presence of hazardous materials will be determined using analytical results and by visual inspection for items like (mercury switches and thermostats, PCB – containing light ballasts, etc).

In-process radiological surveys will be used as necessary to determine when to cease remediation efforts and continue monitoring for quality control.

Analytical results for the site will be reviewed and waste streams will be characterized to verify that each waste stream meets the applicable WAC.


3.3 INPUTS TO THE DECISION

During the initial survey, and if necessary during remediation efforts, the TES project team will collect samples of paint, dust, debris, and insulation for offsite analyses of asbestos, lead, polychlorinated biphenyl (PCB) and toxic characteristic leaching procedure (TCLP) to ensure potential hazardous materials are properly characterized, controlled, and disposed.

Initial gamma scans will be performed and documented. These surveys will encompass outside areas out to 15 meters beyond the work area for Building 401 and the silos. Readings will be documented on a survey map and/or logged and areas greater than two times background will be flagged.

Analysis of gravel borrow material will be used to document the concentrations of radiological and RCRA contamination.

A background study will be performed to determine the material-specific background characteristics of materials within Building 401 and the silos. The study will document the results of measurements of non-impacted materials and a criteria above which measurements would be considered distinguishable from background establishing the point for segregating materials for disposal as potentially LLRW.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

Pre-demolition surveys alpha+beta¹ scans and gamma scans will be used to identify the locations of contamination exceeding the release criteria. If the alpha+beta scans are equal to or greater than the unrestricted release level of 5,000 dpm/100cm² or as otherwise determined during the Background Study, additional remediation may be performed at the discretion of the PM and the RCM or the material will be segregated as radioactive waste. It is expected that any material or equipment showing alpha + beta surface contamination during scans greater than the instrument minimum detection level will be identified and segregated during demolition for further survey, decontamination or disposal to a radioactive waste disposal facility.

During remediation/decontamination efforts, the TES project team will perform in-process radiological surveys to determine when to cease remediation efforts.

If the alpha+beta scans do not show activity above the scan MDC, remediation will cease and the area will be prepared for survey using the MARSSIM survey protocols defined in this plan.


MARSSIM surveys will be performed for areas that will be demolished and segregated as non-radioactive waste. These surveys will consist of alpha+beta scans, direct alpha measurements, direct beta measurement, and smears analyzed for removable alpha and beta contamination. The surveys will be performed, documented, reviewed by an independent reviewer, and approved by the RCM, prior to demolition.

The data collected for building structures, asbestos, lead, PCB and chemicals will be reviewed by the PM, the RCM, and other subject matter experts as needed, to adequately characterize the waste streams for the site.

Verification surveys will be performed of the materials being sent for recycling and materials that are being disposed of as non-radioactive. These surveys will consist of direct scans and smears for removable contamination of metals going for recycling. Surveys using gamma scans will also be performed of materials going for recycling and materials to be disposed of as non-radioactive. Piles will be scanned such that approximately 5% of the material is again verified. Any gamma radiation levels distinguishable from background (greater than 2 times the ambient background level) will be immediately brought to the RCMs attention and investigated.

Post-demolition surveys will be performed of the remaining slab and areas out to 15 meters beyond the work area covering the same areas surveyed during the pre-demolition survey.

¹ Alpha+beta measurements are performed using either a Geiger–Mueller detector or a gas proportional detector operated at an alpha+beta voltage. At this voltage both alpha and beta radiation are detected, though most of the response is from beta radiation.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

3.4 BOUNDARIES OF THE SURVEY


Surveys and sampling are limited to steel members, concrete silos, floors on the second level, walls, and any other materials or equipment within Building 401.

Surveys will also cover areas of the site affected by the demolition process.

Surveys and sampling will include all potential waste streams generated from site decontamination and demolition activities.

3.5 DECISION RULES


- The MARSSIM survey results will be compared to the unrestricted release criteria in section 1.3 of the FSP.
- Verification measurements of materials to be released for recycling will also be compared to the material specific background measurements and if they are statistically significant from the background they will be segregated for decontamination or disposal.
- If the analytical results and rad scanning data indicate a potential source of contamination and the extent of contamination cannot be bounded or is impractical to decontaminate, then removal as Low Level Radioactive Waste (LLRW) may be necessary. Removal of all radiologically contaminated material prior to final release surveys is preferable. If the contaminated material cannot be removed, (e.g., due to structural concerns), the material shall be wrapped or fixed to prevent dispersion and clearly marked with bright paint, (or other identifying method), prior to demolition.
- The TES project team will verify if hazardous materials are present at the site based on visual inspections, previous analytical results, and sampling and analysis during waste characterization.
- ACM will be considered not present if:
 1. The Licensed Building Inspector concludes that ACMs are not present from the historical site surveys and visual site inspection;
 2. Asbestos fibers are not detected in the collected asbestos samples; and
 3. The inspection and results are within the requirements of 40CFR763.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

- Lead analysis will be a TCLP extraction and a lead analytical result of less than 5 ppm will indicate that waste associated with the lead does not have the potential to be hazardous based on a lead leachability.
- PCB \Material is unregulated for disposal if the material contains less than 50 ppm PCBs in accordance with the requirements of 40 CFR 761.
- Waste will be considered hazardous if the TCLP results exceed the requirements of 40CFR261.
- In-process radiological surveys will be performed during removal of contaminated items to verify conditions. In-process radiological surveys during decontamination are complete when:
 1. The alpha+beta scans are indistinguishable from background (less than the Scan MDC) for building structures or the PM and the RCM has directed the TES project team to discontinue decontamination efforts and the materials are segregated as radioactive waste.
 2. The gamma radiation scans are indistinguishable from background (less than the Scan MDC) or the PM and the RCM has directed workers to discontinue decontamination efforts.
- Wastes streams will be identified based on available data, surveys, and sampling prior to demolition, and waste segregated as the demolition progresses. Radiological analysis of radiological waste samples will include all radionuclides listed in Table 1 as well as any others required by the disposal site WAC.
- When radiological and chemical sampling and analyses are complete, the PM, the RCM and other subject matter experts will characterize the waste streams and complete the waste profiles. The results will be evaluated to the disposal facility waste acceptance criteria (WAC) or an alternate waste disposal facility must be identified.
- At the completion of the building demolition, if the results of radiological scanning, are statistically comparable to the pre-demolition surveys, and smears are less than the removable limits in Section 1.3, then the foundation area will be turned over to USACE. (Use of an approved fixative may be included in this decision rule).

3.6 LIMITS ON DECISION ERRORS

Decision errors will be limited by performing the surveys and sampling in accordance with this plan which specifies: the types of measurements and/or samples, the number of measurements,

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

the instrumentation, the analytes to be analyzed for, the required method detection limits (MDLs), and the required minimum detectable concentrations (MDCs) associated with the survey measurements.

Off-site laboratories will be required to run matrix spikes, duplicate analyses, and blanks to access their own performance and to report the results of the analyses.


The probability of making Type I and Type II decision errors for all applicable studies are set at 0.05 for Type I and 0.1 for Type II for designing surface activity measurements.

If the MARSSIM Class 3 survey results indicate the presence of contamination at 75% of the limits in Section 1.3, then: the number of measurements per unit area, and the scanning frequency should be increased to correspond to a Class 2 or Class 1 survey unit (at the discretion of the RCM). Class 1 and Class 2 areas will not be gridded as described in MARSSIM due to the expected limited size of most surfaces being evaluated.

3.7 DESIGN FOR DATA COLLECTION

To facilitate the surveys and sampling the following approach will be used:


- To ensure data collection is optimized, all areas to be surveyed will be walked down prior to the survey. Minimum data requirements shall be defined, special situations identified, specific instructions provided, etc.
 - Both systematic and biased measurements will be collected as part of this plan. Systematic samples will be located based at pre-defined locations. The biased samples will be based in part on the results of gamma scans performed in the area to be sampled and/or based on the judgment of the PM or the RCM.
 - Quality control of instrumentation will include efficiency checks, source checks, and background checks, as well as NIST traceable calibration.
 - Where possible, the MDC for each measurement or sample should be less than 50% of the limits defined in Section.1.3.
 - Chain-of-Custody will be maintained for all samples to be analyzed off-site.
 - A pre-demolition survey of the site will be performed.
1. The survey will identify contaminated areas and locate the areas and items previously noted to be elevated as shown on Attachment 1 drawings.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

2. If the areas or items previously shown to be elevated are less than the criteria established in the background study, the levels will be recorded but the items do not need to be removed and disposed of as radioactive.
 3. Identified areas and materials distinguishable from background (alpha+beta scan measurements) will either be decontaminated, or removed and packaged for disposal. Care will be taken not to contaminate surrounding areas. The contaminated items will be segregated into the appropriate waste stream for disposal.
 4. If beams or structures cannot be decontaminated, they will be wrapped or sprayed with fixative to prevent dispersion of the contamination and clearly marked with paint or other suitable identifier so that the contaminated materials are easily identified and contained during and after demolition.
- To ensure disposal criteria in 6 NYCRR 360 is met, any potentially radiologically impacted material or equipment that is distinguishable from background will be segregated for decontamination or radiological disposal.
 - When contaminated materials have been segregated and removed, the surfaces that will be demolished will receive a final survey using MARSSIM protocols with the exception of gridding (a grid system will not be established since the materials will be demolished and shipped as waste). For areas with no identified contamination, MARSSIM Class 3 survey protocols will be used (i.e., that the surfaces are indistinguishable from background) prior to building demolition. For locations previously remediated for radioactive contamination, MARSSIM Class 1 survey protocols will be used for the area remediated and immediately surrounding the area as applicable. These surveys will include survey packages defining the measurements, number, type, and location of the measurements, and scan frequency. Surveys will be documented, and the data reviewed and approved prior to demolition. Most areas are expected to be surveyed as Class 3 areas.

4.0 PROCEDURES

The TES project team will perform the scope of work according to the procedures identified in Attachment 1 to this QAPP, the Site Health and Safety Plan, the FSP, and applicable requirements of the NFSS Health and Safety Program. The procedures identify survey instruments, calibration, measurement and sample collection. The survey instrumentation is described in Section 3.4 of the FSP including calibration and measurement.

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

The survey and sampling requirements for the scope of work are described in Section 5.0 of the FSP.

5.0 FIELD SAMPLING OPERATIONS

5.1 SAMPLE METHODS

Sampling will be limited to a few waste characterization samples and investigation derived wastewater (water used and collected during demolition activities). Sampling will be conducted using procedures listed in Attachment 1 of this QAPP. Decontamination of sampling equipment will be conducted prior to, and following sampling activities. Sampling equipment will be decontaminated by removing debris and contaminants prior to reuse. All waste streams generated will be managed and disposed under direction of the USACE through communication with the TES Project Manager.

5.1.1 Sample Containers

All samples collected in the field will be placed in a sturdy container (e.g., 500-mL poly jar or as specified by the analytical laboratory) and sealed (e.g., using double-wrapped adhesive tape) to ensure sample integrity.


All samples for chemical analyses will be collected in the appropriate containers, evaluated to the appropriate holding times, and analyzed by the protocols established by the laboratory as specified in Table 5-1. Containers from the off-site laboratory will be used and will be received containing the required preservatives. Refrigeration prior to shipment and ice during shipment is required for debris samples, surface water samples, and sediment samples that will be analyzed for TCLP metals, PCB or BOD analysis – the receipt temperature is required to be less than 4 degrees centigrade.

Table 5-1 Sample Containers, Preservatives, Hold Times

Solid Debris Samples			
Parameter	Containers	Preservatives	Holding Time
Isotopic Uranium (alpha spec)	1 liter poly bottle (approximately 1000 g) or plastic bags	None	180 days
Isotopic Thorium (alpha spec)			
Isotopic Plutonium (alpha spec)			
Gamma Spectroscopy (Am-			

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

241, Cs-137, Ra-2226)			
TCLP metals	Glass jar (at least 200g)	Ice < 4 degrees C	28
TCLP VOCs	Glass jar (at least 100 g)	Ice < 4 degrees C	14
TCLP SVOCs	Glass jar (at least 100 g)	Ice < 4 degrees C	14
PCB	Glass jar (30 grams)	Ice < 4 degrees C	14
PAH	Glass Jar	Ice ,4 degrees C	14
Boron	Glass jar	None	14
IDW Water			
Parameter/method	Containers	Preservatives	Holding Time
Isotopic Uranium (alpha spec)	1 liter poly	HNO3	180 days
Isotopic Thorium (alpha spec)	1 liter poly	HNO3	180 days
Isotopic Plutonium (alpha spec)	1 liter poly	HNO3	180 days
Gamma Spectroscopy (Am-241, Cs-137, Ra-2226)	1 liter poly	HNO3	180 days
Metals: arsenic, boron, cadmium, chromium, copper, cyanide, lead, mercury, molybdenum, nickel, phosphorus, selenium, silver, zinc	500 ml poly	HNO3 (NaOH for cyanide)	180 days (except for: mercury – 28 days; cyanide – 14 days)
Total dissolved solids	1 liter poly	None	7 days
Biochemical Oxygen Demand (BOD)	1 liter poly	Ice < 4 degrees C	48 hours
PAH	Glass Jar	Ice < 4 degrees C	14 days

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

Boron	Glass jar	HNO ₃ (ph<2)	14 days
-------	-----------	-------------------------	---------

5.2 SAMPLE HANDLING AND CUSTODY

5.2.1 *Sample Labeling*

Each sample container will be sealed and labeled with a unique sample ID in accordance with CS-FO-PR-003 and placed in a protective outer container, as needed, during transportation and storage (bucket, cooler, etc.).

5.2.2 *Sample Custody*

All samples will be tracked from the time the sample is obtained through disposition of disposal of the sample by the analytical laboratory. The responsibility for the custody of samples from the time of collection until results are obtained is provided by the applicable procedure listed in Attachment 1. Any samples shipped for analysis will be accompanied by a chain-of-custody record to track each sample. Samples that may be returned to the site from the analytical laboratory will also be tracked.

5.2.3 *Sample Packaging and Shipping*

The samples will be packaged and shipped as described in Table 5-1 of this QAPP and FSP, Section 6.5. The samples will typically be packaged in thermally insulated rigid-body coolers prior to shipping. The required laboratory paperwork including the chain of custody forms is placed in the cooler if being transported by a shipping courier. Refrigeration prior to shipment and ice during shipment is required for debris samples, surface water samples, and sediment samples that will be analyzed for TCLP metals or PCB analysis – the receipt temperature is required to be less than 4 degrees centigrade.

All environmental samples collected will be shipped no later than 12 to 72 hours after time of collection.

5.2.4 *Sample Storage*

All samples will be stored in controlled areas established by TES personnel in consultation with USACE. Refrigeration prior to shipment and ice during shipment is required for debris samples, surface water samples, and sediment samples that will be analyzed for TCLP metals or PCB analysis – the receipt temperature is required to be less than 4 degrees centigrade.

6.0 ANALYTICAL PROCEDURES

Laboratory support for this project includes an off-site laboratory component. This section of the QAPP presents the methodologies, sensitivity, Standard Operating Procedures, and documentation for the analyses. Table 6-1 summarizes the analytical methods, parameters, and sensitivity for the methodologies:

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

Table 6-1 Parameters, Method, and MDC/MDL

Parameter	Method	MDC/MDL
Isotopic Uranium (alpha spec)	DOE EML HASL 300 U-02 mod (or equivalent)	0.5 pCi/g
Isotopic Thorium (alpha spec)	DOE EML HASL 300 Th-01 mod (or equivalent)	0.5 pCi/g
Isotopic Plutonium (alpha spec)	DOE EML HASL 300	1 pCi/g
Gamma Spectroscopy (Am-241, Cs-137, Ra-2226)	DOE EML HASL 300 4.5.2.3 (or equivalent)	1 pCi/g
TCLP metals	6010/7470	Varies (2 – 15 µg/L)
TCLP VOCs	8260	Varies (0.1 -0.5 µg/L)
TCLP SVOCs	8270	Varies (0.1 -0.5 µg/L)
PCB	8082	(5 – 6.2 µg/kg)
PAH	8310	Varies (1 – 23 µg/kg)
Boron	6010C	20 mg/Kg
IDW Water		
Parameter	Method	MDC/MDL
Isotopic Uranium (alpha spec)	DOE EML HASL 300 U-02 mod (or equivalent)	0.5 pCi/L
Isotopic Thorium (alpha spec)	DOE EML HASL 300 Th-01 mod (or equivalent)	0.5 pCi/L
Isotopic Plutonium (alpha spec)	DOE EML HASL 300	1 pCi/L
Gamma Spectroscopy (Am-241, Cs-137, Ra-226)	DOE EML HASL 300 4.5.2.3 (or equivalent)	10 pCi/L (based on Cs-137)
Metals: arsenic, boron, cadmium, chromium, copper, cyanide, lead, mercury, molybdenum, nickel, phosphorus, selenium, silver, zinc	EPA 200.7 (or equivalent)	Varies (1 – 15 µg/L)
Total dissolved solids	SM 2540 D (or equivalent)	1.2 mg/L
Biochemical Oxygen Demand (BOD)	SM5210 B (or equivalent)	1 mg/L

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

PAH	8310	Varies (0.01 – 0.5 µg/L)
Boron	6010C	100 µg/L

^aThe results for each analysis will be reported regardless of the MDL/MDC. All reported values that are less than the MDL/MDC will be noted as such.

6.1 METHODS AND DETECTION LIMITS

All debris and water samples analyzed by the off-site laboratory, including associated QA/QC samples, will be analyzed using the the methods specified in Table 6-1 unless otherwise specified and agreed upon with the USACE.

6.2 STANDARD OPERATING PROCEDURES

All off-site analytical testing will be performed by the laboratories listed in the FSP. Both Test America and GEL are Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) accredited. Documentation of accreditation is provided with this QAPP. All laboratories will be compliant with the DoD Quality Systems Manual (QSM), Version 4.1, April 2009. All laboratory personnel will be familiar with the principles provided in the Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP).

6.3 DOCUMENTATION OF SURVEYS AND FIELD ACTIVITIES


Records of surveys will be documented and managed in accordance with the applicable procedure listed in Attachment 1. Each survey measurement will be identified by the date, technician, instrument type and serial number, detector type and serial number, location code, type of measurement, mode of instrument operation, and QC sample number, as applicable.

The field data collected will be managed using forms and field log books. Laboratory data will be summarized in a manner that provides efficiency in data reduction, tabulation, and evaluation. All samples and measurements taken during the project will be identified by source, type, and sample location.

All information pertinent to the field investigative activities, including field instrumentation calibration data will be recorded in field logbooks. All field logbooks will be submitted with the draft Project Report to the USACE.

During field sampling activities, a log will be generated to describe the event and observations while collecting the samples. Information will be recorded directly in the field without transcribing from a field book or other document. All logs generated during the project will contain the following information, as appropriate:

- Unique sample identification number noted on a sketch map

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

- Description of sample collected, location, material type/matrix, the parameters to be analyzed, etc.
- Dates and times for the start and completion of the sample collection

7.0 CALIBRATION PROCEDURES AND FREQUENCY

Survey instruments, counting devices and other equipment used for radioactivity detection and measurement will be maintained according to CS-FO-PR-002, and as described in Section 3.4 of the FSP.

8.0 QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

8.1 FIELD SAMPLES

The TES project team will ensure that quality control checks (field duplicates, and MS/MSD samples) are performed on measurements and sample analyses, to include those collected as defined by the APP for health and safety. The frequency of these quality control checks will be 10% (1 in 10), 5%, and 5% for field duplicates and MS/MSD samples. All samples packaged for off-site analytical testing will comply with the individual lab's specific procedures and requirements for test and sample type. All off-site laboratory Quality Control Plans will be reviewed to ensure compliance with the most recent DoD QSM, ver. 4.1 (2009). Field duplicate and MS/MSD samples will be analyzed at the same off-site analytical laboratory. Smears for removable activity and airborne samples will be counted on-site with 5% of those recounted as duplicate analysis of the on-site counting system.


9.0 CALCULATION OF DATA QUALITY INDICATORS

Data Quality Indicators (DQIs) are used to monitor and ensure that the data generated are adequate for their intended use. In order to assess the quality of field and laboratory data generated during this project, six measurement performance criteria or DQIs, will be evaluated including: precision, accuracy/bias, representativeness, comparability, completeness, and sensitivity. These six performance criteria indicate the qualitative and quantitative degree of quality associated with measurement data.

Quality Control samples used to monitor DQIs include field duplicates, laboratory duplicates, and matrix spike duplicates to monitor precision; and matrix spike samples, laboratory control samples, and instrument blanks to monitor accuracy/bias.

9.1 PRECISION

The definition of precision is taken from International Organization of Standardization (ISO) 3534-1 "... the closeness of agreement between independent test results obtained under stipulated conditions." The TES project team will use measurement results of field and

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

laboratory duplicates and split samples to assess precision. Field duplicates are two separate samples collected in the same vicinity and used to assess sampling precision. Laboratory duplicates are two measurements of the same sample and are used to assess analytical precision.

The relative percent difference is used to evaluate the precision of two measurements and is referred to simply as RPD. When the analyte is detected at concentrations that are at least five (5) times the MDL, the RPD should not exceed 30% for both field and analytical samples. The RPD is calculated as shown below:

$$RPD = \frac{|S_1 - S_2|}{S_1 + S_2} \times 200 \text{ (Equation 9-1)}$$

Where:

S_1 = the value for the primary sample and/or measurement, and

S_2 = the value for the duplicate sample.


9.2 ACCURACY

Accuracy is defined as the closeness of agreement between a “true” or reference value and an associated measurement result. Data logging instruments and associated detectors, smear counters, and other instruments, including the on-site and off-site instrumentation, are calibrated using National Institute of Standards and Technology (NIST) traceable sources and calibration equipment. Daily source checks using NIST traceable sources are used daily to verify instrument response.

Samples spiked with a known concentration of a constituent are the most common measures of accuracy in analytical laboratories. Laboratory control samples (LCS) are prepared by spiking laboratory reagent water with a known concentration and comparing the final result against this value to determine the percent recovery. LCS ranges will comply with the appropriate tables located within Appendix G of the DoD QSM, ver. 4.1 (2009).

A matrix spike (MS) is an environmental sample to which known concentrations of analytes have been added and will be used to ensure accuracy. The matrix spike is taken through the entire analytical procedure and the recovery of the analytes calculated. Results are expressed as percent recovery of the known amount spiked. The matrix spike is used to evaluate the effect of the sample matrix on the accuracy of the analysis. MS levels will comply with the appropriate ranges set forth in the tables located within Appendix G of the DoD QSM, ver. 4.1 (2009).

Method blanks are used to assess possible contamination during the preparation and processing steps. The method blank will be processed by the off-site laboratory along with and under the

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

same conditions as the associated samples to include all steps of the analytical procedure. Method blanks will be considered acceptable if analytes are reported as less than the detection limits.

9.3 REPRESENTATIVENESS

Representativeness is defined as a measure of the degree to which data accurately and precisely represent a characteristic of a population. Representativeness will be satisfied by ensuring that proper sampling techniques were employed, proper analytical procedures were followed, samples were maintained at proper temperatures as appropriate, and that holding times specific to each parameter were adhered to in the laboratory.

9.4 COMPLETENESS

Completeness is defined as the percentage of valid data points relative to total possible data points. Because the sampling approach is prescriptive rather than being based on a statistical design, the number of valid data points may be equal to the total possible data points, barring incident within the lab that negates sample. In the event a planned survey sampling location cannot be obtained, the location may be offset with approval of the USACE. In the rare instance that an analytical analysis cannot be completed, a resolution will be presented to the USACE for approval.

9.5 COMPARABILITY

Comparability is defined as a qualitative term that expresses the confidence that two data sets can contribute to a common analysis and interpolation—whether two data sets can be considered equivalent in regard to the measurement of a specific variable or groups of variables. Comparability is established via the same qualitative methods used for ensuring representativeness plus the use of conventional and standard units for reporting. The selected off-site laboratory participates regularly in laboratory intercomparison studies wherein blind samples are supplied to a group of participating laboratories (NELAP and DoD ELAP accreditation).


9.6 SENSITIVITY

The instruments and analytical methods sensitivity are defined in Table 6-1 of this QAPP.

10.0 DATA QUALITY ASSESSMENT

All radiological field data will be reviewed by the Senior Health Physicist to ensure that the data were collected per the SAP and that all instrumentation used was in calibration and acceptably passed QC measurements. The review will be documented on the field forms and/or in the project logbook, with the individual's signature documenting the review.

All laboratory data will undergo two levels of review. The first level of review is performed at the laboratory. Laboratory analyses will be assessed for compliance with required precision,

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

accuracy, completeness, and sensitivity. Data qualifiers will be added or applied electronically when acceptance criteria were not met and corrective action was not successful, or corrective action was not performed. Analytical batch comments will be added in a case narrative to explain any non-conformance or other issues.

Upon receipt of the laboratory data, the Project Manager or designee will perform the second level of review to evaluate completeness by ensuring that all requested samples were analyzed and reported. Any QC deficiencies documented in the laboratory case narrative will be reviewed, with significant problems evaluated on a case by case basis to determine their impact upon project DQOs. All laboratory data will also be evaluated for holding time compliance (as applicable), blank contamination, and field duplicate precision.

11.0 CORRECTIVE ACTION PROCEDURES

Corrective actions may be required for two major types of problems: radiation survey equipment problems and noncompliance with the data quality indicators. Equipment problems may be identified during the performance of a survey or during the data review. All correction actions will be evaluated and accepted by the USACE prior to implementation.

11.1 CORRECTIVE ACTION METHODS


Most data problems identified will not require a Deficiency Report. If more data are needed to complete a survey package or to make up for data that was invalid, additional data may be collected and noted in the survey package documentation without generating a DR. Identifying data discrepancies during the review process and obtaining additional data as needed is part of the data review and validation process to ensure enough data are obtained.

Corrective actions either with or without DR documentation may include:

- Repeating measurements to check the data.
- Re-calibrating the equipment and obtaining additional data.
- Checking the calibration.
- Modifying the survey method including documentation and notifications.
- Stopping work (if necessary).

11.2 CORRECTIVE ACTION REPORTS AND REVIEW

Corrective actions will be implemented and documented. Project personnel will initiate corrective actions only after communication through the Site Safety and Health Officer, TES Site Manager, and TES Project Manager. The Site Safety and Health Officer will be responsible for assessing suspected problems to make a decision based on the potential for the situation to impact the quality of the data. When it is determined that the situation warrants a reportable nonconformance and corrective action, then a DR will be initiated by the Site Safety and Health

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

Officer and reviewed by the TES Site Manager and TES Project Manager in accordance with the applicable procedure as listed in Attachment 1.

The Site Safety and Health Officer will be responsible for ensuring that corrective action for any nonconformance is initiated by

- Evaluating the reported nonconformance;
- Controlling work on nonconforming items;
- Determining disposition or action to be taken;
- Reviewing CRs and corrective actions taken; and
- Ensuring that CRs are included in the final documentation project files.

12.0 DATA COLLECTION, REDUCTION, AND REPORTING

12.1 FIELD MEASUREMENTS AND SAMPLE COLLECTION

Raw data from field measurements and sample collection activities will be reduced and summarized. The methods of data reduction will be documented.


The RSO or designee is responsible for review of all field measurement and sample data. This includes verifying the description and measurement locations, verifying that all field instrument calibration requirements have been met, verifying that all field QC data met the required frequencies and criteria goals, and verifying that all data are entered and reported accurately.

12.2 LABORATORY SERVICES

The off-site laboratories will perform analytical data reduction culminating in the issuance of hard copies and EDDs of the analytical data. The QA officer for the off-site laboratories is responsible for assessing the data quality and for informing TES of any data which is unacceptable or which requires caution on the part of the data user in terms of its reliability.

The data review process will include identification of any suspect data or data omissions. Decisions to repeat sample collection and analyses may be made by the RSO based on the extent of the deficiencies and their importance in the overall context of the project. The off-site laboratories will provide flagged data to include items such as the required MDC not achieved². The off-site laboratories will prepare and retain full analytical and QC documentation for the project.

² It is acceptable when there is significant activity in the sample for not achieving the MDC listed in Table 6-1. The MDC is applicable for a blank sample.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---


The off-site laboratories will provide the following information in each analytical data package consistent with the reporting requirements defined in the DoD QSM:

- Cover sheets listing the samples included in the report and narrative comments describing problems encountered in analysis;
- Tabulated results of the parameters (e.g. radionuclides) identified and quantified;
- The combined standard uncertainty result for radiological analyses and associated spiked samples (LCS, MS, MSD);
- The calculated critical level (L_c) based on MARLAP and all initial and continuing calibration and background information for radiological analyses; and
- Analytical results for QC sample spikes, sample duplicates, initial and continuous calibration verifications of standards and blanks, and other QC measurements.

The off-site laboratory will provide electronic data deliverable (EDD) using a data management system that is fully documented as compliant with the USEPA Good Automated Laboratory Practices (GALP) requirements (EPA 2185). Electronic data will be error-free and in complete agreement with the hard copy data. The EDD will be in MS Excel format as either an .xls or .csv file and will include the following fields as applicable at a minimum:

- Sample ID;
- Lab ID;
- Sample type (normal, dup, LCS, Blank, etc.);
- Matrix;
- Collection, extraction and analysis dates;
- Method of analysis;
- Sample Delivery Group Number (SDG #);
- Batch Number;
- CAS number;
- Compound/Element/Isotope;
- Sample result;
- Total uncertainty;
- Units;
- Lab qualifier;
- MDA/MDL;
- Dilution factor;
- LCS and MS/MSD calculated % recoveries with control limits; and
- Lab duplicate and MS/MSD calculated RPDs with control limits.

All data files, as well as the laboratory report in searchable PDF format, will be provided on a CD-ROM accompanying the hardcopy data reports.

	<p align="center">Title Quality Assurance Project Plan</p>	<p align="center">Document No. NFSS-0012-2</p>	<p align="center">Revision REV.0</p>
---	---	---	---

13.0 PREVENTATIVE MAINTENANCE

13.1 FIELD INSTRUMENTS AND EQUIPMENT

All field instrumentation and detectors used for the remediation survey activities will be maintained in accordance with manufacturer's specifications and the requirements of CS-FO-PR-002.

14.0 REFERENCES

U.S. Army Corps of Engineers (USACE). *Scope of Work, Building 401 Demolition, Niagara Falls Storage Site, October 2009.*


U.S. Department of Defense (DoD). *Quality Systems Manual for Environmental Laboratories, Final Version 4.1, April 2009.*

U.S. Nuclear Regulatory Commission. NUREG-1576, Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP); July 2004.

U.S. Army Corps of Engineers EM 200-1-3, Engineering and Design - Requirements for the Preparation of Sampling and Analysis Plans, February 2001.

15.0 APPENDICES

- A. QAP Applicability Form
- B. Project Quality Plan

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

APPENDIX A, QAP APPLICABILITY FORM

Project:	Niagara Falls Storage Site Building 401 Demolition	Contract No.	W912P4-07-D-0003-0002
Client:	USCAE Buffalo District		
	Quality Assurance Plan Criterion	<u>Applicable</u>	<u>Not Applicable</u>
1.	Quality Program	X	
2.	Personnel Qualification and Training	X	
3.	Quality Improvement	X	
4.	Documents and Records Management	X	
5.	Work Process	X	
6.	Design		X
7.	Procurement of Items and Services	X	
8.	Inspection and Acceptance Testing	X	
9.	Management Assessment	X	
10.	Independent Assessment	X	

Prepared By: _____

Date: _____

Project Manager

REVIEW BY QAM or QAD (Check appropriate block(s):

____ Concur with indicated applicability

____ Additional requirements are indicated

____ Recommendations are attached


_____ Date: _____

QAM or QAD

FINAL APPROVAL

_____ Date: _____

QAM or QAD

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

APPENDIX B, PROJECT QUALITY PLAN

Project: Niagara Falls Storage Site Building 401 Demolition

Contract No. W912P4-07-D-0003-0002

Client: USACE, Buffalo District

Project Description	Applicable Section, QA Plan	Applicable Procedure(s)
<p>Development of required work plans: CQCP, Engineering Survey, Site Operations Plan, Demolition Plan, Accident/Prevention Plan, Site Safety and Health Plan, Sampling and Analysis Plan, and Waste Management, Transportation, and Disposal Plan.</p> <p>Characterization and packaging of miscellaneous debris in Building 401, demolition of Building 401, and adjacent silos, and wastes including asbestos containing material.</p> <p>Performance of pre-and post-demolition radiological surveys.</p>	<p>1.0 2.0 3.0 4.0 5.0 7.0 8.0 9.0 10.0</p>	<p>TPMC QIPs: 1.1, 2.1, 2.2, 2.5, 2.6, 2.7, 3.1, 3.2, 4.1, 4.2, 5.1, 7.1, 7.2, 7.3, 8.1, 8.2, 8.3, 9.1 and 10.1</p> <p>ES procedures: CP-CHM-205, CP-IN-WI-235, CS-FO-PR-001, CS-FO-PR-002, CS-FO-PR-003, CS-FO-PR-004, CS-FO-PR-005, CS-RS-PR-001, CS-RS-PR-002, CS-RS-PR-004, CS-RS-PR-004, CS-RS-PR-005, CS-RS-PR-008, CS-RS-PR-010, CS-RS-PR-015</p>

QA PROGRAM PLAN EXCEPTIONS

Section 8.0 and QIP 8.1, used for field surveillances, no quality inspections or testing planned. QIP 8.2 is used for personnel safety monitoring and only require to have Certificate of Calibrations or equivalent, controlled, and daily calibration checks conducted. QIP 8.3 to be used for three phase inspections of DFWs

QIP 2.6 applicable only if additional procedures are required to be developed and QIP 2.7 applicable only if client provides controlled drawing got project team to use and are required to be controlled.

QIP 7.1 applicable if required to conduct evaluation of a supplier and QIP 7.2, applicable but Energy Solutions may use their procurement system but nonconformances are to be handled using QIP 3.1 and 3.2.

QIPs 9.1 and 10.1 used as appropriate to provide management oversight.


ES procedures are used to provide requirements for conducting the activity. If a deficiency or nonconformance occurs, TPMC QIP 3.1 and/or 3.2 are to be followed.

Prepared by: _____
PM

Date: _____

Approved by: _____
QAM or QAD

Date: _____

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

ATTACHMENTS




222 Valley Creek Blvd., Suite 210

Phone: (610) 862-5000

Exton, PA 19341

Fax: (610) 862-5050

18 MAY 2010


 Department of the Army
 Buffalo District Corps of Engineers
 1776 Niagara St.
 Buffalo, NY 14207-3199

**Re: Approval of TPMC – EnergySolutions Environmental Services, LLC (TES) Member
Company Programs and Procedures for Use in Managing and Implementing TES Projects**

Dear Mr. Steils,

TES, a joint venture LLC, operates as a Small Business Administration (SBA) certified 8(a) Small Disadvantaged Business (SDB). Its member firms, TerranearPMC, LLC and EnergySolutions each have intact and operational Program Management, Health and Safety, and Quality Assurance programs which are available for management and implementation of projects performed by the LLC.

Some procedures included in this document for performance of the Building 401 Demolition are incorporated from the TerranearPMC and EnergySolutions' programs. They have been reviewed and found to be acceptable for use in performance of this project. Therefore, project personnel are authorized to perform the work with these procedures recognizing that they carry the same force and effect and requirements for compliance as TES procedures in accordance with this approval letter.


The Quality Assurance Program procedure is among the documents provided, and as such, will govern the management and oversight of quality activities for the project. This procedure requires the preparation of a site-specific Quality Control Plan for each project implemented under the program. The Quality Control Plan prepared for this project meets this requirement.

Sincerely,




 President
 TPMC- EnergySolutions Environmental Services

Enclosures

	Title Quality Assurance Project Plan	Document No. NFSS-0012-2	Revision REV.0
---	---	------------------------------------	--------------------------

ATTACHMENT 1 PLANS AND PROCEDURES

The following is a list of the applicable plans and procedures that will be employed in the safe completion of this project

Procedure Number	Procedure Title
TPMC	
QAP	TPMC Corporate Quality Assurance Plan
QIP 1.1	Organization and Responsibilities
QIP 2.1	Indoctrination and Training
QIP 2.2	Procedural Compliance
QIP 2.5	QA Program Administration Document Development
QIP 2.6	Procedure Development
QIP 2.7	Control of Instructions and Drawings
QIP 3.1	Control of Nonconformances
QIP 3.2	Control of Significant Conditions Adverse to Quality
QIP 4.1	Document Control
QIP 4.2	Records Management
QIP 5.1	Material Control, Care, and Maintenance
QIP 7.1	Supplier and Subcontractor Assessment
QIP 7.2	Procurement and Control of Purchased Items and Services
QIP 7.3	Receipt Inspection
QIP 8.1	Inspections, Surveillances, and Tests
QIP 8.2	Calibration and Control of M&TE
QIP 8.3	Three Phase Inspection
QIP 9.1	Management Assessments
QIP 10.1	Independent Assessments
Procedure Number	Procedure Title
Energy Solutions	
CP-CHM-205	Sample Preparation For Gross Alpha And Gross Beta Analysis
CP-IN-WI-235	Calibration Of The Ludlum Model 2929 Scaler
CS-FO-PR-001	Performance of Radiological Surveys
CS-FO-PR-002	Calibration and Maintenance of Radiological Survey Instruments
CS-FO-PR-003	Soil Surveys; Collection of Water, Sediment, Vegetation, and Soil Samples; and Chain-of-Custody Procedure
CS-FO-PR-004	QA/QC of Portable Radiological Survey Instruments
CS-FO-PR-005	General Operations of Radiological Survey Instruments

