Environmental Resources Management

5788 Widewaters Parkway
DeWitt, New York 13214
315-445-2554
315-445-2543 (fax)

23 December 2011

Michael J. Hinton, P.E.
Division of Environmental Remediation – Region 9
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

RE: Revised Addendum to the Soil Excavation IRM Work Plan
Former Mill No. 2 Site – Niagara Falls, New York
NYSDEC BCP Site Number C932150

Dear Mr. Hinton:

ERM Consulting and Engineering, Inc. (ERM) is providing environmental services to Greenpac Mill, LLC (Greenpac) on the above-referenced project. ERM is documenting activities associated with the investigation and remediation of soil within the parcel identified as Brownfield Cleanup Program (BCP) Site Number C932150 located at 4001 Packard Road in the City of Niagara Falls, Niagara County, New York (the Site). The location of the Site is presented in Figure 1 (Attachment A). General Site layout and the location of selected Site features are presented in Figure 2 (Attachment A).

The New York State Department of Environmental Conservation (NYSDEC) was consulted due to the discovery of radioactive materials at the Site. The removal of radioactive materials at the Site is being performed on behalf of Greenpac under the direction of Los Alamos Technical Associates, Inc. of Westerville, Ohio (LATA) and Greater Radiological Dimensions, Inc. of Lewiston, New York (GRD) under the oversight of NYSDEC and New York State Department of Health (NYSDOH) specialists in radioactive materials removal, in consultation with NYSDEC's BCP Project Manager and ERM. Professional profiles for key LATA personnel are provided in Attachment B.

The purpose of this Addendum is to present results available to date of the investigation of radioactive materials and to describe the approach being used at the Site by LATA for the removal of radioactive materials. The approach for radiological removal at the Site is outlined in four work plans prepared by LATA and previously approved by the NYSDEC and the NYSDOH:

- Site Operations Plan dated 16 September 2011 (Attachment C);
- Site-Specific Radiological Safety Plan dated 2 September 2011 (Attachment D);
- Waste Management Plan dated 8 September 2011 (Attachment E); and
- Transportation and Disposal Plan dated 31 August 2011 (Attachment F).

The removal of radioactive materials at the Site is being incorporated into the overall BCP for the Site through the submission and approval of this Addendum. At the request of the NYSDEC, ERM has prepared this document as an Addendum to the NYSDEC-approved Soil Excavation Interim Remedial Measure (IRM) Work Plan for the Site prepared by ERM dated June 2011. This document supersedes the previous version dated 5 December 2011 and incorporates NYSDEC comments contained in the correspondence from the NYSDEC to Greenpac dated 13 December 2011.

INTRODUCTION

The Site is located in an industrial urban area in Niagara Falls, New York. Buildings, facilities, and operations at the Site are associated with the Former Mill No. 2 which historically housed paper manufacturing, finishing, and packaging operations of finished goods. The facility was originally constructed in the 1920s and was expanded several times. Former Mill No. 2 structures have been demolished to allow construction of a new, state-of-the-art fiberboard recycling facility. Excavation of soil is being performed to install foundations for the new facility and to address areas of chemical-affected soil that contains compounds of potential concern at concentrations above applicable NYSDEC Part 375 Soil Cleanup Objectives. Additionally, remedial investigation (RI) is ongoing at the Site. Data and information obtained from RI activities completed to date were reviewed and incorporated as appropriate into the Soil Excavation Interim Remedial Measure (IRM) Work Plan dated June 2011. This work plan was conditionally approved by the NYSDEC on 3 June 2011.

Radioactive slag material was subsequently discovered in historic fill materials excavated at the Site when three trucks tripped the radiation portal at Allied Landfill on 9 August 2011. Soil from these three trucks was screened in the field using a radiation meter and samples were

collected for laboratory analysis. Initial evaluation of resulting data suggests that the source of the radiation is technically-enhanced naturally-occurring radioactive material (TENORM) associated with historic production of phosphorus slag in western New York.

HEALTH AND SAFETY

Radiological (rad) removal work is being performed under the direct supervision of LATA and GRD personnel in conformance with LATA's Site-Specific Radiological Safety Plan (Attachment D). Attachment D was previously approved by the NYSDEC and the NYSDOH in e-mail correspondence dated 7 September and 8 September 2011, respectively.

INVESTIGATION RESULTS

The purpose of the radiological investigation was to delineate radiological conditions in areas within the BCP Site Boundary that exceed the NYSDEC-approved general guidance value of 10,000 counts-per-minute (cpm) as quantified using a Ludlum Model 2221 meter with a 44-10 probe (sodium iodide). Radiological screening activities included:

- visual identification of slag material;
- scanning of material surfaces by GRD radiological technicians using field instruments;
- comparison of screening data against background measurements to evaluate whether the materials have elevated radioactivity; and
- evaluation of survey results provided by site instruments.

The investigation of TENORM at the Site was performed during the following activities. Results for each activity are summarized below.

Field Screening During RI Activities

All soil cores installed subsequent to the discovery of elevated radiation at the Site were screened for radioactivity by GRD using a Ludlum Model 2221 meter with a 44-10 probe. Radioactivity readings greater than 10,000 cpm were not encountered in soil borings with the exception of historic fill material at the following soil boring locations:

- B-1A;
- B-1B;

- B-1C; and
- B-1D.

These borings are located west and north of the existing electrical substation.

Field Screening During Excavation Activities

Excavation activities in remaining phases associated with the main building construction are being directed by LATA and observed by a LATA Radiation Safety Officer. Excavated soil is being screened by GRD technicians using visual assessment and a Ludlum Model 2221 meter with a 44-10 probe (sodium iodide). Excavation activities have included excavations for construction of the new building and test pits installed in selected areas at the discretion of GRD radiological technicians. Results of the radiological investigation effort are being summarized in selected GRD Gamma Walkover Survey Forms (Attachment G) documenting investigation efforts in the following areas:

- Initial walkover of Excavation Phase 3 and Phase 4 (GRD Survey #GPM-000);
- The proposed new electrical substation (GRD Survey #GPM-004);
- Dose rate survey for the characterization of soil (GRD Survey #GPM-005);
- Survey of the concrete pad staging area in the Northern Extension (GRD Survey #GPM-008);
- Survey of excavation quadrants beneath a portion of the formerly active steam line (GRD Survey #GPM-018);
- Test pits near the western fence line south of Excavation Phase 2 (GRD Survey #GPM-033);
- Test pits between the formerly active steam line and the former Building #10 (GRD Survey #GPM-034); and
- Former Building #10 Pad perimeter characterization (GRD Survey #GPM-044.

Results indicate that elevated radiation has been encountered in a majority of excavation Phases 3 and 4 as well as to foundation areas of the former Building #10. These areas are being remediated under the supervision of LATA and GRD.

Continued screening is being performed as each new layer is exposed. Field screening is being used to characterize and segregate excavated material for disposition. Pre-excavation and post-excavation readings are being collected to document radioactivity levels in excavated areas.

Any intrusive excavation work performed within the BCP Site Boundary prior to the issuance of a Certificate of Completion will be scanned with appropriate radiation meters as the excavation proceeds. Each truckload of excavated material will be scanned for radiation prior to the trucks leaving the Site.

Site-Wide Gamma Walkover Survey

GRD performed a gamma walkover survey of all areas within the BCP Site Boundary that were not previously screened during RI investigation activities and/or building construction excavation activities to evaluate these remaining areas for elevated radiation. A Ludlum Model 2221 meter with a 44-10 probe (sodium iodide) was coupled to a Global Positioning System (GPS) unit and radioactivity readings were measured and their locations recorded. Site gamma walkover survey data were mapped by GRD to facilitate identification of areas of elevated radiation. The results of the Gamma Walkover Survey effort are presented in Figure 3 (Attachment A).

Some areas within the BCP Site Boundary are currently not available for gamma walkover scanning due to various Site construction activities. These areas will be scanned when they become available in the future. While current data do not suggest that these other areas will be a concern, any areas that become available for scanning prior to preparation of the IRM/Alternatives Analysis (AA) Report will be required to be scanned with the results presented in the Final Engineering Report (FER). Any areas that become available for scanning after preparation of the IRM/AA Report will be addressed in the Site Management Plan (SMP).

Radiological Zones

Cumulative review of investigation results from the sources described above has resulted in the identification of seven radiological (rad) zones in areas outside of the main building excavation area. These seven rad zones are presented in Figure 2 (Attachment A).

Laboratory Analysis of Samples

Selected samples were submitted to American Radiation Services, Inc. of Port Allen, Louisiana (ARS) on an as-needed basis as determined by NYSDEC and/or NYSDOH specialists in radiation and GRD's radiological technicians. ARS is a laboratory specializing in environmental radiation analytical services and holds accreditation through the National Environmental Laboratory Approval Program (certification number E87558) and the Louisiana Environmental Laboratory Approval Program (certification number 01949).

Based on input from the NYSDEC, selected samples were submitted for analysis by gamma spectroscopy, alpha spectrometry, and/or isotopic uranium and thorium. Results to date suggest that the main contributing elements are radioactive uranium, thorium, and radium. These analytical results are consistent with radioactive slag and slag-like material associated with historical processes involving phosphorus ores in western New York State. Data from laboratory analysis of samples for radiation collected at the Site will be presented in the upcoming Remedial Investigation (RI) Report.

REMOVAL OF RADIOLOGICALLY-AFFECTED MATERIAL

The investigation results were evaluated against measured background levels at the Site and approved cleanup criteria to evaluate an appropriate scope of the radiological remedial action. After consultation with the NYSDEC and the NYSDOH, excavation and off-Site disposal at a permitted disposal facility located out-of-state has been selected to remediate areas of elevated TENORM within the BCP Site Boundary.

Details of the removal approach for radiologically-affected materials generated at the Site are presented in Attachment C. Excavation activities are being directed by LATA and observed by a LATA Radiation Safety Officer. Excavated soil is being screened by GRD technicians using visual assessment and a Ludlum Model 2221 meter with a 44-10 probe (sodium iodide). Continued screening is being performed as each new layer is exposed. Field screening is being used to characterize and segregate excavated material for disposition.

Excavation will continue until excavation guidance values are achieved. Excavated materials are being placed directly into trucks or other approved waste containers, or are being temporarily staged at the Site for later loading and transport. The exterior of each truck or container is being evaluated for radioactivity prior to moving the equipment and containers from controlled areas.

WASTE TRANSPORT AND DISPOSAL

Details of the management, transportation, and disposal of radiologically-affected soil and waste generated at the Site are presented in Attachment E and Attachment F. Excavated materials are being direct-loaded into trucks or temporarily staged at the site for later loading and transport. Designated loading areas are being lined with plastic sheeting to control any spillage of soil during the loading process and surface water/precipitation impacts. These designated waste areas are moving along with the movement of soil excavation activities. These areas are designated as radiological control areas and bounded with rad rope and appropriate signage. Waste will be sampled as necessary for profiling, re-surveyed if necessary, and transported from the Site to an approved disposal facility using standard (e.g., non-hazardous) waste manifest forms and procedures.

Soil management by categories was originally summarized in the Soil Excavation IRM Work Plan dated June 2011 to provide information on the type of excavated materials anticipated during the project, field observation criteria, and sampling and analysis requirements. This table has been updated to incorporate the handling, management, and off-Site transport and disposal of radiological waste from the Site (Attachment H, Table 1).

CONFIRMATION SOIL SAMPLING

As previously approved by the NYSDEC and NYSDOH, the focus of the radiological investigation and removal effort is based on field instrumentation techniques using a Ludlum Model 2221 meter with a 44-10 probe (sodium iodide) and the professional judgment of LATA and GRD radiological technicians and NYSDEC and NYSDOH specialists in radioactive materials removal. Therefore, collection of confirmation soil samples for laboratory analysis will not be performed subsequent to the completion or radioactive materials removal.

QUALITY ASSURANCE/QUALITY CONTROL

If deemed necessary by the NYSDEC and/or NYSDOH, samples will be collected for laboratory analysis at selected locations based on the professional judgment of NYSDEC and NYSDOH specialists in radioactive materials removal. Any samples collected at the Site for laboratory analyses will be analyzed at an approved environmental laboratory by gamma spectroscopy or other analysis as deemed appropriate by the NYSDEC. As requested by the NYSDEC, reporting for gamma spectroscopy analysis will be limited to radioactive isotopes of uranium, thorium, and radium.

SITE RESTORATION

Removal is primarily being performed in areas that are being substantially modified as part of the ongoing construction of the new mill. Therefore, restoration will not be required in these areas. Areas of radiological removal that will not be substantially modified as part of the ongoing construction project will be restored to a grade and condition consistent with the pre-existing condition and/or with Greenpac's future contemplated use of the areas.

PROJECT SCHEDULE

Removal of radiological hotspots outside of the main excavation areas is planned according to the tentative project schedule outlined below. The proposed schedule is subject to modification based on weather and other Site work conditions encountered.

Rad Zone	**Estimated Timing of Soil Removal**
R-6	15 October to 11 November 2011
R-7	27 October 2011
R-4	7 November to 16 December 2011
R-5	7 November to 9 December 2011
R-2	28 November to 1 December 2011
R-3	28 November to 1 December 2011
R-1	3 December to 16 December 2011
CSX Parcel	To be determined (if necessary)

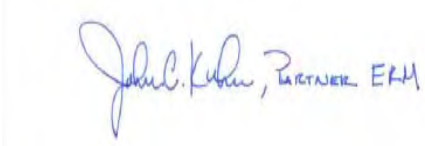
PROJECT CLOSEOUT

Pre-excavation and post-excavation readings are being collected to document radioactivity levels in excavated areas. Pre-removal and post removal data will be provided to the NYSDEC and the NYSDOH as Site work progresses to facilitate concurrent regulatory review and input regarding Site work and operations. Updates will also be provided during weekly site meetings to obtain timely NYSDEC and NYSDOH review and comment. Radiological investigation data will be summarized in the RI Report and radiological removal data will be summarized in the IRM/AA Report and/or the FER. As noted above, some areas within the BCP Site Boundary are currently not available for gamma walkover scanning due to various Site construction activities. These areas will be scanned when they become available in the future. While current data do not suggest that these other areas will be a concern, any areas that become available for scanning prior to preparation of the IRM/AA Report will be required to be scanned with the results presented in the FER. Any areas that become available for scanning after preparation of the IRM/AA Report will be addressed in the SMP. All of these reports and plans will be submitted to the NYSDEC for review and approval.

Thank you and please contact the undersigned if you have any questions or comments.

Sincerely,

Jon S. Fox, P.G.
Senior Consultant

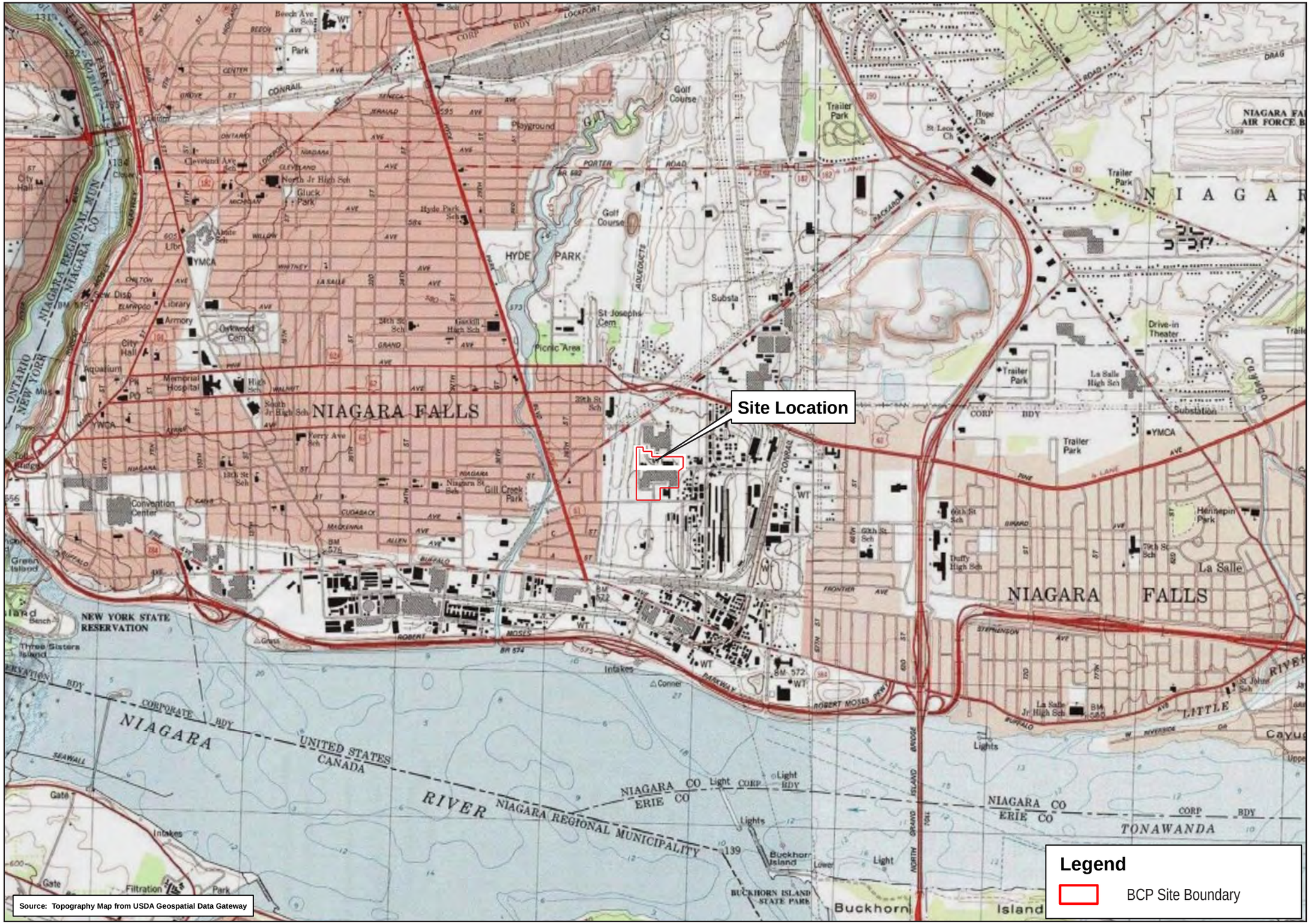


John Kuhn
Partner-in-Charge

Attachment A – Figures
Attachment B – LATA Professional Profiles
Attachment C – LATA Site Operations Plan
Attachment D - LATA Site-Specific Radiological Safety Plan
Attachment E – LATA Waste Management Plan
Attachment F – LATA Transportation and Disposal Plan
Attachment G – Selected GRD Survey Reports
Attachment H - Table

Cc: Luc Nadeau (Greenpac Mill, LLC)
Lucie-Claude Lalonde (Greenpac Mill, LLC)
Yves Levesque (Cascades)
Francois Mayrand (Cascades)
Kamala Rajan (MiniMill Technologies)
Ken Carter (MiniMill Construction)
Elgie Harrison (MiniMill Technologies)
Srini Balaji (MiniMill Technologies)
Laurie Colson (MiniMill Technologies)
Randy Bartels (MiniMill Construction)
Craig Slater, Esq. (Harter, Secrest, & Emery)
Gregory Sutton, P.E. (NYSDEC)
James Charles, Esq. (NYSDEC)
Tom Papura (NYSDEC)
Cynthia Costello (NYSDOH)
Matt Forcucci (NYSDOH)
Steven Bates (NYSDOH)
John Kuhn (ERM)
John Mohlin, P.E. (ERM)
Dave Myers, C.G. (ERM)
John Trendowski, P.E. (C&S Engineers)
Jason Brydges, P.E. (LATA)
Ron Voorheis (LATA)
Stuart Pryce (GRD)

Attachment A
Figures

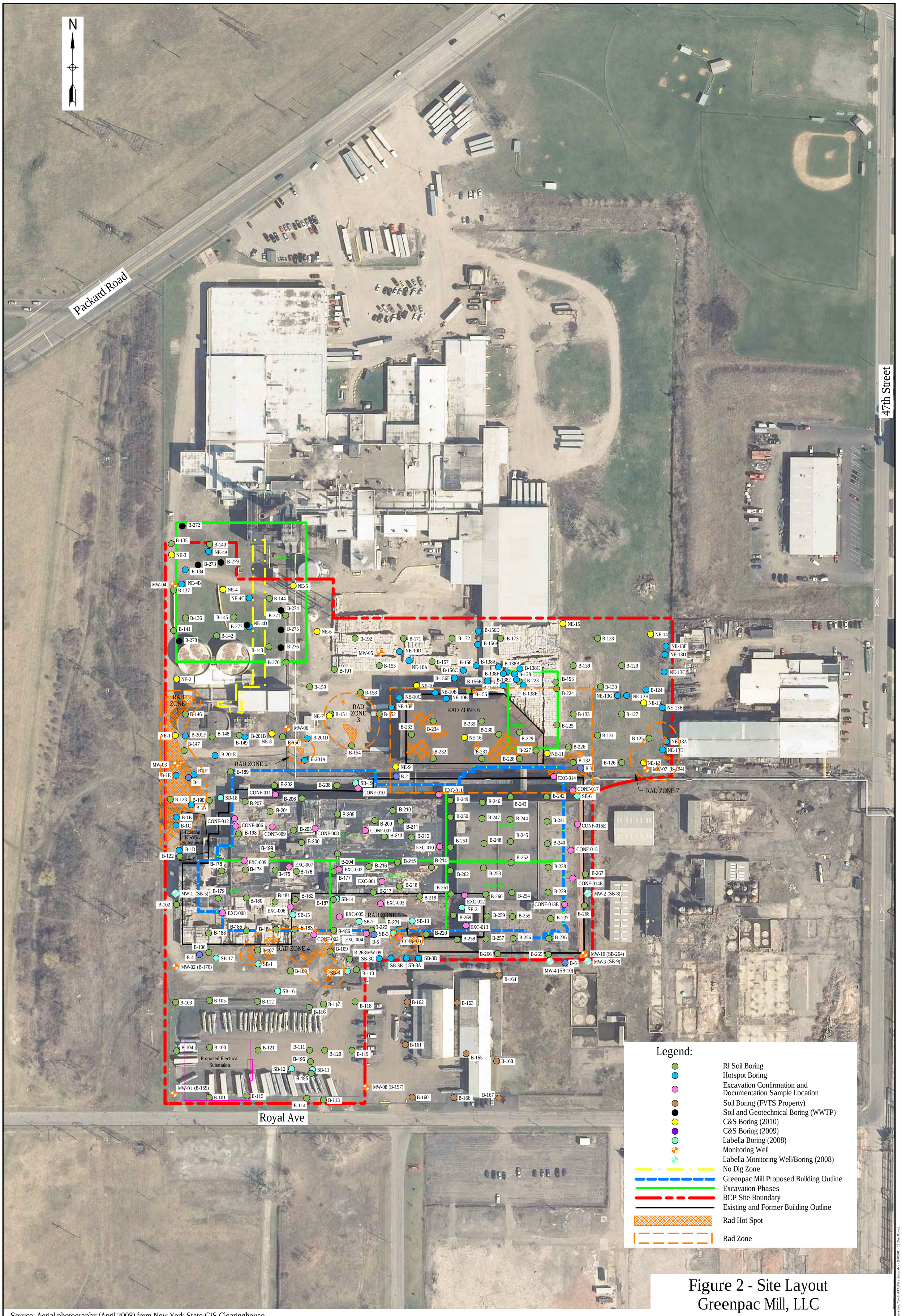


N

0 2,000 Feet

Figure 1 - Site Location Map
Greenpac Mill, LLC
Niagara Falls, New York
NYSDEC BCP Site #C932150

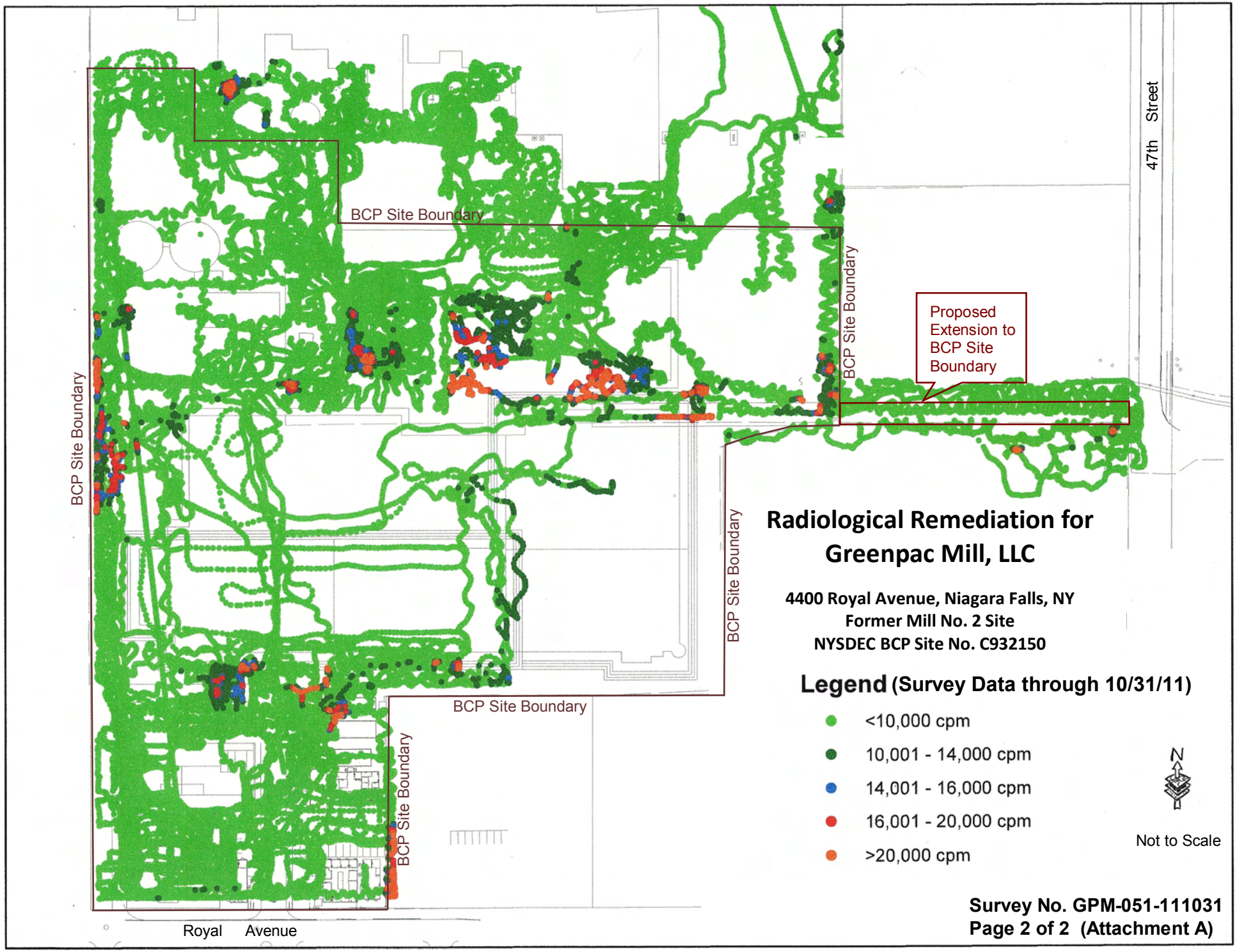
ERM



Source: Aerial photography (April 2008) from New York State GIS Clearinghouse.
Data for all property lines, perimeters and building outlines were obtained from the MiniMill Technologies provided CAD files.

Figure 2 - Site Layout
Greenpac Mill, LLC
NYSDEC BCP Site No. C932150
Niagara Falls, New York

G:\Graphics\Clients\Greenpac Mill\Niagara Falls, New York\CAD\Site Figures.dwg (11/07/2011 - 11:59am Benoni)


BCP Site Boundary
BCP Site Boundary
BCP Site Boundary
BCP Site Boundary
BCP Site Boundary
BCP Site Boundary
Proposed Extension to BCP Site Boundary
47th Street
Royal Avenue
Radiological Remediation for Greenpac Mill, LLC
4400 Royal Avenue, Niagara Falls, NY
Former Mill No. 2 Site
NYSDEC BCP Site No. C932150
Legend (Survey Data through 10/31/11)
<10,000 cpm
10,001 - 14,000 cpm
14,001 - 16,000 cpm
16,001 - 20,000 cpm
>20,000 cpm
N
Not to Scale
Survey No. GPM-051-111031
Page 2 of 2 (Attachment A)

Attachment B
LATA Professional Profiles

Attachment C
LATA Site Operations Plan

SITE OPERATIONS PLAN
for the
Radiologically Impacted Materials Removal
for Greenpac Mill, LLC
at 4400 Royal Avenue, Niagara Falls, NY

Prepared for
Greenpac Mill, LLC
4400 Royal Avenue
Niagara Falls, New York 14303

Prepared by:

Los Alamos Technical Associates, Inc.
756 Park Meadow Road
Westerville, OH 43081

Prepared By: Darl Anderson	**Signature:**	**Date:** 9/16/11	**Title:** LATA Sr. Project Manager
Approved By: Ron Voorheis	**Signature:**	**Date:** 9/16/11	**Title:** LATA Project Manager
Approved By: Jason Brydges, PE	**Signature:**	**Date:** 9/16/11	**Title:** LATA Program Manager

Los Alamos Technical Associates, Inc.

Site Operations Plan for the
Radiologically impacted materials removal for Greenpac Mill, LLC
at 4400 Royal Avenue, Niagara Falls, NY

TABLE OF CONTENTS

Figures:

Attachments:

LIST OF ACRONYMS

ALARA	As Low As Reasonably Achievable
ARAR	Applicable or Relevant and Appropriate Requirement
BCP	Brownfield Cleanup Program
CA	Contamination Area
COC	Contaminant of Concern
CRZ	Contamination Reduction Zone
FSS	Final Status Survey
GRD	Greater Radiological Dimensions, Inc.
Greenpac	Greenpac Mill, LLC.
HASP	Health and Safety Plan
Ingalls	Ingalls Site Development, Inc.
IRM	Interim Remedial Measures
LATA	Los Alamos Technical Associates, Inc.
NYSDEC	New York State Department of Environmental Conservation
PDT	Project Delivery Team
POC	Point of Contact
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QC	Quality Control
RCT	Radiological Control Technician
RMA	Radiological Materials Area
RSO	Radiation Safety Officer
RSP	Radiation Safety Plan
SSHO	Site Safety and Health Officer
SZ	Support Zone
TENORM	Technologically Enhanced Naturally Occurring Radioactive Materials

1.0 INTRODUCTION

This Site Operations Plan prepared by Los Alamos Technical Associates, Inc. (LATA) identifies the activities and tasks associated with the excavation of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) affected soil within the parcel identified as Brownfield Cleanup Program (BCP) Site Number C932150 located at 4001 Packard Road, Niagara Falls, New York (Site). Greenpac Mill, LLC (Greenpac) has entered into a Brownfield Cleanup Agreement with the New York State Department of Environmental Conservation (NYSDEC) to facilitate the voluntary cleanup of the site for redevelopment and reuse. Reference (a) was developed for Greenpac by Environmental Resources Management, DeWitt, New York for the soil excavation required for Interim Remedial Measures (IRM) to support the BCP. Reference (a) was developed based on information available at the time of issuance and did not include radionuclides characterized as TENORM subsequently found, analyzed and reported on August 15, 2011. This Site Operations Plan has been developed based on the American Radiation Services, Inc. Laboratory Analysis Report ARS1-11-01761. All results indicated very small concentrations of radionuclides with low specific activity well below 2000 pCi/g.

This Site Operations Plan and its associated activities and tasks under LATA management is developed to augment, not replace, the Soil Excavation IRM Work Plan of reference (a) specifically to strategically excavate, manage, transport and dispose of soils found to be TENORM contaminated and release the affected area for continued construction operations under reference (a).

During this phase of radiologically impacted materials removal, the Site Operations Plan is the overarching governing document that includes by reference the following:

a. Greenpac Soil Excavation IRM Work Plan – reference (a)
b. *MML-PLA-WP-003*, LATA Waste Management Plan – reference (b)
c. *MML-PLA-WP-004*, LATA Transportation and Disposal Plan – reference (c)
d. *MML-PLA-WP-002*, LATA Site Specific Radiological Safety Plan – reference (d)

2.0 PURPOSE

The primary objective of the radiologically impacted materials removal project is to release the area for continued construction activities without the threat of radiological conditions above regulatory criteria by eliminating or mitigating the potential for humans to ingest, inhale or come into dermal contact with radioactive particulates, or be exposed to external gamma radiation. Other work activities included with releasing the Site for construction include managing the radiologically contaminated material, minimizing exposure to radiologically contaminated soil to As Low As Reasonably Achievable (ALARA), reducing contamination levels to meet the criteria free release of the excavated areas and to comply with Applicable or Relevant and Appropriate Requirement (ARARs).

2.1 PRELIMINARY REMEDIATION GOALS

The Preliminary Remediation Goals (PRGs) for the Site were developed for the radionuclide contaminants of concern (COCs) identified in ARS1-11-01761 and guidance provided by ALARA principles and acceptable NYSDEC limits.

The Site is comprised of two principal parcels, identified as Phases III and IV in the Greenpac construction plan that were identified by survey and analysis as TENORM contaminated. The criteria used for the cleanup PRGs are typically 5 pCi/g above background for radium and thorium isotopes and 60 pCi/g above background for total uranium. Ultimately, the radiologically impacted materials removal goals will achieve dose levels well below regulatory limits, and can thus be considered to meet ALARA and NYSDEC remediation goals based on the dose assessment performed for the Site.

3.0 SITE HISTORY AND BACKGROUND

Refer to reference (a) for the Site history and background.

3.1 RECENT INVESTIGATIONS AND REMOVAL ACTIONS

Contaminated materials remedial actions are underway under the guidance of reference (a) and will continue, augmented by the radiologically impacted materials removal governed by this plan.

4.0 SCOPE

The broad scope of the Site's radiologically impacted materials removal project is to release the area for continued construction by removing the risk of radiological conditions above site established guidance criteria. For the purpose of this plan the guidance value is established as 10,000 cpm (approximately one and one half times area background) using a Ludlum model 2221 meter with 44-10 probe. LATA and site subcontractors have developed these work plans to describe how it intends to provide labor, materials, equipment, tools, supplies, sanitary facilities, transportation and disposal services, and radiological services necessary to perform the following tasks:

- Project management and regulatory interface;
- Mobilization, demobilization, site setup, and site facilities;
- Excavation of slag like materials with elevated radionuclide readings above 10,000 cpm;
- Radiological surveys of excavated soil, in situ soil, and post excavation surveys;
- Continuous health and safety, health physics, and radiation safety support; and
- Transportation and disposal of impacted materials or debris.

The TENORM materials (i.e. slag) discovered at the Site will be removed, staged, packaged, transported, and disposed of at a licensed, out-of-state disposal facility in accordance with

federal, state, and local regulations and references (a) through (d) located in section 1.0 of this document. In addition, any materials scanned that exceed 10,000 cpm will be further investigated through visual field observations, the professional judgment of the radiological control technician and/or additional sampling to determine disposition of the material.

5.0 PROJECT ORGANIZATION

5.1 PROGRAM MANAGER

Mr. Jason Brydges, PE, is the Program Manager for the Greenpac contract and will be the primary Point of Contact (POC) for all contractual issues. Mr. Brydges is responsible for assuring that the project is properly staffed and for overall technical direction and quality of the work performed. The Program Manager establishes budgets and schedules, assures that personnel have appropriate training, and monitors staff performance. In addition, the Program Manager is responsible for monitoring and ensuring the quality of the project is in compliance with LATA's quality management system. Specific responsibilities include the following:

- Assure that labor, equipment, personnel, and funding are available for required tasks;
- Coordinate the preparation, review, and approval of reports, plans and procedures; and
- Provide direction on global technical aspects of the project.

5.2 LATA PROJECT MANAGER

Mr. Ron Voorheis is the Project Manager for the radiologically impacted materials removal at the Site. Mr. Voorheis will be the primary POC for execution of this work. Mr. Voorheis is responsible for overall administration of the project, coordination of field efforts, attendance at project progress meetings and regular reporting activities. He will manage the day-to-day activities and will be responsible for maintaining schedule. The Project Manager will interface with the Program Manager, Site Superintendents, Project Delivery Team (PDT), GRD and Ingalls Site Development, Inc. (Ingalls) to verify that the goals of the project are being met and will conduct technical review of all deliverables. A brief summary of duties includes:

- Provide QA support for subjects involving the quality of field work;
- Assure response to corrective action requirements identified by the project team
- Maintain and track project budget and schedule; and
- Coordinate personnel and field activities.

5.3 RADIATION SAFETY OFFICER (RSO)

The Program Manager, Mr. Brydges, will also be designated as project Radiation Safety Officer (RSO). The RSO will be responsible for:

- Coordinating the implementation of the project Radiation Protection Program.

- Developing and administering the Radiation Safety Plan (RSP) and operations incorporated in the Health and Safety Plan (HASP) and associated standard operating procedures.
- Conducting appropriate radiation safety training for employees and site visitors.
- Evaluating potential site/employee radiation exposure incidents.
- Recommending necessary workplace and administrative controls.
- Issuing Radiation Work Permits.
- Administrating Personal Protective Equipment (PPE) and Site monitoring programs.

5.4 SENIOR SITE SUPERINTENDENT / SITE HEALTH AND SAFETY OFFICER

The project Senior Site Superintendent / Site Health and Safety Officer (SSHO) is Jim Panozzo. Mr. Panozzo will oversee the field personnel performing the various tasks to ensure that the acceptability and performance criteria are met and provide guidance to project personnel responsible for implementation of the approved HASP. This includes the management of Ingalls and GRD field personnel to ensure they are performing their required duties efficiently and safely. Any significant deviations from the approved site plans need to be reviewed and approved by Mr. Panozzo before seeking Greenpac approval. Mr. Panozzo is responsible for investigating health and safety occurrences, working with the Project Manager to identify corrective actions, and making recommendations on policy changes needed to prevent or minimize future occurrences. Mr. Panozzo has the authority to determine the suitability of an employee to perform job duties on the basis of health or fulfillment of health and safety training as required by law or regulation.

Specific responsibilities of the SSHO include:

- Review and approve the HASP of reference (a).
- Review proposed corrective action and assessing them once implemented to evaluate effectiveness;
- Approve significant changes in PPE or protective procedures, including those applicable to health physics and radiation protection;
- Conduct accident investigations and prepare reports; and
- Approve changes to the HASP, engineering controls, and work practices.

5.5 PROJECT DELIVERY TEAM (PDT)

The PDT is responsible for developing project documents and performing project field activities. The PDT will perform ongoing interdisciplinary quality control checks during the project to ensure that activities performed by LATA and its subcontractors conform with one another to maintain production efficiencies.

Radiological Control Technicians (RCT's) will be provided by GRD. The RCT's will be responsible for assisting the PM in the implementation of radiological controls and assessing potential radiological hazards as work progresses or changes during the project execution.

Specific responsibilities will include performing radiological surveys, collecting samples and smears, and making adjustments to ensure that worker radiological exposures and releases to the environment are maintained ALARA.

Dave Richards will serve as the Site Superintendent – Quality Assurance (QA)/Quality Control (QC) Coordinator. Mr. Richards is responsible for providing guidance to project personnel regarding site activities and coordinating between Ingalls supervision and the waste transportation coordinator. Duties as a QC manager include documenting and implementing the QA activities to verify that appropriate QC measures are being conducted and documented, ensure specifications and requirements are being met, and review and approve any additional procedures or plans required, and training records. Health & Safety Training Certificates and proof of medical certifications as described in reference (a) will be provided for all LATA employees and its subcontractors to Greenpac upon request.

5.6 RESUMES OF KEY PERSONNEL

Resumes for the key personnel listed above are included as Attachment 1.

6.0 MOBILIZATION

6.1 MOBILIZATION OF PERSONNEL AND SITE TRAILER

LATA will mobilize personnel including supervisors, superintendents, laborers, and operators as necessary for the oversight of removal of radioactively impacted materials at the project site. A mobile site trailer will be located in the area of the concrete staging pad and will be powered by a diesel electric generator. The trailer will provide an area for administrative support, storage of safety supplies, and a break area for the LATA crew.

6.2 MOBILIZATION OF EQUIPMENT AND MATERIALS

LATA and Ingles will coordinate the provision of necessary facilities and heavy equipment to perform excavation and loading of waste in areas III and IV and at the storage pad will be mobilized to the site. The equipment will be provided from national equipment rental companies that provide well maintained equipment. Materials provided will meet the specifications of local and state requirements for their intended use.

6.3 INSPECTION OF EQUIPMENT AND MATERIALS

When the equipment is delivered to the site it will be staged in an area designated for inbound inspections. An inbound radiological survey will be conducted on all earth moving equipment arriving on-site that is expected to handle, transport or excavate radioactively contaminated soil or materials. Equipment will also be inspected to identify any mechanical or operational deficiencies and that all safety devices and guards are in place and operational. When the equipment has passed the initial safety and mechanical inspection an experienced equipment

operator will operate the machines through a series of maneuvers to determine if all controls are functioning properly. All support materials received will also be inspected prior to use to ensure they are free from manufacturer defects and damage during transport.

6.4 UTILITIES AND COMMUNICATIONS

No utilities will be available for use by LATA at the site. Electrical power will be supplied by portable generators. Worker sanitation will be provided by portable toilets, portable hand washing stations, portable eyewash stations, and potable water. Site communications will be by cellular phones - all field personnel will be equipped with a mobile phone.

7.0 SITE PREPARATION

7.1 SITE LAYOUT AND SETUP OF WORK ZONES

A support zone (SZ), contamination reduction zone (CRZ) and contamination area (CA) will be established prior to the start of field activities. The zones will be separated by boundaries consisting of rad rope and red or yellow boundary tape, as applicable. The use and placement of erosion controls (i.e. silt fencing) and storm water controls (i.e. earthen berms) will be evaluated in accordance with reference (a) and installed as needed to prevent the migration of contamination into the active construction area during remedial activities.

A SZ agreed upon between Greenpac and LATA will be prepared by dressing and grading an area level as needed to accept a ground level office of approximately 8 feet wide by 20 feet long. A diesel powered electric generator will be wired to the office to provide electrical service. One or more CRZs will be established adjacent to the CAs as required to ingress/egress from the CA, sign in/out of the CA, don and doff PPE and conduct body frisks/scans for radiological contamination at the boundary of the CA and CRZ. Likewise, one or more CAs will be established to conduct excavation activities of the hot zones and will be designated using yellow and magenta rad rope with the appropriate radiological signage denoting the “CA”. Figure 1 shows the preliminary site layout plan and proposed locations of the site access areas, work zones, Radiological Materials Area, (RMA), and equipment staging area. These staging areas and work zones are subject to change as work progresses and based on site conditions.

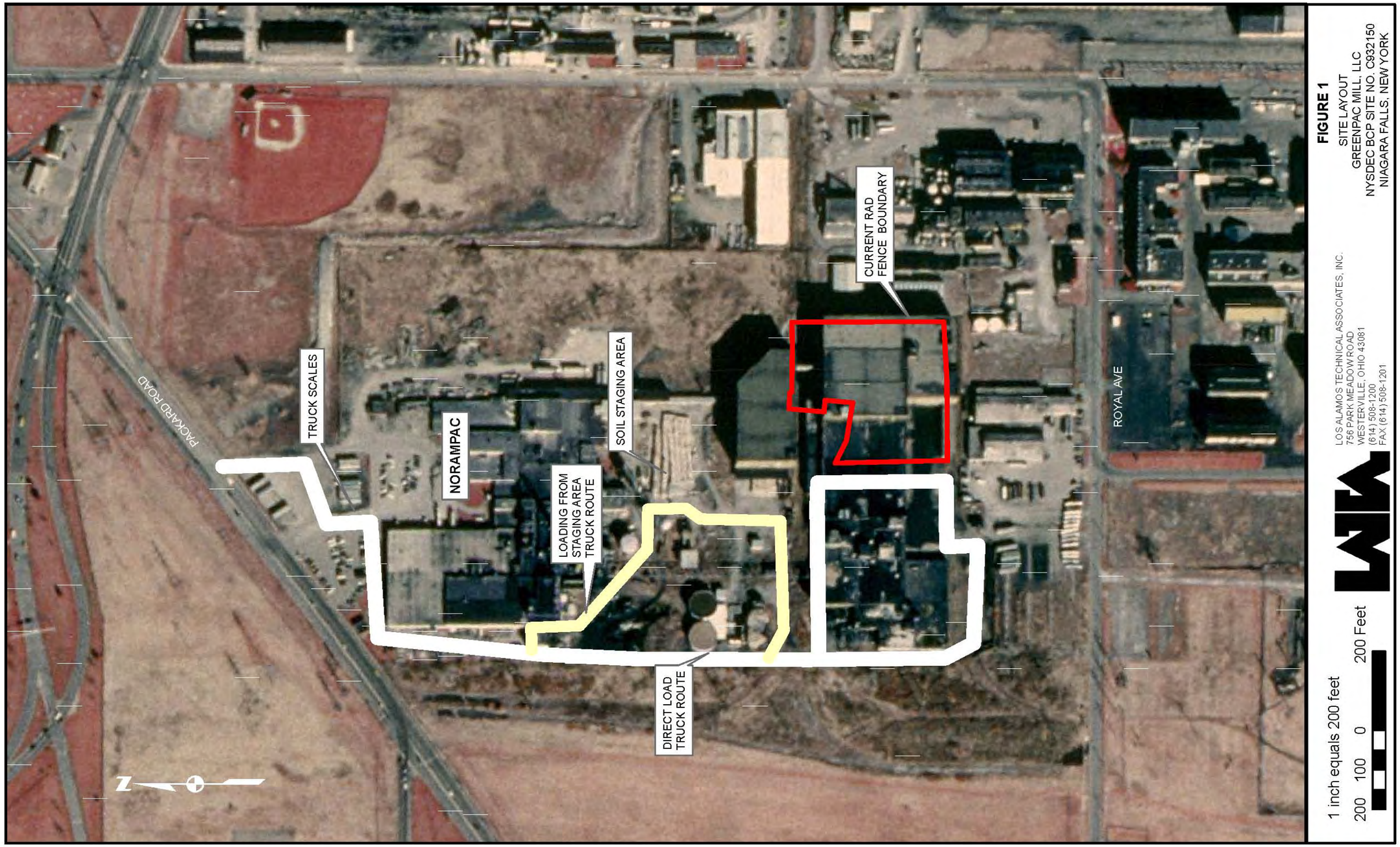


FIGURE 1
SITE LAYOUT
GREENPAC MILL, LLC
NYSDEC BCP SITE NO. C932150
NIAGARA FALLS, NEW YORK

LOS ALAMOS TECHNICAL ASSOCIATES, INC.
756 PARK MEADOW ROAD
WESTERVILLE, OHIO 43081
(614) 508-1200
FAX (614) 508-1201

Workers entering the CA will be required to sign in a logbook with their name and time of entry. Additionally, prior to entry workers will be required to don the proper PPE in accordance with site conditions and their training. The PPE requirements for this project and the air monitoring activities conducted in the work zone and the immediate surrounding area are identified in reference (d).

Control measures, such as dust control, storm water control, fencing, erosion control and traffic control will be evaluated and implemented as per reference (a) at the discretion of the LATA Project Manager or Superintendents prior to and during the remedial activities to protect on and off-site receptors.

7.2 SITE SECURITY

Site Security is in accordance with reference (a).

7.3 EMERGENCY PROCEDURES

Emergency Procedures will be in accordance with references (a) through (d).

7.4 TRAINING REQUIREMENTS

Training requirements will be in accordance with references (a), (c) and (d).

7.5 EQUIPMENT STAGING AREA

As discussed in section *6.3 Inspection of Equipment and Materials,* an area designated for equipment staging will be prepared that will be used to perform inbound and outbound inspections required by reference (d). An area in close proximity to the work, but not to inhibit the work progression will be selected.

7.6 EQUIPMENT MAINTENANCE

Due to the short duration of the field effort to complete the contract requirements, it is not anticipated that routine service or repair of the equipment will be required. If necessary, repairs and regularly scheduled service events will be performed by mechanics employed by equipment rental suppliers. Repairs or service work will be performed in an area designated by the LATA Superintendent.

7.7 DECONTAMINATION

Equipment decontamination area(s) will be established at predetermined locations as required. These areas will be available for the cleaning of light and heavy equipment (tracked construction equipment, vehicles, etc.) used during radiological excavation and remediation activities. In-place cleaning may include rinsing and/or dry, gross cleaning. If wet decontamination methods are used, water will be captured and containerized for characterization and disposal. All

equipment will be evaluated for removable radioactive contamination before leaving the facility.

8.0 EXCAVATION OF RADIOLOGICALLY CONTAMINATED SOIL

Excavation of radiologically contaminated soils will be accomplished using a track excavator equipped with a smooth edged ditch bucket or equivalent. Support equipment may include a bulldozer skid steer, or rubber tire or track loader to move and load excavated soil. It is estimated that approximately 11,310 tons of impacted soil will be excavated and transported off-site for proper disposal.

Prior to the start of excavation activities, survey grid points will be set by LATA and GRD and boundaries of the work zones established. Within the CA, the area(s) of previously identified contamination may be further subdivided into grids within the CA. The number and size of the grids will be dependent on the square footage within the target area and actual Site conditions and logistical concerns.

Prior to the excavation of soil, a gamma field survey of the targeted area will be conducted by GRD. Based on the survey results, a LATA Superintendent in conjunction with the radiological control technician will direct the operator to the area to be excavated. The excavator will remove soil from the targeted grid as directed by the Superintendent under the guidance of the radiological control technician. If the material is identified as TENORM (i.e. slag) or material scanned in excess of 10,000 cpm that is determined through the professional judgment of the radiological technician to be impacted and consistent with the existing approved waste profile, the excavated material will be direct loaded into end dump trailers and transported to the approved disposal facility or placed into a dump truck and transported to an on-site temporary waste staging area for future loading and transport to the disposal facility. Any material scanned in excess of 10,000 cpm that is determined to be anomalous will be investigated further and may require additional sampling to determine final disposition. The vertical and horizontal extent of the excavated soils will proceed under the guidance of the radiological control technician and Superintendent until the target depth is achieved or an excavation face is deemed to be free of elevated radioactivity. As determined in previous investigations, target depths are expected to range from 2 to 4 feet, but may be deeper as determined by survey results.

9.0 VERIFICATION SCREENING

After completion of excavation activities within a specific grid, composite soil verification screening will be completed on-site to verify the presence of radionuclide COCs above the PRGs previous discussed. This approach is effective and cost efficient, and will be used to correlate and compare to field surveys collected by GRD and confirm that TENORM is no longer present above PRG.

9.1 RADIOLOGICAL SCREENING AND REMEDIATION OF CONTAMINATION

Based on knowledge of Site operations and the results of the previous investigations, the subsurface material within the Phase III and IV areas of the Site contain elevated TENORM levels. Therefore, the focus of the radiological screening and cleanup will be placed on instrumentation and analytical techniques required for the detection of these constituents.

The direction of the radiological effort will be placed on the principle areas of known contamination within the Phase III and IV areas. Additional sampling (bulk samples for soil and wipe samples for surfaces) may be collected and analyzed to quantify activity in selected areas based on field screening results. The results will be evaluated against established background levels and/or the cleanup criteria to assess the appropriate scope of remedial actions. Screening and remediation will be conducted following implementation of the reference (d), ALARA principles and radiologically impacted materials removal activities. Screening and sample results will be documented to show compliance with cleanup goals.

The sections below discuss the radiological screening, assessment and remediation protocols to be conducted for these areas.

9.2 RADIOLOGICAL HEALTH AND SAFETY AND TRAINING

Reference (d) located in section 1.0 of this document provides guidance on radiological health, safety and training.

9.3 RADIOLOGICAL SCREENING FIELD INSTRUMENTATION

Field instruments identified in the *Site Radiation Safety Plan* will be used to detect, monitor, and measure surface activity, volumetric activity, and exposure rates throughout excavation and materials removal. GRD, under contract to Greenpac Mill LLC, will provide the instruments and services in support of this radiologically impacted materials removal project.

9.4 RADIOLOGICAL SCREENING FOR EXCAVATION ACTIVITIES

Excavation and removal in the Phase III and IV areas will be performed by sequentially removing soil using excavation equipment and screening soil using a Ludlum model 2221 meter with a 44-10 probe. Continued screening will be performed as each new layer is exposed. Field surveys and on-site screening will be used to characterize and segregate excavated material for disposition. Radiological screening activities will include scanning of material surfaces by GRD using field instruments, comparison of screening data against background measurements to evaluate whether the materials are impacted, and evaluation of survey results provided by the onsite instruments.

In addition to instrument surveys, smear samples may be collected from debris and excavation equipment and analyzed for removable radiological contaminants.

In general, LATA will use survey results performed by GRD to characterize and survey materials for classification as either (1) contaminated requiring excavation or removal and disposal off-site as TENORM contaminated material, or as (2) non-impacted and can remain on site or otherwise dispositioned as non-radiologically contaminated material.

9.5 Excavation and Disposition of Materials Greater Than Clean-up Levels

Excavation at the Site will continue until the clean-up values are achieved. As the lateral excavation continues to expand, the vertical sidewalls will also be screened to determine the point at which clean-up levels are encountered. Achievement of clean-up levels will be determined through field scanning with a Ludlum model 2221 meter with a 44-10 probe, visual field observations and the professional judgment of the radiological control technicians.

Excavated material will be placed directly in trucks or transferred to a staging area for later loading and transport. Prior to moving equipment and/or containers from the CA, the exterior of each container will be evaluated by smears for removable contamination to ensure compliance with release criteria.

10.0 MANAGEMENT, TRANSPORTATION AND DISPOSAL OF RADIOLOGICALLY CONTAMINATED SOIL

Radiologically contaminated soil and waste generated at the Site will be managed, staged, transported and disposed of in accordance with all applicable federal, state and local laws, regulations and ARARs and is discussed in more detail in references (b) and (c).

10.1 Waste Loading and Staging Area

It is anticipated that excavated radiologically contaminated soil will be excavated and direct loaded into transport trailers in designated waste loading areas located at the CA. The designated loading areas may be lined with poly sheeting to control any spillage of soil during the loading process. These designated waste loading areas will progress along with the movement of soil excavation activities. When possible, these designated areas will be located adjacent to the active excavation within the CA. If the situation should occur that space is not available for direct loading or excavation progress exceeds direct loading and transportation capabilities, the soil will be moved to a staging area to accommodate continued excavation.

The temporary waste staging area will be designated as a radiological control area and bounded with rad rope and the appropriate signage. Within the staging area, the waste can be sampled for profiling, surveyed again as necessary, and transported from the Site to the approved disposal facility using standard waste manifest forms and procedures. Details for the management, transportation and disposal of waste are provided in references (b) and (c).

11.0 DEMOBILIZATION

Equipment that is no longer needed and has never entered the CA will be staged in the inspection area. It will receive general mud and soil removal and receive final cleaning and inspection. Additionally, a radiological outbound survey will be conducted to verify that no radiologically contaminated soil leaves the Site.

For equipment that has entered the CA, a radiological survey will be conducted prior to leaving the CA. If decontamination is required based on radiological surveys, a decontamination area will be set up and the equipment will be decontaminated in accordance with the procedures described in Section 7.8, *Decontamination*. Equipment will not be demobilized from the Site until it has satisfied an outbound radiological survey and is free released. Once completed, the equipment and support materials can be returned to the rental company or shop location as appropriate.

When all equipment is demobilized, the support trailer will be removed from the Site and a final inspection of the area will be performed by LATA project management. Refer to reference (d) for additional details on radiological controls.

12.0 PROJECT CLOSE OUT

Upon request, LATA will submit hard copies of waste manifests, disposal records, survey results and results of field verification sampling to Greenpac at the completion of field activities.

13.0 REFERENCES:

ERM Soil Excavation IRM Work Plan for Greenpac Mill, LLC – Former Mill No. 2 Site – Niagara Falls, New York (NYSDEC, BCP Site Number C932150), June 16, 2011

MML-PLA-WP-003, LATA Waste Management Plan for Greenpac Mill, LLC, August, 2011

MML-PLA-WP-004, LATA Transportation and Disposal Plan for Greenpac Mill, LLC, August, 2011

MML-PLA-WP-002, LATA Radiological Safety Plan, for Greenpac Mill, LLC, August, 2011

Attachment 1

Key Personnel Resumes

Attachment D
LATA Site-Specific Radiological Safety Plan

SITE SPECIFIC RADIOLOGICAL SAFETY PLAN
for the
Radiologically Impacted Materials Removal for Greenpac Mill, LLC at 4400 Royal Avenue, Niagara Falls, NY

Prepared for
Greenpac Mill, LLC
4400 Royal Avenue
Niagara Falls, New York 14303

Prepared by:

Los Alamos Technical Associates, Inc.
756 Park Meadow Road
Westerville, OH 43081

Prepared By: Joseph P. Shuman, CFPS CSP CHMM	**Signature:**	**Date:** 9/2/11	**Title:** LATA Sr. Environmental Engineer
Approved By: Ron Voorheis	**Signature:**	**Date:** 9/2/11	**Title:** LATA Project Manager
Approved By: Jason Brydges, PE	**Signature:**	**Date:** 9/2/11	**Title:** LATA Program Manager

Los Alamos Technical Associates, Inc.
Site Specific Radiological Safety Plan for the
Radiological Remediation for Greenpac Mill, LLC
At 4400 Royal Avenue, Niagara Falls, NY

TABLE OF CONTENTS

List of Tables

1.0 PURPOSE AND SCOPE

This Site-Specific Radiological Safety Plan (RSP) provides detail on the work practices necessary to fully implement Los Alamos Technical Associates (LATA) Radiological Safety practices at the Greenpac Mill, LLC (Greenpac) property located at 4400 Royal Avenue, Niagara Falls, New York (Site) to achieve:

- Sound radiological practices implemented during activities at the Site where the potential for exposure to ionizing radiation exists;,
- Radiological exposure to the public, site personnel, and the environment that are maintained As Low as Reasonably Achievable (ALARA), and
- Performance of activities at the Site in a manner consistent with applicable local, state, and federal regulations.

2.0 APPLICABILITY

The work practices specified in this site specific RSP apply to work conducted by site personnel that have a potential to result in the exposure of employees to ionizing radiation. All Site visitors and employees working in a radiation area or a radioactive materials area are responsible for following this RSP. The Project Manager (PM) and the Site Radiation Safety Officer (RSO) are responsible for ensuring that the Site Specific RSP is implemented at the Greenpac Site.

3.0 GENERAL

3.1 REFERENCES

- DOT 49 CFR 171-177, Transportation – Hazardous Materials Regulations.
- 6 NYCRR 380 Prevention and Control of Environmental Pollution by Radioactive Materials
- 10 NYCRR 16 Ionizing Radiation
- 10 NYCRR Part 16, Standards for Protection Against Radiation
- OSHA 29 CFR 1910.1096, Ionizing Radiation
- OSHA 29 CFR 1926.53, Ionizing Radiation
- NRC Regulatory Guide 8.25, Air Sampling in the Workplace
- LATA Corporate Respiratory Protection Program
- Federal Guidance Report No. 12, entitled External Exposure To Radionuclides In Air, Water, And Soil (EPA-402-R-93-081

3.2 DEFINITIONS

Airborne Radioactivity Area – Area where the measured concentration of airborne radioactivity above natural background exceeds a peak concentration of 1 derived air concentration (DAC) or 12 DAC-hours during the hours a worker is present during one week.
As Low As Reasonably Achievable (ALARA) – An approach to radiological control or a process to manage and control exposures to the work force and to the general public at levels as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations.
Bioassay – Measurement of radioactive material deposited within or excreted from the body. This process may include whole body and organ counting as well as collection of urine and fecal samples.
Contaminated Area – An area in which radioactive contamination is present that exceeds removable levels presented in Table 3.

Controlled Area – An area to which access is controlled in order to protect personnel from exposure to radiation and radioactive materials. An area in which the existing or potential radiation and radioactivity levels are above normal background but are less than that designating a radiological area or a restricted area.

Derived Air Concentration (DAC) – The concentration of a radionuclide in air that, if breathed over the period of a work year (2000 hours), would result in the annual limit on intake being reached.

Disintegration per Minute (dpm) – The rate of emission by radioactive material as determined by correcting the counts per minute observed by a detector for background, efficiency, and counting geometry associated with the instrument.

Dose – A generic term for the amount of energy deposited in body tissue due to radiation exposure. Technical definitions for dose terms necessary for various exposure calculations and recordkeeping purposes include the following:

Absorbed Dose (D) – Energy imparted to matter by ionizing radiation per unit mass of irradiated material at the place of interest in that material. The units of absorbed dose are the rad and the gray (Gy).

Dose Equivalent (H_T) – The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and Sievert (Sv).

Effective Dose Equivalent (H_E) – The sum of the products of the dose equivalent to the organ or tissue (H_T) and the weighting factors (W_T) applicable to each of the body organs or tissues that are irradiated (H_E= SWTxHT).

Committed Dose Equivalent ($H_{T,50}$) – The dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by a person during the 50-year period following the intake.

Committed Effective Dose Equivalent ($H_{E,50}$) – The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues ($H_{E,50}=\Sigma w_T x H_{T,50}$).

Total Effective Dose Equivalent (TEDE) – The sum of the deep dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Total Organ Dose Equivalent (TODE) – The sum of the deep dose equivalent (for external exposures) and the committed dose equivalent to an individual organ or tissue (for internal exposures).

Fixed Contamination – Radioactive material that cannot readily be removed from surfaces by nondestructive means such as causal contact, wiping, brushing, or washing.

Frisking – Process of monitoring personnel for contamination.

Hazardous Work Permit (HWP) – Permit that identifies Hazardous conditions and health and safety hazards, establishes worker protection and monitoring requirements, and also contains specific approvals for radiological work activities. The HWP serves as an administrative process for planning and controlling radiological work where a Hazardous and informing the worker of the radiological, health, and safety issues.

Health Physics – The practice of radiological protection or radiation safety.

High Radiation Area – An area, accessible to personnel, in which radiation levels could result in a person receiving a dose equivalent to or in excess of 100 mrem in 1 hour at 30 cm from the radiation source or from any surface that the radiation penetrates.

Internal Dose – The portion of the dose equivalent received from radioactive material taken into the body.

Occupational Dose – The dose received by a person during employment in which the person's assigned duties involve exposure to radiation and to radioactive material. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research plans, or as a member of the public.

Optically Stimulated Luminescence Dosimeter (OSL) – Radiation detection and measuring device used to record the radiological exposure of personnel or area to certain types of radiation.
Personnel Dosimetry – Devices designed to be worn by a single person for the assessment of dose equivalent such as film badges, optically stimulated luminescence dosimeters, thermoluminescent dosimeters, and pocket ionization chambers.
Personnel Monitoring – Systematic and periodic estimate of radiation dose received by personnel during work hours.
Radiological Work Permit (RWP) – Permit that identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. The RWP serves as an administrative process for planning and controlling radiological work and informing the worker of the radiological, health and safety issues.
Radioactive Material Area – A controlled area or structure where radioactive material is used, handled, or stored.
Radiation – Ionizing radiation that includes alpha particulate, beta particulate, X-rays, gamma rays, neutrons, and other particulates capable of producing ions.
Radiation Area – An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent or in excess of 5 mrem in 1 hour at 30 cm from the source of radiation or from any surface that the radiation penetrates.
Radiological Controlled Areas (RCA)- Includes Radioactive Materials Areas, Radiation Areas, Contamination Areas, or Airborne Radioactivity Areas.
Radiological Worker – Worker whose job assignment requires work on, with, or in the proximity of radiation-producing machines or radioactive materials. A radiological worker has the potential of being exposed to more than 100 mrem per year, which is the sum of the dose equivalent from external irradiation and the committed effective dose equivalent from internal irradiation.
Removable Contamination – Radioactive material that can be removed from surfaces by nondestructive means, such as casual contact, wiping, brushing, or washing.
Survey – An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other source of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.
Unrestricted Area – An area designated by the Nuclear Regulatory Commission (NRC) or Agreement State as being an area to which access is neither limited nor controlled by an NRC or Agreement State licensee.

3.3 RESPONSIBILITIES

3.3.1 LATA Project Manager

The LATA Project Manager (PM) will be responsible for:

- Overall radiological safety of the public and occupational workers.
- Reviewing each scope of work to identify potential radiation risks and hazards.
- Designating a Site Radiation Safety Officer (RSO) and arranging for employees on the project to receive appropriate radiation safety training.
- Ensuring that employees working on the project are monitored for radiation exposures as is required by applicable regulation(s).
- Assessing and controlling risks to employee and public health and safety from site activities.
- Maintaining routine housekeeping at the site to ensure safe and efficient working conditions and environment.

The PM will ensure that all employees are knowledgeable of applicable radiological safety requirements for their work area and compliance with these requirements. PMs emphasize the need for high standards for radiological control through direct communication, support of radiation control goals and a presence in the workplace.

3.3.2 Site Radiation Safety Officer/Health Physicist

The Site Radiation Safety Officer/Health Physicist (RSO) will be responsible for:

- Coordinating implementation of the Radiological Safety Plan (RSP).
- Developing and administering the RSP incorporated into the Interim Remedial Measures (IRM) HASP and associated standard operating procedures.
- Conducting appropriate radiation safety training for employees.
- Evaluating potential site/employee radiation exposure.
- Recommending necessary workplace and administrative controls.
- Issuing Radiation Work Permits, as necessary(see Section 6.2).
- Administrating the personnel monitoring program.
- Arranging for each individual's monitoring results to be sent to the individual and employers as appropriate.

3.3.3 Radiation Technicians

Radiation Technicians provided by Greater Radiological Dimensions, Inc. GRD will be responsible for assisting the RSO in the implementation of radiological controls on each site. Specific responsibilities will include:

- Performing radiological surveys.
- Collecting samples and smears.
- In conjunction with the RSO, assessing radiological hazards during work evolutions and making adjustments to ensure that worker radiological exposures and potential releases to the environment are maintained ALARA.

Qualifications of Radiation Technicians will be reviewed by the RSO to ensure that the level of expertise is commensurate with the assigned duties.

3.3.4 Employees

Employees will be responsible for understanding radiological protection requirements for their work areas and for complying with these requirements.

4.0 ALARA

4.1 POLICY STATEMENT

All work with ionizing radiation will be conducted in accordance with established good practices in radiation protection, and in all cases, incorporate radiological criteria to ensure safety and maintain radiation exposures ALARA. The primary method to maintain exposure ALARA will focus on the use of established work practices and engineering controls following the use of administrative and procedural requirements.

4.2 ADMINISTRATIVE IMPLEMENTATION PROCEDURES AND ENGINEERING CONTROLS

The following minimum steps will be implemented for maintaining radiation exposures ALARA.

- Estimate radiation exposure and use the estimate to set project ALARA dose goals.
- Review actual radiation exposures and compare with projected dose values.
- If necessary, make adjustments to the administrative and engineering control in place.

- Implement engineering controls to minimize the spread of activity.
- Radiological training and monitoring requirements.

5.0 EXPOSURE LIMITS

5.1 ADMINISTRATIVE GOALS

Administrative goals for radiological protection performance will be established. These limits are more conservative than regulatory limits, commensurate with the work plan and level of hazard, and in accordance with the ALARA principle. The annual radiological goals include (not to exceed):

- Maximum individual total effective dose equivalent – 100 mrem;
- Maximum embryo/fetus total organ dose equivalent for a declared pregnancy – 100 mrem; and
- Maximum total effective dose equivalent to a member of the public, or visitor (excluding background radon and thoron) – 50 mrem.

5.2 OCCUPATIONAL EXPOSURE LIMITS

The occupational exposure to employees performing the duties of radiological workers will be controlled so that the limits in Table 1 are not exceeded in one year for this project. Measures will be taken to maintain doses as far below these limits as reasonable achievable through use of administrative goals, engineering controls, and application of the ALARA process. Radiation exposure from normal background, therapeutic and diagnostic medical radiation, and voluntary participation in medical research plans will not be included in the determination of occupational exposure. Planned special exposures will not be required.

Table 1. Occupational Dose Limits

Category	Greenpac Administrative Limit		10 NYCRR Part 16 Limit	
	mrem/yr	mSv/yr	mrem/yr	mSv/yr
Total Effective Dose Equivalent	100	1	5,000	50
Total Organ Dose Equivalent	1,000	10	50,000	500
Lens of Eye Dose Equivalent	300	3	15,000	150
Shallow Dose Equivalent	1,000	10	50,000	500
Embryo/Fetus	100/gestation	1/gestation	500/gestation	5/gestation
Minor	Not Allowed	Not Allowed	500	5
General Public (See comment above)	100	1	100	1

5.3 EMBRYO/FETUS EXPOSURE LIMITS

The occupational dose equivalent limits applicable to the embryo/fetus are detailed in Table 1, and apply to a "declared pregnancy." In such a case, a woman may elect to voluntarily declare the pregnancy and limit the dose received by the embryo/fetus as provided in regulatory requirements. In this case, the dose equivalent goal for the embryo/fetus, from the period of conception to birth from occupational exposure, will be no more than 100 mrem, an administrative limit significantly lower than the regulatory limits. The expected duration of the project and relatively low anticipated doses indicate that there will not be a

significant potential dose to a pregnant worker exceeding regulatory limits. If the dose equivalent has exceeded 500 mrem at the time the pregnancy is declared, based on doses from other projects, steps shall be taken to ensure that additional occupational exposure does not occur. The Voluntary Declaration of Pregnancy shall be documented. Occupational exposure to an individual who has declared pregnancy will not be allowed until the RSO documents an embryo/fetus dose of record upon declaration, based on the individual's declaration of the date the pregnancy began. If the dose from prior exposure exceeds the administrative limit, the individual will be restricted from performing work involving exposure to radiation and radioactive materials. Any declared pregnancy may be voluntarily undeclared, in writing, to withdraw a pregnancy declaration.

5.4 MINOR EXPOSURE LIMITS

Individuals under 18 years of age will NOT be allowed to work on site where there is the potential for occupational exposure to radiation. There are no exceptions to this requirement.

5.5 MEMBERS OF THE PUBLIC EXPOSURE LIMITS

The annual exposure limit for any member of the public shall be limited to 100 mrem total effective dose equivalent, regardless of whether the individual is inside or outside of a controlled area. The dose equivalent in any unrestricted area from external sources (other than natural background) will not exceed 2 mrem in any one hour or 50 mrem per year, regardless of occupancy by a member of the public.

5.6 AIR AND LIQUID EFFLUENTS

The release of radioactivity in air or liquid effluents to unrestricted areas will be monitored and controlled in accordance with the requirements of 10 NYCRR Part 16. The Greenpac project will limit air emissions by controlling fugitive dust (see detailed discussion below in section 6.4, *Action Levels*). Liquids from decontamination will be contained to prevent release to off-site waters. Records of air monitoring, radioactive effluent monitoring, and/or modeling will be generated and maintained to demonstrate compliance with effluent limitation requirements.

6.0 CONDUCT OF RADIOLOGICAL WORK

6.1 PLANNING

Engineering controls will be implemented at the Site to minimize the spread of contamination and limit the potential uptake by, and direct exposure to workers. This will principally involve mitigation of dust generation, as discussed in Section 5.6. Contamination reduction and establishment of controlled access zones will also be used to limit radiological exposures.

6.2 RADIOLOGICAL AND HAZARDOUS WORK PERMITS

Radiological Work Permits (RWPs) will be used to inform workers of area radiological conditions and entry requirements, and to provide a mechanism to relate worker exposure to specific work activities. Radiological requirements may be combined with other, non- radiological requirements, into a single Hazardous Work Permit (HWP). Implementation of a work permit plan will have the following requirements:

- RWPs/HWPs will be written based on radiological survey data that characterize the expected work conditions.
- RWPs/HWPs will detail the work area and activity that are within their scope and will specify required conditions for protective measures, including dosimetry, air sampling, PPE, respiratory protection, work area preparation, and health physics oversight.
- RWPs/HWPs will be reviewed and approved by the RSO. Modifications to existing RWPs/HWPs will require the concurrence of the RSO or designee.

- RWPs/HWPs will be posted in a conspicuous area (if possible, they will be posted at the access point to the applicable radiological work area).
- Workers will acknowledge by signature that they have read, understand, and will comply with the RWPs/HWPs prior to initial entry to the area and after any revisions to the RWPs/HWPs.
- RWPs/HWPs will be updated if radiological conditions change to the extent that protective requirements need modification.

6.3 CONTROL ZONES

6.3.1 Access/Egress Procedures

Only appropriately trained, authorized, and qualified personnel will be permitted access to radiological controlled areas. The degree of control will be commensurate with the existing and potential radiological hazards within the area and may include, for example, signs and barricades, entrance ways locked against ingress, control devices or alarms, or administrative controls. The establishment of High or Very High Radiation Areas is not anticipated for this project, however additional access control measures for High and Very High Radiation Areas will be established in accordance with 10 NYCRR Part 16, as appropriate. The controls will be established so that rapid egress from the controlled area in an emergency is not hindered. Control measures and established procedures will incorporate a RWP/HWP system to ensure appropriate planning, control, hazard communication, and documentation of work activities in Radiological Controlled Areas (RCA) that include Radioactive Material Areas, Radiation Areas, Contamination Areas, or Airborne Radioactivity Areas. Task-specific RWP/HWP's will be used for short-term work in these RCAs with the potential for changing radiological conditions. General RWP/HWP s may be used for longer term activities in RCAs with known, stable radiological conditions.

Personnel frisking and/or monitoring will be conducted before exiting radiologically contaminated areas and other areas where contamination is suspect. If the instruments, usually a pancake-type Geiger-Mueller probe and ratemeter with a nominal efficiency of ten percent, indicate greater than 100 cpm above background for beta-gamma radiation emissions, a Radiation Technician will be contacted for evaluation and/or decontamination of personnel.

6.3.2 Posting and Labeling

The standard radiation symbol (ANSI N2.1/12.1) in magenta or black on a yellow background (or alternate as provided by regulations) will be used to warn individuals of the presence of radiation and/or radioactive material. Each access point to a controlled or restricted area will be posted with the appropriate identification and instructions. For controlled or restricted areas, each area will be posted as detailed in Table 2. For the Greenpac Site, only the postings for a Contaminated Area or a Radioactive Material Area are expected to be required.

Table 2. Posting Requirements

Posting Sign	Definition
Caution Radiation Area	5 mrem in 1 hour at 30 cm
Caution or Danger High Radiation Area	100 mrem in 1 hr at 30 cm
Grave Danger Very High Radiation Area	500 rads in 1 hr at 1 m
Caution Contaminated Area	Removable radioactive contamination (Ref. Table 3)
Caution or Danger Airborne Radioactivity Area	>1 DAC or 12 DAC-hours/week

Posting Sign	Definition
Caution or Danger Radioactive Material	Radioactive material handled, used or stored
NY Form DOH-2482, Notice to Employees	Posted in a location visible to all employees

6.4 DOSE ASSESSMENT

The radionuclides of concern and their concentrations at the Site, identified through soil analysis from Analytical Report ARSI-11-01761, are presented in Table 3.

Table 3. Soil Sample Results

Isotope	Concentration (pCi/g)			
	Sample ID			Average
	001	002	003	
K-40	5.644	8.246	5.988	6.626
Tl-208	0.116	0.157	0.102	0.125
Pb-210	2.405	2.752	4.377	3.178
Bi-212	0.336	0.609	0.225	0.390`
Bi-214	2.733	3.959	6.092	4.261
Pb-214	3.396	3.583	6.916	4.632
Ra-226	6.219	6.69	12.574	8.494
Ra-228	0.322	0.587	0.324	0.411
Th-228	0.382	0.44	0.385	0.402
U-235	<MDC (0.179)	0.269	0.427	0.292

For the Site, two methods of exposure have been evaluated. First is the direct exposure from the contaminated soil. The second pathway evaluated is the potential for exposure due to excavation activities creating fugitive soil dust in the work area.

Direct exposure from contaminated soil, using the radionuclide concentration averages in Table 3, has been estimated using the Dose Coefficients for contaminated soil contained in Federal Guidance Report No. 12, entitled EXTERNAL EXPOSURE TO RADIONUCLIDES IN AIR, WATER, AND SOIL (EPA-402-R-93-081, commonly called FGR-12). The coefficients used are for a nominal soil density, taken from FGR-12, of 1.6E3 Kg/m^3 and a conservative assumption was made that the depth of contamination was “infinite” (Table III.7). The infinite depth table is preceded by a table with the depth assumption of contamination to be 15 cm which, based on available site history, was not considered to reflect potential contaminant conditions at the site.

The soil contaminants, conservatively ignoring the fact that, as the remediation proceeds, the available mass of radionuclides contributing to exposure will decrease, will contribute approximately 11 mrem of occupational exposure over the course of a 2080-hour work year. This level will decrease as material is removed, segregated, and controlled for disposal.

Exposure resulting from contaminated soil as fugitive dust in the air was evaluated at a limit of 5 mg/m^3 of dust loading in the breathing zone. The estimate used Dose Coefficients for air immersion contained in FGR-12. A continuous work zone fugitive dust load of 5 mg/m3 will contribute approximately 57 mrem of occupational exposure over the course of a 2080-hour work year.

The total occupational worker exposure estimate over a work year is about 68 mrem which is well below the administrative limit of 100 mrem for this project.

7.0 MONITORING

7.1 PERSONNEL MONITORING

7.1.1 Internal Dosimetry

Personnel are not anticipated to have the potential for significant uptakes of radioactive materials (greater than the personnel monitoring threshold of a committed effective dose equivalent in excess of 500 mrem). Therefore, a radiological bioassay program will not be implemented for this project. Prior to allowing a radiological worker to start work in a controlled area, a 24 hour urine sample will be taken and stored. This will be a baseline sample, if needed. After the project is complete, or at the discretion of the RSO, an additional 24 hour urine sample will be taken. If air sampling results indicate the airborne activity in the work area is or was elevated during the project the urine sample will be analyzed for the appropriate radionuclide(s).

7.1.2 External Dosimetry

Monitoring applies to any individual likely to receive an annual external whole body exposure in excess of ten percent of the occupational limit (500 mrem). Though individual doses are not expected to reach levels of 500 mrem on this project (and the administrative goal is less than 100 mrem), whole body dosimetry will be implemented as a good practice. All personnel dosimetry used will be processed and evaluated by a processor holding a current accreditation under the National Voluntary Laboratory Accreditation Plan (NVLAP) of the National Institute of Standards and Technology (NIST).

7.1.3 Summation of Internal and External Exposures

Internal committed effective dose equivalents and external effective dose equivalents during the year will be combined to determine the annual total effective dose equivalent in accordance with the requirements of federal and state regulations. Generally, summation will be required when intakes exceed ten percent of the annual limit on intake, may result in a total effective dose equivalent of 50 mrem for visitors, or a dose equivalent of 50 mrem to the embryo/fetus for declared pregnant women. The deep dose equivalent to the whole body may be used as the effective dose equivalent for external exposures.

7.1.4 Medical Surveillance

Other than baseline and possible follow up urine sampling as discussed in Section 7.1.1 and medical qualification for respirator use discussed in Section 8.2, no specific medical surveillance requirements exist for exposure to radiation levels at occupational levels. General medical surveillance requirements for all hazardous waste sites are contained in the project HASP.

7.15 Overexposure

All cases of overexposure and suspected ingestion or inhalation of radioactive materials must be reported to the RSO immediately. The LATA Sr. Environmental Engineer, in consultation with the Occupational

Medicine Specialist, will advise the RSO on the type(s) of test(s) required to accurately assess exposure effects if necessary.

7.2 WORKPLACE MONITORING

7.2.1 Surveys

Radiological monitoring and surveys of radiation exposure levels, contamination, and airborne radioactivity will be conducted to:

- Characterize workplace conditions and detect changes in those conditions;
- Verify the effectiveness of physical design features, engineering and process controls, and administrative control procedures;
- Demonstrate regulatory compliance;
- Detect the gradual buildup of radioactive material;
- Identify and control potential sources of personnel exposure; and
- Identify areas requiring postings.

Monitoring will be performed only by trained and qualified personnel and will be conducted as specified by the project RSO.

Minimally, radiological surveys will be conducted:

- Once per shift at entrance or exit points, between contamination areas and clean areas;
- Daily in RCAs;
- Weekly in radiation and/or contamination areas; and
- Weekly in clean areas.

7.2.2 Air Sampling

General area and personal air sampling will be conducted in accordance with the guidance in NRC Regulatory Guide 8.25. Air sampling will be employed when necessary to determine whether confinement or suppression of radioactive material is effective, to determine required workplace administrative controls, to estimate worker intakes, and to determine what personal protective equipment (PPE) is appropriate.

General area and/or perimeter air sampling for airborne radioactivity will be conducted with low-volume air samplers F and J Model LV-1 or equivalent (0-100 lpm). The low-volume samplers will use 47mm filters and will be counted on a Ludlum model 2929 sample counter or equivalent, for alpha and beta immediately to determine any excessive levels. The filters will be changed daily. Following a 5 day hold time for radon decay, where the potential for airborne radioactivity is above background levels, the sample will be counted again to determine the actual activity without radon progeny contribution.

High-volume air samplers are those with sufficient flow rate to achieve a minimum detectable activity (MDA) of 10% of the applicable DAC in an 8-hour shift. Air sample filters will be analyzed on site for gross alpha and gross beta in accordance with written procedures. In work zones with a potential for short-term airborne excursions, representative breathing zone samples will be collected in the immediate vicinity of work being performed to determine whether the area is an airborne radioactivity area requiring additional work controls or to assess the worker's intake of airborne radioactive materials.

When required to estimate worker intakes, representative personal air sampling from a member of each field team working in radiologically contaminated areas will be conducted for airborne radioactivity in the breathing zone. The data will be compared with the DACs that are the most conservative for the

contaminant(s) expected to be present to gauge employee exposure potential. DACs for radioactive contaminants in Appendix C to 10 NYCRR 16 will be used to assess exposure potentials, as appropriate.

7.3 RELEASE OF MATERIALS FROM CONTAMINATION AREAS

Radiological contamination survey, documentation, and labeling requirements will be established for all property/material released from an RCA. All equipment, materials, and property used in an RCA established for contamination control will be considered as potentially contaminated and will not be released to an uncontrolled or unrestricted area until they have been surveyed and meet the unconditional release limits listed in Table 4 below.

Table 4. Surface Radioactivity Release Limits/ Acceptable Surface Contamination Levels				
Application	***Alpha (dpm/cm^2)***		***Beta/Gamma[1]***	
	Total	***Removable***	***Total (mR/hr)***	***Removable (dpm/cm^2)***
Controlled Area				
Basic guide	25,000 Max. 5,000 Av.	500	1.0	5,000
Clean area	1,000	100	0.5	1,000
Non-controlled Area				
Skin, personal clothing	500	ND[2]	0.1	ND[2]
Release of material or facilities	2,500 Max. 500 Av.	100	0.2	1,000

[1]Measured at 1 cm from the surface
[2]ND – Non-Detectable

Source: 10 NYCRR 16, Appendix 16-A, Table 7

7.4 INSTRUMENT CALIBRATION

Radiation detection instrumentation will be provided as appropriate for performing necessary surveys and monitoring. The instrumentation will be selected based upon the type of radiation detected, MDA measurement capability, and range in accordance with the radiological hazards present or anticipated for the project.

Calibration of radiological instruments and equipment will be performed by the manufacturer or a calibration service in accordance with ANSI N323 - 1997 using standards traceable to the NIST primary standards. The calibration certificate will be available at the site and maintained by the RSO.

Field calibration of counting/analysis instrumentation in accordance with approved written procedures is authorized if it meets the above requirements and the source calibration certificate and documented detection efficiency determination are maintained in the site-specific project file. Each instrument or piece of equipment will have a calibration sticker with an expiration date affixed.

At a minimum, performance tests of radiological instruments will be conducted daily before use, and at the end of the day. Satisfactory performance test results will be within ± 10% of the expected response. Instruments that do not meet performance test criteria, are found to be out of calibration, or are defective, will be removed from service until repaired and/or calibrated. The results of these checks will be recorded in a daily source check log by the performer and will be maintained in the project file. All performance tests will be conducted in accordance with approved written procedures.

8.0 PERSONNEL PROTECTIVE EQUIPMENT

8.1 USE AND SELECTION OF PROTECTIVE CLOTHING

PPE will be selected based on the contamination levels in the work area and the anticipated work activity, ALARA and safety considerations, and consideration of non-radiological hazardous materials that may be present. Surfaces are considered radiologically contaminated if above Table 4 levels. PPE provided will be in good condition and free of chemical or radioactive contamination and may include the following items at the discretion of the RSO:

- Full Set Coveralls (Tyvek ® or cotton)
- Cotton glove liners
- Rubber or chemical resistant gloves
- Shoe covers
- Protective overshoes
- Hood (Tyvek ® or cotton)

Protective clothing and equipment selected for project tasks will be described in the HASP, together with procedures for donning and removing PPE without spreading contamination or contaminating the worker. The necessary PPE for a task will be specified by the RWP.

8.2 USE AND SELECTION OF RESPIRATORY PROTECTION DEVICES

LATA's documented respiratory protection program details specific procedures for respiratory usage, fit, cleaning, and so forth.

Engineering control measures will be provided to limit the concentrations of radioactivity in air to levels below those that constitute an airborne radioactivity area to the extent feasible. When this level is not feasible, other methods such as administrative controls and respiratory protection will be employed to limit the potential for intake of radioactive material.

Only respiratory protection equipment that is tested and certified by the National Institute for Occupational Safety and Health (NIOSH) will be used. Protection factors listed in 10 NYCRR Part 16 will be used in the assessment of potential radioactive material intake. Selection of appropriate respiratory protection devices will be designated within either the HASP or the RWP. At a minimum, respiratory protection devices will be selected so that a protection factor greater than the multiple by which peak concentrations or airborne radioactivity exceed the values specified in 10 NYCRR Part 16 is not exceeded.

Only respiratory protection equipment that has been specifically certified for emergency use by NIOSH/Mine Safety and Health Administration (MSHA) will be used as emergency devices.

Whenever respiratory protection will be used at a site, the following additional minimum requirements will be met:

- Air sampling will be performed to identify the potential hazard, permit proper equipment selection, and estimate exposures.
- Surveys and bioassays, as appropriate, will be performed to evaluate actual intakes.
- Respirators will be tested for operability immediately prior to each use.

- Written procedures will be available regarding selection, fitting, issuance, maintenance, medical testing and testing of respirators (including testing for operability prior to each use), supervision and training of personnel, monitoring (including air sampling and bioassays), and recordkeeping.

9.0 RADIOACTIVE MATERIAL ACCOUNTABILITY AND CONTROL

All procurement, receipt, and storage of radioactive material (instrument check sources, analytical calibration standards, etc.) will be coordinated with the individual or organization responsible for radiation protection at the project site. A source custodian and documented inventory record will be established and maintained for radioactive sources. All sources brought on site by external organizations will not be allowed into areas under company control without prior notification and approval by the RSO or organization responsible for radiation protection. Radioactive materials licenses will be required for sources that exceed exempt quantities.

Transportation of radioactive material (specific activity greater than the nuclide-specific values in 49 CFR 173.436) in commerce, generally off site, will be in accordance with Department of Transportation (DOT) requirements in 49 CFR 170 through 180, and other federal, state and local regulations, as applicable.

10.0 DECONTAMINATION

10.1 PERSONNEL

The guideline for determining the presence of skin contamination on personnel is any detectable radiological contamination above background.

If necessary, decontamination of personnel will be performed only under the direct supervision of the RSO. Generally, dry, nonabrasive methods will be attempted first and, if necessary, may be followed by washing with mild soap and warm water. Material generated during decontamination, including wipes, tape, and water, will be collected and disposed as radioactive waste. Specific decontamination procedures and documentation requirements shall be under the direction of the RSO.

10.2 EQUIPMENT

Surface contamination levels presented in Table 4 will be used to determine if a piece of equipment is contaminated with radioactive materials. When decontamination is necessary, decontamination will be performed using techniques that are appropriate based on site-specific conditions. Generally, dry decontamination methods such as high-efficiency particulate air (HEPA) vacuuming or wipe-downs are preferred when facilities for the collection of radiological contaminated wastewater are not in place. If adequate facilities exist for the collection of such fluids, it may be appropriate to use a wet decontamination technique. Additional decontamination methods in extreme conditions include sand or other abrasive blasting. Specific decontamination procedures and decontamination requirements shall be under the direction of the RSO.

11.0 WASTE MANAGEMENT

TENORM is the waste material expected to be generated during this project. Materials suspected of being mixed waste (RCRA/TSCA/etc. hazardous substances combined with radioactive materials) will be identified and segregated as soon as practical to avoid combining mixed waste with other waste forms. While the scope of this waste minimization will be commensurate with the level of radioactive materials present and activities conducted at each site, at a minimum, the following guidelines will be used:

- Removal of excess/unnecessary packaging material prior to bringing materials into radiological controlled areas;
- Restriction of materials entering radiological areas to those materials necessary for performance of work;
- Restriction of the quantities of hazardous materials, such as paints, solvents, chemicals, cleaners, and fuels, entering radiological areas;
- Substitution of reusable items in place of disposable ones, when practical;
- Selection of consumable materials such as PPE that is compatible with waste processing systems, volume reduction, and waste acceptance criteria;
- Survey of potentially contaminated material leaving controlled areas to separate uncontaminated materials from contaminated materials; and
- Emphasis on waste reduction methodologies in training.

Additional waste minimization procedures and/or requirements may be identified in each site specific work plan and will be commensurate with the levels of radioactive materials present and activities being performed. A separate waste management plan shall be prepared for the Site.

12.0 EMERGENCY PROCEDURES

Details on the site-specific emergency procedures are provided in the HASP. All site personnel will be instructed in their emergency responsibilities and the emergency procedures. An emergency hospital is identified in the HASP and maps to this facility are readily available.

13.0 TRAINING

Training will be provided to general employees, radiation workers, and radiological control staff at the project Site. Annual retraining for Radiological Worker qualification is required specific to operations at this Site. All formal training under the RSP will verify individual knowledge by an appropriate examination. Documentation of training will be generated containing the individual's name, date of training, topic(s) covered, pass or fail, and the name of the certifying official. An employee will not be permitted to independently perform tasks inside of a radiological controlled area until the appropriate training and qualification requirements are met.

Additional training requirements will be determined on a site-specific basis and will be commensurate with the radiological hazards present on each site. These additional requirements will be determined and documented by the RSO.

13.1 RADIOLOGICAL WORKER TRAINING

At a minimum, all personnel entering an area where radioactive material or radiation generating devices are used, and where there is a potential for an individual to receive a Total Effective Dose Equivalent (TEDE) of 100 mrem or more in one year, will receive the following training:

- **Radiological Fundamentals** – Atomic Structure, Definitions and Units of Measure, the Four Basic Types of Ionizing Radiation, Units of Measure for Radiation.
- **Biological Effects** – Sources of Radiation, Effects of Radiation on Cells, Acute and Chronic Radiation Dose, Prenatal Radiation Exposure, Risks in Perspective.
- **Radiation Dose Limits** – Basis for and Purpose of Radiation Dose Limits and Administrative Control Levels, Dose Limits and Administrative Control Levels.
- **ALARA Program** – ALARA Program, Responsibilities for the ALARA Program, External and Internal Dose Reduction, Radioactive Waste Minimization.

- **Personnel Monitoring Programs** – External Dosimetry, Internal Monitoring, Methods for Obtaining Radiation Dose Records.
- **Radiological Access Controls and Postings** –Radiological Work Permits, Radiological Postings, Requirements for entering, working and exiting Radiological Control Areas.
- **Radioactive Contamination** – Types & sources of contamination, Contamination control methods, Contamination monitoring equipment, Decontamination.
- **Radiological Emergencies** – Emergency Alarms and Responses, Radiological Emergency Situations, Considerations in Rescue and Recovery Operations.
- **Practical Factors for Radiological Workers** – Review an Appropriate Radiological Work Permit (RWP); Record the Appropriate Information on the RWP; Select and Don, Wear and Remove Required PPE and Dosimeter(s); Enter Simulated Area and Demonstrate ALARA Techniques; Monitor for Contamination; Respond to Emergency Situations or Abnormal Radiological Situations; and Personal Frisking on Exit from Controlled Area.

Evidence of similar training completed within the past year will be accepted in lieu of new training. Site specific training will be provided.

13.2 General Awareness Training

General employees who are not radiological workers but may be involved in an occasional or indirect manner with radioactive material or activities supporting decontamination and decommissioning (D&D) efforts will receive training specific to the Site activities. This training may be similar in content to the Radiological Worker training but will not require a practical exercise.

13.3 Visitors

Visitors to the site will be provided with a handout that summarizes the necessary radiation training and this will be documented by the RSO or designee. Visitors will not be allowed unescorted access to radiation areas.

14.0 AUDITS

Because of the short duration of this project, the normal requirement for an internal audit of the field implementation of this RSP to be conducted at least once per year by the RSO will not be required. Should conditions at the site change significantly this requirement may be reconsidered by the Site RSO or LATA corporate RSO. Evidence of the annual audit conducted in support of the LATA NRC radioactive materials license is available to the RSO and project personnel. Audit findings are reported in writing to appropriate personnel and agencies.

15.0 RECORDS MANAGEMENT

RSP records will be maintained to document compliance with regulatory requirements and the exercise of due diligence in the control of radiological hazards for the protection of employees, members of the public, and the environment. These records will be transferred to the project file at the conclusion of the project.

At the completion of Site activities, copies of exposure monitoring records will be sent to the individuals monitored and their employers where appropriate. LATA employees will have copies also sent to the LATA Corporate Health Officer for inclusion into each respective employee's medical file. Exposure monitoring records for subcontract personnel will be transferred to each respective subcontract organization. Monitored individuals will be provided with a copy of their radiation monitoring results, consistent with the requirements of to 10 NYCRR 16.13(e). Upon completion of work at a site, exposure

data pursuant to the 10 NYCRR 16.13(e) requirements will be provided for LATA employees only. Subcontract personnel will be required to make requests for exposure records directly to their respective employer.

Exposure records that are maintained by LATA will be maintained in a manner consistent with applicable Privacy Act requirements. The records will be available for retrieval until termination of the LATA license. All quantities used in the records will be in special units of curie, rad, or rem, including multiples and subdivisions of these units.

Records identified with an individual's name or identifying number will be available upon request from that individual.

Records to be maintained include the following (as available):

- Doses received by individuals, for whom monitoring was required, during previous employment;
- Doses received by individuals for whom monitoring was required;
- Dose assessments for individuals for whom bioassay was performed;
- Doses to the embryo/fetus of a declared pregnant employee;
- Written declarations of pregnancy;
- Written withdrawal of declaration of pregnancy;
- Results of surveys for radiation and radioactive material in the workplace and outside of controlled or unrestricted areas as required by regulatory requirements or the radiation protection program;
- Results of surveys for the release of material or equipment to uncontrolled or unrestricted areas;
- Records of effluents and radioactive waste disposal under control;
- Results of calibrations performed on radiological instruments and quality control;
- Checks for radiological instrumentation and personal monitoring devices;
- Records of ALARA evaluations and control actions;
- Records of radiological training completed, including general employee radiological
- training;
- Records of internal reviews and audits with corrective actions closeout; and
- Records of regulatory agency inspections and audits with corrective actions closeout.

Interim storage of the above radiological records will be the responsibility of the RSO and will be maintained in a readily retrievable, controlled manner. Upon completion of each site project, and upon request, copies of all radiation exposure records will be made available to appropriate parties.

Records associated with radiation surveys and measurements performed to support activities associated with D&D of a site and equipment are:

- Name of the person making the evaluation and recording the results;
- Date of the survey;
- Instrument serial number used for surveys and measurements;
- Results obtained; and
- Applicable review.

LATA will record contamination levels observed and procedures followed for incidents involving contamination of individuals. The record should include name of individuals involved, description of work activities, calculated dose, probable causes (including root causes), steps taken to reduce future incidents of contamination, times and dates, and the surveyor’s signature.

Attachment E
LATA Waste Management Plan

WASTE MANAGEMENT PLAN
for the
Radiological Remediation
for Greenpac Mill, LLC
at 4400 Royal Avenue, Niagara Falls, NY

Prepared for
Greenpac Mill, LLC
4400 Royal Avenue
Niagara Falls, New York, 14303

Prepared by:

Los Alamos Technical Associates, Inc.
756 Park Meadow Road
Westerville, OH 43081

Prepared By: Darl Anderson	**Signature:**	**Date:** 9/8/11	**Title:** LATA Sr. Project Manager
Approved By: Ron Voorheis	**Signature:**	**Date:** 9/8/11	**Title:** LATA Project Manager
Approved By: Jason Brydges, PE	**Signature:**	**Date:** 9/8/11	**Title:** LATA Program Manager

Los Alamos Technical Associates, Inc.
Waste Management Plan for the
Radiological Remediation for Greenpac Mill, LLC
at 4400 Royal Avenue, Niagara Falls, NY

TABLE OF CONTENTS

LIST OF ACRONYMS

BCP	Brownfield Cleanup Program
CFR	Code of Federal Regulations
DOT	Department of Transportation
ERM	Environmental Resource Management
Greenpac	Greenpac Mill, LLC
IDW	Investigation Derived Waste
LATA	Los Alamos Technical Associates, Inc.
NTT	Notice to Transport
NYCRR	New York Official Compilation of Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Compliance
NYSDH	New York State Department of Health
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
TENORM	Technologically Enhanced Naturally Occurring Radioactive Materials
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, Disposal Facility
WAC	Waste Acceptance Criteria

1.0 INTRODUCTION

This Waste Management Plan has been prepared by Los Alamos Technical Associates, Inc. (LATA) as a guidance document for use during the radiological remediation of the Greenpac Mill, LLC (Greenpac) property located at 4400 Royal Avenue, Niagara Falls, New York (Site). This remedial action is being conducted under the auspices of the New York State Department of Environmental Compliance (NYSDEC) and New York State Department of Health (NYSDOH).

The project has been authorized to perform the soil radiological remediation and any low level radioactive waste generated from these activities will be disposed of at an out-of-state disposal location. This Waste Management Plan is based on the American Radiation Services, Inc. Laboratory Analysis Report ARS1-11-01761 of August 15, 2011 and identifies the waste management activities and tasks associated with the excavation of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) affected soil within the parcel identified as Brownfield Cleanup Program (BCP) Site Number C932150 located at 4001 Packard Road, Niagara Falls, New York (Site). TENORM is produced when radionuclides that occur naturally in ores, soils, water, or other natural materials are concentrated or exposed to the environment by activities, such as uranium mining, sewage treatment or water treatment sludges. The analysis results indicated very small concentrations of radionuclides with low specific activity well below 2000 pCi/g. This waste management plan applies to wastes generated from the activities performed as a part of the remediation activities of this project.

This document establishes the framework to disseminate programmatic strategies for managing waste from initial generation through final disposition. This plan addresses (1) pollution prevention, segregation, and waste minimization methods, (2) waste generation forecasts, (3) point of generation controls, (4) staging and storage requirements, (5) transportation, (6) treatment/recycling/disposal requirements, (7) required training, and (8) waste with no disposal path conditions.

Generated waste will be characterized in accordance with applicable regulations, profile and procedure requirements, and the applicable Treatment, Storage, Disposal Facility (TSDF) Waste Acceptance Criteria (WAC). Process knowledge will be used to the extent practical to minimize additional sampling. Additional sampling and laboratory analysis or noninvasive characterization methods will be performed as necessary when existing information is inadequate to make an accurate waste determination.

Sorting, segregation, and decontamination techniques will be performed to the extent practicable to minimize the amount of material requiring off-site treatment and disposal. Wastes will be evaluated for the best technical and cost effective disposition path.

2.0 PURPOSE AND SCOPE

2.1 PURPOSE

The purpose of this waste management plan is to provide a systematic approach to the management of waste generated at the Site and is designed to protect the health and safety of the worker, the public, and the environment. The waste management plan provides an overall strategy for how waste management activities will be implemented for wastes generated by the project. This document describes the proper management of waste streams from generation to disposal, including characterization and segregation to meet the applicable disposal facility requirements.

2.2 SCOPE

The scope of this document is to set forth the requirements for managing newly generated waste for Greenpac. The plan identifies the compliance drivers (codes, standards, laws, and regulations), organizational responsibilities, waste types, and specific elements that must be addressed during preplanning, generation, management, and waste disposition.

This plan provides guidance for waste minimization, control, staging, and transportation of wastes generated by the project. Waste generated as part of the project will include the radiologically contaminated soils at the Site.

LATA will be responsible for review of the characterization and packaging of generated TENORM contaminated waste from the project. Greenpac/ERM will be responsible for the characterization of generated hazardous waste (non-radiological waste) and the disclosure of which to LATA in LATA remediation areas. This project will operate with the overall waste management guiding EPA hierarchy of reduce, reuse, recycle, dispose. As a result of process knowledge and historical characterization information, it is anticipated that all TENORM generated waste will be transported out-of-state for appropriate disposal.

3.0 CODES, STANDARDS, LAWS, AND REGULATIONS

Unless indicated otherwise, the following codes, standards, laws, and regulations establish the minimum requirements for management of waste generated as part of this project.

10 CFR, Chapter 1	Nuclear Regulatory Commission, Part 61
29 CFR, Part 1910	Occupational Safety and Health Standards
40 CFR, Chapter 1	Environmental Protection Agency – Parts 260-299 and 700-780
40 CFR, Chapter 1	Environmental Protection Agency – Part 330.440 Procedures for planning and implementing off-site response actions

49 CFR, Subchapter C	Hazardous Material Regulations – Parts 40, 100-185, 325, and 355-399
6 NYCRR, 360	Solid Waste Management Facilities
6 NYCRR, 371.1, (c) (7)	Identification and Listing of Hazardous Wastes
6 NYCRR, 370 – 376	Hazardous Waste Management
6 NYCRR, 380	Prevention and Control of Environmental Pollution by Radioactive Materials

4.0 RESPONSIBILITIES

Waste management activities have subset activities such as waste volume reduction, waste minimization and pollution prevention, packaging, and transportation and disposal. Waste management is the responsibility of personnel performing work under this plan. Work procedures and processes are designed to minimize waste generation to the maximum extent practicable. Staff working on the project are required to comply with this work plan and other applicable project documents. Key positions for waste management are the LATA Project Manager, Waste Manager, Shipper, and Quality Assurance/Quality Control Representative. Their specific responsibilities are provided below.

4.1 LATA PROJECT MANAGER

The LATA Project Manager is responsible for management and control of activities associated with the soil remediation at the Site. The project manager will ensure that personnel assigned to perform waste management activities do so in accordance with this plan and appropriate procedures. In the event of an emergency, the project manager, or his designee, will make appropriate notifications.

4.2 WASTE MANAGER

The Waste Manager will serve as the point of contact for matters relating to characterization and management of wastes. The waste manager is responsible for ensuring the proper characterization and management of wastes resulting from the activities associated with the project. Primary responsibilities include, but are not limited to, the following:

- Ensure that personnel involved in the management of waste are qualified and trained to perform job specific duties.
- Interface with waste generators and the TSDF on WAC matters.

- Ensure that waste packages have proper certifications for the type of waste contained therein.

- Ensure that waste being shipped meets the TSDF WAC.

- Certify (when required by the receiving facility) that waste is properly segregated, packaged, and prepared for shipment and meets the requirements of the waste profile and the site specific requirements of the receiving facility.

4.3 WASTE SHIPPER

The Waste Shipper is responsible for providing the support needed to adequately identify, classify, contain, control, and communicate the hazards for waste being shipped off-site. A detailed description of the roles and responsibilities of the Waste Shipper are addressed in detail within the Transportation and Disposal Plan.

4.4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) REPRESENTATIVE

The QA/QC representative will facilitate implementation of quality requirements and practices into waste management activities, and verify that these operations are being performed effectively, efficiently, and in accordance with the requirements of the waste management and transportation plan. The QA/QC representative will ensure that quality requirements are met through the use of surveillance.

5.0 WASTE GENERATION PLANNING AND FORECASTING

Waste forecasting is the process by which waste volume estimates are derived for each waste type to support the development of project schedules and cost estimates, and to serve as input for other waste management planning efforts (e.g., providing anticipated shipment schedule and quantity to the TSDF).

Waste forecasts will be developed to show anticipated waste generation rates by waste type throughout the entire project period and will be updated as necessary. The forecasts will be provided to the project manager.

Minimization of the quantity of controlled waste will be a high priority during the project. Project management will incorporate waste volume minimization practices into site work and include the elements described below as an integral part of the remediation process.

On-site handling and packaging of waste, prior to transportation, will be performed in areas designated for these activities.

Waste generated during this project will be staged on-site until approved for disposition. These materials will be managed in accordance with federal, state, local, and site permitting

requirements, consistent with project team procedures and license requirements for handling, storage, and transportation.

5.1 PROJECT WASTE GENERATION PLANNING

Work will be planned, authorized, and accomplished under controlled conditions, using work plans, instructions, or procedures commensurate with the complexity and risk of the work.

Processes important to waste disposition activities (e.g., characterization, radiological surveys, etc.) shall have controls or verification steps identified as part of operating procedures. Controls will be established to ensure the traceability of the waste from the point of generation through final disposition.

5.1.1 Pollution Prevention/Waste Minimization

The project team will plan activities to meet the obligations and responsibilities for the radiological remediation of the Site. The project team will minimize the generation of waste per the following EPA hierarchy:

- Reduce
- Recycle
- Dispose

Reduce - During project planning, every effort will be made to minimize the amount of waste generated by the following means:

- Use the least hazardous chemicals/products possible.
- Purchase only the amount of materials required.
- Limit the materials taken into contamination areas.
- Perform as many tasks as possible outside a contamination area as possible.
- Decontaminate items to the greatest extent practical.
- Aggressively sort and segregate materials.

Recycle – There is not anticipated to be any recycled material on this project.

Dispose – The project team will initiate and maintain required treatment/disposal contracts as required for the project. The team will seek the most compliant, cost-effective alternative.

The unnecessary generation of TENORM contaminated waste will be minimized by controlling materials and equipment brought on-site and by preventing unnecessary packaging materials, tools, and equipment from entering the regulated areas. Appropriate environmental/health technicians will conduct and document surveys of materials within the likely area of remediation to define the probable waste streams and to facilitate segregation of wastes. Minimal quantities

of liquids will be used during remediation activities for dust control to minimize the amount of liquid wastes that may require treatment prior to disposal.

5.2 WASTE STREAM HANDLING AND DISPOSITION

The following sections provide general definitions of the waste streams that may be generated during this project. The list may not be inclusive of all wastes generated.

5.2.1 Non-Contaminated, Non-Regulated Wastes and Recyclable Materials

Sanitary wastes and other wastes that are not radioactive will be disposed of at the local commercial disposal facility (landfill). Materials that are considered by the project to be exempt from regulation, based on the intent to reclaim, recycle, or reuse will be released in compliance with State of New York Official Compilation of Codes, Rules, and Regulations (NYCRR) 6 NYCRR 371.1(c)(7). As required by the regulation, a notification including required information will be provided to the NYSDEC prior to utilizing the exemption or exclusion.

5.2.2 Chemical and Hazardous Waste

Federal regulations define hazardous wastes as those solid wastes that are either specifically listed in the solid waste regulations ("F", "U", "P", or "K"-listed wastes) or have particular characteristics (reactivity, ignitability, corrosivity, or leachability). Hazardous wastes include solids, liquids, and gases. Wastes generated from C&D activities (e.g. debris) and maintenance activities (e.g., vehicle/equipment oil changes) that are determined to be hazardous wastes, per RCRA/TSCA regulations, will be packaged, treated, staged, transported, and disposed of consistent with RCRA/TSCA and Department of Transportation (DOT) regulations. These wastes will be disposed either by direct contract with a permitted TSDF, or indirectly through a contract with a qualified local hazardous waste broker. However, these types of wastes are not anticipated to be generated as part of this project.

5.2.3 Technically Enhanced Normally Occurring Radioactive Material (TENORM)

Based on a review of the site historical data and survey analyses, anticipated radioactive waste streams are expected to be limited to TENORM contaminated wastes within the upper 2-4 feet of Phase III and IV designated areas at the Site. Radiologically contaminated wastes will be managed in accordance with local, state, and federal requirements.

5.2.4 Non-Impacted Waste

For the purposes of this plan, non-impacted wastes are those that are not considered hazardous under federal or state regulation. This would include such items as paper, cardboard, scrap metal, and woody debris.

5.2.5 Universal Waste

Universal waste is a category of waste materials not designated as hazardous but containing materials that need to be prevented from unconditional release into the environment. It is defined in 40 CFR 273 by the EPA and New York has corollary regulations regarding these materials (NYCRR). If universal waste is generated as part of this project, a location for recycle/disposal will be evaluated and proposed for appropriate agency approval.

5.3 RELEASE OF POTENTIALLY CONTAMINATED ITEMS

Some items will be used in contaminated areas during this project. This typically includes potentially contaminated tools and equipment to be surveyed for unconditional release, in accordance with procedures presented in the Site Operations Plan and the Site Specific Radiation Safety Plan.

5.4 WASTE SEGREGATION

The volume of the different waste streams will be minimized by decontaminating areas and equipment where practical and by segregating waste as TENORM contaminated waste and unconditional releasable waste. Segregation of waste streams will also be practiced where practical.

5.5 VOLUME REDUCTION

Bulky material will be dismantled or cut up to reduce volume for temporary staging and shipment when it is necessary and cost-effective to do so. No bulky material is expected on this project.

5.6 WASTE TRACKING

Waste movement from generation to disposal will be tracked. On-site waste movements will be supervised and tracked to ensure only approved routes are used and material appropriately reaches its designated destination. Off-site tracking will be implemented through logging of shipping manifests, supplementary transportation data, other notifications and documentation provided per subcontract, and documents provided in accordance with DOT and EPA regulations (e.g., certificates of treatment/disposal) in accordance with the Transportation and Disposal Plan.

The tracking systems will provide the capability to identify for each waste container (transport trailer), the type of container, the type of waste contained, the container location, the volume of waste contained, the pertinent Waste Stream Profile, date loaded, date disposed, related container or waste material certifications, etc.

As the information for each container is received and logged into the tracking system, the supporting documentation will be compiled into a record package for that container. Upon

receiving and logging the Certificate of Disposal, the record package will be transferred to the Project Manager.

5.7 WASTE STAGING ON-SITE

Any unpackaged waste temporarily staged while project personnel are not on site shall be covered at the end of each work day. Contaminated materials will be completely covered with a minimum of 1 layer of 0.15 millimeter (6-mil) polyethylene sheeting, or an equivalent material.

6.0 WASTE STREAM CHARACTERIZATION

There are several different potential waste generation activities during this remedial action project. A general discussion regarding the generation, sampling, and disposal of remedial action wastes is presented in the following sections. Greenpac will be listed as the generator for waste that is shipped for disposal from this remedial action project. No waste will be transported off-site until LATA has notified and received the Notice to Transport (NTT) from the TSDF. Waste will be transported to a licensed and approved TSDF in accordance with state and federal guidelines.

Waste will be appropriately characterized to identify radiological contaminant concentrations to address the requirements in Title 10 Code of Federal Regulations (10 CFR) Part 61, as well as non-radiological hazardous waste characteristics as required by the U.S. Environmental Protection Agency (EPA) and in Title 40 CFR, Parts 260 and 265. Characterization of waste for radiological and non-radiological constituents will assure waste is in compliance for acceptance and disposal off-site.

Characterization of waste will include waste sampling, testing, and analysis for each waste stream as appropriate.

6.1 PERSONAL PROTECTIVE EQUIPMENT (PPE) WASTE

Any potential waste PPE generated by remedial activities (including used respirator cartridges and disposable protective coveralls) will be placed in plastic bags, marked and labeled, and then disposed of at an approved disposal facility.

6.2 SAMPLING WASTE

Investigation Derived Waste (IDW) generated from sampling activities will be considered TENORM contaminated waste and be treated accordingly until proven otherwise by analysis.

6.3 EXCAVATION WASTE

Excavation waste will be direct loaded in transport carriers or temporarily staged within a designated area pending loading and transport. Excavation waste may include clay, soil, minimal debris, etc. The excavation waste will be sampled and analyzed by the project team as

necessary to provide the basis for disposal facility selection. No mixing of clean soils with waste streams will be used to achieve non-impacted status. Transportation to an appropriate disposal facility is detailed in the Transportation and Disposal Plan.

Potentially affected remedial action wastes (such as PPE, etc.) will be disposed of at an appropriate TSDF. The project team will provide documentation of waste characterization prior to disposal of waste. The disposal of project wastes will be in accordance with applicable state and federal regulations.

6.4 NON-RADIOLOGICALLY CONTAMINATED WASTE

Material that does not exceed levels for unrestricted release ("free release") criteria for radioactive material will be segregated and disposed of at an approved local landfill or as directed by Greenpac/ERM based on any know hazardous constituents. The project team will survey, and/or sample and analyze waste prior to deciding the disposition of this non-radioactive waste. The team will direct this material to be transferred to a designated on-site waste staging area for handling and disposal by Greenpac/ERM. The disposal of project wastes will be in accordance with applicable state and federal regulations.

7.0 WASTE STREAM PACKAGING, TRANSPORT, AND DISPOSTION

General requirements pertaining to packaging, transport, and disposal are described in the Transportation and Disposal Plan.

7.1 NON-EXEMPT (LOW LEVEL RADIOACTIVE WASTE) SOLID WASTE

Non-exempt solid waste includes any solid, semi-solid, liquid, or contained gaseous radioactive material that is discarded. Radioactive waste will be generated by decontaminating areas and equipment, PPE, and monitoring media.

Non-exempt solid waste that is to be shipped from the project site will be identified, packaged, and transported in accordance with the project Transportation and Disposal Plan and the most recent revision to the applicable DOT Hazardous Materials Regulations in 49 CFR and any applicable state regulations that are more stringent than DOT regulations.

7.1.1 Non-Exempt (Low-Level Radioactive Waste) Waste Package Characterization

The hazardous materials regulations indicate that non-exempt (low-level radioactive waste) solid waste must contain radionuclides where both the activity concentration and the total activity in the consignment exceeds the exemption values specified in the table in 49 CFR 173.436 (or derived according to the instruction in 49 CFR 173.433) for the material to be regulated for purposes of transportation.

7.1.2 Non-Exempt (Low-Level Radioactive Waste) Waste Package Contamination

The hazardous materials regulations define non-fixed contamination as the presence of a radioactive substance on a surface in quantities in excess of 4.0 becquerels per square centimeter (Bq/cm2) [220 disintegrations per minute (dpm)/cm2 or 22,000 dpm/100cm2] for beta and gamma emitters and low toxicity alpha emitters. Non-fixed and fixed contamination is contamination that can and cannot be removed from a surface during normal conditions of transport, respectively.

The level of non-fixed contamination on the external surfaces of each package offered for transport from the site will be kept at levels below the regulatory limits. In addition, the level of non-fixed contamination may not exceed the transport limits set forth in Table 9 of 49 CFR 173.443.

Since Greenpac remediation waste shipments from the facility will be under exclusive use consignment, the permissible package non-fixed contamination levels at any time during shipment may be up to 10 times the limits discussed above. Additional vehicle survey requirements apply and will be implemented pursuant to 49 CFR 173.443 (c) and (d).

7.1.3 Non-Exempt (Low-Level Radioactive Waste) Waste Packaging

Low-level radioactive waste to be transported off-site for disposal will be packaged according to regulations in 49 CFR.

7.1.4 Non-Exempt (Low-Level Radioactive Waste) Waste Package Storage and Transportation

Waste is intended to be packaged close to the point of generation or at a designated location within the regulated area of the site. Packaging of the materials will incorporate use of approved disposal containers.

After packaging the waste, the waste container may be relocated to an on-site staging area to be prepared for shipment. The waste will be transported as required by DOT regulations.

7.2 NON-HAZARDOUS WASTE

For the purposes of this plan, non-hazardous wastes are those that are not considered hazardous under federal or state regulation. This would include such items as paper, cardboard, PPE, and monitoring media. These materials will be collected for disposal at a licensed/permitted landfill as non-impacted waste.

7.3 SAMPLING WASTE

For the purposes of this plan, sample wastes are those materials that are generated during sampling activities. Each waste stream will be sampled to verify compliance with disposal facility waste acceptance requirements. The sampled material will be handled, packaged, stored, and transported in accordance with applicable regulations.

7.3.1 Sample Waste Packaging, Storage, and Transportation

Sample waste will be tracked with a Chain of Custody form provided by the laboratory documenting, at a minimum, sample identification numbers, dates, times, locations, and waste streams. The samples will be packaged and stored according to specifications provided by the analyzing laboratory. Transportation of sample waste will be in compliance with International Air Transport Association Dangerous Goods Regulations.

8.0 DISPOSITION STRATEGY

8.1 OVERVIEW

Waste generated as part of this project will characterized and packaged in accordance with this work plan. Wastes shall be evaluated for the best technical and cost effective disposition path.

8.2 WATER CONTROL

Collected surface water and decontamination waste water will be collected in appropriate portable containers (i.e., frac-tanks) for storage and testing. It is anticipated that minimal amounts of water will be generated during the course of the project. However, surface water and contact water will be collected where verification testing/scanning will be performed to confirm that it is uncontaminated. Water collected from run-off and site operations may be used for dust suppression provided representative sampling analysis yield results that are acceptable for such use.

8.3 TENORM CONTAMINATED WASTE

TENORM Contaminated Waste that is generated during this project will be transported out of state to an approved disposal facility. It is anticipated that one (1) waste profile will be created to handle specific wastes that will be generated as a result of this operation. Waste streams will follow the respective approval process of the TSDF, which includes the document generation, review and approval of characterization determinations, and final disposal site determination. The waste management team will begin interfacing with the TSDF acceptance team far in advance of intended shipments to insure that administrative requirements are met prior to transportation. This process ensures that proper characterization determinations are made and that the correct waste codes are assigned to the waste stream to ensure that the wastes are compliant prior to disposal.

9.0 OFF-SITE ANALYSIS QUALITY ASSURANCE AND DATA QUALITY OBJECTIVES

Data quality objectives have been established to ensure that quality radiological and hazardous data necessary to accurately characterize waste awaiting disposal is obtained. .

The data obtained from this characterization effort will be used to direct the disposal of waste in accordance with this plan. Only if necessary, waste streams will be characterized by a certified laboratory in accordance with the waste disposal facility requirements.

10.0 WASTE DISPOSITION

Estimated waste quantities are discussed in the following sections.

10.1 WASTE QUANTITY ESTIMATES

It is estimated that approximately 11,310 tons of material will be removed from the area of concern as part of this project.

10.2 WASTE DISPOSAL

Non-radioactive wastes will be disposed of in accordance with local and state requirements associated with area land disposal facilities. Waste generated as a result of this project will be handled, packaged, transported, and disposed of in accordance with this plan.

11.0 WASTE CERTIFICATION

A Certificate of Destruction, Disposal, or Placement is required for wastes disposed of off-site as part of this project. These certificates will provide a complete record of the final disposition of the wastes. The certificates will identify the individual quantities of material received at the disposal facility, the disposal method, and location where the material is finally placed after disposal.

12.0 SPILL CONTINGENCY PLAN

Throughout the course of the project, the project team will implement a Spill Contingency Plan (Attachment A). This plan describes the measures that will be taken to prevent, control, and clean up spills of oil, hazardous materials, and other pollutants. It also identifies the potential sources of pollution that may reasonably be expected to affect the quality of storm water at the site.

13.0 PROBLEM IDENTIFICATION AND CORRECTIVE ACTIONS

13.1 TRACKING AND CORRECTIVE ACTIONS

The project team will implement a program to track issues, corrective actions, and incorporate lessons learned to prevent recurrence.

13.2 STOP WORK AUTHORITY

The project team will implement a project philosophy that will ensure waste is managed with consideration for the following objectives:

- Protect the public from exposure to radiation from radioactive materials
- Protect the environment
- Protect workers, including following requirements for radiation protection

Anyone on site has the authority to stop work if the task at hand poses an imminent risk to the individual, the public, or the environment.

14.0 MANAGEMENT AND INDEPENDENT ASSESSMENTS

14.1 MANAGEMENT ASSESSMENTS

Management assessments may be performed at the discretion of the LATA Project Manager to evaluate the adequacy and effectiveness of procedure implementation, work performance, and contract performance deliverables and expectations. This assessment process requires managers at every level to assess the performance of the activities assigned to their function and document their observations and findings.

14.2 INDEPENDENT ASSESSMENTS

Independent assessments are normally planned, scheduled, and conducted to evaluate compliance with environmental, health, safety, quality, and regulatory requirements, the adequacy of work performance, and to promote continuous improvement. These planned assessments are separate from and in addition to management assessments. Assessment schedules, and the allocation of resources needed to meet these schedules, are based on the status, hazard, and complexity of the activity or process being assessed. Schedule flexibility allows performance of additional assessments of project activities for identified areas of concern.

The assessment process includes follow-up by project management to assure corrective actions are implemented when deficiencies are identified.

Due to the short duration of this project, independent assessments may prove infeasible and unnecessary. However, the LATA Project Manager will consider assigning independent assessments when and where practicable.

15.0 REFERENCES / ATTACHMENTS

Regulations

EPA, 2004, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Update IIIB, November

Executive Order 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*

Executive Order 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*

Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*

Solid Waste Management Act of 1968

10 CFR Part 71, Nuclear Regulatory Commission, "Packaging and Transportation of Radioactive Material"

10 CFR Part 830, Department of Energy, "Nuclear Safety Management"

29 CFR Part 1910, Occupational Safety and Health Administration, Subpart H, "Hazardous Materials"

29 CFR Part 1910, Occupational Safety and Health Administration, Subpart N, "Materials Handling and Storage"

29 CFR Part 1926, Occupational Safety and Health Administration, "Safety and Health Regulations for Construction"

40 CFR Parts 260-265, Environmental Protection Agency (EPA), Resource Conservation and Recovery Act (RCRA)

49 CFR Parts 100-185, Research and Special Programs Administration

Attachment A - Spill Contingency Plan

1.0 PURPOSE AND SCOPE

This Spill Contingency Plan describes the measures that will be taken to prevent, control, and clean up spills of hazardous materials during project activities. It also identifies potential sources of pollution that may reasonably be expected to affect the quality of storm water at the site.

2.0 GENERAL

2.1 DEFINITIONS

- **Best Management Practices (BMPs) –** Measures or practices used to reduce the amount of pollution entering surface water, air, land, or groundwater. A BMP may take the form of a process, activity, or physical structure.

- **Discharge –** Discharge of a pollutant, which means the addition of any "pollutant(s)" to "waters of the state" from any "point source" including, but not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

- **Emergency Response Coordinator –** Designated person accountable for spill prevention and response preparation.

- **Harmful Quantity –** Discharges of oil that: (a) violate applicable water quality standards or (b) cause a film or sheen upon or discoloration of the surfaces of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

- **Material handling –** Storage, loading, unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product.

- **Oil –** Oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

- **Point Source –** Any discernible, confined, and discrete conveyance, such as a pipe, ditch, channel, etc., from which pollutants are or may be discharged into waters of the state.

- **Potential Discharge –** Any incident or other circumstance that constitutes a substantial threat of oil to be discharged.

- **Significant Materials –** Includes, but is not limited to, raw materials, fuels, solvents, detergents, hazardous substances, fertilizers, pesticides, and waste products that have the potential to be released with storm water discharges.

- **Spill Contingency Plan** – A series of steps and activities to (1) identify sources of pollution or contamination on a site and (2) select and carry out actions that prevent or control the pollution of storm water discharges.

- **Storm Water –** Storm water runoff, snowmelt runoff, and surface runoff and drainage.

2.2 RESPONSIBILITIES

LATA Project Manager

- Ensure personnel are trained regarding associated hazards of the materials used and appropriate spill response procedures.

- Coordinate emergency activities relating to control and cleanup of a hazardous material to minimize any hazards to personnel or the environment.

- Are familiar with the contents of the Spill Contingency Plan

- Ensure personnel are trained in the appropriate spill control procedures in accordance with the Spill Contingency Plan.

Project Personnel

- Are aware of the circumstances and situations that may contribute to oil spills and leaks.

- Develop adequate understanding of the Spill Contingency Plan, including known spill events, potential malfunctioning components on equipment, and the most recent spill control developments.

- Understand how to deal with spills, leaks, and other potential emergencies involving significant materials, including oils and petroleum products.

Waste/Transportation Manager

- Notifies the appropriate regulatory agencies of reportable spills of potentially radioactive materials.

3.0 SITE INFORMATION

3.1 SITE INFORMATION

Owner: Greenpac Mill, LLC
Attn: Srini Balaji
Location: 4400 Royal Avenue, Niagara Falls, New York 14303
Telephone: 716-299-0584

3.2 SITE CONTACTS

Ron Voorheis, LATA Project Manager, (614) 778-6606
Jim Panozzo, LATA Senior Site Superintendent, (740)497-9653
Dave Richards, LATA Site Superintendent, (614)778-6447

4.0 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

4.1 SUMMARY OF POTENTIAL POLLUTANT SOURCES

An evaluation of the site found the following sources to present potential sources of pollutants:

- **Vehicle and Equipment Maintenance -** To complete the contract Scope of Work, the project will have several specific pieces of equipment on the site including loaders, excavators, etc. Maintenance for these vehicles will be conducted on site in a designated area. Leaks and spills of motor oil, hydraulic fluids, coolants, and other lubricants pose potential sources of pollutants.

- **Transfer Operations -** During filling operations by outside vendors and the transfer of fuels into containers or vehicle tanks by on-site personnel, there is a potential for spillage or leaks of petroleum products onto the ground service.

- **Loading and Unloading Areas -** Loading and unloading of waste materials will be performed in a designated area on site. Conveyances will be loaded and unloaded using appropriate material handling vehicles.

- **Outdoor Staging of TENORM Contaminated Waste –** The waste staging area during operations will be uncovered. The staging area will be recovered at the close of business each day to minimize storm water runoff.

4.2 INVENTORY OF EXPOSED MATERIALS

Chemicals, oil and petroleum products, and wastes that are staged on site will be in strong tight containers or covered areas. An inventory of chemicals stored on site will be

available. Flammable liquids and aerosols will be stored in flammable storage cabinets. Other liquid materials will be stored in secondary containment. Products (i.e., chemicals, oil, etc.) will be stored as recommended by manufacturer.

5.0 MEASURES AND CONTROLS – BEST MANAGEMENT PRACTICES

5.1 GOOD HOUSEKEEPING

Good housekeeping requires the maintenance of a clean and orderly project site.

5.2 VEHICLE AND EQUIPMENT STORAGE AREAS

Material handling vehicles and other equipment used on site will be stored or parked in a designated area. Dry cleanup methods such as drip pans, absorbent, and absorbent pads will be used for vehicles leaking fluids.

5.3 FUELING AREA AND OPERATIONS

When unloading oil and other petroleum products, the following will be implemented:

- Fill tanks to less than 80% capacity.
- Avoid topping off tanks during filling operations.
- Ensure that a spill kit is accessible during the transfer operation.
- Contain and clean up spills and leaks immediately.

5.4 EMPLOYEE TRAINING

Employee awareness training of information contained in this plan shall be conducted prior to working in impacted areas. Training shall include, but is not limited to:

- Summary of this plan.
- Spill prevention, response, and control procedures.
- Fueling procedures.
- Housekeeping practices.

5.5 MANAGEMENT OF RUNOFF

The site will utilize practices and structures for controlling, diverting, and managing storm water runoff.

6.0 EMERGENCY RESPONSE PROCEDURES

6.1 SPILL CLASSIFICATION

Classifying the magnitude of a spill is necessary to determine the appropriate level of response. Spill level (I, II, or III) is based upon the following considerations:

- Type of spill
- Extent of personnel, environment, and property affected
- Level of expertise required to respond to or abate the spill
- Extent of personnel evacuation
- Cleanup and decontamination requirements.

Level I Spill

A Level I Spill is a spill that normally would not constitute an emergency but that indicates a potential safety or environmental problem exists at the site. These spills can usually be contained or abated utilizing equipment and personnel immediately available at the location. Examples include non-hazardous or small volume spills, drips, and small leaks that do not migrate from the operating area of the site.

Level II Spill

A Level II Spill is a spill where actual conditions may affect the safety or health of employees, protection of the environment, or the safeguarding of the facility. Emergency response personnel are activated or available for activation depending on the type and severity of the spill. Level I Spills may be upgraded to Level II Spills. Examples include hazardous material spills, spills of significant quantities, chemical releases, spills that ignite, and spills that migrate from the operating area of the site into storm drains. There is no expectation of a potential Level II spill as a result of the remediation operations of this project.

Level III Spill

A Level III Spill constitutes a major emergency requiring response from off-site emergency teams. Level I or II Spills may be upgraded to Level III. Examples include significant spills, spills related to natural disasters, large hazardous spills, spills resulting in an explosion or large-scale fire, and spills that migrate outside the facility fence line. There is no expectation of a potential Level III spill as a result of the remediation operations of this project.

6.2 RESPONSE TO A SPILL

Spill response actions will be dictated by the classification of a spill. Response to spills shall depend on personal level of training and the magnitude of the spill. Personnel shall only perform those functions for which they have been trained.

Level I Spill Response Actions:

a) Stop the spill if possible.
b) Clear the affected area.
c) Apply absorbents to prevent the migration of the spill.
d) Clean up the spill immediately.
e) Properly dispose of spill cleanup wastes.

Level II and III Spill Response Actions

a) Stop the spill if possible.
b) Notify others in the immediate area.
c) Implement the site Emergency Response Plan.

6.3 SPILL RESPONSE EQUIPMENT

Spill response equipment will be located on site. Spill response equipment includes, but is not limited to, the following items:

- Fire Extinguishers
- First Aid Equipment
- Eyewash/Showers
- Spill Kits

7.0 GUIDELINES AND REGULATIONS

There are four primary Federal statutes that require release reporting including the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), the Hazardous Material Transportation Act of 1974 (HMTA), and the Clean Water Act (CWA).

Because CERCLA defines hazardous substances to include CWA hazardous substances and toxic pollutants, the Clean Air Act (CAA) hazardous air pollutants, the RCRA hazardous wastes, and the TSCA imminently hazardous chemical substances, releases of the substances are also subject to CERCLA reporting requirements.

The following reporting guidelines will be followed as applicable:

- CERCLA Section 103 (40 CFR Part 300 and Part 302)
- EPCRA Section 304 (40 CFR Part 355)
- HMTA Section 1808 (49 CFR Part 171)
- CWA Section 311 (40 CFR Part 110 and Part 300)

Attachment F
LATA Transportation and Disposal Plan

TRANSPORTATION AND DISPOSAL PLAN
for the
Radiological Remediation for Greenpac Mill, LLC
at 4400 Royal Avenue, Niagara Falls, NY

Prepared for
Greenpac Mill, LLC
4400 Royal Avenue
Niagara Falls, New York, 14303

Prepared by:

Los Alamos Technical Associates, Inc.
756 Park Meadow Road
Westerville, OH 43081

Prepared By: Darl Anderson	**Signature:** 	**Date:** 8/31/11	**Title:** LATA Sr. Project Manager
Approved By: Ron Voorheis	**Signature:** 	**Date:** 8/31/11	**Title:** LATA Project Manager
Approved By: Jason Brydges, PE	**Signature:** 	**Date:** 8/31/11	**Title:** LATA Program Manager

Transportation and Disposal Plan for the Radiological Remediation for Greenpac Mill, LLC at 4400 Royal Avenue, Niagara Falls, NY

TABLE OF CONTENTS

LIST OF ACRONYMS

AHA	Activity Hazard Analysis
CFR	Code of Federal Regulations
DOT	Department of Transportation
Greenpac	Greenpack Mill, LLC
LATA	Los Alamos Technical Associates, Inc.
NRC	U.S. Nuclear Regulatory Commission
NYSDEC	New York State Department of Environmental Conservation
RCRA	Resource Conservation and Recovery Act
SSHO	Site Safety and Health Officer
TENORM	Technically Enhanced Naturally Occurring Radioactive Material
TSCA	Toxic Substance Control Act
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

This Transportation and Disposal Plan has been developed by Los Alamos Technical Associates, Inc. (LATA) for the radiological remediation of the Greenpac Mill, LLC (Greenpac) property located at 4400 Royal Avenue, Niagara Falls, NY (Site). The Transportation and Disposal Plan purpose is to aid the assigned project staff in performing transportation related work, assuring that compliance with motor carrier, federal, state and local regulations are understood and adhered to applicable transportation activities performed by employees and lower tier subcontractors.

The project team shall implement the Transportation and Disposal Plan in accordance with existing procedures to ensure that the transportation of hazardous materials on-site and off-site is performed in accordance with applicable federal, state and local rules and regulations.

1.1 TRANSPORTATION SAFETY POLICY

The LATA Project Manager will ensure quality performance and full compliance during transportation in regard to the project operations. The safety of employees and subcontractors shall not be jeopardized in any way as a result of production, contract, or regulatory schedule pressure. Management is responsible for addressing conditions that can lead to accidents and/or injuries by implementing appropriate administrative and engineering controls to provide a safe work environment. Project team members will avoid work conditions and activities that are deemed unsafe. Safety briefings will be regularly conducted by the supervisory staff to address any Activity Hazard Analysis (AHA) applicable to the job tasks being performed, and to reiterate the emphasis on overall safety for project personnel.

Project employees and subcontractors are encouraged to report transportation safety concerns to their management team. In no way shall employees or sub-contractors be disciplined for reporting safety concerns. If safety concerns are not resolved by the employee's management, they may be brought to the Project Manager's attention either informally through verbal communication, or formally by filing a written notification.

2.0 PURPOSE AND SCOPE

2.1 PURPOSE

In support of this project, the project team shall ensure that waste and material shipments are performed in compliance with Department of Transportation (DOT) regulations. Shipments under this plan will include waste and material originating from the Site. The implementation of this plan will ensure compliance with applicable standards and contractual commitments. At a minimum, this plan addresses transportation of materials from the project site on private haul roads and public highways for staging and disposal at on-site and off-site locations.

This document defines the process for shipment of waste and material shipments, as well as incident response during transit. Project personnel are responsible for the proper identification, classification, communication, containment, and controls in accordance with the U.S. DOT, New York State Department of Environmental Conservation (NYSDEC), U.S. Nuclear Regulatory Commission (NRC), and U.S. Environmental Protection Agency (USEPA) regulations.

2.2 SCOPE

The scope of this work encompasses waste and material that is transported outside the Site project area. This may include solids, liquids, nonradioactive, radioactive, hazardous, industrial waste, and material items. Formal DOT compliance documentation is required for off-site moves. This plan will be used by the project team and its subcontractors to ensure compliant implementation of transportation activities. Project team members and sub-contractors shall be responsible for contractual agreements and for identification and full compliance with applicable standards of the DOT regulations and associated licenses and permits, and applicable client procedures that are applicable to transportation. On-site and off-site packaging and transportation of material will be conducted in a manner that:

- Protects public and worker health and safety and the environment;
- Maintains compliance with applicable requirements and federal, state, and local regulations;
- Minimizes waste; and
- Meets the criteria of the disposal location.

3.0 GENERAL

3.1 RESPONSIBILITIES

3.1.1 LATA Project Manager

The LATA Project Manager is responsible for management and control of activities associated with the radiological remediation of the Site. The Project Manager will ensure that personnel assigned to perform waste management activities do so in accordance with this plan and appropriate procedures. In the event of an emergency, the Project Manager, or designee, will make appropriate notifications.

3.1.2 Waste/Transportation Manager

The designated Waste/Transportation Manager is responsible for transportation and transportation-related work activities associated with the Greenpac remediation project. The Waste/Transportation Manager will have met the prerequisites and training requirements outlined in 49 CFR 172 Subpart H (Hazmat Employee Training), Reference 2.31 and is authorized to ship certain hazardous materials as defined in Sections 5.3-5.4. The Waste/Transportation Manager is responsible for providing support needed to

adequately identify, classify, contain, control, and communicate the hazards for waste being shipped off-site.

3.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) will be responsible for the implementation of the Greenpac Construction Safety Manual site policies and procedures to ensure appropriate consistency, accountability and compliance when engaging in any transportation or transportation related-work activities.

3.2 CODES, STANDARDS, LAWS, AND REGULATIONS

Unless otherwise indicated, the following codes, standards, laws, and regulations establish the minimum requirements for transportation-related work.

- 10 CFR 830- Nuclear Safety Management
- 10 CFR 835- Occupational Radiation Protection
- ICAO/IATA- Dangerous Goods Regulations
- ISO 9001- Quality Management Standard
- FMCSR- Federal Motor Carrier Safety Regulations
- NYCRR- New York Codes, Rules, Regulations
- TDEC Rule 1200-1-7
- Title 29 CFR 1910- Occupational Safety and Health Standards
- Title 40 CFR 61, 262-263 and 700-789
- Title 49 CFR, 100-185, 325 and 355-399

The project team shall perform on-site and off-site transportation and transportation-related work in accordance with the above listed and applicable regulatory requirements.

3.3 DEFINITIONS

3.3.1 Disposition

The activities that follow generation of a waste and that constitute completion of the life cycle management of the waste, including, but not limited to, stabilization, deactivation, disposal, decommissioning, dismantlement, and/or reuse.

3.3.2 Emergency

An emergency or potential emergency is defined as an unplanned event that endangers the health and safety of individuals, environment or equipment.

3.3.3 Material

Refers to anything being moved, removed or transported. This includes, but is not limited to, chemical and/or radiological contaminated materials, discarded material, equipment, material to be recycled, supplies, samples, and/or waste.

3.3.4 Non-hazardous Waste

Any discarded material that is not recycled and does not meet the definition of a hazardous waste, as defined in 40 CFR 261. A subset of non-hazardous waste includes Special Waste.

3.3.5 Hazardous Material

A substance or material that the DOT has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and is designated as hazardous under Section 5103 of Federal Hazardous Materials Transportation Law (49 U.S.C. 5103). The term includes temperature sensitive materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of this chapter.

3.3.6 Hazardous Waste

A waste that exhibits one or more of the characteristics of hazardous waste in 40 CFR 261, Subpart D.

3.3.7 Low-Level Radioactive Waste

A radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material [as defined in Section 11e.(2) of the Atomic Energy Act of 1954, as amended], or naturally occurring radioactive material (including technically enhanced naturally occurring radioactive material (TENORM)). [Adapted from Nuclear Waste Policy Act of 1982, as amended]

3.3.8 Radioactive Waste

Any garbage, refuse, sludge, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material, that must be managed for its radioactive content.

3.3.9 Record

A completed document or other media that provides objective evidence of an item, service, or process.

3.3.10 Recyclable Material

A material that can be used, reused, or reclaimed. A material is used or reused if it is either: 1) employed as an ingredient (including use as an intermediate) in an industrial process to make a product; or 2) employed as a substitute for a commercial product. A material is reclaimed if it is processed to recover a useable product or if it is regenerated.

3.3.11 Special Waste

A waste that is difficult or dangerous to manage and may include bulky or industrial waste.

3.3.12 Transportation-related Work

Includes, but is not limited to, identifying, classifying, containerizing, marking, labeling, placarding, preparing shipping papers, offering for shipment, or transporting materials as a result of work performed pursuant to this project.

3.3.13 Qualified Shipper

Personnel or subcontractor qualified to identify and classify material, determine packaging requirements, complete shipping papers and perform pre-shipment reviews. The minimum qualifications for the qualified shipper is at least three (3) years of experience in hazardous materials shipping activities with advanced training in transportation covering air, highway, and rail shipment of hazardous materials, and including radioactive materials, hazardous waste and mixed waste.

3.3.14 Waste Acceptance Criteria

The technical and administrative requirements that a waste must meet to be accepted at a storage, treatment or disposal facility.

4.0 TRANSPORTATION PLAN

The project team shall ensure the integrity of the transportation plan by conducting oversight of employees and subcontractors who perform transportation and transportation-related work in an effort to guarantee compliance with applicable requirements and regulations.

As there is no on-site rail access, waste shipments will be transported by truck to the approved disposal facility. The project team will ensure that each waste shipment will be accompanied by properly completed shipping documents and use appropriate documents as required by Federal, State, and local laws and regulations. A Non-Hazardous Waste Manifest will be completed for each qualifying waste container.

Final shipping documents will be submitted to the LATA Project Manager for review and approval prior to off-site shipment of waste. Completed manifests requiring shipper's certifications will be signed by a designated Greenpac representative prior to release of each shipment.

The project team shall conduct self-assessments, independent assessments, and audits as necessary to control the quality of identification, classification, containerization, communication (marking, labeling, placarding), and documentation/records management.

4.1 TRAINING REQUIREMENTS

The project team shall comply with the training requirements of 49 CFR 172.700 for "HAZMAT" employees. "HAZMAT" employees are defined as any person who in the course of employment directly affects hazardous materials transportation safety. This term includes any employee who:

- Loads, unloads, or handles hazardous materials
- Tests, reconditions, repairs, modifies, marks, or otherwise represents containers, drums, or packaging as qualified for use in the transportation of hazardous materials
- Prepares hazardous materials for transportation
- Is responsible for safety in transporting hazardous materials
- Operates a vehicle used to transport hazardous materials

4.1.1 HAZMAT Employees

The project team shall ensure only qualified personnel perform transportation and transportation-related work. As a minimum, "HAZMAT" employees are to be trained in accordance with 49 CFR 172.700 (Subpart H) requirements.

4.1.2 Shippers

Shippers shall have a minimum of three (3) years of experience and advanced training in transportation covering air, highway, and rail shipment of hazardous, radioactive and mixed wastes. Duties will include transportation-related work such as identifying and classifying material, determining packaging requirements, completing shipping papers, and performing pre-shipment reviews.

4.2 TRANSPORTERS

The specific Transporter requirements for shipments are as follows:

- Verify that the transporter can provide the required authorizations, insurance, license permits, and/or registrations for the material to be transported

- Receive certification from the transporter that there is no administrative action, or license, permit, authority, and/or registration revocation proceeding pending

- The project team shall evaluate carriers in accordance with DOT regulations. Verify that the transporter has a Security Plan in place, if required, when transporting hazardous materials

- Verify that the transporter has a DOT Motor Carrier Rating of "satisfactory", if rated

4.3 PROCUREMENT OF CONTAINERS

Prospective suppliers of containers shall be evaluated and selected based on the specified container criteria. Waste transportation containers shall be used for sole source, and an exclusive use agreement shall be obtained from the transporter.

4.4 SHIPMENT SCHEDULE REQUIREMENTS

A written schedule of planned shipments of material shall be provided to Greenpac and LATA as required. The written schedule of planned shipments shall include the shipment date(s), originating date(s), quantities of material reported according to DOT category, placarding requirements, and intended receiving facility. Updates shall be provided to the schedule when changes are made.

4.5 WASTE SHIPMENTS

Waste shipments will be in accordance with applicable federal, state, and local regulations, as well as disposal site requirements. Required documents will meet the requirements in 49 CFR, 10 CFR 20, in addition to the receiving facility requirements.

4.5.1 Samples

Sampling will be limited to the necessary waste characterization samples and investigation derived wastewater (water used and collected during remediation activities). Sampling will be conducted according to regulatory requirements and LATA Standard Operating Procedures (i.e., *LATA-SOP-FLD-002 Sample Packing and Shipment*).

4.6 IDENTIFICATION AND CLASSIFICATION OF DOT HAZARDOUS MATERIALS

Based on the characterization data, a qualified shipper shall:

- Properly identify the hazardous material offered for transport in accordance with 49 CFR 171.8 based on the characterization data (physical form, chemical form, technical name, quantity, history, characteristics of hazard class, etc.)

- Properly classify the material for transportation in accordance with 49 CFR 173.2, 173.2a, and 172.101.

4.7 CONTAINER SELECTION PROCESS

The package shall be selected based on the criteria specified in 49 CFR 172.101 and 173.24, General Packaging Requirements.

The container requirements shall be developed following the methods to manage designs to conform to the requirements of 10 CFR 830 Subpart A, 10 CFR 830 Subpart B, ISO 9001, and 10 CFR 835, as appropriate. Note: This shall not certify the package as a DOT Specification Package.

When required, a supplier or subcontractor evaluation shall be performed by the project team to establish the supplier or subcontractor's capability to adhere to stated quality requirements. Processes to ensure suppliers continue to provide acceptable containers shall be established and implemented by methods such as:

- Inspection of containers upon receipt;
- Programmatic self-assessments; and
- Supplier or subcontractor surveillance/audit, as appropriate.

Containers to be used for transportation of hazardous materials shall undergo a receipt inspection, as required, as well as an inspection prior use. If circumstances warrant, informal surveillance inspections may be performed at any time, without notice.

4.8 DOCUMENTATION AND SHIPPING PAPERS

The qualified shipper shall be responsible for completing shipping papers in accordance with 49 CFR 172.200. The qualified shipper shall have a qualified person perform a peer review of the documentation prior to the shipment leaving the site.

Based on characterization data:

- The qualified shipper shall identify hazardous materials offered for transport in accordance with 49 CFR 171.8;

- The qualified shipper shall classify the material in accordance with 49 CFR 173.2 and 173.2a; and

- The qualified shipper shall assign the most appropriate shipping name in accordance with 49 CFR 171.101.

When shipping and/or transporting materials from the project, the shipping papers shall be executed and signed by a Greenpac designated representative.

The qualified shipper shall provide the Emergency Response information required in accordance with 49 CFR 172.602 and shall verify the Emergency Response information is included with the shipping papers.

The qualified shipper shall provide appropriate shipping documentation to the driver prior to making the shipment.

The qualified shipper shall complete the disposal facility's or processor's Radioactive Waste Shipment forms and/or Prior Notification forms, and provide copies to the project team. The shipper shall also mail, e-mail or fax a copy to the receiving facility in accordance with their notification policy, as required.

4.9 MARKING, LABELING, AND PLACARDING

The waste manager shall:

- Ensure that each package is marked in accordance with 49 CFR 172.300;
- Ensure that each package is labeled in accordance with 49 CFR 172.400; and
- Ensure that each package and/or load is placarded in accordance with 49 CFR 172.500.

4.10 CONTAINER LOADING

The project team and/or the qualified shipper shall comply with the Hazardous Materials Regulations for on-site hazardous materials transfers.

The type of transport to be used shall be determined by the qualified shipper based on evaluation of factors such as:

- Waste constituent evaluation and analysis;
- Classification of a material having more than one hazard (49 CFR 173.2a);
- Compliance with USEPA regulations (RCRA/TSCA) for waste shipment;
- Receiving facility waste acceptance criteria;
- Mode of transportation (highway/air) and type of transport;
- Size, dimensions, weights, and number of containers of material to be shipped;
- Waste transportation containers shall be inspected, radiologically surveyed, and decontaminated, if required upon arrival and prior to leaving the loading area; and
- Exemptions to be used to transport material, if applicable.

Plant site truck scales will be used to weigh single, dual or triple axle vehicles load capacities up to 80,000 lbs.

In preparation of containerized waste transportation, applicable leak and spill protection and prevention will be referenced in the Spill Contingency Plan.

The qualified shipper shall verify that the material to be shipped is loaded and segregated in accordance with 49 CFR 177.842, 177.848.

The qualified shipper shall ensure that the load being shipped is braced, blocked or otherwise secured to prevent movement during transport in accordance with an approved bracing and blocking plan, when necessary, and applicable requirements in 49 CFR 177.834, 393.100 through 393.106.

The qualified shipper shall ensure that the specific loading and tie down requirements or restrictions shall be met for the type of transport and equipment to be selected for shipment.

4.11 INCIDENT NOTIFICATION REQUIREMENT

The Transportation subcontractor shall notify LATA Project Manager within 30 minutes of any incident, spill, or release that occurs while the material is in transit. The LATA Project Manager shall notify the appropriate local, state and federal regulatory agencies. The project team shall promptly remediate any situation arising from an incident, spill or release resulting from project transportation activities, or its lower-tier subcontractors, in accordance with local, state and federal laws.

4.12 EMERGENCY RESPONSE PLAN

When accidents and incidents involving hazardous material transportation occur, local police officers and fire fighters are usually first on the scene. Accident remediation is based on emergency response training that responders have received and information made available with the shipment. DOT shipping papers and Emergency Response Guide identification, as required, are the key to effective initial response actions.

Transportation-related emergencies involving hazardous material require accident and spill reporting. Regulations and requirements mandating the reporting of hazardous material accidents and spills are as follows:

- 49 CFR 171.15, Immediate Notice of Certain Hazardous Materials Incidents - This section requires each carrier who transports hazardous materials to give, at the earliest practicable moment, notice to the DOT concerning specific listed incidents.

- 49 CFR 171.16, Detailed Hazardous Materials Incidents Reports - This section requires each carrier who transports a hazardous material to report in writing, in duplicate, on DOT Form F, 5800.1 to DOT within 30 days of each incident identified in 49 CFR 171.15(a) or any unintentional release that occurs during the course of transportation or that occurs as a result of an unintentional release of hazardous materials from a package, or any quantity of hazardous waste discharged during transportation.

- 49 CFR 176.45, Emergency Situations - This section identifies adoption of procedures for accidents occurring aboard a maritime vessel.

- 49 CFR 176.48, Situations Requiring Reporting - This section identifies incident reporting requirements for accidents occurring aboard a maritime water vessel, including those identified in 49 CFR 171.15 and 171.16.

- 40 CFR 302.6, Notification Requirements - This section requires persons in charge of facilities (including transport vehicles, vessels, and aircraft) to report any release of a hazardous substance greater than or equal to a reportable quantity to the U.S. Coast Guard National Response Center (toll free) at 1-800-424-8802.

- 40 CFR 355.40, Emergency Release Notification - This section requires that transportation-related releases of reportable quantities be reported to the 911 Operator.

The project will be committed to ensuring that operations involving transportation or transportation-related work have minimal impact on worker and public health, the environment, or to public or government property. The LATA Emergency Response Plan provides guidance for handling transportation emergencies in accordance with 49 CFR 171.15, "Immediate Notice of Certain Hazardous Materials Incidents". Rigid compliance with DOT-required packaging and transportation regulations, advanced emergency response planning, selection of qualified carriers, and providing detailed information, will help minimize the hazard from any incident involving project hazardous materials.

Each shipping paper covering the transportation of hazardous materials will include an emergency telephone number as required by 49 CFR 172.604, where a first responder can obtain specific information about the material hazards and the appropriate response and recovery steps. This telephone must be monitored continually, even when the material is in storage, by an individual who is knowledgeable about the hazardous material being shipped and has access to comprehensive emergency response and incident mitigation information. This telephone number can be that of the qualified shipper or an agent who has the current information on the material.

The project team shall forward emergency response information, as required in 49 CFR 172.602, for every shipment of hazardous materials to the appropriate, approved vendor. The vendor will maintain the specific emergency response information provided by the project and provide it over the telephone when requested to do so by any authorized first response organization responding to a transportation incident involving project shipments. The approved vendor will immediately contact appropriate transportation personnel regarding any transportation incident involving project material

4.13 TRANSPORTATION SAFEGUARDS AND SECURITY

Transportation safeguards and security shall be ensured by performing the following for truck shipments:

- Obtain a list of drivers that will be entering the project site;
- Verify that each driver is a citizen of the United States (no dual citizenship allowed);
- Verify the transporter has a Security Plan in effect and that the driver knows how to implement it, should the need arise;
- Require a copy of the driver's Commercial Driver's License with proper hazardous materials endorsement and medical card, and attach to the record copy of the shipping papers;
- Ensure that safety/security inspections of incoming and outgoing shipments are being conducted appropriately; and
- Verify the transport vehicle has tracking (i.e. Qualcomm, etc.) and/or two-way voice communication that allows for daily monitoring for any vehicle that is used for transporting material during interstate transport.

5.0 RECORDS

5.1 TRACKING LETTER OF ACKNOWLEDGEMENT

The project team shall track the receipt of acknowledgement letters of outbound shipments sent to a disposal site.

In the event of a non-receipt, the project team shall confirm receipt of shipment and send a written request for an acknowledgement letter.

If a returned signed copy of a manifest is not received, an exception report must be prepared and filed with the NYSDEC. Manifest copies must be retained for a minimum of 3 years.

In the event that a signed USEPA Hazardous Waste Manifest is not received within 35 days of the release of the shipment, the project team shall confirm receipt of the shipment and send a written request for the signed manifest.

If the EPA Hazardous Waste Manifest is not received within 45 days, an Exception Report shall be submitted to the EPA Regional Administrator in Accordance with 40 CFR 262.42(2).

Attachment G
Selected GRD Survey Reports

Attachment H
Table

TABLE 1 – SOIL MANAGEMENT BY CATEGORIES
ADDENDUM TO SOIL EXCAVATION IRM WORK PLAN
FORMER MILL NO. 2 SITE – NIAGARA FALLS, NEW YORK
NYSDEC BCP SITE NUMBER C932150

Number	Type	Soil Characterization: Field Observation Criteria	Sampling/Analysis	Example Materials/ Comments
1	Visibly "Clean" Soil or Material	• Less than 5 ppm PID **and** • No nuisance (odor, sheen, product, etc.) characteristics; **and** • No recognizable C&D or other industrial waste (ash, slag, etc.).	• May be reused on-site or off-site if sampled and reused in accordance with DER-10 Table 5.4(e)4.	• Topsoil • Native soil beneath fill • Crushed concrete • Acceptable borrow materials (i.e., clean gravels, sand, etc.)
2	Solid Waste (Visibly Contaminated Soil or Exceeds Industrial SCOs)	• Over 5 ppm PID **and** • Exhibits nuisance characteristics.	• Will be disposed at a permitted disposal or recycling facility • May be sampled for parameters as determined by the disposal facility.	• Grossly-contaminated soil or materials
3	Soil "Deemed" Solid Waste	• Less than 5 ppm PID **and** • No nuisance characteristics, **but** typically exceeds SCOs **and/or** contains recognizable C&D waste or other industrial waste (ash, slag, etc.).	• May be reused on site if under a 6 NYCRR Part 360 BUD and located >1-foot below ground surface[1]; **or** • May be reused off-site at a NYSDEC-approved location if sampled and reused in accordance with DER-10 Table 5.4(e)4. and all contaminants are below site-specific cleanup goals and deposited >1-foot below ground surface[2]; **or** • May be disposed at a permitted disposal or recycling facility.	• Fill • An approved location subject to institutional controls and a 6 NYCRR Part 360 BUD will have to be identified and approved by NYSDEC after details of the location, placement, and use of the soil/waste is defined.
4	Radiological Waste	• >10,000 counts per minute as measured by GRD radiological technicians using a Ludlum Model 2221 meter with a 44-10 probe (general guidance level approved by the NYSDEC and subject to professional judgment of GRD technicians and NYSDEC and NYSDOH specialists in remediation of radiological materials).	• Will be disposed at the Environmental Quality (EQ) Company Landfill in Belleville, Michigan or other permitted disposal or recycling facility located outside of New York State.	• Slag • Fill • Soil

Notes:
[1] Although a 6 NYCRR Part 360 beneficial use determination (BUD; the material is not, by definition, a "solid waste") allows the reuse of *contaminated* soil on-site if used as fill in the same site if the work is completed under a NYSDEC-approved remedial program (Section 360-1.15(b)8)). We do not expect to be utilizing this BUD.
[2] Track 2 (restricted industrial use) is the current goal for the site. Track 4 remedial goals can be achieved for industrial use if the top 1-foot meets Industrial SCOs.