

Checklist for Final Engineering Report (FER) Approval

(For reference only; checklist will be completed by DEC staff. Applies to sites in the Brownfield Cleanup Program (BCP), Environmental Restoration Program (ERP), Voluntary Cleanup Program (VCP) and Inactive Hazardous Waste Disposal Site Program (SSF))

Site Name:

Municipality:

County:

Site No.:

This FER is for a project which:

- Includes a summary of one or more construction completion reports (CCRs) - if checked the FER must reference of these previous CCRs for the areas identified below.
- Is for a single remedial action

All FERs submitted to DEC for approval will be prepared by an individual licensed or otherwise authorized in accordance with article 145 of the education law of the State of New York to practice the profession of engineering, and include the following:

Technical Content of the Report:

The FER must include the following:

- Yes** Clear identification of the boundaries of the site as described in the Brownfield Cleanup Agreement (BCA), ERP State Assistance Contract, Voluntary Cleanup Agreement, or for a Superfund site as defined in the Order on Consent or the Inactive Hazardous Waste Disposal Site Registry.
- Yes** **N/A** Clear identification of the boundaries of the real property subject to the environmental easement or other institutional controls, if different than the site boundaries described above.
- Yes** A metes and bounds description and survey map must be included in the FER which corresponds to the above site boundaries.
- Yes** A description of the remedial activities completed at the site, including previous CCRs and the project which is the subject of this FER, completed in accordance with the remedial work plan(s) and/or decision document(s) for the site.
- Yes** **N/A** A complete description of any ICs/ECs employed at the site.
- Yes** Identification of the cleanup levels applied to the remedial actions, for each media of concern and area of concern at the site.
- Yes** A summary of the implementation of the remedial actions, which includes as appropriate:
 - A description of any problems encountered during construction and their resolution;
 - A description of changes to the design documents and why the changes were made; including documentation of the approval of the change by DEC.

- Quantities and concentration of contaminants removed or treated;
- A listing of the waste streams, quantity of materials disposed and where they were disposed.

Yes The FER substantially follows the guidance provided in [DER-10: Technical Guidance for Site Investigation and Remediation](#) and specifically includes the following, as appropriate to the remedy:

Yes **No** **N/A** A detailed description of site restoration activities pursuant to DER-10.

Yes **No** **N/A** A detailed description of the source and quality of imported fill pursuant to DER-10.

Yes **No** **N/A** For active groundwater remedial actions consisting of groundwater extraction or control: The FER should also include figures representative of flow conditions immediately preceding initiation of the remedial action and flow conditions representative of pumping conditions required by the remedy.

Yes **No** **N/A** For SSF and ERP projects, where State funding is provided: A detailed summary of actual costs including bid tabulations and change orders.

Tables and Figures:

Included **Yes** **No** **N/A**

As set forth in DER-10 tables and figures presenting post-remedial data as appropriate to document the satisfactory completion of the remedial action. The figure/tables should clearly indicate the nature and extent of any contamination remaining at the site.

As-Built Drawings:

Included **Yes** **No** **N/A**

"As-built" drawings, with a NYS P.E. stamp and signature on each drawing, were provided. The as-built drawings must identify:

Yes The boundaries of the site, and if different, the real property subject to the environmental easement; other institutional controls must be incorporated on all figures.

Yes **N/A** The location and extent of all engineering controls including, without limitation, slurry walls, treatment units, piping and instrumentation wiring or other remedial structures which will remain in place after completion of the remedial action.

Yes **No** **N/A** Permanent survey markers for horizontal and vertical control for site management, where required.

Yes **No** **N/A** For projects with soil covers and/or caps: the areal and vertical (depth) extent of the covered/capped area, including identification of buildings and/or paving which are considered part of the site cover/cap as well as a description of the material and depths of the demarcation layer.

Yes **No** **N/A** For projects with soil removals: the limits of the excavation, the depth of the excavation and location of all documentation samples.

Yes No N/A For projects with underground storage tank removals: the size and contents of the tank(s) identified and addressed by the remedy, the surveyed location of the tanks removed or abandoned in place and the extent of any soil removal as per above.

Electronic Data Submittal:

Included Yes No N/A

The following information should be submitted only in an electronic format that is acceptable to the DER with the FER.

Yes No N/A Copies of all fully executed manifests documenting off-site transport and disposal of all material deemed hazardous or solid wastes.

Yes No N/A All analytical data for pre and post-excavation samples, soil backfill analyses, treated water effluent analyses, and waste disposal characterizations, including all laboratory data sheets and the required laboratory data deliverables pursuant to DER-10.

Yes No N/A Photographs

Site Management Plan (SMP):

N/A If none is required for the remedy which is the subject of this FER, check here.

Yes The approved SMP is included in, or specifically referenced by, the FER.

Yes The required certification regarding the SMP is included in the Certification Section below.

Environmental Easement or Deed Restriction (where applicable)

N/A If none is required for the remedy which is the subject of this FER, check here.

Yes A filed copy of the environmental easement or deed restriction with proof of filing with the responsible municipal authority is included in the FER or has been provided to DEC.

Yes A certification that the easement or deed restriction has been filed and the municipalities having jurisdiction over the easement or deed restriction have been notified is required. See Certification Section below for the language of this certification.

Yes No The County Recording Identifier number is provided in the FER.

Financial Assurance

N/A If none is required for the remedy which is the subject of this FER, check here.

Yes No N/A Identify the financial assurance mechanisms required for the site and include the copy of the executed mechanism.

Yes A certification that the Financial Assurance has been submitted by the applicant must be included in the FER. See Certification Section below for the language of this certification.

Citizen Participation

Yes (BCP Only) A fact sheet was issued to the site contact list after the FER was submitted, but prior to DEC approval of the FER. NOTE: A notice to the site contact list is also to be issued within 10 days of when the Certificate of Completion is issued by DEC for a site which will utilize institutional and/or engineering controls.

Yes (SSF Only) A Notice of the COC/Reclassification shall be combined into one Fact Sheet and mailed to the site contact list no sooner than 20 days after issuance of the of the COC. If the site is being delisted, the notice may be mailed immediately; allow for a 30 day public comment period and the classification will be changed 60 days after the COC issuance (or end of comment period if later)

N/A (ERP)

FER Professional Engineer Certification and Stamp:

Included **Yes** **No**

The FER will be prepared, stamped and the following certification signed by an [individual licensed or otherwise authorized in accordance with article 145 of the education law to practice the profession of engineering](#):

- I, _____, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the [Remedial Action Work Plan or Remedial Design] was implemented and that all construction activities were completed in substantial conformance with the Department-approved [Remedial Action Work Plan or Remedial Design].

Included **Yes** **No**

- I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the [Remedial Action Work Plan or Remedial Design] and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

Included **Yes** **No**

- I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

Included **Yes** **No** **N/A**

- I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

Included **Yes** **No** **N/A**

If financial assurance is required:

- I certify that any financial assurance mechanisms required by the Department pursuant to Environmental Conservation Law have been executed.

Included **Yes** **No** **N/A**

- I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

Included **Yes** **No**

- I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

Included **Yes** **No**

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as Owner’s Designated Site Representative (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site.

Included **Yes** **No**

Generic Template for Final Engineering Report

Instructions

This document is a generic template for development of a Final Engineering Report (FER) for projects performed under the management of NYSDEC, Division of Environmental Remediation. This document is intended to expedite development of the FER. By providing format and general content guidelines, it is intended to increase the predictability of format and content required for agency approval; shorten the document preparation time by Applicants in the program; improve the quality of draft FER submittals; shorten the review time by NYSDEC; and streamline and expedite the process for FER approval by NYSDEC. This is a generic and non-site-specific guide that does not address all possible NYSDEC or NYSDOH issues. It is not intended to replace DER-10 (Tech Guide) or to act as a substitute for the agency review and comment process. This template may also be used for development of a Construction Completion Report (CCR).

This document contains blue text, green text and highlighted bracketed items. Blue text indicates text that is generally acceptable to NYSDEC for use in the site-specific FER. While it must be applied to each site in a manner that is suitable for site-specific conditions, use of this blue text with minimal changes will generally promote a more timely acceptance of the FER by NYSDEC. Green text provides guidance on the recommended content in each of the specific sections of the FER and should be deleted from this template prior to submittal. Items highlighted in blue brackets are variable and should be entered in a manner that is self-explanatory and specific to each case.

It is strongly recommended that the draft FER submittal to NYSDEC adhere to the following conventions:

- Retain the original blue text color for all blue text that is not changed.
- Use black text for all new text, including any changes to blue text.
- Delete all green text
- Remove highlights and brackets

- A track changes' redline/strikeout method should be used for all removal and replacement of blue text.
- The redline/strikeout document should be submitted (with blue text strikeouts in the text and not in the margins) along with a clean copy of the draft FER to NYSDEC.

While this approach is not mandatory, it may greatly shorten the review time required by NYSDEC staff and approval of the document.

The following document is a draft and will be modified and improved periodically. Comments and suggestions for improvement are welcome. Redline/strikeout edits of the template are also welcome. Contact the NYSDEC's project manager if you would like to make sure that you have the most recent version.

[Site Name]

[COUNTY], NEW YORK

Final Engineering Report

NYSDEC Site Number: xxxxxx

Prepared for:

[Remedial Party Name]

[Address]

Prepared by:

[Name]

[Address]

[Phone]

[MONTH YEAR]

CERTIFICATIONS

I, _____, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the [Remedial Action Work Plan or Remedial Design] was implemented and that all construction activities were completed in substantial conformance with the Department-approved [Remedial Action Work Plan or Remedial Design].

The following certifications are only required for Final Engineering Reports, and are not applicable to Construction Completion Reports

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the [Remedial Action Work Plan or Remedial Design] and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

If financial assurance is required, also include the following sentence:

I certify that any financial assurance mechanisms required by the Department pursuant to Environmental Conservation Law have been executed.

For all certifications, both CCRs and FERs, include the following:

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

For reports submitted after July 1, 2011, also include the following:

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as Owner’s Designated Site Representative (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site.

_____	_____	_____
NYS Professional Engineer #	Date	Signature

Note: include PE stamp

TABLE OF CONTENTS

When the site-specific SMP is prepared, delete this Table of Contents and re-generate a 2-level Table of Contents.

CERTIFICATIONS.....	IV
TABLE OF CONTENTS	VI
LIST OF ACRONYMS	IX
FINAL ENGINEERING REPORT	1
1.0 BACKGROUND AND SITE DESCRIPTION.....	1
2.1 REMEDIAL ACTION OBJECTIVES	2
2.1.1 Groundwater RAOs	2
2.1.2 Soil RAOs.....	2
2.1.3 Surface Water RAOs.....	3
2.1.4 Sediment RAOs	3
2.2 DESCRIPTION OF SELECTED REMEDY	4
3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS	6
3.1 INTERIM REMEDIAL MEASURES	6
3.2 OPERABLE UNITS	6
3.3 REMEDIAL CONTRACTS	
4.0 DESCRIPTION OF REMEDIAL ACTIONS	

PERFORMED.....	6
4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED	7
4.1 GOVERNING DOCUMENTS	7
4.1.1 Site Specific Health & Safety Plan (HASP)	7
4.1.2 Quality Assurance Project Plan (QAPP).....	7
4.1.3 Construction Quality Assurance Plan (CQAP).....	7
4.1.4 Soil/Materials Management Plan (S/MMP)	8
4.1.5 Storm-Water Pollution Prevention Plan (SWPPP)	8
4.1.6 Community Air Monitoring Plan (CAMP)	9
4.1.7 Contractors Site Operations Plans (SOPs)	9
4.1.8 Community Participation Plan	9
4.2 REMEDIAL PROGRAM ELEMENTS	9
4.2.1 Contractors and Consultants.....	9
4.2.2 Site Preparation	9
4.2.3 General Site Controls.....	10
4.2.4 Nuisance controls	10
4.2.5 CAMP results	11
4.2.6 Reporting.....	11
4.3 CONTAMINATED MATERIALS REMOVAL.....	11
4.3- <input checked="" type="checkbox"/> [Name of contaminated media/material removed].....	12
4.4 REMEDIAL PERFORMANCE/DOCUMENTATION SAMPLING	13
4.5 IMPORTED BACKFILL.....	14
4.6 CONTAMINATION REMAINING AT THE SITE	14
4.7 SOIL COVER <input checked="" type="checkbox"/> SYSTEM	16
4.8 OTHER ENGINEERING CONTROLS.....	16

4.9 INSTITUTIONAL CONTROLS..... 17

4.9 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN..... 17

LIST OF TABLES 19

LIST OF ACRONYMS

Acronym	Definition

FINAL ENGINEERING REPORT

1.0 BACKGROUND AND SITE DESCRIPTION

[Applicant name(s)] entered into a [Brownfield Cleanup Agreement (BCA, State Assistance Contract (SAC), Order on Consent, or Voluntary Cleanup Agreement (VCA)] with the New York State Department of Environmental Conservation (NYSDEC) in [month, year], to investigate and remediate a [size]-acre property located in [village, county, city], New York. The property was remediated to [unrestricted, restricted residential, commercial, industrial] use [if known, enter the following: , and will be used for *give specific use*].

The site is located in the County of [county], New York and is identified as [a portion of] Block xxxx and Lot xxx on the [municipality] Tax Map # [tax map number]. The site is situated on an approximately [x]-acre area bounded by [road or feature] to the north, [road or feature] to the south, [road or feature] to the east, and [road or feature] to the west (see Figure 1). The boundaries of the site are fully described in Appendix A: Survey Map, Metes and Bounds.

If the boundaries of the project site in the legal agreement don't match the tax map boundaries, this should be discussed. Landmarks or other physical boundaries of the project site should be provided. The survey should identify permanent survey markers for horizontal and vertical control of site features.

The site boundaries in detailed in Appendix A must match the boundaries in the legal agreement.

An electronic copy of this FER with all supporting documentation is included as Appendix B.

2.0 SUMMARY OF SITE REMEDY

2.1 REMEDIAL ACTION OBJECTIVES

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) were identified for this site.

Include all RAOs that are appropriate, and delete sections that are not applicable. These can be drawn from the RAWP.

2.1.1 Groundwater RAOs

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer, to the extent practicable, to pre-disposal/pre-release conditions.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

2.1.2 Soil RAOs

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota due to ingestion/direct contact with contaminated soil that would cause toxicity or bioaccumulation through the terrestrial food chain.

2.1.3 Surface Water RAOs

RAOs for Public Health Protection

- Prevent ingestion of contaminated water.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination that may result in fish advisories.

RAOs for Environmental Protection

- Restore surface water to ambient water quality standards for each contaminant of concern.
- Prevent impacts to biota due to ingestion/direct contact with contaminated surface water that would cause toxicity or bioaccumulation through the marine or aquatic food chain.

2.1.4 Sediment RAOs

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination that may result in fish advisories.

RAOs for Environmental Protection

- Prevent release(s) of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).

- Prevent impacts to biota due to ingestion/direct contact with contaminated sediments that would cause toxicity or bioaccumulation through the marine or aquatic food chain.

2.2 DESCRIPTION OF SELECTED REMEDY

The site was remediated in accordance with the remedy selected by the NYSDEC in the [ROD, RAWP or Decision Document] dated [month day year] and [add the type (minor modification, explanation of significant difference, ROD/DD amendment) and date of any revisions to the decision document here].

The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

This section should include a comprehensive and concise summary of the remedy selected for the Site and should include a numbered bullet list of remedial elements. This should follow the remedy description provided in Section 8 of the ROD, or applicable section of the RAWP or Decision Document, and any revisions. Examples are listed below and may be used, if appropriate:

1. Excavation of soil/fill exceeding [unrestricted, restricted residential, commercial, industrial] SCOs listed in Table [x], [add: to a depth of x feet or bedrock, as applicable];
2. Construction and maintenance of a soil cover system consisting of [summary of cover types] to prevent human exposure to remaining contaminated soil/fill remaining at the site;
3. [Other primary remedial action elements, such as extraction and/or treatment systems, stabilization, restoration, etc. listed here];
4. [Other primary engineering controls listed here];
5. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site.
6. [Other institutional controls listed here];

7. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;
8. Periodic certification of the institutional and engineering controls listed above.

3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS

The purpose of this chapter is to summarize work performed as IRMs, operable units or under separate remedial construction contracts that were previously documented in individual Construction Completion Reports. This includes IRMs which result in no further remedial action.

If none of these circumstances apply, delete the following sections and state:

The remedy for this site was performed as a single project, and no interim remedial measures, operable units or separate construction contracts were performed.

Each section below should provide a detailed summary of any IRMs, operable unit remedies, or individual remedial contracts that were performed at the site. These should include the time frames, names of contractor and certifying engineering firm, and title and date of each Construction Completion Report (CCR). For each referenced CCR state: The information and certifications made in the [date, report title] were relied upon to prepare this report and certify that the remediation requirements for the site have been met.

3.1 INTERIM REMEDIAL MEASURES

3.2 OPERABLE UNITS

3.3 REMEDIAL CONTRACTS

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved [Remedial Design (RD) or Remedial Action Work Plan (RAWP)] for the [Site Name] site ([month, year]). All deviations from the [RD or RAWP] are noted below.

4.1 GOVERNING DOCUMENTS

Governing documents should be introduced and discussed generally as in the RD or RAWP. Highlights of these documents should be included here. If specific plans listed below were not included in the RD/RAWP, omit and re-number.

4.1.1 Site Specific Health & Safety Plan (HASP)

The following text should be included somewhere in this section:

All remedial work performed under this Remedial Action was in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Health and Safety Plan (HASP) was complied with for all remedial and invasive work performed at the Site.

4.1.2 Quality Assurance Project Plan (QAPP)

The QAPP was included as Appendix X of the [Remedial Design (RD) or Remedial Action Work Plan (RAWP)] approved by the NYSDEC. The QAPP describes the specific policies, objectives, organization, functional activities and quality assurance/quality control activities designed to achieve the project data quality objectives.

4.1.3 Construction Quality Assurance Plan (CQAP)

The Construction Quality Assurance Plan(s) (CQAPs) managed performance of the Remedial Action tasks through designed and documented QA/QC methodologies applied in the field and in the lab. The CQAP provided a detailed description of the observation and testing activities that were used to monitor construction quality and confirm that remedial construction was in conformance with the remediation objectives and specifications.

These plans should be briefly described and should include:

- Responsibilities and authorities of the organizations and key personnel involved in the design and construction of the remedy.
- The observations and tests that were used to monitor construction and the frequency of performance of such activities.
- The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for implementing corrective measures as addressed in the plans and specifications.
- Requirements for project coordination meetings between the Applicant and its representatives, the Construction Manager, Excavation Contractor, remedial or environmental subcontractors, and other involved parties.
- Description of the reporting requirements for quality assurance activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.
- Description of the final documentation retention provisions.

There may be separate plans for each component of the remedy.

4.1.4 Soil/Materials Management Plan (S/MMP)

Summarize the detailed plans for managing all soils/materials that were disturbed at the site, including excavation, handling, storage, transport and disposal. Include all of the controls that were applied to these efforts to assure effective, nuisance free performance in compliance with all applicable Federal, State and local laws and regulations.

4.1.5 Storm-Water Pollution Prevention Plan (SWPPP)

The following text should be included somewhere in this section:

The erosion and sediment controls for all remedial construction were performed in conformance with requirements presented in the New York State Guidelines for Urban

Erosion and Sediment Control and the site-specific Storm Water Pollution Prevention Plan [provide date and/or contractor submittal #].

4.1.6 Community Air Monitoring Plan (CAMP)

Summarize the CAMP monitoring approach, instruments, action levels, response measures, etc. Actual CAMP results and response actions are provided in a later section.

4.1.7 Contractors Site Operations Plans (SOPs)

The following text should be included somewhere in this section:

The Remediation Engineer reviewed all plans and submittals for this remedial project (i.e. those listed above plus contractor and subcontractor submittals) and confirmed that they were in compliance with the [RD or RAWP]. All remedial documents were submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.8 Community Participation Plan

This Section should summarize the pertinent elements of the Community Participation Plan that were performed during the Remedial Action and those elements that pertain to the remainder of the remedial program.

4.2 REMEDIAL PROGRAM ELEMENTS

4.2.1 Contractors and Consultants

- Listing of contractors who performed work and their associated tasks;
- Identity of certifying Engineer of Record responsible for inspection of the work.

For the following Sections, add approximate time frames/dates for performance of all work.

4.2.2 Site Preparation

Generally describe the work performed in the following areas:

- Mobilization;
- Grubbing, fencing, truck wash construction, etc.;

- Erosion and sedimentation controls;
- Utility marker layout;
- Acquisition of agency approvals, permits, etc.
 - A complete list of agency approvals, substantive technical requirements, and non-agency permits should be provided as defined in the RAWP.
- Pre-construction meeting with NYSDEC;

The following text should be included somewhere in this section:

A pre-construction meeting was held with NYSDEC and all contractors on [date].

Documentation of agency approvals required by the [RD or RAWP] is included in Appendix [x]. Other non-agency permits relating to the remediation project are provided in Appendix [x].

All SEQRA requirements and all substantive compliance requirements for attainment of applicable natural resource or other permits were achieved during this Remedial Action.

A NYSDEC-approved project sign was erected at the project entrance and remained in place during all phases of the Remedial Action.

4.2.3 General Site Controls

Generally describe the following:

- Site security;
- Job site record keeping.
- Erosion and sedimentation controls;
- Equipment decontamination and residual waste management;
- Soil screening results;
- Stockpile methods;
- Problems encountered;

4.2.4 Nuisance controls

Briefly describe the procedures for:

- Truck wash and egress housekeeping,

- dust control,
- odor control,
- truck routing,
- responding to complaints.

4.2.5 CAMP results

Briefly summarize the monitoring results, exceedance of action levels and response actions. If action levels were exceeded and response actions were taken on multiple days, the dates should be listed, and a general description of the pattern of exceedance and response should be given.

The following text should be included somewhere in this section:

Copies of all field data sheets relating to the CAMP are provided in electronic format in Appendix [x].

4.2.6 Reporting

Briefly describe the responsibility for, and process of, preparing and distributing daily and monthly reports.

- Daily reports (include electronically in full in Appendix);
- Monthly reports (electronically in full in Appendix).

The following text should be included somewhere in this section:

All daily and monthly reports are included in electronic format in Appendix [x].

The digital photo log required by the [RD or RAWP] is included in electronic format in Appendix [x].

4.3 CONTAMINATED MATERIALS REMOVAL

This section should describe the removal activities for all contaminated media (soils, water, structures, USTs, etc.) during the remedial action and should describe:

- The soil cleanup objectives (SCOs) for the site (eg., Track 4 BCP SCOs for restricted commercial use);
- Other remedial performance criteria (eg., removal of source material)

- Type and quantities of materials removed;
- Locations the materials were removed from:
 - Figures of excavation areas and materials removed.

The following text should be included somewhere in this section:

A list of the soil cleanup objectives (SCOs) for the contaminants of concern for this project is provided in Table [x].

A figure of the location of original sources and areas where excavations were performed is shown in Figure [x].

Note: there should be separate sub-sections for each medium or waste stream removed according to logical lines of division for reporting purposes (eg., USTs, soil, NAPL, groundwater, sediments, etc.). Each section should describe, as appropriate (items in blue text should remain as sub-headings in this FER section)

4.3.[x] [Name of contaminated media/material removed]

- Type/media removed;
- On-Site locations from which materials were removed;
- Figures of excavation and materials removed;
- Cut/Fill thickness figures as appropriate for soil and sediments.

The following text should be included somewhere in this section:

Contour maps of estimated cut and fill thicknesses for remedial activities at the site are included in Figures [x and x].

4.3.[x].1 Disposal Details

Narrative should include:

- Time frames;
- Total quantities removed;
- Disposal facility name(s) (TSDFs);
- Summary of waste characterization sampling. Description of sampling approach (number of grabs/composites, locations, etc.) and table of results.

- Transporter names and license numbers;

Appendices should include:

- Letter from Applicant to disposal facility describing material type and source (with data summary);
- Letter from facility stating it is approved to accept;
- Manifests, bills of lading (electronic format);

The following text should be included somewhere in this section:

Table [x] shows the total quantities of each category of material removed from the site and the disposal locations. A summary of the samples collected to characterize the waste, and associated analytical results are summarized on Table(s) [x].

Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are attached in Appendix [x].

Manifests and bills of lading are included in electronic format in Appendix [x].

4.3.[x].2 On-Site Reuse

Describe:

- Procedure for segregating, storing and testing;
- Approvals;
- Description of material reused, quantities, analytical results, placement location and horizon/depth (include a figure, see fill figures, above).

4.4 REMEDIAL PERFORMANCE/DOCUMENTATION SAMPLING

This section should describe the methodology and results of end-point sampling to demonstrate that SCOs were achieved and to document what levels of contamination remain and will be managed under the Site Management Plan. This should include a summary of:

- Sampling approach and methodology;
- Results;
- QA/QC;

- DUSR – discuss and attach electronically;
- Table;
- Figure.

Include the following text somewhere in this section:

A table and figure summarizing all end-point sampling is included in Table [x] and Figure [x], respectively, and all exceedances of SCOs are highlighted.

Data Usability Summary Reports (DUSRs) were prepared for all data generated in this remedial performance evaluation program. These DUSRs are included in Appendix [x], and associated raw is provided electronically in Appendix [x].

4.5 IMPORTED BACKFILL

Describe:

- Volumes and sources;
- On-site placement locations, both horizontal and vertical;
- Sampling results.
- Approvals.

The following text should be included somewhere in this section:

A table of all sources of imported backfill with quantities for each source is shown in Table [x]. Tables summarizing chemical analytical results for backfill, in comparison to allowable levels, are provided in [Table or Appendix number]. A figure showing the site locations where backfill was used at the site is shown in Figure [x].

4.6 CONTAMINATION REMAINING AT THE SITE

- A narrative description of the remaining contamination, including:
 - A description of the material and depth of the demarcation layer;
 - A description of the depths at which the demarcation layer or surface of remaining contamination will be encountered, and at which contamination is no longer expected. If the upper surface of the remaining contamination zone varies due to differing cover types, a figure showing the elevations of

top of remaining contamination zone should be included. Similarly the thickness of the remaining contamination zone may be shown on a figure.

- If certain areas of the site contain source areas or higher levels of contamination than others, these should be described.
 - If active utility lines or other subsurface infrastructure are present at the site, contaminant levels in these areas must be described, so that future maintenance activities can be properly planned.
 - If contamination was not remediated due to the presence of buildings or critical infrastructure, and the decision document required this contamination to be removed if such infrastructure is replaced, this must be discussed. Alternatively, if this contamination is not to be remediated, this should also be identified.
- A summary of all contaminated soil and structures left on-site after remedy is complete. Include the following as applicable:
 - Table of exceedances of unrestricted SCOs (Part 375-6) after Remedial Action;
 - Figure of exceedances of unrestricted SCOs (Part 375-6) after Remedial Action (i.e., below the cover system);
 - Figure of areas complying with unrestricted SCOs (Part 375-6) after Remedial Action;

The following text should be included somewhere in this section:

Table [x] and Figure [x] summarize the results of all soil samples remaining at the site after completion of Remedial Action that exceed the Track 1 (unrestricted) SCOs.

Figure [x] summarizes the results of all soil samples remaining at the site after completion of the remedial action that meet the SCOs for unrestricted use of the site.

Since contaminated soil [and groundwater/soil vapor] remains beneath the site after completion of the Remedial Action, Institutional and Engineering Controls are required to protect human health and the environment. These Engineering and Institutional Controls (ECs/ICs) are described in the following sections. Long-term management of these EC/ICs and residual contamination will be performed under the Site Management Plan (SMP) approved by the NYSDEC.

4.7 SOIL COVER [or CAP] SYSTEM

Describe the construction of the soil cover or cap on the site. This should include any buildings and/or paving which are considered part of the covered/capped area. The following sample language may be used:

Exposure to remaining contamination in soil/fill at the site is prevented by a soil cover system placed over the site. This cover system is comprised of a minimum of [12 inches or 24 inches] of clean soil, asphalt pavement, concrete-covered sidewalks, and concrete building slabs [add other components as appropriate]. Figure [x] shows the as-built cross sections for each remedial cover type used on the site. Figure [x] shows the location of each cover type built at the Site. An Excavation Work Plan, which outlines the procedures required in the event the cover system and/or underlying residual contamination are disturbed, is provided in Appendix A of the SMP.

4.8 OTHER ENGINEERING CONTROLS

Since remaining contaminated soil [source material, groundwater/soil vapor, sediments, and/or other media] exists beneath the site, Engineering Controls (EC) are required to protect human health and the environment. The site has the following primary Engineering Controls, as described in the following subsections.

Or:

The remedy for the site did not require the construction of any other engineering control systems.

Describe all on-site and off-site engineering controls in separate subsections below.

A subsection should be dedicated to each Engineering Control or mitigation system, such as sub-slab depressurization systems; air sparging/soil vapor extraction systems; in-situ solidification systems; NAPL collection systems; etc. Each section should include a description of both on-site and off-site components of the EC, including:

- Conceptual remedial approach;
- System design and installation:
 - Components, materials and layout;
 - Locations of systems (figures)
 - Operating conditions;

- Treatment systems installed;
- Processes and materials employed;
- Appendices should provide details:
 - Support documentation;
 - As-built drawings and diagrams;
 - Calculations;
 - Manufacturer documentation.
- System OM&M;
 - Refer to OM&M plan for full details.

The following text should be added at the end of each EC sub-section:

Procedures for monitoring, operating and maintaining the [remedial system name] system are provided in the Operation and Maintenance Plan in Section 4 of the Site Management Plan (SMP). The Monitoring Plan also addresses inspection procedures that must occur after any severe weather condition has taken place that may affect on-site ECs.

4.9 INSTITUTIONAL CONTROLS

The site remedy requires that an environmental easement [or deed restriction] be placed on the property to (1) implement, maintain and monitor the Engineering Controls; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to [usage type] uses only.

The environmental easement for the site was executed by the Department on [date], and filed with the [County] County Clerk on [date]. The County Recording Identifier number for this filing is [number]. A copy of the easement and proof of filing is provided in Appendix [x].

4.9 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

This section should provide a complete description of:

- Each deviation from the approved RD or RAWP during the Remedial Action;

- Original requirement in the RAWP;
- Action taken;
- Reason for change;
- Approval for action;
- Effect of action.

LIST OF TABLES

Soil Cleanup Objectives (SCOs) for the Project

Waste Characterization Samples by Area and/or Material Type

 USTs Waste Characterization Sample Results

Offsite Soil/ Waste Disposal Volumes and Facilities

 Liquid Waste Disposal Summary

 Drummed Waste Disposal Summary

Remedial Performance/Documentation Sampling Results (by Area)

 Process Tanks and Vaults Endpoint Sample Results

 Process Piping Endpoint Sample Results

Backfill Quantities and Sources

Analytical Results and Associated Limits for Imported Material

Stockpile/Reuse Material Sample Results

Soils Exceeding Unrestricted SCOs After the Remedial Action

LIST OF FIGURES

Project Site Map

Finer Scale Site Map

Areas Where Excavations Were Performed

Contour Maps of Cut and Fill Thicknesses

Figure of Reused Material, Quantities and Destinations

Figure of Backfill Placement Locations (Can Be Linked With Cut and Fill, Above)

Exceedances of Unrestricted SCOs (After Remedy)

Remaining Contamination Figure

Site Wide Cover System Plan (location of different cover types)

Typical Cover Detail for All Cover Types

Soil Stockpile Areas, and Air Monitoring Station Locations

Areas of Concern

Drain and Pipe Chase Plan

LIST OF APPENDICES

Survey Map, Metes and Bounds

Digital Copy of the FER (CD)

Environmental Easement

NYSDEC Approvals of Substantive Technical Requirements

Remediation- Related Permits

Daily and Monthly Reports (CD)

Project Photo Log (CD)

Soil /Waste Characterization Documentation

- Waste Hauler Permit Certificates
- Disposal Facility Approval and Approval Letters
- Facility Permit Certificates
- Tabulated Load Summaries
- Waste Manifests or Bills of Lading (CD)
- Liquid Disposal Manifests (CD)

CAMP Field Data Sheets and Air Monitoring Data (Incl. CD)

Raw Analytical Laboratory Data (Incl. CD)

DUSRs For All Endpoint Samples (Incl CD)

EC As-Built Drawings, Documentation and Drawings

Imported Materials Documentation

Remediation and Costs (State Superfund and Environmental Restoration Projects only)