EXHIBIT A 4

TO

AGREEMENT FOR ENVIRONMENTAL MONITORING, LABORATORY ANALYSIS AND REPORTING SERVICES AT THE WALLINGFORD LANDFILL

SCOPE OF SERVICES

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Environmental Monitoring, Laboratory Analysis and Reporting - Wallingford Landfill

BACKGROUND

The 82-acre Wallingford Landfill is located on the west side of South Cherry Street and Pent Road in the southeast portion of Wallingford, Connecticut. The landfill is bounded to the north by the Wallingford Sewage Treatment Plant and the Town of Wallingford Recycling and Leaf Composting Area, to the east by South Cherry Street and Pent Road, to the south by undeveloped land (the former Barberino property) which is owned by the Connecticut Resources Recovery Authority (CRRA), and to the west by the Quinnipiac River. A residential trailer park was formerly located on the former Barberino property. A general location plan showing the CRRA Wallingford Landfill and the former Barberino property is included as **Figure 1**.

Prior to September 4, 1988, the landfill was operated by the Town of Wallingford. Since that time, the CRRA has leased the landfill property from the Town of Wallingford consistent with the start-up operations of the Wallingford waste to energy facility, converting municipal solid waste to electricity and ash residue. From September 1988 to November 1995, ash residue as well as solid waste was placed at the landfill. Since November 1995, there have been no daily activities at the landfill except for the operation of a resident drop off area and bulky waste transfer station at the front of the landfill by the Town. Otherwise, the site is inspected, maintained and monitored on a routine basis.

A detailed site plan showing sampling locations is included as **Figure 2**. The landfill consists of the following waste management units, all of which have been closed:

(a) MSW/Non-Processible Emergency by-pass Landfill (NPEL) Area: These disposal areas are located in the south-central portion of the site and have been utilized for the disposal of municipal solid waste (MSW) and non-processible/bulky wastes from the Wallingford Resource Recovery Facility. MSW disposal was conducted under private/town operations, while operation of the NPEL was overseen by CRRA.

(b) RCRA Metal Hydroxide Cell: This cell, which is located in the northwest corner of the site, was operated between November 1980 and January 1984 for the disposal of approximately 3.8 million pounds of K063 hazardous waste and 0.2 million pounds of F006 hazardous wastes. A pre-RCRA metal hydroxide cell, located adjacent to the RCRA-regulated unit, was utilized for the disposal of similar metal hydroxide materials prior to November 1980.

(c) Ash Residue Disposal Landfill: This disposal area is located in the southern section of the property, approximately 150 feet northwest of the intersection of Pent Road and Oliver Creek Road. The Connecticut Department of Environmental Protection

(CTDEP) issued the permit for ash disposal on February 24, 1989, and the last load of ash residue was unloaded in this area on November 2, 1995. Grading of the final cover was completed in November 1996.

(d) Former Bulky Waste Landfill: This area is located in the northeastern portion of the property near the intersection of Ball and South Cherry Streets. The CTDEP issued the permit for the bulky waste landfill on December 12, 1975, and the area was closed and given final cover in June 1992.

The site is equipped with various environmental control systems, including

(a) A passive landfill gas venting system along the northern and western property lines, and

(b) A stormwater collection and discharge system (overall site).

There is also an active resident drop-off area for MSW and bulky waste that is operated by the Town of Wallingford.

The landfill has various environmental permits, with specific sampling programs and reporting requirements associated with the various control systems and permits. Copies of all site-specific permits applicable to the environmental monitoring program, specifically groundwater discharge permit LF0000028 and RCRA Stewardship Permit DEP/HWM/CS-148-004, are included in **Appendix A**.

The former Barberino Property is bounded to the north by the Town of Wallingford Landfill, to the south by Cytec Industries, Inc. (formerly American Cyanamid) and to the east by Pent Road. The Quinnipiac River is located immediately west of the site. Environmental monitoring at the former Barberino property has been conducted since April 1993 to assess impacts to surface water and groundwater by leachate-impacted groundwater migrating onto the site from the Wallingford Landfill. CRRA purchased the former Barberino property in September 2001.

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Consultant's work shall be inclusive of all environmental monitoring and reporting required at the Wallingford Landfill and former Barberino property, unless otherwise indicated. Monitoring and reporting will be required for a three (3) year period starting July 1, 2010 and ending June 30, 2013.

Costs for monitoring work shall also include but are not limited to sample bottle preparation and delivery, sample collection, laboratory analysis, and reporting as further described in this Scope of Services.

The environmental media to be sampled under this Scope of Services include groundwater, surface water, and stormwater. All sampling at the Wallingford Landfill will be performed to meet the requirements of all applicable permits issued to the Wallingford Landfill/CRRA by the federal, state, and local permitting authorities, as applicable. Refer to **Appendix A** for site-specific permit information. All sample analyses shall be conducted by an analytical testing laboratory

certified to perform such analyses by the State of Connecticut. The analytical testing laboratory will be subcontracted directly by the Consultant and approved by CRRA.

All work will be conducted pursuant to all applicable state and federal regulations and guidelines concerning groundwater, surface water, and stormwater sampling, monitoring and analysis. Consultant is to be familiar with and have reviewed all applicable landfill permits and requirements for site monitoring issued by CTDEP (and EPA, where applicable). Consultant shall be familiar with representative past monitoring reports prepared for the Wallingford Landfill and the former Barberino property, and shall prepare monitoring reports consistent in format with past monitoring reports. Consultant shall provide summary tables of data results, and reference, as applicable, drinking water standards and Connecticut Remediation Standards for monitoring wells (i.e., Surface Water Protection Criteria), and surface water Numerical Criteria contained in the Connecticut Water Quality Standards. Consultant shall also be responsible for the timely submittal of stormwater discharge data to CRRA so that CRRA can meet its regulatory reporting obligations.

In accordance with the approved Groundwater Monitoring Plan for the Wallingford Landfill and the former Barberino property, Consultant shall conduct the monitoring program for the sampling points and parameters as summarized in **Tables 1 through 3**, on a semi-annual basis except as otherwise indicated. If one or more monitoring points are inaccessible for regularly scheduled monitoring, the Consultant shall make arrangements to sample the location(s) at other times. If it is not possible to sample in a timely manner within the monitoring event timeframe, CRRA will not be charged for sample collection and laboratory analysis for those portions of work not completed.

The environmental monitoring will include but not necessarily be limited to the following elements:

- Preparation for sampling, including bottle preparation, field parameter measurement equipment, sample collection equipment, and means of access to sampling points.

- Completion of field (RCRA) data sheets for each sample point, modified as applicable for each type of sample point.

- Completion of a synoptic groundwater measurement event at all forty-five monitoring wells that are in the monitoring well network on the first day of each semi-annual monitoring event to determine the groundwater elevations. The synoptic groundwater measurement event is to be completed prior to any purging and sampling activities.

- Measuring of field parameters, and collection of samples in bottles for laboratory analysis and appropriate field and laboratory QA/QC in accordance with applicable CTDEP and EPA regulations and guidance.

- Preservation and transport of samples to the laboratory.

- Analytical laboratory analyses of collected samples.

- Entering analytical results and other pertinent sample and/or laboratory test data into a database. Provide an electronic copy of the database to CRRA at the end of each calendar year to accompany the annual report, and after the completion of the April 2013 sampling event (i.e., the final sampling event under this Scope of Services).

- Data review and verification, cursory check for outliers, extreme exceedances and notification to CRRA of unusual results or "Significant Environmental Hazard" conditions under Public Act 98-134.

- Preparation of graphs and tables of data results, maps of sampling locations, groundwater elevation contours and isopleths of monitoring results as appropriate.

- Preparation of summary reports on status of each sample point and site environmental conditions.

- Preparation of draft semi-annual and annual reports for CRRA review and comment prior to report finalization.

- Finalization, duplication, and distribution of reports following incorporation of CRRA comments.

The Consultant is responsible for maintaining clear access to all wells (i.e., by cutting back brush and trimming weeds and grass). Consultant is also responsible for maintaining well markers (i.e., stakes, flagging, and I.D. numbers) to assist field personnel in locating and identifying the wells.

The environmental monitoring program is outlined by task and description below. The format of the Not-To-Exceed Bid Price Form is consistent with the task listing that follows.

TASK 1: SEMI-ANNUAL ENVIRONMENTAL MONITORING, ANALYSIS, REPORTING AND ANNUAL REPORTING

Environmental permits issued to CRRA for the Wallingford Landfill require that semi-annual monitoring of the ground water be completed at the Landfill and at the former Barberino property. The activities under Task 1 of this Scope of Services describe these semi-annual monitoring activities.

Task 1.1: Sampling and Documentation of Field Activities

Sampling Schedule

Semi-annual environmental sampling of site groundwater and surface water is to be performed in the following months:

- April
- October

Sampling of groundwater and surface water can begin on the 1st day of the sampling month and must be completed by the last day of the sampling month.

Monitoring of Groundwater Wells

There are twenty-two (22) groundwater monitoring wells at the Wallingford Landfill and thirteen (13) groundwater monitoring wells at the former Barberino property that are monitored on a semi-annual basis. **Table 1** summarizes the characteristics of each well. Consultant is responsible for supplying all equipment to the site as required for each semi-annual monitoring event and its storage at a safe off-site location by Consultant's arrangement.

Due to the presence of the closed RCRA cell at the Wallingford Landfill, the Consultant shall develop and maintain a site-specific safety and health plan in accordance with 29 CFR 1910.120(b)(4). Additionally, the Consultant shall ensure that all sampling personnel "receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor," as required by 29 CFR 1910.120(e)(3)(ii). The Consultant shall also ensure that on-site supervisory personnel are trained in accordance with 29 CFR 1910.120(e)(4), and that all personnel (sampling personnel and supervisory personnel) are provided with annual refresher training under 29 CFR 1910.120(e)(8).

The following items are also highlighted for each quarterly sampling event:

- Keyed-alike well locks will be provided for all wells by CRRA.
- Access to some wells is by foot only, because of location and/or restrictions of vehicle use. Specifically, vehicles are NOT to be driven over the RCRA metal hydroxide cell or the pre-RCRA metal hydroxide cell.
- Consultant shall complete a "Monitoring Well Field Data Sheet" which summarizes well elevation data, well condition, purge data, observed water yield and quality comments, sampling data, and results of measured field parameters. An example of the proposed "Monitoring Well Field Data Sheet" is to be submitted for approval by CRRA before the first sampling event, at the initiation of the monitoring contract.
- On the first day of each semi-annual sampling event, prior to any purging and sampling activities, complete a synoptic groundwater measurement event to determine the groundwater elevations at all forty-five (45) monitoring wells that are in the monitoring well network (includes 10 non-sampled wells). Measure water elevation data at all monitoring wells prior to well purging using decontaminated equipment (depth to water, depth to bottom, depth of sample) referenced to top of PVC (or casing) and record on the data sheet.

- Provide an in-line meter (or equivalent methodology which mitigates exposure to the atmosphere) to concurrently measure pH, temperature, specific conductivity, dissolved oxygen (DO), and redox potential (RP), as applicable, during purging. Also, provide a device to measure turbidity. A minimum of four (4) readings of each parameter shall be taken and recorded during purging.

- Perform purging using dedicated bladder pump equipment [at ten (10) of the sampled wells], dedicated Grundfos pumps [at three (3) of the wells], or Consultant-supplied peristaltic pump with dedicated tubing [at twenty-two (22) of the sampled wells] at low flow rates, not taking the first reading until at least one pump volume plus one discharge tubing volume have passed. The purged groundwater may be discarded to the ground at the landfill. Sampling personnel are to monitor the drawdown in the wells and ensure that the drawdown is maintained at less than or equal to 0.3 feet during the entire purging and sampling process. Wells shall be purged at a rate of less than or equal to 300 ml/minute. Field parameter readings shall be recorded at a minimum of three minute intervals, until turbidity is stabilized such that three consecutive reading are within 10% of each other for readings >10 NTU, or readings are within 2 NTU of each other for readings <10 NTU. Per EPA's SOP, if the turbidity has not stabilized after four hours of purging, collect samples and provide full explanation of attempt to achieve stabilization. Provide a summary of periodic readings and time of reading for all parameters.

- Sample collection should proceed from high parameter volatility to low parameter volatility at a low flow rate. Samples for volatile parameters should be transferred slowly to the sample container to eliminate creation of air bubbles. Samples are to be collected in proper containers and properly preserved in the field.

- No filtering of samples is to occur, <u>except</u> where analysis of dissolved metals is specified. Where analysis of dissolved metals is specified, sample filtration is to be performed <u>in the field</u> during sample collection with an in-line 0.45-micron filter.

- Record all observations relating to the well sampling and any deviations from the sampling plan.

Surface Water Sampling

Surface water sampling consists of grab sample collection from as many as ten (10) surface water sampling locations at the former Barberino property on a semi-annual basis (April and October). The ten surface water sampling locations are designated as:

- SW-1
- SW-2
- SW-3
- SW-4
- SW-5
- SW-6
- SW-9
- SW-10
- SW-11
- SW-12

Surface water sampling shall consist of the collection of one grab sample from each surface water sampling location. A field data sheet shall be completed for each sample location. Field measurements of water temperature, air temperature, pH, specific conductance, and dissolved oxygen shall be recorded. Sampling equipment (i.e., peristaltic pump, dipper sampler, etc.), time and date of sample collection, sampler's name, depth of water, sample identification, and other pertinent information shall also be recorded on the field data sheet. In order to prevent the inadvertent collection of sediments during surface water sampling, surface water samples are to be collected only from those locations where the depth of water is at least one inch. All surface water samples collected for analysis of metals will be filtered in the field prior to acid preservation.

Preparation for Sampling

This task includes coordination between field monitoring personnel and the analytical laboratory for the bottle order, bottle delivery, sample preservation and chain of custody to complete the required sampling.

Sample collection scheduling shall allow enough time for completion of the sample analyses by the laboratory so that the monitoring reports can be assembled, reviewed, finalized and submitted in a timely manner according to permit requirements as further discussed below.

Consultant is responsible for coordinating equipment blanks, field blanks, trip blanks and duplicate samples as part of the sampling quality assurance program. In addition to any other approved EPA or CTDEP protocols, equipment blanks and field blanks are required for each day of sampling where non-dedicated equipment is used, with laboratory-supplied reagent water poured over the sampling equipment at the beginning of the sampling day and at the end of the sampling day and collected for analysis. Trip blanks, as supplied by the laboratory, are to be carried on each day that samples for VOC analyses are collected, and returned with the samples for analysis of VOC's. Duplicate samples are to be collected at two groundwater well locations (one well from the Wallingford Landfill, and one well from the former Barberino property) for each quarterly sampling event and analyzed for all the same parameters as the sampled wells.

As mentioned previously, ten of the monitoring wells at the Wallingford Landfill are equipped with dedicated 2-inch diameter bladder pumps (Marschalk brand SS/Teflon bladder pumps), while the three deep wells at the former Barberino property are equipped with 2-inch diameter Grundfos submersible pumps (Grundfos MP1 Redi-Flo2 with 150' lead). All thirteen pumps are

owned by CRRA. The Consultant shall supply all equipment necessary to operate the bladder pumps and the Grundfos submersible pumps. Such equipment may include, but not necessarily be limited to, bladder pump controllers, oil-less air compressors, inert gas packs to drive the pump bladders, pneumatic hoses, fittings, Grundfos VFD controller, and a portable generator. It is the Consultant's responsibility to maintain the CRRA-owned pumps in good working order. This Scope of Services does not include costs associated with repairs to CRRA-owned pumps and equipment that may be necessary due to normal wear and tear. If the CRRA-owned pumps require maintenance, repair or replacement, the Consultant must notify CRRA, provide a price quote for the necessary work, and proceed with the work only after receiving approval from CRRA.

The Consultant shall also provide the peristaltic pump required for sampling those monitoring wells equipped solely with dedicated tubing for purging and sampling. The Consultant will also supply equipment required for measurement of field parameters. Field equipment calibration and decontamination shall be the responsibility of the Consultant. The Consultant shall supply any other equipment necessary to adequately and properly complete the work.

Field Measurements and Collection of Samples

This task includes measuring selected parameters in the field and collecting samples in laboratory-supplied bottles, varying with the sampling point's parameter matrix. Refer to **Table 2** for a summary of field and laboratory parameter requirements for each sampling point at the Wallingford Landfill and former Barberino property. **Table 1** provides summaries of monitoring well completion details with total well depth and screened interval depth of each monitoring well.

Consultant shall follow the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846" (latest edition) and "RCRA Groundwater Monitoring" Draft Technical Guidance (latest edition) as well as all applicable CTDEP and USEPA regulations. Procedures described herein are not intended to be comprehensive, but to provide a clarification or to supplement the referenced regulations as they might pertain to certain site conditions. The various subsections below describe particulars for sampling at various types of sample locations.

Sampling methods described herein are to be utilized by Consultant during water quality monitoring events including monitoring of groundwater and surface water. Specific items that shall be performed during all water quality monitoring events and summarized in the monitoring reports include the following:

- Documentation of Field Activities
- Sample Handling

- Decontamination Procedures
- Monitoring and Sampling Techniques
- Field Quality Control Checks

Documentation of Field Activities shall include listing the procedures used to record data about the sampling event, the sampling locations, the samples themselves, and the handling and transport of the samples.

Sample Handling shall detail the source of the sample containers, sample preservation methods, and the chain-of-custody protocol that is followed from time of sample collection until sample acceptance by the laboratory performing the analysis.

Decontamination Procedures shall provide general data on field and in-house decontamination. Non-dedicated equipment used for purging, sampling, and filtering (to be completed only for analysis of dissolved metals) is to be decontaminated (unless replaced) between each sampling location. For the groundwater monitoring wells equipped with bladder or Grundfos submersible pumps, each pump is effectively "dedicated" to each sampling location. It is recommended in those instances where pumps are dedicated to individual wells, that they receive a thorough in-house decontamination as conditions warrant.

Monitoring and Sampling Techniques for groundwater and surface water locations shall include a description of the fundamental procedures for collection of samples. Specific procedures to be addressed include water level measurement; purging calculations, sample collection equipment and techniques utilized; and monitoring of field parameters (i.e., pH, temperature, specific conductivity, etc.) and their results. Surface water monitoring and sample techniques shall describe equipment purging (if applicable), monitoring of field parameters, method of filtering for dissolved metals and sample collection techniques.

Field Quality Control Checks shall describe typical QA/QC samples and their use. Monitoring events will include trip blanks, equipment blanks, field blanks, and duplicate samples. The trip blank is only associated with days when groundwater well monitoring is performed, because VOC's are not analyzed in surface waters. The equipment blank and field blank are only necessary when non-dedicated sampling equipment is utilized for well purging or surface water sample collection. Duplicate samples will be collected at one (1) ground water monitoring well on the Wallingford Landfill, and at one (1) groundwater monitoring well on the former Barberino property.

Except where sample analysis in accordance with methods in 40 CFR Part 136 is required by permits, the methodologies to be utilized should be consistent

with 40 CFR Part 258, Subpart E, Section 258.53 through 258.56, and as further detailed in EPA 530-R-93-017, "Solid Waste Disposal Facility Criteria - Technical Manual," November 1993; CTDEP's "Solid Waste Management Program Description", July 1993; USEPA's "RCRA Ground Water Monitoring Technical Enforcement Guidance Document", September 1986; and US EPA Region I Standard Operating Procedure GW-001 – "Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells" (January 19, 2010 – Revision 3).

Task 1.2: Laboratory Analysis

All sample analyses required under this Scope of Services shall be performed by a laboratory certified for such analyses by the Connecticut Department of Public Health or, in advance of any use, a laboratory approved in writing by the CTDEP. The laboratory shall analyze all samples submitted from the same monitoring event at one time, such that duplicate samples and blanks are analyzed under the same conditions.

Preservation and Transport of Samples to Laboratory

Samples shall be properly preserved and kept cool. They shall be transported to the laboratory the same day they are collected per coordination with the lab by the Consultant's field personnel. Container types, preservatives and maximum holding times shall be per CTDEP Reasonable Confidence Protocols (RCP), SW-846 (latest edition), or 40 CFR 136, as applicable. Consultant is to coordinate re-sampling, at no additional cost to CRRA, if re-sampling is necessary due to loss of sample in bottle transport or in laboratory handling, or if the maximum holding times are exceeded.

Analytical Methods and Detection Limits

Where published by CTDEP, laboratory analyses will be conducted in accordance with Reasonable Confidence Protocol (RCP) analytical methods. In those circumstances where an RCP method has not been published by CTDEP, the applicable method from the most-recent edition of EPA SW-846 ("Test Methods for Evaluating Solid Waste, Physical/Chemical Methods") will be utilized. In the absence of RCP and SW-846 analytical methods, the laboratory analytical procedure from the most recent edition of "Standard Methods for the Examination of Water and Wastewater" will be utilized.

The minimum detection limit for each analyzed parameter in groundwater monitoring well samples will have to be less than or equal to that parameter's Groundwater Protection Criterion (GWPC) or its Surface Water Protection Criteria (SWPC) from the State's Remediation Standard Regulations, whichever is lower. [Note: Groundwater samples for Ethylene Dibromide (EDB) and 1,2-Dibromo-3-chloropropane (DBCP) need only be analyzed via RCP Method 8260; analysis for EDB and DBCP via EPA Method 504.1 is not required.].

For surface water samples, the minimum detection limits need to be at least as low as the Chronic Aquatic Life Criteria (CALC) from the State's Surface Water Quality Standards.

Monitoring parameters for surface water and groundwater samples are summarized in **Table 2.** Analytical results for each parameter shall be reported together with the analytical method, method detection limits, date of analysis, and initials of analyst. The value of each parameter shall be reported to the maximum level of accuracy and precision possible.

Review of Lab Results, Quality Control Procedures and Invoices

Consultant is responsible for ensuring lab analyses are performed as required by the parameter list and that MDL limits are met. A summary of the lab's QA/QC procedures and results, including matrix spikes and surrogate recovery analyses, are to be reviewed by the Consultant and included in the semi-annual report. The laboratory must also provide signed "Laboratory Analysis QA/QC Certification Forms" that certify that all reported data meet the CTDEP's requirements for "reasonable confidence." Consultant is to review the laboratory invoices for consistency with actual sample parameter analyses requested and completed.

Task 1.3: Semi-Annual Reports - Water Quality Monitoring

The Stewardship Permit specifies that finalized water quality monitoring reports must be submitted to the CTDEP within sixty (60) calendar days of the date of sampling.

Sampling shall be arranged to allow for a reasonable laboratory turnaround time for analysis and compiling of lab results, writing draft report, reviewing draft report, finalizing report and distributing report to appropriate parties.

The semi-annual reports shall include in the monitoring results an indication of parameters that exceed criteria appropriate to the sampling point of classification. This will include state and federal limits for maximum contaminant levels not to be exceeded in the aquifer(s) at the relevant point of compliance (per Subtitle D requirements), groundwater and surface water protection criteria per CTDEP regulations in accordance with the classifications of the same, and acute aquatic life criteria for surface water locations.

The semi-annual reports must include assessment of conditions of the groundwater monitoring wells and other sampling locations as applicable. The semi-annual reports will also include a summary table of groundwater well construction details, and site maps which show groundwater contours in both the shallow overburden and the deep overburden aquifers across the two sites. The groundwater contours shall be developed on an AutoCAD drawing of the sites that includes site features and topography. CRRA will provide an AutoCAD disk of the sites for use by Consultant upon request.

During April and October, ground water elevation data will also be collected at all other available wells in the project vicinity as described in Task 1.4, regardless of whether or not the well is in the sampling program. The measured groundwater elevations at the additional well locations will be included on the groundwater contour maps. A Monitoring Well Field Data Sheet shall also be completed for each additional well.

Each semi-annual report shall fully document the field activities and the laboratory work details, be formatted to support the annual report, and provide interim results and an update on impacts and exceedances. CRRA shall be notified immediately of any significant variation from past results or exceedances of "Significant Environmental Hazard" reporting guidelines under Public Act 98-134.

A copy of the draft semi-annual report, including sampling details and supporting analytical data, sample chains of custody, Monitoring Well Field Data Sheets, and a site map of groundwater elevations and possibly isopleths of results, is due to CRRA for review a minimum of fourteen (14) calendar days before the final report is due to the CTDEP. CRRA shall also be allowed sufficient time to review any other reports or forms prior to submittal to CTDEP.

Finalized semi-annual reports are to be printed by the Consultant on double-sided pages. The report distribution and addresses will be provided. Six (6) finalized hard-copies of each report plus one electronic copy (PDF format) are required to be generated by the Consultant. Consultant is responsible for mailing reports directly.

Task 1.4: Non-Sampled Well Condition Survey and Water Elevations

There are ten (10) ground water monitoring wells included in this monitoring program that are not part of the semi-annual sampling program as outlined herein. During the April and October sampling events, the ground water elevation shall be measured at each of the ten non-sampled wells, and a Monitoring Well Field Data Sheet (as described in Task 1.1) shall be completed to document each well's condition. The groundwater elevations obtained at the non-sampled well locations should be used to supplement the groundwater contour maps developed as part of the applicable semi-annual environmental monitoring report. Copies of the Monitoring Well Field Data Sheets shall be included in the applicable environmental monitoring report.

Task 1.5: Annual Dioxins and Furans Monitoring, Lab Analysis and Reporting

The groundwater discharge permit and the Stewardship Permit require that three (3) wells (MW-3, MW-101A, and MW-200) be sampled for dioxins and furans annually, in April of each monitoring year. Dioxins and furans are to be analyzed via EPA Method 8280. The Consultant will be responsible for sampling for dioxins and furans concurrent with the regular semi-annual (April) sampling at these three wells.

The laboratory analytical results of the annual dioxin and furan monitoring, including calculations of the 2,3,7,8-TCDD toxicity equivalence, are to be summarized in the April semi-annual report, including copies of the laboratory analytical reports.

Task 1.6: Annual Reports - Water Quality Monitoring

The annual report shall address the zone of influence of the discharge (defined as the area of soil and groundwater within which the treatment of the leachate by soils and mixing of leachate with groundwater occurs and could be reasonably expected to occur, and therefore within which some degradation of groundwater quality is anticipated to occur). The annual reports shall also provide an overall assessment of site conditions for the calendar year, including but not limited to the following:

(a) Map depicting all groundwater and surface water monitoring locations, groundwater withdrawal locations, and the locations of the collection, treatment, and conveyance of stormwater;

(b) Evaluation of groundwater and surface water quality, including graphical representations of monitoring results for at least the past six (6) years;

(c) Condition of all monitoring wells and the need for repair or replacement of any wells;

(d) Evaluation of the extent and potential extent of the leachate discharge to groundwater, and whether any impact on the surface water quality to any surface waters bodies including wetlands was detected or could reasonably be expected to occur;

(e) Written request for modification of the groundwater and/or surface water monitoring program, as warranted by the data generated through the monitoring.

All annual reports are to be submitted as a draft to CRRA at least fourteen (14) calendar days prior to the submittal deadline of March 1st specified in the Stewardship Permit. CRRA shall be supplied with electronic copies of all information included in the final annual report, as well as groundwater contour maps and other miscellaneous site plans in AutoCAD files.

Finalized annual reports are to be printed by the Consultant on double-sided pages. The report distribution and addresses will be provided. Six (6) finalized hard-copies of the annual report plus one electronic copy (PDF format) are required to be generated by the Consultant. Consultant is responsible for mailing reports directly.

TASK 2: STORMWATER DISCHARGE SAMPLING, ANALYSIS AND REPORTING

The Wallingford Landfill is registered under the "General Permit for the Discharge of Stormwater Associated with Industrial Activity," issued October 1, 2002, modified on July 15, 2003, and re-issued on April 14, 2009. The permit registration number is GSI000499.

In accordance with the General Permit, stormwater samples are to be collected and analyzed on an annual basis. Under this Scope of Services, annual sampling is to be completed by June 30th of each year. There are a total of two (2) locations that must be sampled annually: outfall 001 and outfall 003 (or outfall 003A if there is insufficient flow at outfall 003), both of which are outfall pipes that discharge to surface waters. Refer to **Figure 2** for a map depicting the sampling locations.

Task 2.1: Stormwater Sampling

The General Permit requires that grab samples of stormwater be collected for analysis. The Consultant will also be required to collect a sample of uncontaminated rainfall, as required by the General Permit. The grab samples are to be collected from the sampling locations specified in the Stormwater Pollution Prevention Plan (SPPP) that has been prepared for the landfill and transfer station (refer to **Figure 2**). The Consultant is responsible for following proper sampling protocols to ensure that all collected samples are representative of the discharges and that contaminants are not artificially introduced into the samples.

Task 2.2: Laboratory Analysis

Samples shall be appropriately preserved and kept cool. They shall be transported to the laboratory the same day they are collected per coordination with the lab by Consultant. Container types, preservatives and maximum holding times per 40 CFR 136, latest revisions, shall be followed.

Both chemical analyses and acute toxicity biomonitoring shall be completed at each sampled outfall per the General Permit requirements. It is important to note that the samples from the two landfill outfalls must also be analyzed for the parameters specified in 40 CFR 445 (Landfill Point Source Category). The stormwater monitoring parameters are specified in **Table 3**.

Consultant is responsible for ensuring lab analyses are performed as required by the parameter list and that required methods are utilized. A summary of the lab's QA/QC procedures and results are to be reviewed. Consultant is to coordinate re-sampling at no additional cost to CRRA, if re-sampling is necessary due to loss of sample in bottle transport or in laboratory handling, or if the maximum holding times are exceeded. Consultant is to review the laboratory invoices for consistency with actual sample parameter analyses requested and completed.

Task 2.3: Reporting

CRRA is required to submit Stormwater Monitoring Reports (SMR's) to the CTDEP within ninety (90) calendar days of the sampling event. In order to meet this reporting requirement, the Consultant shall provide to CRRA finalized laboratory reports, laboratory QA/QC results, sample chains of custody, and stormwater event data (i.e., sample date and time, sampler's name, magnitude of storm event, date and magnitude of previous storm event, etc.) within forty-five (45) calendar days after the sampling event.

TABLE 1
Summary of Monitoring Well Construction
Wallingford Landfill and Former Barberino Property
Wallingford, Connecticut

Well Number	Dedicated Sampling Apparatus	Ground Elevation (feet)	Top of Steel Elevation (feet)	Measured Well Depth[b] (feet)	Well Bottom Elevation (feet)	Date of Installation
Upper Aquifer						
MW-1A	Tubing	58.50	62.37	26.77	35.60	09/01/81
MW-1B	Tubing	59.90	61.08	30.60	30.48	06/01/86
MW-2A	Tubing	59.50	61.13	32.05	29.08	11/01/88
MW-3	Tubing	22.60	23.59	11.90	11.69	09/01/81
MW-4R	Tubing	42.10	43.87	22.17	21.70	07/01/92
MW-5	Tubing	25.80	27.48	9.95	17.53	09/01/81
MW-9	Tubing	43.90	46.01	33.15	12.86	05/01/86
MW-10	Tubing	36.20	36.82	40.75	-3.93	05/01/86
MW-10A	Tubing	37.00	37.23	20.40	16.83	05/01/86
MW-11	Bladder Pump	49.80	51.12	72.55	-21.43	11/01/88
MW-12	Tubing	36.60	37.86	17.15	20.71	12/01/88
MW-13	Tubing	61.00	65.68	37.45	28.23	12/01/88
MW-100	Bladder Pump	51.70	53.90	40.62	13.28	11/01/83
MW-101R	Bladder Pump	54.50	55.84	40.37	15.47	07/01/92
MW-200	Tubing	29.10	30.64	14.45	16.19	12/01/88
MW-CEE1	Tubing	N/A	34.59	12.35	22.24	11/24/92
MW-CEE2	Tubing	N/A	37.48	18.18	19.30	11/24/92
MW-CEE3	Tubing	N/A	31.46	13.88	17.58	11/11/92
MW-CEE4	Tubing	N/A	30.37	14.54	15.83	03/26/93
MW-CEE5	Tubing	N/A	37.82	14.13	23.69	03/25/93
MW-CEE6	Tubing	N/A	34.95	14.02	20.93	03/29/93
MW-CEE7	Tubing	N/A	30.88	14.87	16.01	03/26/93
MW-CEE8	Tubing	N/A	29.05	14.80	14.25	03/29/93
MW-CEE9	Tubing	N/A	27.99	14.52	13.47	03/26/93
MW-CEE10	Tubing	N/A	32.15	14.82	17.33	03/29/93
Lower Aquifer						
MW-1	Bladder Pump	60.70	60.71	71.00	-10.29	10/23/01
MW-3A	Bladder Pump	35.60	37.02	165.00[a]	-127.98	01/01/89
MW-9A	Bladder Pump	44.35	47.75	161.30[a]	-113.55	09/11/02
MW-11A	Bladder Pump	49.70	51.19	186.00[a]	-134.81	12/01/88
MW-12A	Bladder Pump	36.59	38.91	150.40[a]	-111.49	09/16/02
MW-100A	Bladder Pump	52.00	53.30	136.00[a]	-82.70	12/01/88
MW-101A	Bladder Pump	54.10	55.35	142.00[a]	-86.65	12/01/88
MW-CEE6D	Grundfos Pump	N/A	34.45	174.5	-140.05	04/30/93
MW-CEE9D	Grundfos Pump	N/A	27.70	148.0	-120.30	04/16/93
MW-CEE10D	Grundfos Pump	N/A	31.86	151.5	-119.64	04/21/93

[a] Historical depth to bottom of well casing
[b] As measured from top of steel casing
Wells designated "MW-CEE-__" are located on the former Barberino property. All other wells are located on the Wallingford Landfill property.
N/A = Not Available

Table 2 Monitoring Parameters Wallingford Landfill and Former Barberino Property Wallingford, Connecticut			
	Wallingford Landfill	Former Barberino Property	
Parameters	Twenty-Two (22) Wells[1]	Thirteen (13) Wells[1]	Ten (10) Surface Water
Field Parameters:			
Depth to Water	S	S	
Water Elevation (msl)	S	S	
pH	S	S	S
Temperature	S	S	S
Specific Conductance	S	S	S
Dissolved Oxygen	S	S	S
Redox Potential	S	S	S
Turbidity	S	S	S
Inorganic Leachate Indicator Parameters:			
pH (Lab Analysis)	S	S	S
Specific Conductance (Lab Analysis)	S	S	S
Total Dissolved Solids (TDS)	S	S	S
Total Suspended Solids (TSS)	S	S	S
Alkalinity, Total	S	S	S
Hardness	S	S	S
Biochemical Oxygen Demand (BOD5)	S		
Chemical Oxygen Demand (COD)	S	S	S
Chloride	S	S	S
Nitrate (N)	S		
Ammonia (N)	S	S	S
Total Organic Carbon (TOC)	S		
Sulfate, Total	S	S	S
Fluoride	S		
Cyanide, Total	S		
Coliform Bacteria, Total	S		
Metals[2]:			
Aluminum	S	S	S
Antimony	S	S	S
Arsenic	S	S	S
Barium	S	S	S
Beryllium	S	S	S
Cadmium	S	S	S
Calcium	S	S	
Chromium, Total	S	S	S
Chromium, Hexavalent	S	S	
Cobalt	S	S	
Copper	S	S	S
Iron	S	S	S
Lead	S	S	S
Magnesium	S	S	S
Manganese	S	S	S
Mercury	S	S	S
Nickel	S	S	S
Potassium	S	S	S

Table 2
Monitoring Parameters
Wallingford Landfill and Former Barberino Property
Wallingford, Connecticut

Parameters	Wallingford Landfill	Former Barberino Property	
	Twenty-Two (22) Wells[1]	Thirteen (13) Wells[1]	Ten (10) Surface Water
Selenium	S	S	S
Silver	S	S	S
Sodium	S	S	S
Thallium	S	S	S
Vanadium	S	S	S
Zinc	S	S	S
Volatile Organic Compounds:			
VOC's via EPA Method 8260[3]	S	S	
Acrylamide via EPA Method 8032A	S	S	
Phenol & Total Phenolics:			
Method 9065	S		
Dioxins / Furans:			
Method 8280	A[4]		

S = Tested Semi-Annually in April and October A = Tested Annually in April

Notes:

1. For QA/QC purposes, one duplicate sample is to be collected from one well at the Wallingford Landfill, and one duplicate sample is to be collected from one well at the former Barberino property.
2. Groundwater samples to be analyzed for total metals concentrations. Surface water samples to be analyzed for dissolved metals concentrations.
3. The VOC analytical parameter list is to include all Organic Constituents listed in Appendix I to 40 CFR 258, all analytes listed in CTDEP RCP Method 8260, and 2-Chloroethyl Vinyl Ether, Chloromethyl Methyl Ether, and 1-Chlorohexane
4. MW-3, MW-101A, and MW-200 only.

TABLE 3
STORMWATER SAMPLING PARAMETERS
Wallingford Landfill
Wallingford, Connecticut

Parameter	Units	Required Analytical Method(s)[1, 2]	Outfall 003	Outfall 001
Total Oil and Grease	mg/L	Per 40 CFR 136	✓	✓
Chemical Oxygen Demand	mg/L	Per 40 CFR 136	✓	✓
Total Suspended Solids[3]	mg/L	Per 40 CFR 136	✓	✓
Total Phosphorous	mg/L	Per 40 CFR 136	✓	✓
Total Kjeldahl Nitrogen	mg/L	Per 40 CFR 136	✓	✓
Nitrate as Nitrogen	mg/L	Per 40 CFR 136	✓	✓
Total Copper	mg/L	Per 40 CFR 136	✓	✓
Total Lead	mg/L	Per 40 CFR 136	✓	✓
Total Zinc[3]	mg/L	Per 40 CFR 136	✓	✓
Aquatic Toxicity (LC_{50})	%	See Note 5	✓	✓
pH[3]	S.U.	Per 40 CFR 136	✓	✓
BOD_5[4]	mg/L	Per 40 CFR 136	✓	✓
Ammonia (as N)[4]	mg/L	Per 40 CFR 136	✓	✓
α-Terpineol[4]	mg/L	Via EPA Method 625	✓	✓
Benzoic acid[4]	mg/L	Via EPA Method 625 or 1625B	✓	✓
p-Cresol[4]	mg/L	Via EPA Method 625 or 1625B	✓	✓
Phenol[4]	mg/L	Via EPA Method 625 or 1625B	✓	✓
Analine[4]	mg/L	Via EPA Method 625 or 1625B		✓
Naphthalene[4]	mg/L	Via EPA Method 625 or 1625B		✓
Pyridine[4]	mg/L	Via EPA Method 625 or 1625B		✓
Arsenic[4]	mg/L	Per 40 CFR 136		✓
Chromium[4]	mg/L	Per 40 CFR 136		✓
pH of Uncontaminated Rainfall	S.U.	Per 40 CFR 136	✓	✓

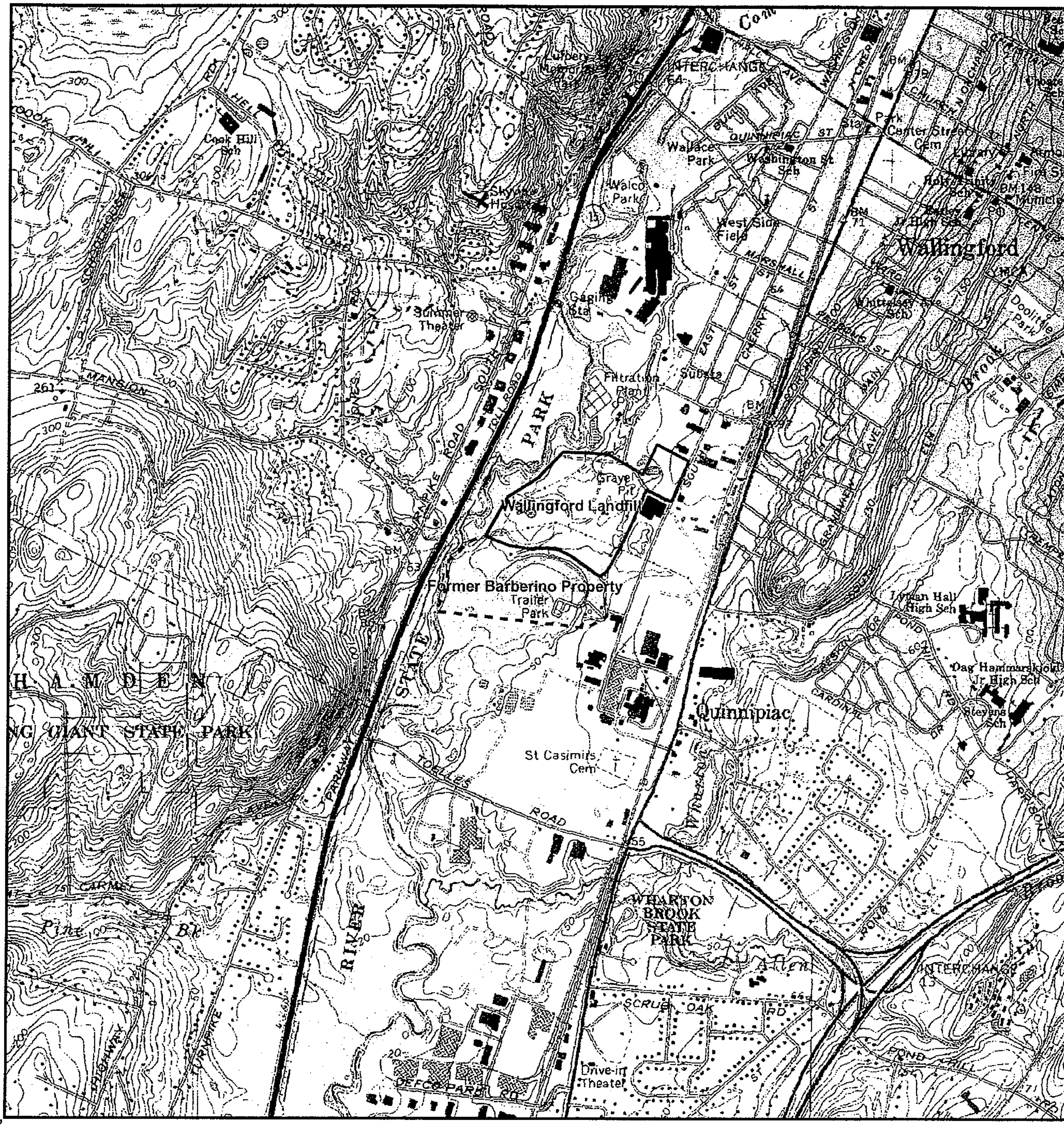
Notes:

1. All chemical analyses shall be performed using methods approved by the USEPA under 40 CFR 136 unless otherwise specified.
2. All chemical analyses shall be performed by a laboratory certified for such analyses by the Connecticut Department of Public Health.
3. TSS, Zinc, and pH are standard General Permit parameters, as well as parameters incorporated through 40 CFR 445.
4. Analysis of these parameters is required by the incorporation of 40 CFR 445 in the General Permit.
5. Acute toxicity biomonitoring shall be conducted according to the procedures specified in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 5th Edition (EPA 821-R-02-012), under the specific conditions listed in the General Permit.

FIGURES

Figure 1: Site Location Plan

Figure 2: Water Quality Monitoring Site Plan

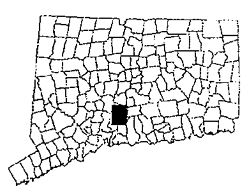


Legend

Approx. Site Boundary

Wallingford Landfill

Former Barberino Property



MAP REFERENCES:
USGS 7.5 Minute Topographic Map
Wallingford, CT 1984

0 1,000 2,000
Feet
Scale 1" = 2000'

Site Location

CRRA Wallingford Landfill
Wallingford, Connecticut

FIGURE 1

March 2009

G:\P2007\0073\V10\Wetlands\GIS\SiteLocation_mapping.mxd

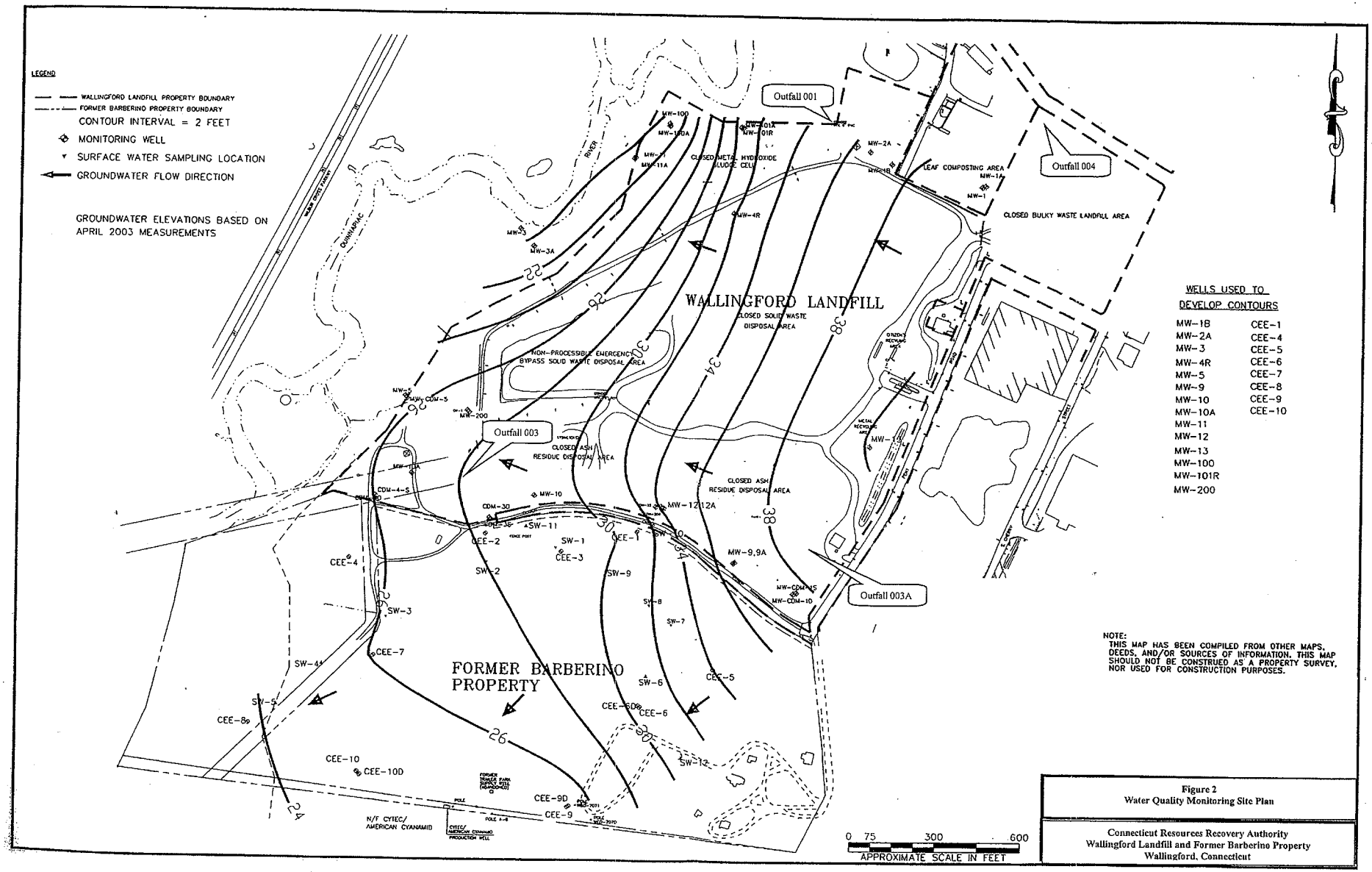


Figure 2
Water Quality Monitoring Site Plan

Connecticut Resources Recovery Authority
Wallingford Landfill and Former Barberino Property
Wallingford, Connecticut

APPENDIX A - Permits

DEP/HWM/CS-148-004	**Stewardship Permit** **(Dated September 16, 2009)** **69 Pages**
LF0000028	**Discharge of Sanitary Landfill Leachate to Ground Water** **(Dated July 18, 1989)** **6 Pages**

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Mr. Peter W. Egan
Director of Environmental Affairs
Connecticut Resource Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, CT 06103

September 16, 2009

Re: Transmittal Letter- Stewardship Permit
EPA ID No. CTD991288960
Permit No. DEP/HWM/CS-148-004

Dear Mr. Egan:

The Commissioner of the Department of Environmental Protection ("DEP') has made a final permit decision in accordance with Chapters 439 and 446k of the Connecticut General Statutes ("CGS") to issue the Stewardship Permit to the Connecticut Resources Recovery Authority ("CRRA") for the Wallingford Landfill. This permit became effective on the date it was signed by the Commissioner and shall expire ten (10) years from that date. Included with this letter you will find the signed Stewardship Permit.

The permit regulates and authorizes CRRA to complete post-closure care inclusive of water quality monitoring, and landfill gas decomposition monitoring; and environmental investigation and cleanup ("corrective action" measures) at the Wallingford Landfill. The permit does not authorize CRRA to accept waste or to operate the facility. The permit requires CRRA to complete the post-closure care and corrective action activities in accordance with a schedule, fulfill its cleanup obligations, and provide financial assurance for environmental cleanup.

The draft Stewardship Permit was public noticed on July 2, 2009 and the comment period closed at the end of the business day on August 17, 2009. The DEP received comments from the United States Environmental Protection Agency dated August 17, 2009 addressing the draft permit. The comments have been evaluated and are addressed by the DEP in the Response to Comments, Attachment A pursuant to Section 22a-449(c)-110(a)(2)(a)(KKK) of the Regulations of Connecticut State Agencies, incorporating 40 CFR 124.179(a). The Response to Comments specifies which provisions of the draft permit have been changed in the final permit decision, the reasons for the change to the final permit and also provides the reasons for not making other revisions which were requested.

The permit includes a Compliance Schedule, Section III, which identifies the submittals that CRRA must complete within specific timeframes. Failure to fulfill these conditions may result in violations, suspension or revocation of the permit.

The permit is transferrable upon the Commissioner's written authorization, provided the Permittee and potential transferee have complied with the requirements set forth for permit transfer in the permit and CGS Section 22a-6o.

If you have any questions or need additional information regarding this transmittal letter, please contact Lauren Kostiuk of my staff at (860) 424-3155 or e-mail Lauren.Kostiuk@ct.gov.

Sincerely,

Diane W. Duva

Diane W. Duva
Assistant Director
Waste Engineering and Enforcement Division
Bureau of Materials Management and Compliance Assurance

Encl.(3): Stewardship Permit
Certificate of Stewardship
Response to Comments, Attachment A

cc: Stuart Gray, Chief Hazardous Waste Unit, Compliance Enforcement Section, EPA Region I, 1 Congress Street, Suite 1100 (CHW), Boston, MA 02114-2023
James Chow, EPA Region I, 1 Congress Street, Suite 1100 (CHW), Boston, MA 02114-2023

ATTACHMENT A
RESPONSE TO COMMENTS

Connecticut Resources Recovery Authority, Wallingford Landfill
Stewardship Permit No. DEP/HWM/CS-148-004

Comments from the United States Environmental Protection Agency ("US EPA") Dated August 17, 2009, Followed by DEP Responses

1. Page 10 – Section II.A.5. notes that an Ecological Risk Assessment (ERA) shall be prepared and submitted for the CTDEP's review and approval but a schedule for the submission of the ERA could not be found in either Section II or in Section III (Compliance Schedule). If one has not been submitted, a schedule for the submission of the ERA similar to the one provided in the CRRA Shelton draft stewardship permit should be included.

   Comment not accepted.

   The Permittee has submitted a Screening Level Ecological Risk Assessment dated May 5, 2009 for the Commissioner's review and written approval. After review of this document, the Commissioner will instruct the Permittee if additional studies and activities need to be conducted, they need to further evaluate site-relates environmental risks, or they need to identify and implement appropriate remedial activities.

   This condition has been revised to state: "Pursuant to RCSA Section 22a-133k-1 et. seq., the Permittee has prepared and submitted for the Commissioner's review and written approval a Screening Level Ecological Risk Assessment dated May 5, 2009 evaluating the potential for ecological receptors to be exposed to contaminants. The Permittee is required to conduct additional studies and activities, as identified by the Commissioner in writing, pursuant to the Commissioner's review of the Screening Level Ecological Risk Assessment, and as necessary to further evaluate site-related environmental risk or identify and implement appropriate remedial activities.

2. Page 20 – Section III.A.1 – Consultant – In addition to the naming and designation of the "Consultant" as required in the compliance schedule, the language in this condition should be revised to include clearer language noting that the CTDEP will be notified in writing for approval whenever there is a change in the "Consultant" during the life of the permit.

   Comment accepted.

   The condition has been revised to state: "The Permittee shall designate and assign an environmental compliance expert who may be a full-time employee of the Permitee, and/or retain one or more qualified consultants, acceptable to the Commissioner to prepare the documents required by Condition Nos. II.B.2. and III.C.2. and shall, by that date, notify the Commissioner in writing of the identity of such environmental compliance expert and/or consultants. The Permiteee shall assign such environmental compliance expert and/or retain such qualified consultant, acceptable to the Commissioner, until Condition No. III.C.1. of this permit is fully complied with. The Permittee shall notify the Commissioner in writing of the identity of any environmental compliance expert or consultant otherthan the one approved by the Commissioner, within ten (10) days after assigning or retaining any environmental compliance expert or consultant for the purpose of addressing the actions required by this permit. The Permittee shall submit to the Commissioner a description of the assigned environmental compliance expert's

and/or consultant's education, experience and training which is relevant to the work required by this permit within ten (10) days after a request for such a description. Nothing in this paragraph shall preclude the Commissioner from finding a previously acceptable environmental compliance expert or consultant unacceptable."

CERTIFICATE OF STEWARDSHIP

The Commissioner of Environmental Protection has made a final administrative decision to issue a Stewardship Permit to the **Connecticut Resources Recovery Authority** for the Wallingford Landfill, EPA ID No. CTD991288960, located on Pent Road, Wallingford, Connecticut.

This permit is for the continuation of facility post-closure care inclusive of water quality monitoring, landfill decomposition gas monitoring; and corrective action activities, meaning environmental investigation and remediation, at the facility and may be transferred upon the written authorization of the Commissioner. Opportunity for public comment has been provided in accordance with state and federal requirements.

This action is based on the obligation to initiate and complete post-closure care and environmental clean-up work required by state laws and regulations, including RCRA Corrective Action and Closure, and requires compliance with Connecticut's Solid Waste Management Regulations and Hazardous Waste Management Regulations, as well as state and federal guidance.

September 16, 2009

Amey W. Marrella
Commissioner

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Stewardship Permit

Pursuant to Chapters 439 and 446k of the Connecticut General Statutes, a permit is issued to:

Permittee:
Connecticut Resources Recovery Authority
Wallingford Landfill
Pent Road, Wallingford, CT 06492

Facility Identification:
EPA ID No. CTD991288960
Permit Number: DEP/HWM/CS-148-004

To perform site-wide environmental investigation and cleanup ("post-closure care" and "corrective action measures") at the hazardous and solid waste disposal facility in accordance with Connecticut General Statutes ("CGS") Sections 22a-6, 22a-449(c) and 22a-454, and Section 22a-449(c)-110 of the Regulations of Connecticut State Agencies ("RCSA") as specified in the conditions set forth in this permit.

This permit regulates and authorizes the Permittee to perform post-closure care and corrective action measures at the facility. The permit does not authorize operation of a hazardous and solid waste management facility in the sense of treating, storing, or disposing of hazardous and solid wastes generated off-site.

All terms in this permit are defined in the permit or if not defined in the permit are as defined in Section 22a-449(c)-100 of the RCSA or in Title 40 of the Code of Federal Regulations ("CFR") Parts 260, 261, 262, 264, 268, 270, 273 or 279.

This permit is based on the information described in the Resource Conservation and Recovery Act ("RCRA") Part A filed by the applicant on November 19, 1980 and the Stewardship application filed on April 16, 2009. The Permittee must keep records of all data used to complete the permit application and any supplemental information submitted for the effective term of this permit. The permit application and RCRA Part A filing are incorporated by reference as part of the permit. Any false statements or inaccuracies contained in the information submitted by the Permittee may result in the suspension, revocation or modification of this permit and civil or criminal enforcement action.

The Permittee shall comply with all terms and conditions contained in the following sections of the permit: Section I (Standard Facility Conditions) pages 1 through 9; Section II (Authorized Activities) pages 10 through 17; Section III (Compliance Schedule) pages 18 through 19; Appendices A-1, and B-1; and the information contained in the Permittee's permit application, except where the application is superseded by the more stringent conditions contained herein. Any violation of any provision of this permit may subject the Permittee to enforcement action pursuant to the CGS including but not limited to Sections 22a-6a and 22a-131.

This permit is transferrable upon the Commissioner's written authorization, provided the Permittee and potential transferee have complied with the requirements set forth in CGS Section 22a-6o.

This permit may be revoked, suspended, modified, transferred, or reissued, in order to comply with applicable law. The Commissioner may also modify this permit when it is deemed necessary to do so.

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The Permittee shall submit a revised permit application to the Commissioner at least one hundred and eighty (180) calendar days before making any changes to any of the permitted areas or activities. Any application shall be approved in writing by the Commissioner prior to the Permittee implementing such change. The Permittee shall submit an application for a renewal of this permit to the Commissioner at least one hundred eighty (180) calendar days prior to its expiration date.

The terms and conditions of the permits listed below are hereby superseded with the terms and conditions of this permit. Subsequently, the permits listed below are hereby revoked for administrative purposes.

1. Permit to Operate No. 148-2-B-O issued on November 14, 1986;
2. Permit to Operate No. 148-4-L-O issued on November 14, 1986; and
3. Permit Modification No. 148-L issued on November 15, 1988.

In the event of a conflict between any previously issued solid waste permit and the terms and conditions of this permit, the terms and conditions of this permit shall supersede.

Condition No. 4 of Groundwater Discharge Permit No. LF0000028 issued on July 18, 1989 is superseded by the requirements of this permit.

This permit is hereby in effect and shall expire ten (10) years from this date.

September 16, 2009
Date

Amey W. Marrella
Amey W. Marrella
Commissioner

STEWARDSHIP PERMIT
Connecticut Resources Recovery Authority
Wallingford Landfill

Pent Road
Wallingford, CT

EPA ID No. CTD991288960
Permit No. DEP/HWM/CS-148-004

SECTION I

Stewardship Permit
Standard Facility Conditions

Connecticut Resources Recovery Authority
Wallingford Landfill

EPA ID No. CTD991288960
Permit No. DEP/HWM/CS-148-004

Table of Contents
Section I – Standard Facility Conditions

STEWARDSHIP PERMIT
SECTION I
STANDARD FACILITY CONDITIONS

A. EFFECT OF PERMIT

Except as is provided in the Regulations of Connecticut State Agencies (RCSA) Section 22a-449(c)-110(a)(2) and except for any federally enforceable requirement(s), compliance with this permit during its term constitutes compliance, for purposes of enforcement, with Connecticut General Statutes (CGS) Section 22a-449(c). This permit may be modified, revoked and reissued, or terminated during its term as set forth in RCSA Section 22a-449(c)-110(a)(1), which incorporates by reference Title 40 of the Code of Federal Regulations (40 CFR) Parts 270.41, 270.42 and 270.43.

The Permittee shall perform post-closure care inclusive of surface and groundwater monitoring , landfill decomposition gas monitoring and corrective action in accordance with its applications (Application Nos. 200901180 and 199500989) received by the Department of Environmental Protection ("Department') on April 16, 2009 and September 2, 1992 respectively and the requirements of this permit. In the event of a conflict between the Permittee's application and the requirements of this permit, the requirements of this permit shall take precedence and apply.

The issuance of this permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of federal, state or local law or regulations.

Term (Duration) - The effective date of this permit is the date on which the permit is signed by the Commissioner. This permit is in effect for a term of ten (10) years and may be renewed at the end of the term, in accordance with the requirements described in Condition No. I.E.2., "Duty to Reapply."

In accordance with 40 CFR 270.73(a), upon issuance of this permit the Permittee's Interim Status granted under Resource Conservation and Recovery Act ("RCRA") is hereby terminated. In addition, upon the Commissioner's determination that the Permittee has satisfied the requirements of this permit, a Certificate of Completion shall be issued to the Permittee.

B. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

C. CONFIDENTIAL INFORMATION

The Permittee may claim that any information required to be submitted by this permit contains or constitutes confidential information in accordance with CGS Section 1-210(b).

D. IMMINENT HAZARD ACTIONS

Notwithstanding any provision of this permit, enforcement actions may be brought pursuant to Section 7003 of the Resource Conservation and Recovery Act (RCRA), CGS Section 22a-6, or any other applicable law.

E. DUTIES AND REQUIREMENTS

1. Duty to Comply. The Permittee shall comply with all conditions of this permit except that the Permittee need not comply with the conditions of this permit to the extent and for the duration such noncompliance is authorized in an Emergency Permit that explicitly authorizes any such noncompliance. Noncompliance by the Permittee with the terms of this permit, except under the terms of an Emergency Permit, shall constitute a violation of this permit and any applicable laws or regulations and is grounds for enforcement action, for permit termination, revocation and reissuance or for denial of a permit renewal. Emergency Permit as used herein shall mean Emergency Permit as identified in RCSA Section 22a-449(c)-110(a)(1) incorporating 40 CFR 270.61.

   A violation of this permit for purposes of state and federal law constitutes a violation of a RCRA permit.

2. Duty to Reapply. This permit shall expire ten (10) years after the effective date of this permit. If the Permittee wishes to continue engaging in an activity regulated by this permit after the expiration date of this permit, the Permittee shall apply for renewal of this permit one hundred eighty (180) calendar days prior to the date of expiration of the permit, in accordance with the requirements of RCSA Sections 22a-449(c)-104 and 22a-449(c)-110 incorporating 40 CFR 264.101 and 270.10(h) and any other applicable law.

3. Obligation for Post-Closure Care and Corrective Action. The Permittee is required to continue this permit for any period necessary to comply with the post-closure care and corrective action requirements of this permit.

4. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce any activity authorized by this permit in order to maintain compliance with the conditions of this permit, unless otherwise required to do so by another state or federal authority.

5. Duty to Mitigate. In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent its noncompliance from having significant adverse impacts on human health or the environment. No action taken by the Permittee pursuant to this section of this permit shall affect or limit the Commissioner's authority under any other statute or regulation.

6. Permit Actions. This permit may be modified, revoked and reissued, or terminated as provided for in 40 CFR 270.41, 270.42 or 270.43, and in accordance with all applicable law, including but not limited to, CGS Sections 22a-6g and 6h and RCSA Sections 22a-3a-5 and 22a-449(c)-110. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any condition of this permit.

7. Property Rights. This permit does not convey any property rights of any sort, or any exclusive privilege to the Permittee.

8. Duty to Provide Information. The Permittee shall furnish to the Commissioner, within the timeframe specified by the Commissioner, any information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit.

9. Post-Closure Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance, at a minimum, includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls, including appropriate laboratory quality assurance procedures. This provision requires the operation of backup, auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

10. Inspection and Entry. The Permittee shall allow the Commissioner, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
    (a) Enter at reasonable times upon the Site where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;

    (b) Have access to and copy, at reasonable times, any records that shall be kept under the conditions of this permit;

    (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, and operations regulated or required under this permit; and

    (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substance or parameters at any location.

11. Security. Pursuant to RCSA Section 22a-449(c)-104 incorporating 40 CFR 264.14, the Permittee shall prevent the unknowing entry, and minimize the possibility for unauthorized entry, of persons or livestock onto the active portion of the Facility. The Permittee shall secure the Facility to the extent necessary to protect human health.

12. Monitoring and Records.
    (a) The Permittee shall ensure that samples and measurements taken for the purpose of monitoring are representative of the monitored activity.

    (b) The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit (i.e. records from groundwater monitoring and groundwater surface elevations), the certification required by RCSA Section 22a-449(c)-104 incorporating 40 CFR 264.73(b)(9), and records of all data used to complete the application for this permit, for the Post-Closure Period. This period may be extended by request of the Commissioner at any time.

(c) Records for monitoring information shall include:
- (i) The date, exact place and time of sampling or measurements;
- (ii) The individual(s) or company who performed the sampling or measurements;
- (iii) The date(s) analyses were performed;
- (iv) The individual(s) or company who performed the analyses;
- (v) The analytical techniques or methods used; and
- (vi) The results of such analyses.

13. Operating Record. The Permittee shall maintain, in writing, the following information in the Facility's operating record until termination of this permit:

(a) Records and results of inspections as required by this permit, except this data need only be kept for three (3) years from the date of any such inspection;

(b) Monitoring, testing or analytical data, and corrective action where required by 40 CFR 264 Subpart F or any regulatory section noted in 40 CFR 264.73(b)(6);

(c) All post-closure and corrective action cost estimates, as applicable, under RCSA Section 22a-449(c)-104 and 40 CFR 264.142 and 40 CFR 264 Subpart H; and

(d) Any other information required by this permit or by any applicable law to be maintained in the Facility operating record.

14. Signatory Requirements. The Permittee's application and all reports or information submitted to the Commissioner by the Permittee pursuant to this permit shall be signed by the person specified in and contain the certification prescribed in RCSA Section 22a-449(c)-110 incorporating 40 CFR 270.11.

15. Transfers. This permit is not transferable to any person without the advanced written authorization of the Commissioner. The Commissioner may request any information deemed necessary regarding the potential transferee. Before any such transfer, the Permittee and any proposed transferee shall fully comply with the requirements of CGS Section 22a-6o. The Commissioner may require modification or revocation and reissuance of this permit to change the name of the Permittee and as an incident to any such transfer, incorporate such other requirements, as the Commissioner deems necessary.

In advance of transferring ownership or operation of its Facility prior to the termination of this permit, the Permittee shall notify the prospective new owner or operator in writing of the requirements of this permit, 40 CFR 264 through 270, and of the RCSA Section 22a-449(c)100 et. al. The Permittee shall provide such prospective new owner or operator with a copy of this permit.

The Permittee's failure to notify the new Permittee of the requirements of this permit in no way relieves the new Permittee of his obligations to comply with all applicable requirements.

If the transfer of the property takes place and the Permittee retains the permit, an access agreement between the Permittee and the prospective new owners of the Facility shall be

approved by the Commissioner prior to the sale of the Facility/Site. The agreement shall include the anticipated times, locations and frequency of access needed in order for the Permittee to complete closure, post-closure care and corrective action activities and conduct inspection, operation and management activities for all remedial systems. A copy of the Post Closure Plan, referenced in Condition No.II.A.1.. of this permit, shall be provided to the prospective new owner prior to transfer of the property.

16. Reporting Requirements.

(a) Anticipated Non-Compliance. The Permittee shall give as much advance written notice as possible to the Commissioner of any planned changes in the Facility or activity, which may result in non-compliance with any requirement of this permit.

(b) Compliance Schedules. Except where otherwise provided for in this permit, reports of compliance and non-compliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule (Section III) of this permit, shall be submitted no later than fourteen (l4) calendar days following each schedule date, to the extent such reports are required herein.

(c) Twenty-four Hour Reporting.

(i) The Permittee or designee shall orally report to the Commissioner any condition resulting from remedial activity or waste related activity at its Facility, irrespective of whether such activity is in compliance with the requirements of this permit, which does or may pose an imminent and substantial endangerment to human health or the environment, immediately but not later than twenty-four (24) hours from the time the Permittee becomes aware or should be aware of the circumstances causing such endangerment.

The report to the Commissioner shall include:

(A) Name, address, and telephone number of the Permittee;
(B) Name, address, and telephone number of the Facility;
(C) Date, time and type of incident;
(D) Description of the occurrence and its cause;
(E) Name and quantity of waste(s) or constituents thereof involved;
(F) The extent of injuries, if any;
(G) An assessment of actual or potential hazards to human health and the environment;
(H) Estimated quantity and disposition of recovered waste that resulted from the incident;
(I) All information concerning the release of any waste or constituents thereof that may cause an endangerment to public drinking water supplies; and
(J) All information concerning a release or discharge of waste or constituents thereof or of a fire or explosion from the Facility, which could threaten human health or the environment

(ii) A written submission shall also be provided within five (5) calendar days of the time the Permittee becomes aware of the circumstances described

in subdivision (i) above. The written submission shall contain a description of the endangerment and its cause; the period of endangerment including exact dates and times, if the endangerment has been abated, and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reccurrence of the endangerment. The Permittee shall maintain in the operating record of its Facility a copy of all such written reports. The Commissioner may waive the five (5) day written notice requirement in favor of a written report within fifteen (15) days of the incident requiring reporting.

(iii) Nothing in this section shall effect or relieve the Permittee of its obligations under CGS Sections 22a-6u or 22a-450.

(d) Other Noncompliance. The Permittee shall report all instances of noncompliance with this permit not otherwise required to be reported by this permit to the Commissioner along with any other required monitoring report, no later than thirty (30) days from or after the date the Permittee is aware, or reasonably should have been aware of any such noncompliance. Any such report shall contain, at a minimum, the information listed in Condition No. I.E.16.(c)(i) of this permit.

(e) Other Information. When the Permittee becomes aware that it failed to submit any relevant facts or information in a permit application, or submitted incorrect information in a permit application, report or other document provided to the Commissioner regarding this permit, it shall submit such relevant facts or correct information to the Commissioner within thirty (30) calendar days of becoming aware of such facts or information.

17. Computation of Time.

(a) Except as is expressly provided for in this permit, the computation of time periods set forth in this permit shall be as follows:

(i) Any time period scheduled to begin on the occurrence of an act or event shall begin on the day after the act or event.

(ii) Any time period scheduled to begin before the occurrence of an act or event shall be computed so that the period ends on the day before the act or event.

(iii) If the final day of any time period falls on a Saturday, Sunday or a federally or state recognized legal holiday or state mandated furlough day, the time period shall be extended to the next working day.

(b) Submission of Reports. Where this permit requires the submission of a written report, a notification or other information or documentation to the Commissioner, the report or notification shall be deemed submitted on the date such report, notification or other information is received by the Department.

18. Availability, Retention and Disposition of Records. The Permittee shall ensure that all records required under RCSA Sections 22a-449(c)-100 to 119 et. seq. or this permit, including all plans, are furnished upon request, and made available at all reasonable times

for inspection, by any officer, employee, or representative of the Department or the U.S. Environmental Protection Agency ("EPA").

The retention period for all records required under RCSA Sections 22a-449(c)-100 to 119 and this permit is extended automatically during the course of any unresolved enforcement action regarding the Facility or as requested by the Commissioner or Regional Administrator of EPA.

19. Additional Requirements. Requirements not included in this permit, which become effective by statute or regulation, and not made specifically inapplicable to facilities with a permit, shall apply to the Permittee's Facility. In the event of any conflict between this permit and any such requirement, the Permittee shall comply with the more stringent requirement. If the Permittee does not fully comply with the more stringent requirement, the Department may enforce either requirement.

20. Federal, State and Local Laws. Nothing in this permit shall be construed to prohibit any federal, state or political subdivision thereof from imposing any requirements to the extent authorized by law which are more stringent than those imposed by this permit. In addition, nothing in the permit shall relieve the Permittee of its obligation to comply with any other applicable federal, state, or local statute, regulation or ordinance.

21. Modification of the Compliance Schedule.

(a) The Permittee may request to modify the submittal due dates of the Compliance Schedule (Section III) of this permit at any time. Such requests shall be submitted for the Commissioner's review and written approval and shall include sufficient justification for such request(s).

(b) The Commissioner may grant extensions of submittal due dates based on the Permittee's demonstration that sufficient justification for the extension exists. Extensions to due dates, which this permit explicitly defines as being due by a certain time or during a certain time interval, may be granted by the Commissioner if sufficient justification for the extension is demonstrated by the Permittee.

F. DEFINITIONS

Any term not otherwise defined herein shall be defined as that term is defined in RCSA 22a-449(c)-100 thru 119 incorporating 40 CFR 264 through 279.

1. "Annual" means that sampling and analysis shall occur no later than December 31st of the calendar year. The results of such sampling and analysis shall be submitted to the Commissioner no later than March 1st of the subsequent year.

2. "Ash Residue Area" means the 7.5-acre area located along the southern section of the Facility that was formerly used for the disposal of ash residue generated by the Connecticut Resources Recovery Authority ("CRRA") Wallingford Waste to Energy Facility.

3. "CFR" means the Code of Federal Regulations in effect on the date that this permit is issued.

4. "Commissioner" means the Commissioner of Environmental Protection as defined in CGS Section 22a-2 or the Commissioner's duly authorized designee.

5. "Emergency By-pass/Non-Processibles Area" means the 6-acre area located southwest of and adjacent to the Municipal Solid Waste Area of the Facility that was formerly used for the disposal of emergency by-pass waste and non-processible waste from the CRRA Wallingford Waste to Energy Facility.

6. "Facility" shall mean, pursuant to 40 CFR 260.10, all contiguous land, structures, other appurtenances, and improvements on the land, used for treating, storing or disposing of hazardous and solid waste and all contiguous property under control of the owner or operator.

   For the purposes of this permit, Facility shall mean the 82-acre parcel of land located on Pent Road in Wallingford, CT and subject to the requirements of this permit. Facility does not include the Former Barberino Property.

7. "Former Barberino Property" means the 45-acre parcel of land to the south of the Facility, and that formerly consisted of a trailer park and residential dwellings.

8. "Former Bulky Waste Area" means the 5-acre area located in the northeastern portion of the Facility Property near the intersection of Ball and South Cherry Streets that was formerly used by the Town of Wallingford for the disposal of bulky solid wastes.

9. "Hazardous Waste" or "Hazardous Wastes" shall mean hazardous waste as identified or listed as hazardous waste pursuant to 42 U.S.C. Section 6901 et. seq. and RSCA Section 22a-449(c)-101.

10. "Metal Hydroxide Sludge Cell Area" means the 3-acre area located along the northern flank of the Emergency Bypass/Non-Processibles Area of the Facility that was formerly used for the disposal of approximately 4 million pounds of hazardous wastes (EPA hazardous waste codes K063 and F006) from local industries.

11. "Municipal Solid Waste Area" means the 36-acre area located in the south central portion of the Facility that was formerly used by the Town of Wallingford for the disposal of municipal solid wastes.

12. "Period of Active Remediation" shall mean the period of time prior to the completion of remedial activity conducted pursuant to this permit, with the exception of that period when the only remaining activity is post-remediation monitoring and monitored natural attenuation.

13. "Permittee" shall mean the person responsible for the overall operation of the Facility who has been issued a license by the Commissioner. As used herein "person" is defined in Section 22a-423, Chapter 446k, of the CGS and "license" is defined in Section 4-166, Chapter 54 of the CGS.

14. "Post-Closure Period" means a minimum of thirty (30) years from the date of certification of closure of the Facility. This period shall be extended or shortened by the Commissioner in accordance with 40 CFR 264.117(a)(2).
For the purposes of this permit, the start date of the post-closure period is February 28, 2005.
Please note: For sites in which waste will remain in place, the post-closure period shall be extended at the Commissioner's discretion. In the event the waste is removed, an alternate post-closure period may be approved by the Commissioner.

15. "Quarterly" means that sampling and analysis shall occur once every three (3) consecutive months in a calendar year (i.e. January, April, July, and October). The results of the sampling and analysis shall be submitted to the Commissioner within sixty (60) calendar days of the date of sampling.

16. "Semi-annual" means that sampling and analysis shall occur during the months of April and October each calendar year. The results of the sampling and analysis shall be submitted to the Commissioner within sixty (60) calendar days of the date of sampling.

17. "Site" means the same or geographically contiguous property which may be divided by public and private right-of-way, provided the entrance and exit between the properties is at a cross-road intersection, and access is by crossing opposed to going along, the right-of-way. Non-contiguous properties owned by the same person but connected by a right-of-way that he controls and to which the public does not have access, is also considered part of the Site property.

    For the purposes of this permit, there are six areas that comprise the Site: "Ash Residue Area", "Emergency Bypass/Non-Processibles Area", "Former Bulky Waste Area", "Metal Hydroxide Sludge Cell Area", "Municipal Solid Waste Area", and "Former Barberino Property". Herein after the term "Site" shall refer to all six areas.

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SECTION II

Stewardship Permit
Authorized Activities

Connecticut Resources Recovery Authority
Wallingford Landfill

EPA ID No. CTD991288960
Permit No. DEP/HWM/CS-148-004

SECTION II
AUTHORIZED ACTIVITIES

A. POST-CLOSURE REQUIREMENTS

1. Post-Closure Care Plan. The Permittee shall perform post-closure care of the Site in accordance with the Post-Closure Plan, included in Connecticut Resources Recovery Authority's ("CRRA") application (included in Appendix A-1 of this permit). Herein after, the "approved Post-Closure Plan".

2. Modifications to Approved Post-Closure Plan. The Permittee shall submit a written notification or request for a permit modification to authorize a change in the approved Post-Closure Plan in accordance with the applicable requirements of 40 CFR 124 and 40 CFR 270. The written notification or request must include a copy of the amended post-closure plan for the Commissioner's review and written approval.

3. Copy of Post-Closure Plan. The Permittee shall ensure that a copy of the approved Post-Closure Plan is kept at CRRA Headquarters or at an alternate location acceptable to the Commissioner, until the Post-Closure Care Period has been completed and certified in accordance with the requirements of this permit.

4. Completion of Post-Closure Period.
   (a) The Permittee shall notify the Commissioner in writing two (2) calendar years prior to the anticipated end date of the Post-Closure Period for the Ash Residue Area.

   (b) Within sixty (60) calendar days after the completion of the Post-Closure Period, the Permittee shall submit to the Commissioner by registered mail, a certification signed by both the Permittee and by an independent registered professional engineer stating that the post-closure care for the Site, was performed in accordance with the specifications in the approved Post-Closure Plan. Documentation supporting the independent, registered professional engineer's certification shall be furnished to the Commissioner upon request.

5. Ecological Risk Assessment. Pursuant to RCSA Section 22a-133k-1 et.seq., the Permittee has prepared and submitted for the Commissioner's review and written approval a Screening Level Ecological Risk Assessment dated April 6, 2009 evaluating the potential for ecological receptors to be exposed to contaminants. The Permittee is required to conduct additional studies and activities, as identified by the Commissioner in writing, pursuant to the Commissioner's review of the Screening Level Ecological Risk Assessment, and as necessary to further evaluate site-related environmental risk or identify and implement appropriate remedial activities.

6. Notification Requirements for Newly Discovered Releases.
   (a) The Permittee shall notify the Commissioner in writing of any newly discovered release(s) of solid or hazardous waste or hazardous waste constituents discovered during the course of post-closure care, groundwater monitoring, environmental audits, or other means, within fifteen (15) calendar days of the date of discovery.

(b) If the Commissioner determines that further investigation of the Site is needed, the Permittee shall be required to prepare a plan for further investigation within sixty (60) calendar days of notification by the Commissioner.

7. Inspections.

(a) The Permittee shall inspect the Facility for malfunctions, deterioration, and discharges, which may lead to any release of hazardous or solid wastes. The Permittee shall remedy any deterioration which an inspection reveals, to ensure that the problem does not lead to an environmental hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(b) The Permittee shall ensure inspections are performed on a quarterly basis by a registered professional engineer. Such inspections shall include, but not be limited to:

(i) Odors and dust control;
(ii) Conditions of the access road;
(iii) Erosion, settling, subsidence or other events that may affect the grading;
(iv) Integrity of the final cover soils and vegetation;
(v) Drainage control;
(vi) Leachate seeps; and
(vii) Groundwater monitoring systems.

(c) The Permittee shall record all inspections in an inspection log. The inspection logs shall include: the date and time of the inspection, the name of the inspector and company or affiliation, a notation of the observations made, and the date and nature of any repairs. Such records shall be kept for at least three (3) years from the date of inspection or for longer if a more stringent condition applies, and maintained in either an electronic format with a copy available to the Commissioner upon request, or a written copy in the Facility's Operating Record.

8. Maintenance of Final Cover. The Permittee shall ensure that the final cover for the Site is properly maintained and repaired when necessary in accordance with the approved Post-Closure Plan. Proper maintenance shall include, but not be limited to, ensuring that:

(a) Established vegetation is cut to the proper length to ensure that the root depth is less than six (6) inches for the Metal Hydroxide Sludge Cell Area.

(b) For areas in which erosion has occurred, the lost material shall be replaced and the area re-seeded; and

(c) Obstructions to the drainage structures are removed and properly disposed.

9. Landfill Decomposition Gas Monitoring.

(a) The Permittee shall conduct gas monitoring in accordance with the requirements of 40 CFR 258.23 and the "Wallingford Landfill Gas Monitoring Plan" revised October 2004 and approved by the Department on December 10, 2004. Herein after, the "approved Gas Monitoring Plan".

(b) The Permittee shall ensure that, at a minimum, in addition to the soil gas probes along the east and north sides of the Site, the methane concentrations within on-site structures are monitored as specified in the approved Gas Monitoring Plan.

(c) The Permittee shall perform soil gas monitoring on a quarterly basis as specified in the approved Gas Monitoring Plan, unless otherwise approved in writing by the Commissioner.

(d) The Permittee shall submit a written notification or request for a permit modification to authorize a change in the approved Wallingford Landfill Gas Monitoring Plan in accordance with the applicable requirements of 40 CFR 124 and 40 CFR 270. The written notification or request must include a copy of the amended Wallingford Landfill Gas Monitoring Plan for the Commissioner's review and written approval

10. Public Participation Plan. The Permittee shall develop and implement a Public Participation Plan. Such plan shall, at a minimum, include provisions for:
(a) A public notice prior to the start of or completion of remedial activities or the completion of post-closure care inclusive of landfill decomposition gas monitoring, and surface and groundwater monitoring at the Site or area affected by the Site or any portion thereof consistent with Condition No. II.A.11. of this permit and the requirements of CGS Section 22a-134(i);
(b) The submittal of a copy of such notice to the Commissioner ten (10) calendar days prior to the date of the publication; and
(c) The submittal of a written summary of all comments received and responses thirty (30) calendar days after the end of the comment period.

The Commissioner shall review the summary of the comments and the Permittee's responses and shall either: adopt the responses, adopt the responses with modifications, or reject the responses and prepare a response to each comment.

In the event of substantial changes in the remedial or post-closure care approach, the Commissioner may require an additional opportunity for public comment with respect to such changes.

11. Public Notice Requirements. The Permittee shall provide public notice of any proposed remediation and the Commissioner's tentative determination that remediation and/or post-closure care inclusive of landfill gas decomposition and groundwater monitoring is complete. Each public notice must provide a forty-five (45) calendar day comment period and a public information meeting no earlier than thirty (30) calendar days from the date of the public notice and no later than forty five (45) calendar days after the public notice.
(a) Prior to the commencement of any proposed remedial action, the public notice shall summarize the investigations undertaken, the results of the investigations, clearly identify the proposed remedial activities, and include an address and telephone number for a contact person. The Permittee shall:
(i) Publish the notice in a newspaper having substantial circulation in the municipality in which the Site or the affected area is located;

(ii) Broadcast the notice on a radio station during the high volume listening times on the same day the notice is published;

(iii) Provide a copy of the notice to the Chief Elected Official and the Director of Health of the municipality where the Site or affected area is located;

(iv) Provide a copy of the notice to the owner or operator of the Site (if the Permittee is not the Site owner or operator) and to all persons on the Facility mailing list maintained pursuant to 40 CFR 124.10(c)(1)(ix); and

(v) Erect and maintain a sign at least six (6) feet by four (4) feet for at least thirty (30) calendar days in a legible condition at the Site, clearly visible from the public highway and including the words "ENVIRONMENTAL CLEAN_UP IN PROGRESS AT THIS SITE. FOR FURTHER INFORMATION CONTACT:", and a telephone number at which any interested person may obtain additional information about the remediation.

(b) Prior to the Commissioner's final determination that remediation and/or post-closure care inclusive of landfill gas decomposition and groundwater monitoring is complete, the Permittee shall:

(i) Publish the notice in a newspaper having substantial circulation in the municipality in which the Site or the affected area is located;

(ii) Broadcast the notice on a radio station during the high volume listening times on the same day the notice is published;

(iii) Provide a copy of the notice to the owner or operator of the Site (if the Permittee is not the Site owner or operator) and to all persons on the Facility mailing list maintained pursuant to 40 CFR 124.10(c)(1)(ix); and

(iv) Include a summary of the basis for the Commissioner's determination.

(c) Upon the completion of the public comment period the Commissioner shall make a final determination. If the final determination is that post-closure care and/or remediation is complete then the Stewardship Permit will be terminated and a Certificate of Completion will be issued.

B. WATER QUALITY MONITORING REQUIREMENTS

1. Water Quality Monitoring Plan. The Permittee shall perform surface and groundwater monitoring in accordance with the Groundwater Monitoring Plan, included in the CRRA's application (included in Appendix B-1 of this permit) until it is superseded by the approval of a revised Groundwater Monitoring Plan submitted pursuant to Condition No. II.B.2. of this permit. Herein after, the "approved Water Quality Monitoring Plan".

   The Permittee shall complete all surface and groundwater monitoring in accordance with the approved Water Quality Monitoring Plan.

2. Revised Water Quality Monitoring Plan. The Permittee shall prepare and submit for the Commissioner's review and written approval a revised water quality monitoring plan for the site that incorporates the requirements under CGS Section 22a-430 and the Groundwater Discharge Permit (Permit No. LF0000028) issued March 4, 1988 and modified on July 18, 1989.

3. Modifications to Approved Water Quality Monitoring Plan. The Permittee shall submit a written notification or request for a permit modification to authorize a change in the approved Water Quality Monitoring Plan in accordance with the applicable requirements of 40 CFR 124 and 270. The written notification or request must include a copy of the amended water quality monitoring plan for the Commissioner's review and written approval.

4. Copy of Approved Water Quality Monitoring Plan. The Permittee shall ensure that a copy of the approved Water Quality Monitoring Plan is kept at CRRA Headquarters or at an alternate location acceptable to the Commissioner, until the surface and groundwater monitoring has been completed and certified in accordance with the requirements of this permit.

5. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all monitoring wells which are installed or used by the Permittee to achieve compliance with this permit. Proper maintenance, at a minimum, includes inspections to detect existing and potential problems and adequate funding to maintain proper conditions and repair any problems at the Site.

6. Quality Assurance Project Plan. The Permittee shall prepare and submit for the Commissioner's review and written approval a Quality Assurance Project plan ("QAPP"), prepared in accordance with the document titled: *Quality Assurance Guidance for Conducting Brownfields Site Assessments*, US Environmental Protection Agency OSWER Directive No. 9230.0-83P, and incorporating Connecticut's Reasonable Confidence Protocols. The Permittee shall ensure that the data is of sufficient quality to make decisions regarding investigation, potential remediation, and monitoring of the Site.

7. Monitoring Frequency. The Permittee shall perform surface and groundwater monitoring on a semi-annual basis. Upon the Commissioner's approval of the Ecological Risk Assessment, the Permitte may re-evaluate the Water Quality Monitoring Plan. If such re-evaluation results in proposed changes to the approved Water Quality Monitoring Plan, the Permittee shall submit written notification of such changes and an amended plan for the Commissioner's review and written approval.

8. Future Corrective Action. If the Commissioner determines that the surface and groundwater monitoring data indicates the soil and/or groundwater remediation was not effective, the Permittee shall within one hundred eighty (180) days of the Commissioner's notice, submit for the Commissioner's review and written approval, a plan for additional soil and groundwater characterization and establishment of a corrective action program consistent with the objectives of 40 CFR 264.100.

9. Completion of Water Quality Monitoring. Within sixty (60) calendar days after the completion of surface and groundwater monitoring (i.e the end of the Post-Closure Period), the Permittee shall submit to the Commissioner by registered mail, a certification signed by both the Permittee and by an independent registered professional engineer stating that the surface and groundwater monitoring for the Site was performed in accordance with the specifications in the approved Water Quality Monitoring Plan. Documentation supporting the independent, registered professional engineer's certification shall be furnished to the Commissioner upon request.

C. FINANCIAL RESPONSIBILITY

1. The Permittee shall submit for the Commissioner's review and written approval written estimate(s) of the current cost for performing post-closure care inclusive of surface and groundwater monitoring and landfill decomposition gas monitoring of the Site for the Post-Closure Period and in accordance with the requirements of this permit. The Permittee shall ensure that such written estimates are prepared in accordance with the methodology specified in RCSA 22a-449(c)-104 incorporating 40 CFR 264.142(a) and 40 CFR 264.144(a), as applicable. Note: a fifteen percent (15%) contingency shall be applied to the estimates for unforeseeable elements or events which may increase the cost of performing corrective action.

2. Upon request by the Permittee, the Commissioner may approve periodic reductions in the amount of financial assurance commensurate with the completion of corrective action activities. Such request shall include a revised cost estimate and demonstration of completed work activities which equates to at least a fifteen percent (15%) reduction in the estimate costs.

3. The Permittee shall maintain such financial assurances in effect until the Commissioner notifies the Permittee in writing that it is no longer required to maintain such a mechanism for financial assurances as provided for in Condition No II.C.4. of this permit.

4. Within sixty (60) calendar days after receiving the certifications, submitted pursuant to Condition Nos. II.A.4. and II.B.8., that post-closure care inclusive of surface and groundwater monitoring and landfill decomposition gas monitoring of the Site has been completed in accordance with the approved Post-Closure Plan, approved Water Quality Monitoring Plan and/or approved Gas Monitoring Plan, the Commissioner will notify the Permittee in writing that it is no longer required to maintain financial assurance for post-closure care of the Site, unless the Commissioner has reason to believe that post-closure care has not been performed and/or completed in accordance with the approved Post-Closure Plan, approved Water Quality Monitoring Plan, and/or approved Gas Monitoring Plan. The Commissioner shall provide the Permittee with a detailed written statement of any such reason(s) to believe that post-closure care has not been performed and/or completed in accordance with the approved Post-Closure Plan, approved Water Quality Monitoring Plan, and/or approved Gas Monitoring Plan.

5. If the Permittee fails to perform any of the terms or conditions of this permit, the financial assurance shall be available to the Commissioner to perform such terms or conditions of this permit provided that, prior to drawing upon any mechanism(s) for financial assurance, the Commissioner shall notify Permittee, in writing, of the alleged failure to perform and provide Permittee with a reasonable period of not less than fifteen (15) calendar days in which to remedy the alleged non-performance.

D. MISCELLANEOUS

1. The Permittee shall not operate the Facility in any manner that stores, treats, or disposes of hazardous or solid wastes or in any way manages hazardous or solid wastes other than hazardous or solid wastes that may be generated during Facility maintenance, authorized closure and/or corrective action activities. Such waste shall be managed in accordance with all applicable regulations. The Permittee shall comply with all applicable requirements of RCSA Section 22a-449(c)-102 incorporating 40 CFR Part 262 "Standards Applicable to Generators of Hazardous Waste".

PART 1: POST-CLOSURE PLAN

1. GENERAL REQUIREMENTS

1.1 Location and Number of Post Closure Plans

There are three Post-Closure Plans for the Wallingford Landfill. The Plans are assigned to the following at the indicated locations:

Peter W. Egan
Director of Environmental Affairs and Development
Connecticut Resources Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, CT 06103

The Honorable William W. Dickinson, Jr.
Mayor, Town of Wallingford
Wallingford Town Hall
45 South Main Street, Room 310
Wallingford, CT 06492

Connecticut Resources Recovery Authority Environmental Files
Connecticut Resources Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, CT 06103

1.2 Identification and Location of Person Responsible for Facility During Post-Closure Period

The person responsible for the Wallingford Landfill during the post-closure period is Peter W. Egan, CRRA Director of Environmental Affairs and Development. Mr. Egan is located as follows:

Peter W. Egan
Director of Environmental Affairs and Development
Connecticut Resources Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, CT 06103
(860) 757-7725

1.3 Procedures for Updating Post-Closure Plan

When updates of the Post-Closure Plan are required, CRRA prepares the update and distributes copies to the appropriate personnel at CRRA Headquarters and the Town of Wallingford. In addition, copies of the updated Plan are forwarded to the United States Environmental Protection Agency ("USEPA") and the Connecticut Department of Environmental Protection ("CTDEP").

1.4 General Description of the Closed Facility

The Wallingford Landfill is located along the Quinnipiac River, approximately one mile north of the Wallingford/North Haven town line. The site is bounded on the north by the Wallingford Sewage Treatment Plant, on the east by South Cherry Street and Pent Road, on the south by the Former Barberino Property, which is now vacant land that is owned by CRRA, and on the west by the Quinnipiac River. Industrial land use occurs on the east side of South Cherry Street and Pent Road. The site location is shown in Exhibit 1.

The Town of Wallingford began to operate the Wallingford Landfill on an 82-acre parcel in the early 1950s. A mix of solid waste streams was disposed at the Landfill. The streams were segregated and disposed in specific areas of the Landfill. The Town of Wallingford holds the solid waste permit to operate the Landfill, which it operated until September 1988. Beginning in September 1988, the Connecticut Resources Recovery Authority ("CRRA") operated the Landfill under lease from the Town of Wallingford. Pursuant to the lease between CRRA and the Town, CRRA is responsible for the post-closure maintenance and monitoring of the Landfill.

The Wallingford Landfill is closed and is no longer accepting waste. The final area of the Landfill was closed in 2002 and Connecticut Department of Environmental Protection ("CTDEP") certification of closure was received in February 2005.

In 2001, in order to gain control of a leachate plume from the Wallingford Landfill, CRRA acquired the "Barberino" property located south of the Landfill. The Former Barberino Property is now an integral part of the Wallingford Landfill; however, no landfilling activities have ever been conducted on the Former Barberino Property.

1.4.1 Wallingford Landfill

The 82-acre Wallingford Landfill is divided into five parts as follows:

(a) The 36-acre Municipal Solid Waste (MSW) Area located in the south central portion of the landfill. The Town of Wallingford began to dispose of MSW in this part of the Landfill in the early 1950's. The MSW Area stopped receiving waste in 1988 and was closed by the Town;

(b) The 6-acre Emergency Bypass/Non-Processibles Area southwest of and adjacent to the MSW Area. CRRA submitted an application to CTDEP in December 1988 for expansion of the MSW Area to allow non-processibles and emergency by-pass of solid waste from the CRRA Wallingford Waste-to-Energy Facility. CTDEP approved the permit application for the Emergency By-Pass/Non-Processibles Area and operations began in the expansion area in July 1989. This Area stopped receiving waste in 2000 and was closed with grading of the final cover completed in July 2002.

(c) The 7.5-acre Ash Residue Area, which is located in the southern section of the property approximately 150 feet northwest of the intersection of Pent Road and Oliver Creek Road. On June 30,

1988, CRRA submitted a permit application entitled "Application for Permit Modification, Wallingford Landfill, Wallingford, Connecticut" for the disposal of ash residue. Subsequently, following completion of initial site preparations, a proposed final grading plan for the ash landfill was submitted to CTDEP in February 1989. The as-built plan was approved by CTDEP and a permit for ash disposal was issued on February 24, 1989. The last load of ash residue was unloaded in this area on November 2, 1995 and grading of the final cover was completed in November 1996.

(d) The 5-acre Former Bulky Waste Area located in the northeastern portion of the property near the intersection of Ball and South Cherry Streets. In 1975, the Town of Wallingford submitted maps, letters and plans to the CTDEP for the bulky waste disposal area to be constructed and operated on the landfill property. The CTDEP permitted the bulky waste landfill on December 12, 1975. The bulky waste disposal area was closed and given final cover in June 1992.

(e) The closed, 3-acre Metal Hydroxide Sludge Cell Area (EPA wastes F006 and K063), used by local industries. The Metal Hydroxide Sludge Cell Area consists of approximately three acres along the northern flank of the Emergency By-Pass/Non-Processibles Area and was certified closed on May 6, 1986. Between November 1980 and January 1984, 4 million pounds of waste were deposited in the metal hydroxide sludge cell; 3.8 million pounds are listed as EPA waste number K063 "Sludge from Lime Treatment of Spent Pickling Liquor from Steel Finishing Operations." The remaining 0.2 million pounds are classified as F006, "Wastewater Treatment Sludge from Electro Plating Operations." The Town of Wallingford's RCRA permit application for the cell indicated that annual quantities of sludge would be 120 tons for F006 and 1,400 tons for K063. Town records indicate that only about 28 percent of the estimated F006 and 42 percent of the estimated K063 were filled. A non-hazardous metal hydroxide cell is located adjacent to the RCRA cell and operated prior to 1980. The non-hazardous cell accepted similar materials as the RCRA cell, however, RCRA permitting was not required at the time of construction. The non-hazardous cell is also inactive and no longer accepts waste materials. As with the other cells it too has been capped.

Prior to September 4, 1988, the Town of Wallingford operated the landfill. Since that time, CRRA has leased the landfill property from the Town of Wallingford consistent with the start-up operations of the Wallingford Waste-to-Energy Facility, converting municipal solid waste to ash residue. From September 1988 to November 1995, ash residue as well as MSW by-pass/non-processible wastes were placed at the landfill. Since 2000, there have been no daily activities at the landfill except for the operation by the Town of a resident drop off area and bulky waste transfer station at the front (eastern portion) of the landfill.

In 2004, while preparing closure documentation for the Emergency By-Pass/Non-Processible Area, CRRA discovered that some previously closed portions of the Landfill were never recorded as such in the local land records. To finalize closure of the areas not recorded in the land records, CRRA prepared a closure plan showing all existing closed areas of the Landfill along with closure notices for the historic MSW Area, the Bulky Waste Area, the Emergency By-Pass/Non-Processibles Area and the Ash Residue Area. In January 2005, CRRA recorded all remaining required closure documentation for these areas of the Wallingford Landfill in the Town of Wallingford land records and subsequently provided certified copies of such to CTDEP for its review and written approval. On February 23, 2005, CTDEP issued a letter approving final closure of all previously uncertified areas of the Wallingford Landfill.

1.4.2 Former Barberino Property

CRRA purchased the Former Barberino Property in 2001 in order to gain the right of possession of the southern edge of the leachate plume from the Wallingford Landfill. CRRA conducted a Phase I Environmental Site Assessment (ESA) at the Former Barberino Property prior to purchasing the site. Prior to CRRA's purchase, the Former Barberino Property was developed with a trailer park and residential dwellings. The trailer park was developed on-site sometime between 1951 and 1957. Aerial photographs indicate the presence of agricultural and residential structures by 1934. The 1914 USGS 7.5 minute New Haven Quadrangle topographic map indicates that the site was undeveloped and the property was not used for industrial purposes at that time.

The Phase I ESA identified two possible waste-oil dumping areas on the northeast corner of the site. Surficial soil sampling was completed which indicated the presence of poly-chlorinated biphenyl's (PCBs) (specifically Arochlor 1260), total petroleum hydrocarbons (TPH), polynuclear aromatic hydrocarbons and some metals in the soil. Excavation activities were completed on two separate occasions in 2001. Residual PCB concentrations are less than 1 milligram per kilogram (mg/Kg). Additionally, samples of the wastewater and sludge collected from the trailer park septic tank indicated the presence of low concentrations of total pollutant metals, volatile organic compounds, semi-volatile organic compounds and TPH. PCBs were not identified in the either sample collected from the septic tank. All structures on the 45-acre lot have been demolished and the site is currently vacant.

1.5 Documentation of Facility Relative to 100-Year Flood Plan Level

In accordance with the Flood Insurance Study of the Town of Wallingford, dated June, 1990, by the Federal Emergency Management Agency ("FEMA"), the Metal Hydroxide Sludge Area located at an approximate elevation of 52 feet NGVD, is above the 100-year flood elevation of 28 feet NGVD.

1.6 Description of Groundwater Monitoring Activities and Frequencies

Pursuant to the Groundwater Discharge Permit (LF0000028) for the Wallingford Landfill, quarterly monitoring of groundwater is required. Pursuant to the lease be-

tween the Town of Wallingford and CRRA for the Landfill, the quarterly groundwater monitoring is CRRA's responsibility. In addition to submitting quarterly reports of the monitoring, CRRA also is required to submit an annual report summarizing the results of the quarterly monitoring.

The monitoring program requires the quarterly sampling of 22 monitoring wells on site. Of the 22 wells, 15 are screened in the upper aquifer and 7 are screened in the lower aquifer. The wells are analyzed for 33 parameters.

The current off-site monitoring includes 10 shallow wells, 3 deep wells and 10 surface water locations, all on the Former Barberino Property. A quarterly monitoring program was initiated in April 1993 at the Former Barberino Property. Since FY 2005, surface water monitoring has been conducted semi-annually (April and October).

CRRA uses a consultant to conduct the groundwater monitoring. The consultant currently used is HRP Associates. On a periodic basis, CRRA conducts a competitive bid process to select a consultant to conduct the groundwater monitoring.

1.7 Description of the Maintenance Activities and Frequencies for the Final Containment Structures and Facility Monitoring Equipment

There are no containment structures or facility monitoring equipment at the Wallingford Landfill.

1.8 Documentation of the Notice on the Deed

Documentation on the land records that the land was used to manage hazardous wastes and that the area has restricted use in included in Exhibit 2.

2. INSPECTION PROCEDURES AND SCHEDULE

2.1 Inspection Procedures

2.1.1 Quarterly Landfill Inspections

Pursuant to the Solid Waste Permit (148-4-L) for the Wallingford Landfill, quarterly landfill inspections by a professional engineer are required. Pursuant to the lease between the Town of Wallingford and CRRA for the Landfill, the quarterly landfill inspections are CRRA's responsibility.

The inspections cover subject such as

- odors,
- dust control,
- final cover soils, vegetation and grading,
- drainage and erosion control,
- leachate seeps,
- access roads
- groundwater monitoring, and
- gas collection and monitoring.

The landfill inspections are conducted by David Bodendorf, CRRA's Senior Environmental Engineer and reports of the inspections are submitted to CTDEP.

2.1.2 Quarterly Gas Monitoring

Also pursuant to the Solid Waste Permit, the lease and the Wallingford Landfill Gas Monitoring Plan (revised October 2004 and approved by CTDEP December 10, 2004), CRRA is responsible for conducting quarterly gas (methane) monitoring of the Landfill. The monitoring includes all on-site structures and a series of soil gas monitoring probes on the east and north sides of the Landfill.

CRRA uses a consultant to conduct the quarterly gas monitoring. The consultant currently used is Malcolm Pirnie, Inc. The quarterly reports of the gas monitoring are submitted to CTDEP.

2.1.3 Quarterly Groundwater Monitoring

Pursuant to the Groundwater Discharge Permit (LF0000028) for the Wallingford Landfill, quarterly monitoring of groundwater is required. Pursuant to the lease between the Town of Wallingford and CRRA for the Landfill, the quarterly groundwater monitoring is CRRA's responsibility. In addition to submitting quarterly reports of the monitoring, CRRA also is required to submit an annual report summarizing the results of the quarterly monitoring. The Groundwater Monitoring Plan for the Wallingford provides a detailed description of the subject.

The monitoring program requires the quarterly sampling of 22 monitoring wells on site. Of the 22 wells, 15 are screened in the upper aquifer and 7 are screened in the lower aquifer. The wells are analyzed for 33 parameters.

The current off-site monitoring includes 10 shallow wells, 3 deep wells and 10 surface water locations, all on the Former Barberino Property. A quarterly monitoring program was initiated in early 1993 at the Former Barberino Property. Since FY 2005, surface water monitoring has been conducted semi-annually (April and October).

CRRA uses a consultant to conduct the groundwater monitoring. The consultant currently used is HRP Associates. On a periodic basis, CRRA conducts a competitive bid process to select a consultant to conduct the groundwater monitoring.

2.1.4 Stormwater Semi-Annual Comprehensive Site Compliance Evaluations and Annual Monitoring

Pursuant to the "General Permit for the Discharge of Stormwater Associated with Industrial Activities" (Issued 10/01/02, Modified 07/15/03 and Re-Issued 10/02/08), as registered by Permit No. GSI000499 for the Wallingford Landfill, Comprehensive Site Compliance Evaluations are performed semi-annually and stormwater samples are taken and analyzed on an annual basis. The results of the annual sampling and analysis are reported to CTDEP. During the

Comprehensive Site Compliance Evaluations, there must be visual inspection of potential sources of pollution for evidence of, or the potential for, pollutants entering the stormwater drainage system. Structural stormwater management measures, erosion control measures and other structural pollution prevention measures must be observed to ensure that they are operating correctly.

The Comprehensive Site Compliance Evaluations are conducted by David Bodendorf, CRRA's Senior Environmental Engineer or Christopher Shepard, CRRA's Environmental Engineer.

2.2 Statement as to Where the Inspection Schedule and Logs Will Be Kept

The inspection schedule and logs will be kept at CRRA Headquarters, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103.

3. ADDITIONAL REQUIREMENTS FOR LANDFILLS

3.1 List of Hazardous Wastes Placed in Each Cell

Hazardous wastes were placed in the Metal Hydroxide Sludge Area/Cell. Between November 1980 and January 1984, 4 million pounds of waste were deposited in the Area/Cell; 3.8 million pounds are listed as EPA waste number K063 "Sludge from Lime Treatment of Spent Pickling Liquor from Steel Finishing Operations." The remaining 0.2 million pounds are classified as F006, "Wastewater Treatment Sludge from Electro Plating Operations."

3.2 Description of the System for Controlling Run-On and Run-Off

There are two point source stormwater discharge points from the Wallingford Landfill. The two discharge points are sampled annually. One is a 6-inch PVC pipe outlet from the stone trench of a passive gas venting system. This trench also collects overland flow of stormwater from a portion of the MSW and the Bulky Waste Areas at the north end of the site. The second discharge point is from a swale around the Ash Residue Area. This swale discharges to the west, beyond the south side of the Phase III sub-area where the stormwater combines with runoff from the southern portion of the Emergency Bypass/Non-Processible Area.

During FY 2001, the open, deep swales of the passive gas venting systems were replaced with vertical stone trenches equipped with piped exhausts. As part of this project, a piped storm drainage system was installed to manage stormwater in this area of the Landfill.

An evaluation of the volume and flow rate of surface infiltration was conducted to determine the drainage requirements for the final landform for those areas of the Landfill with synthetic covers, including the Metal Hydroxide Sludge Area/Cell. Based on this evaluation, the measures that were proposed and approved for both surface and subsurface drainage will handle all surface infiltration with a significant factor of safety.

3.3 Procedures for Maintenance and Repair of the Final Cover

The primary maintenance activity of the final cover required at those portions of the Wallingford Landfill that have a synthetic cover (i.e., the Metal Hydroxide Sludge Area/Cell), consists of cutting the vegetative growth in order to limit the root depth to less than six inches and eliminate any observed obstructions of drainage facilities.

Repair of the cover typically consists of replacement of any lost material and re-seeding. Drainage facility repair consists of removal and proper disposal of any obstruction objects. If the obstruction object is silt or soil material that has eroded off the surface of the Landfill, the material is used to repair the erosional feature and the area is re-seeded. However, since the last area of the Landfill that was closed was closed over seven years ago, the vegetative cover is mature and there are seldom erosional features that require repair.

3.4 Procedures for Monitoring and Maintenance of the Leak Detection System

There is leak detection system at the Wallingford Landfill.

3.5 Procedures for Operation of the Leachate Collection/Removal System

There is no leachate collection/removal system at the Wallingford Landfill.

3.6 Procedures for Maintenance of the Groundwater Monitoring System

The groundwater monitoring system is inspected during the quarterly landfill inspections and the periodic groundwater monitoring events (see Section 2.1.3 and the Groundwater Monitoring Plan for additional details). During these both of these types of inspections, any damage to the wells or impairment to the drainage system is noted and corrective action is immediately undertaken if warranted.

3.7 Procedures for Ensuring Compliance with 40 CFR 264 Subpart F

A quarterly groundwater monitoring program has been instituted at the Wallingford Landfill (see Section 2.1.3 and the Groundwater Monitoring Plan for additional details). The groundwater monitoring program will continue throughout the post-closure period. If any statistically significant change to the groundwater is detected, appropriate action will be taken immediately.

3.8 Procedures for Preventing Erosion of the Final Cap Due to Run-On and Run-Off

The final grading of the Landfill was designed with a three percent slope on the top surface and side slope of 3:1, which is conducive to preventing excess run-on and promoting run-off. In addition, the Landfill is designed so that run-off from disposal areas is collected in swales and diverted away from disposal areas to the two point source stormwater discharge points for the Wallingford Landfill (see Section 3.2) from which it is discharged to off-site wetlands/surface waters.

The final cap has an established vegetative cover to protect it from erosion. The condition of the vegetation is one of the items monitored during the quarterly landfill

inspections (see Section 2.1.1). In the event the inspector identifies the presence of deep-rooting plants or bare spots, corrective action is immediately taken. In addition, vehicular access is prohibited from the top of the Landfill disposal areas, including the Metal Hydroxide Sludge Area/Cell.

3.9 Procedures for the Protection and Maintenance of Benchmarks

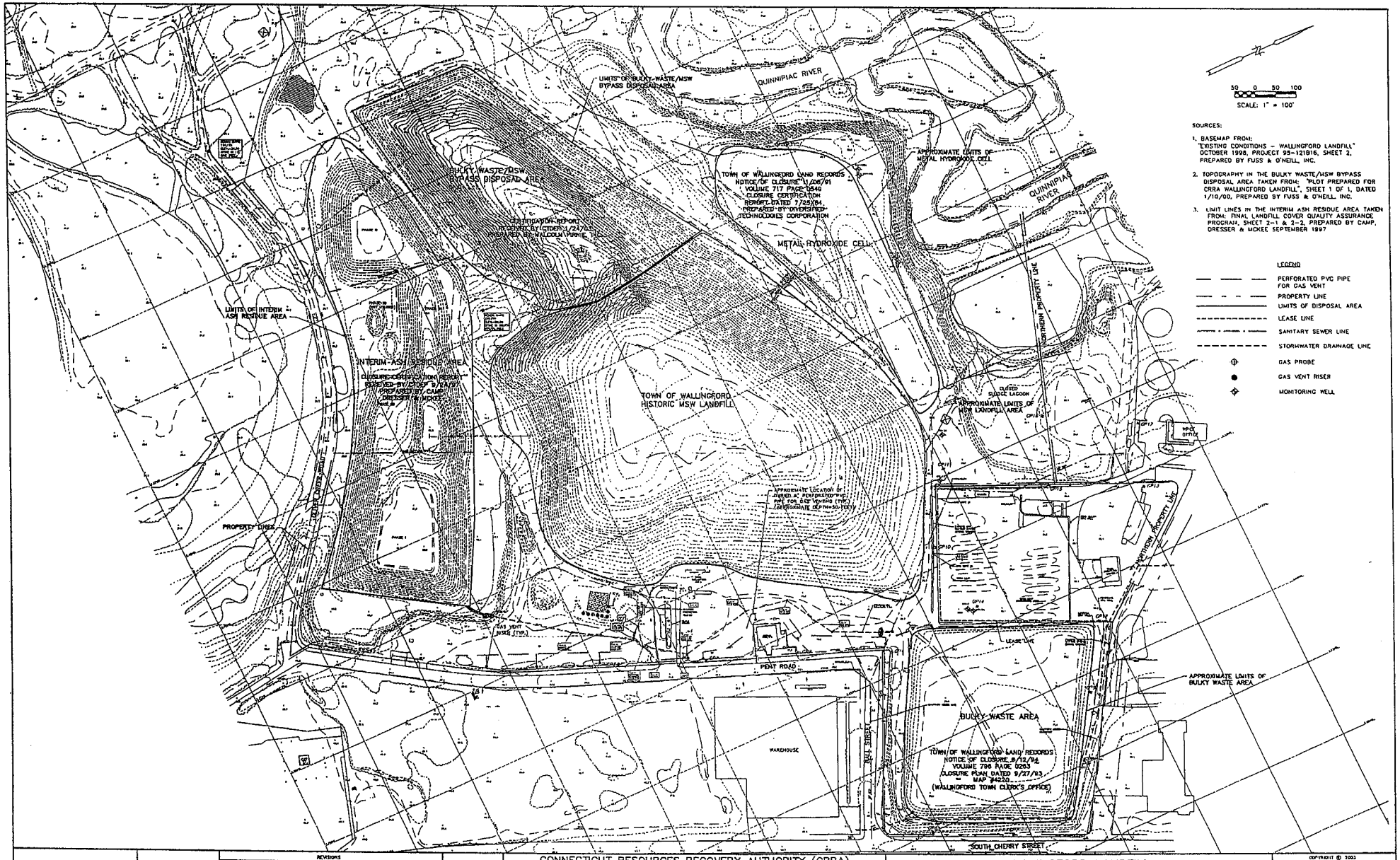
During the quarterly landfill inspections (see Section 2.1.1), the benchmarks are checked to assure that no damage to the permanently surveyed benchmarks has occurred. In the event that a problem is noted, corrective action will be undertaken as soon as possible.

3.10 Procedures for Inspecting Weekly and After Storms

The Wallingford Landfill, including the Metal Hydroxide Sludge Area/Cell, is subject to four different types of inspections/monitoring, including landfill inspections on a quarterly basis (see Section 2.1.1), quarterly landfill gas monitoring (see Section 2.1.2), quarterly groundwater monitoring (see Section 2.1.3) and semi-annual stormwater evaluations (see Section 2.1.4). Based on the results of all of these types on inspections over the past ten years and on the maturity of the cover systems for all of the landfill units, CRRA does not consider it necessary to conduct weekly inspections of the Metal Hydroxide Sludge Area/Cell or inspections of the Area/Cell after storms.

EXHIBIT 1
TO
POST-CLOSURE PLAN

SITE PLAN



MALCOLM PIRNIE

NO.	BY	DATE	REVISIONS
1	MVT	11/19/02	ADDED PROPOSED GAS PROBES AND TEST PITS, SEWER MANHOLES AND LEASE LINE
2	MVT	3/25/04	MODIFIED DRAWING

DES VED
DRN MVT
CKD MB

CONNECTICUT RESOURCES RECOVERY AUTHORITY (CRRA)
WALLINGFORD, CONNECTICUT

WALLINGFORD LANDFILL
CLOSURE MAP

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DATE OCTOBER 2003

SHEET 1 OF 1

CAD REF. NO. 1878-070

EXHIBIT 2
TO
POST CLOSURE PLAN

DOCUMENTATION OF THE NOTICE ON THE DEED

VOL. 717 PAGE 0550

CERTIFICATION

This is to certify that a Notice has been recorded on the Land Records of the Town of Wallingford that a certain specified portion of the Wallingford Landfill has been used for the management of hazardous waste and that as a consequence thereof the future use of said portion is restricted. The Notice was filed in the Grantor Index in the name of Town of Wallingford. In addition, in accordance with the requirements of 40 CFR 264.119(b)(1), a notation was placed on the original deeds of the Wallingford Landfill premises directing title searchers to the Volume and Page of said Notice.

Dated at Wallingford, Connecticut this 8th day of November, 1991.

RECEIVED FOR RECORD NOV 15 1991
AT 4:42 PM AND RECORDED BY
Kathryn J. Wall TOWN CLERK

THE TOWN OF WALLINGFORD

BY: William W. Dickinson Jr.
William W. Dickinson, Jr.
Its Mayor
Duly Authorized

N O T I C E

The TOWN OF WALLINGFORD hereby gives notice pursuant to the provisions of 40 CFR 264.119 of the Federal Regulations as follows:

1. That from on or about November, 1980 to on or about January, 1984, a certain part of the Wallingford Landfill ("Landfill") was used for the management of hazardous wastes;

2. That as a consequence thereof the future use of such part of the Landfill is restricted pursuant to the provisions of 40 CFR Subpart G of the Federal Regulations;

3. That the said part of the Landfill is particularly described on a map entitled "Closure of the Regulated and Unregulated Metal Hydroxide Site," dated July 25, 1984, prepared by Diversified Technologies Corporation, which map is on file in the office of the Town Clerk and to which reference may be had;

4. That the Town of Wallingford has filed said map and a record of the type, location and quantity of hazardous wastes disposed of within said site with the Wallingford Planning and Zoning Commission and with the Regional Administrator of the United States Environmental Protection Agency; and

5. That the derivative deeds for the premisees known as the Wallingford Landfill are V 114 P 425; V 239 P 517; V 280 P 531; V 284 P 64; V 292 P 588; V 337 P 506; and V 338 P 364; all on file in the Office of the Town Clerk, Town of Wallingford.

Dated at Wallingford, Connecticut this 8th day of November, 1991.

RECEIVED FOR RECORD NOV 15 1991
AT 4H 40M P M AND RECORDED BY
Kathryn J Wall TOWN CLERK

THE TOWN OF WALLINGFORD

BY: William W Dickinson Jr
William W. Dickinson, Jr.
Its Mayor

GROUNDWATER MONITORING PLAN AND COST ESTIMATE

Connecticut Resources Recovery Authority RCRA Stewardship Application For The Wallingford Landfill

1. GENERAL INFORMATION

On March 8, 1989, the Hazardous Material Management Unit of the CTDEP approved the document entitled "Groundwater Monitoring Program, Wallingford Landfill, Wallingford, Connecticut" dated August 1988 and amended by letter on January 5, 1989. The proposed Groundwater Monitoring Program presented an integrated monitoring program for the Metal Hydroxide Sludge disposal area and the historic MSW disposal portion of the Wallingford Landfill. The letter amendment of January 5, 1989 incorporated the groundwater monitoring requirements for the Ash Residue Disposal Area into the groundwater monitoring program for the Wallingford Landfill.

The groundwater monitoring program for the Wallingford Landfill, as approved in the CTDEP's letter dated March 8, 1989, was also incorporated into a modification of Groundwater Discharge Permit LF0000028 that was issued on July 18, 1989. The modification to the Groundwater Discharge Permit was issued to authorize the discharge of leachate to on-site groundwater from the Ash Residue Disposal Area and from the Non-Processible/MSW By-Pass Disposal Area. Groundwater Discharge Permit LF0000028 expired on March 4, 1993; however, CRRA did submit a timely application for renewal that was not acted upon by CTDEP. It is CRRA's understanding that a renewed Groundwater Discharge Permit is not required for the Wallingford Landfill because the landfill is no longer operational and all solid waste disposal units have been closed.

Environmental monitoring on the Former Barberino Property was begun in April 1993 to assess potential groundwater and surface water impacts from the Wallingford Landfill on the property. CRRA purchased the Former Barberino Property in September 2001 and has continued the monitoring of the property's groundwater and surface water, even though this monitoring is not required by permit.

Groundwater monitoring activities at the Wallingford Landfill and Former Barberino Property are currently conducted on a quarterly basis; however, this groundwater monitoring plan proposes that the sampling frequency be reduced from quarterly to semi-annually. CRRA believes that this reduction in sampling frequency is justified by the fact that all landfill units have been closed for at least six years, and that the groundwater plume is well-defined and appears to be stable.

1.1 Site Setting

The Wallingford Landfill is located along the Quinnipiac River, approximately one mile north of the Wallingford/North Haven town line. The site is bounded on the north by the Wallingford Sewage Treatment Plant and the Town of Wallingford Re-

cycling and Leaf Composting Area, on the east by South Cherry Street and Pent Road, on the south by the Former Barberino Property, which is now vacant land that is owned by CRRA, and on the west by the Quinnipiac River. Cytec Industries (formerly American Cyanamid) is located to the south of the former Barberino property. Industrial land use occurs on the east side of South Cherry Street and Pent Road. The site location is shown in Attachment H of this Stewardship Permit Application.

Topography on the landfill property ranges from 20 feet above mean sea level (amsl), on the west portion of the site, along the Quinnipiac River to approximately 120 feet amsl at the peak of the landfill. From this point, the land slopes down to the east to an elevation of approximately 40 feet amsl along Pent Road. A Site Plan is included in Attachment H of this Stewardship Permit Application.

1.2 Site Activities

The Town of Wallingford began to operate the Wallingford Landfill on an 82-acre parcel in the early 1950s. A mix of solid waste streams was disposed at the Landfill. The streams were segregated and disposed in specific areas of the Landfill. The Town of Wallingford holds the solid waste permit to operate the Landfill, which it operated until September 1988. Beginning in September 1988, the Connecticut Resources Recovery Authority ("CRRA") operated the Landfill under lease from the Town of Wallingford. Pursuant to the lease between CRRA and the Town, CRRA is responsible for the post-closure maintenance and monitoring of the Landfill.

The Wallingford Landfill is closed and is no longer accepting waste. The final area of the Landfill was closed in 2002 and Connecticut Department of Environmental Protection ("CTDEP") certification of closure was received in February 2005.

In 2001, in order to gain control of a leachate plume from the Wallingford Landfill, CRRA acquired the "Barberino" property located south of the Landfill. The Former Barberino Property is now an integral part of the Wallingford Landfill.

1.2.1 Wallingford Landfill

The 82-acre Wallingford Landfill is divided into the following five parts, all of which are depicted on the Site Plan in Attachment H of this Stewardship Application:

(a) The 36-acre Municipal Solid Waste (MSW) Area located in the south central portion of the landfill. The Town of Wallingford began to dispose of MSW in this part of the Landfill in the early 1950's. The MSW Area stopped receiving waste in 1988 and was closed by the Town;

(b) The 6-acre Emergency Bypass/Non-Processibles Area southwest of and adjacent to the MSW Area. CRRA submitted an application to CTDEP in December 1988 for expansion of the MSW Area to allow non-processibles and emergency by-pass of solid waste from the CRRA Wallingford Waste-to-Energy Facility. CTDEP approved the permit application to for the Emergency By-Pass/Non-Processibles Area and operations began in the expansion area in

July 1989. This Area stopped receiving waste in 2000 and was closed with grading of the final cover was completed in July 2002.

(c) The 7.5-acre Ash Residue Area, which is located in the southern section of the property approximately 150 feet northwest of the intersection of Pent Road and Oliver Creek Road. On June 30, 1988, CRRA submitted a permit application entitled "Application for Permit Modification, Wallingford Landfill, Wallingford, Connecticut" for the disposal of ash residue generated by the Wallingford Waste-to-Energy Facility. Subsequently, following completion of initial site preparations, a proposed final grading plan for the ash landfill was submitted to CTDEP in February 1989. The as-built plan was approved by CTDEP and a permit for ash disposal was issued on February 24, 1989. The last load of ash residue was unloaded in this area on November 2, 1995 and grading of the final cover was completed in November 1996.

(d) The 5-acre Former Bulky Waste Area located in the northeastern portion of the property near the intersection of Ball and South Cherry Streets. In 1975, the Town of Wallingford submitted maps, letters and plans to the CTDEP for the bulky waste disposal area to be constructed and operated on the landfill property. The CTDEP permitted the bulky waste landfill on December 12, 1975. The bulky waste disposal area was closed and given final cover in June 1992.

(e) The closed, 3-acre Metal Hydroxide Sludge Cell Area (EPA wastes F006 and K063), used by local industries. The Metal Hydroxide Sludge Cell Area consists of approximately three acres to the west-northwest of the Emergency By-Pass/Non-Processibles Area and was certified closed on May 6, 1986. Between November 1980 and January 1984, 4 million pounds of waste were deposited in the metal hydroxide sludge cell; 3.8 million pounds are listed as EPA waste number K063 "Sludge from Lime Treatment of Spent Pickling Liquor from Steel Finishing Operations." The remaining 0.2 million pounds are classified as F006, "Wastewater Treatment Sludge from Electro Plating Operations." The Town of Wallingford's RCRA permit application for the cell indicated that annual quantities of sludge would be 120 tons for F006 and 1,400 tons for K063. Town records indicate that only about 28 percent of the estimated F006 and 42 percent of the estimated K063 were filled. A non-hazardous metal hydroxide cell is located adjacent to the RCRA cell and operated prior to 1980. The non-hazardous cell accepted similar materials as the RCRA cell, however, RCRA permitting was not required at the time of construction. The non-hazardous cell is also inactive and no longer accepts waste materials. As with the other cells it too has been capped.

Prior to September 4, 1988, the Town of Wallingford operated the landfill. Since that time, CRRA has leased the landfill property from the Town of Wallingford consistent with the start-up operations of the Wallingford Waste-to-Energy Facility, converting municipal solid waste to ash residue. From September 1988 to November 1995, ash

residue as well as solid waste residue was placed at the landfill. Since 2000, there have been no daily activities at the landfill except for the operation by the Town of a resident drop off area and bulky waste transfer station at the front of the landfill.

1.2.2 Former Barberino Property

CRRA purchased the Former Barberino Property in 2001 in order to gain the right of possession of the southern edge of the leachate plume from the Wallingford Landfill. Prior to CRRA's purchase, the Former Barberino Property was developed with a trailer park and residential dwellings which were served by an on-site domestic well and septic system. The trailer park was developed on-site sometime between 1951 and 1957. Aerial photographs indicate the presence of agricultural and residential structures by 1934. The 1914 USGS 7.5 minute New Haven Quadrangle topographic map indicates that the site was undeveloped and the property was not used for industrial purposes at that time. All structures on the 45-acre lot have been demolished and the Site is currently vacant.

No landfill activities have been conducted on the Former Barberino Property.

1.3 Geology and Soils

Bedrock underlying the landfill property is mapped by CTDEP as the Triassic age New Haven Arkose. The New Haven Arkose consists of arkosic conglomerate and sandstone and medium to fine grained feldspathic sandstone and siltstone. Bedding is predominantly lenticular and cut and fill stratification is common in the coarser grained rocks. Interstratified with the sedimentary rocks may be igneous bedrock units. The igneous bedrock is composed of basaltic lava flows with related dikes and sills. Based on the USGS bedrock surface map, bedrock underlying the Site is located approximately 125 to 250 feet below grade and forms a north-south trending valley, surficially, the Quinnipiac River Valley.

Surficial deposits (Stone et al., 1992) underlying the southwestern portion of the Wallingford Landfill property are mapped primarily as terrace alluvium. Terrace alluvium consists of thin deposits of gravel and sand that cap river terraces in the Quinnipiac Valley. The same source reports surficial geology in the northwestern portion of the Wallingford Landfill property as well as the former Barberino property alluvium. This material is generally comprised of gravel, sand, silt, and clay occurring as thin covers on valley floors. Surficial geology in the northeastern portion of the landfill property is described as artificial fill.

According to the National Resource Conservation Service (NRCS) soil mapping, the area which the Site occupies consists primarily of altered soils. Dumps (Map Unit 302), Udorthents and Urban land (Map Units 306, 307 and 308) make up approximately 47 percent of the Site. These soils are well drained to excessively drained soils that have been disturbed by cutting or filling and are typically covered by buildings and pavement. In the case of the Landfill, the soils have been altered by landfill activities including closure. Approximately 28 percent of the Site consists of soils derived from alluvial material and are within the active Quinnipiac River floodplain – Pootatuck series (Map Unit 102) and Rippowam series (Map Unit 103). Pootatuck soils are moderately well drained while Rippowam soils are poorly drained.

Finally, approximately 25 percent of the Site consists of soils derived from glaciofluvial material and not subject to regular flooding by the Quinnipiac River. These soils include the very poorly drained Timakwa and Natchaug series (Map Unit 17), the moderately drained Deerfield series (Map Unit 24A), and the excessively drained Penwood series (Map Unit 35)

1.4 Hydrogeology

The site is underlain by two overburden aquifers (the upper aquifer and the lower aquifer) separated by a varved clay layer. Groundwater flow, from the upper aquifer is towards the Quinnipiac River as presented in Attachment H of this Stewardship Application. Groundwater flow in the lower aquifer is towards a pumping industrial well located along the southern boundary of the Former Barberino Property as presented in Attachment H of this Stewardship Application. This well is actively operated by Cytec Industries.

The groundwater beneath the Site is mapped by the CTDEP (1993) as "GC" (Figure 5). Groundwater classified as "GC" has been authorized to receive a discharge with approval from CTDEP in accordance with all regulatory requirements. Groundwater in this area is not suitable for human consumption and can be used for assimilation of the authorized discharges (CTDEP, 2002).

The groundwater to the north and south of the Site is mapped by the CTDEP (1993) as "GB." Such groundwater may be not be suitable for human consumption without treatment due to waste discharges, spills, leaks of chemicals, or land use impacts (CTDEP, 2002).

One circular area along the southern border of the Former Barberino Property is mapped by the CTDEP (1993) as "GAA." This area is associated with an abandoned groundwater supply well previously used as a supply well for the trailer park (Henry's Trailer Park) located on the Former Barberino Property. This well was abandoned in accordance with applicable State of Connecticut regulations on November 14, 2002. "GAA" groundwater is defined by CTDEP (2002) as groundwater that is tributary to a public water-supply reservoir and is suitable for drinking without treatment.

1.5 Surface Water

The nearest surface water bodies are the Quinnipiac River, an intermittent unnamed stream located on the former Barberino Property, and wetlands associated with these two watercourses. The Quinnipiac River flows in a southerly direction along the western side of the Site. The unnamed stream flows in a southwesterly direction off of the former Barberino Property and is a tributary to the Quinnipiac River. Approximately 47 percent of the Site consists of disturbed or placed soils. The remaining 53 percent of the Site consists of alluvial, poorly drained or very poorly drained soils.

The Quinnipiac River is mapped by the CTDEP (1993) as "C/B" (Figure 5). Such inland surface waters are known or presumed to not be suitable for the following designated uses: recreational use, fish and wildlife habitat, agricultural and industrial supply, and other legitimate uses (CTDEP, 2002).

The unnamed tributary is mapped by the CTDEP (1993) as "A." Inland surface waters classified by the CTDEP as "A" are those known or presumed to meet Class "A" Water Quality Criteria that support the following designated uses: potential drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other legitimate uses, including navigation (CTDEP, 2002).

2. GROUNDWATER MONITORING SYSTEM

2.1 Summary of Sampling Locations

A total of thirty-five groundwater monitoring wells are included in the groundwater monitoring system. Twenty-two of the monitoring wells are located on the Wallingford Landfill property, while thirteen monitoring wells are located on the Former Barberino Property. Twenty-five monitoring wells are screened within the upper aquifer (from approximately 10 to 70 feet deep) and ten monitoring wells are screened within the lower aquifer (from approximately 70 to 200 feet deep).

The upper aquifer wells are designated as:

MW-1A	MW-9	MW-13
MW-1B	MW-10	MW-100
MW-2A	MW-10A	MW-101R
MW-3	MW-11	MW-200
MW-4R	MW-12	CEE-1 through CEE-10
MW-5		

The lower aquifer wells are designated as:

MW-1	MW-100A
MW-3A	MW-101A
MW-9A	CEE-6D
MW-11A	CEE-9D
MW-12A	CEE-10D

Monitoring well completion details are summarized in Table 1. The locations of the wells are presented on the Site Plans in Attachment H of this Stewardship Permit Application.

2.2 Upper Aquifer Well Locations in Relation to Landfill Disposal Areas

The hydrogeologic locations of the twenty-five upper aquifer monitoring wells with respect to the five landfill disposal areas are as follows:

(a) Upgradient of Municipal Solid Waste (MSW) Area:

- MW-13

(b) Downgradient of the Former Bulky Waste Area:

- MW-1A
- MW-1B

- MW-2A

(c) Downgradient of the MSW Area and Upgradient of the Metal Hydroxide Sludge Cell Area:

- MW-4R

(d) Downgradient of the MSW Area and the Metal Hydroxide Sludge Cell Area:

- MW-11
- MW-100
- MW-101R

(e) Downgradient of the MSW Area and the Emergency Bypass/Non-Processibles Area:

- MW-3

(f) Downgradient of the Emergency Bypass/Non-Processibles Area and the Ash Residue Area:

- MW-5
- MW-9
- MW-10
- MW-10A
- MW-12
- MW-200

(g) Downgradient of the Ash Residue Area (on the Former Barberino Property):

- MW-CEE-1
- MW-CEE-2
- MW-CEE-3
- MW-CEE-4
- MW-CEE-7
- MW-CEE-8
- MW-CEE-10

(h) Sidegradient of the Ash Residue Area (on the Former Barberino Property):

- MW-CEE-5
- MW-CEE-6
- MW-CEE-9

2.3 Lower Aquifer Well Locations in Relation to Landfill Disposal Areas

The hydrogeologic locations of the ten lower aquifer monitoring wells with respect to the five landfill disposal areas are as follows:

(a) Upgradient of MSW Area:

- MW-1

(b) Upgradient and Sidegradient of the Metal Hydroxide Sludge Cell Area: :

- MW-11A
- MW-100A
- MW-101A

(c) Sidegradient of the MSW Area and Downgradient of the Metal Hydroxide Sludge Cell Area:

- MW-3A

(d) Downgradient of the MSW Area, the Ash Residue Area, the Emergency Bypass/Non-Processibles Area, and the Metal Hydroxide Sludge Cell Area:

- MW-9A
- MW-12A
- MW-101R

(e) Downgradient of the MSW Area, the Ash Residue Area, the Emergency Bypass/Non-Processibles Area, and the Metal Hydroxide Sludge Cell Area (on the Former Barberino Property):

- MW-CEE-6D
- MW-CEE-9D
- MW-CEE-10D

2.4 Upper and Lower Aquifer Characteristics

Groundwater flow in the upper aquifer is generally to the west/northwest at the eastern and western ends of the landfill and west/southwest beneath the former Barberino property.

As part of the groundwater discharge permitting process for the Ash Residue Disposal Area, the transmissivity (T) of five monitoring wells along the western portion of the landfill were estimated based upon their saturated thicknesses and soil descriptions from their boring logs. These T values have been utilized to estimate quarterly Ultimate Oxygen Demand (UOD) loading to the Quinnipiac River attributable to the discharge of leachate-impacted groundwater to the river. The transmissivity of each of the five wells was estimated to be:

Well	Transmissivity (T), ft^2/day
MW-3	146
MW-5	327
MW-10A	86
MW-100	105
MW-101	118

During the summer of 1989, Fuss & O'Neill, Inc. completed a "First Determination of the Extent, Degree and Migration of the Landfill Generated Leachate Plume, Wallingford Landfill." This "first determination" was completed for CRRA as a condition of the CTDEP's March 8, 1989 approval of the "Groundwater Monitoring Program" for the Wallingford Landfill. Part of scope of work for the "first determination" included slug testing at certain paired monitoring wells to estimate hydraulic conductivity (K), transmissivity, and storativity (S) at each well. The results of the slug testing, as summarized in the September 1992 application for the renewal of the groundwater discharge permit, were as follows:

Well	Aquifer	Hydraulic Conductivity (K), ft/day	Transmissivity (T), ft^2/day	Storativity (S), unitless
MW-9	Upper	0.8	28	0.000004
MW-9A	*Lower*	*0.001*	*0.01*	*0.0043*
MW-11	Upper	0.3	15	0.004
MW-11A	*Lower*	*0.015*	*0.20*	*4.3×10^{-10}*
MW-100	Upper	19.5	58	1×10^{-8}
MW-100A	*Lower*	*0.53*	*4.24*	*0.010*
MW-101	Upper	0.7	22	1×10^{-8}
MW-101A	*Lower*	*2.4*	*9.60*	*1×10^{-7}*
Mean	Upper	5.3	31	
Mean	*Lower*	*0.7*	*3.5*	

As summarized above, hydraulic conductivity and transmissivity in the lower aquifer are generally an order of magnitude less than in the upper aquifer.

Subsurface stratigraphy of the upper aquifer along the landfill property line with the Former Barberino Property was further evaluated by Camp, Dresser & McKee (CDM) during a plume control evaluation performed in 1994. The following excerpt from the CDM Second Quarter 1998 CRRA/Wallingford Landfill Monitoring Report describes their findings:

> During this study, CDM identified four soil strata of interest (designated Stratum I, II, III and IV) within the unconsolidated layers underlying the landfill. Stratum I consists of either glacial outwash or river alluvium which can generally be classified as widely to narrowly graded fine to coarse sand, with varying amounts of fine gravel and silt. The horizontal hydrau-

lic conductivity value calculated for this stratum was 1 x 10^{-3} cm/sec. Stratum II can generally be classified as narrowly graded, non-plastic silt to sandy silt. The horizontal hydraulic conductivity values calculated for Stratum II ranged from 5 x 10^{-2} cm/sec to 2 x 10^{-3} cm/sec. Stratum III can generally be classified as narrowly graded, non-plastic silt to sandy silt with occasional thin clay lenses. The horizontal hydraulic conductivity value calculated for this stratum was 9 x 10^{-4} cm/sec. Stratum IV can generally be classified as a varved silt and clay deposit. The horizontal hydraulic conductivity values calculated for this stratum ranged from 1 x 10^{-3} cm/sec to 7 x 10^{-5} cm/sec. Below this lies an approximately 80 ft thick layer of varved clay, followed by a pervious lower overburden aquifer before finding bedrock.

3. SAMPLING AND ANALYSIS PROCEDURES

The following sections describe the sample collection, preservation and analytical procedures which are employed to ensure that all collected samples are representative of the sampled media.

3.1 Determination of Groundwater Elevations

A synoptic groundwater measurement will be completed on the first day of each semi-annual monitoring event to determine the groundwater elevations at all sampled monitoring wells prior to any purging and sampling activities. At each monitoring well, the depth to groundwater and the depth to the bottom of the will be measured with either an electronic water level indicator or a steel tape accurate to within 0.01 feet. All measurements will be made relative to the surveyed measurement point at each well, i.e., the top of the PVC casing.

The water level measuring device will be decontaminated between monitoring wells to ensure that cross-contamination of the monitoring wells does not occur. The decontamination will consist of rinsing the measuring device with deionized water.

3.2 Sample Collection Methods

A total of thirty-five groundwater monitoring wells are included in the groundwater monitoring system. Twenty-two of the monitoring wells are located on the Wallingford Landfill property, while thirteen monitoring wells are located on the Former Barberino Property. Twenty-five monitoring wells are screened within the upper aquifer (from approximately 10 to 70 feet deep) and ten monitoring wells are screened within the lower aquifer (from approximately 70 to 200 feet deep). All monitoring parameters are listed in Table 2.

The following sample collection procedures will be followed during each sampling event:

- A "Monitoring Well Field Data Sheet" which summarizes well elevation data, well condition, purge data, observed water yield and quality comments, sampling data, and results of measured field parameters will be completed for each monitoring well sampled.

- Measure well's water depth using decontaminated equipment (depth to water, depth to bottom, depth of sample) referenced to top of PVC (or casing) and record on the data sheet.

- Provide an in-line meter (or equivalent methodology which mitigates exposure to the atmosphere) to concurrently measure pH, temperature, specific conductivity, dissolved oxygen (DO), and redox potential (RP), as applicable, during purging. Also, provide a device to measure turbidity. A minimum of four (4) readings of each parameter shall be taken and recorded during purging.

- Perform purging using dedicated bladder pump equipment [at ten (10) of the sampled wells], a peristaltic pump with dedicated tubing [at twenty-two (22) of the sampled wells], or dedicated Grundfos pumps [(at three) of the sampled wells] at low flow rates, not taking the first reading until at least one pump volume plus one discharge tubing volume have passed. The purged groundwater may be discarded to the ground. Sampling personnel are to monitor the drawdown in the wells and ensure that the drawdown is maintained at less than or equal to 0.3 feet during the entire purging and sampling process. Wells shall be purged at a rate of less than or equal to 300 ml/minute. Field parameter readings shall be recorded at a minimum of three minute intervals, until turbidity is stabilized such that three consecutive reading are within 10% of each other for readings >10 NTU, or readings are within 2 NTU of each other for readings <10 NTU. Per US EPA Region I Standard Operating Procedure GW-0001 – "Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells" (July 30, 1996 – Revision 2), if the turbidity has not stabilized after four hours of purging, collect samples and provide full explanation of attempt to achieve stabilization. Provide a summary of periodic readings and time of reading for all parameters.

- Sample collection should proceed from high parameter volatility to low parameter volatility at a low flow rate. Samples for volatile parameters should be transferred slowly to the sample container to eliminate creation of air bubbles. Samples are to be collected in proper containers and properly preserved in the field, as summarized in Table 3.

- No filtering of samples is to occur, <u>except</u> where analysis of dissolved metals is specified. Where analysis of dissolved metals is specified, sample filtration is to be performed <u>in the field</u> during sample collection with an in-line 0.45-micron filter.

- All observations relating to the well sampling, well conditions and any deviations from the sampling plan are to be recorded on the Monitoring Well Data Sheet.

3.3 Sample Preservation and Submission

All samples are to be preserved in the field at the time of sample collection, as summarized in Table 3. All sample containers are to be labeled in the field with the sample/well identification, sample date and time, type of preservation, and parame-

ters to be analyzed. Following collection of the samples in the proper containers, all samples are to be placed into a cooler with ice/ice packs and maintained at a temperature of 4°C until submitted to the analytical testing laboratory. All samples are to be submitted to the testing laboratory as soon as possible after collection to ensure that all applicable testing method holding times are met. Proper chain of custody protocols will be followed to document the sample collection and submission.

3.4 Laboratory Analyses

All sample analyses will be performed only by environmental testing laboratories that are certified by the State of Connecticut Department of Public Health. Where published by CTDEP, laboratory analyses will be conducted in accordance with Reasonable Confidence Protocol (RCP) analytical methods. In those circumstances where an RCP method has not been published by CTDEP, the applicable method from the most-recent edition of EPA SW-846 ("Test Methods for Evaluating Solid Waste, Physical/Chemical Methods") will utilized. In the absence of RCP and SW-846 analytical methods, the laboratory analytical procedure from the most recent edition of "Standard Methods for the Examination of Water and Wastewater" will be utilized. Table 4 provides a summary of parameters to be analyzed and their acceptable method(s) of analysis.

3.5 Laboratory Reporting of Analytical Results

Laboratory reports must include sampling date, sample identification numbers, analytical results, sample specific reporting limits, preparation date, and analysis date for each sample. When an analyte is not detected or when the result for an analyte is below the reporting limit, the result will be reported as "ND," along with the sample-specific reporting limit. Reporting limits must be corrected to take into account any dilutions that were performed, the exact volume of the sample, and any other factors that would affect the actual reporting limit for specific sample(s). The reasons for any dilutions that were performed must be reported in the narrative that will accompany the RCP Laboratory Analysis QA/QC Certification Form.

The laboratory reports will also include a table listing field sample identification numbers that are cross-referenced to laboratory sample identification numbers, matrix, date of collection, and date of receipt at the laboratory.

3.6 Quality Assurance/Quality Control

In order to establish and document the reliability and quality of the field and laboratory data, quality assurance/quality control (QA/QC) procedures will be followed both in the field and in the testing laboratory.

3.6.1 Field Quality Assurance/Quality Control

Monitoring events will include trip blanks and field duplicate samples. The trip blanks are only associated with days when groundwater samples are collected for analysis of volatile organic compounds (VOC's), and are utilized to ascertain if sample containers may have been contaminated during transport or storage. Trip blanks will originate within the laboratory, and will consist of sample containers that are filled with analyte-free reagent water, transported with other sample containers out to the

field, and then returned to the laboratory without being exposed to sampling procedures.

A total of two field duplicate samples will be collected during each semi-annual sampling event to document the precision of the sample collection procedures. One field duplicate sample will be collected from a ground water monitoring well on the Wallingford Landfill, and one field duplicate sample will be collected from a groundwater monitoring well on the Former Barberino Property.

The use of equipment blanks is not necessary because all well purging and sample collection is completed with either dedicated sampling equipment or disposable, one-time-use equipment.

3.6.2 Laboratory Quality Assurance/Quality Control

In order to ensure that the analytical testing laboratory provides analytical data of known and documented quality, the applicable laboratory quality assurance and quality control (QA/QC) criteria from the RCP's will be met. All laboratory reports will be accompanied by the RCP Laboratory Analysis QA/QC Certification Form and required narrative that provides a detailed explanation of any non-conformances that occurred.

For those analytical methods for which no RCP method has been established, the laboratory will submit QC data deemed equivalent to a similar RCP method. In general, the QC data will include the following, as appropriate to the method:

- Method blank results;
- Sample duplicate results, identified as a duplicate;
- Matrix spike results;
- Matrix spike duplicate results;
- Surrogate recovery results; and
- Laboratory control sample results.

3.7 Minimum Detection Limits

Given the site setting, the discharge of groundwater from the site to the Quinnipiac River will have to comply with the Surface Water Protection Criteria (SWPC) from the State's Remediation Standard Regulations. Therefore, the minimum detection limits for all groundwater analyses will have to be at least as low as the SWPC numeric criteria. For surface water samples, the minimum detection limits need to be at least as low as the Chronic Aquatic Life Criteria (CALC) from the State's Surface Water Quality Standards.

4. COST ESTIMATE

As summarized in Attachment P of this Stewardship Permit Application, the estimated annual cost of (quarterly) groundwater and surface water monitoring for the Wallingford Landfill and Former Barberino Property is $101,000 per year. CRRA provides financial assurance for groundwater and surface water monitoring at the Wallingford Landfill through January 2035. The total estimated cost for this monitoring through January 2035 is $2,684,917.

TABLE 1
Summary of Monitoring Well Construction
Wallingford Landfill and Former Barberino Property
Wallingford, Connecticut

Well Number	Dedicated Sampling Apparatus	Ground Elevation (feet)	Top of Steel Elevation (feet)	Measured Well Depth[b] (feet)	Well Bottom Elevation (feet)	Date of Installation
Upper Aquifer						
MW-1A	Tubing	58.50	62.37	26.77	35.60	09/01/81
MW-1B	Tubing	59.90	61.08	30.60	30.48	06/01/86
MW-2A	Tubing	59.50	61.13	32.05	29.08	11/01/88
MW-3	Tubing	22.60	23.59	11.90	11.69	09/01/81
MW-4R	Tubing	42.10	43.87	22.17	21.70	07/01/92
MW-5	Tubing	25.80	27.48	9.95	17.53	09/01/81
MW-9	Tubing	43.90	46.01	33.15	12.86	05/01/86
MW-10	Tubing	36.20	36.82	40.75	-3.93	05/01/86
MW-10A	Tubing	37.00	37.23	20.40	16.83	05/01/86
MW-11	Bladder Pump	49.80	51.12	72.55	-21.43	11/01/88
MW-12	Tubing	36.60	37.86	17.15	20.71	12/01/88
MW-13	Tubing	61.00	65.68	37.45	28.23	12/01/88
MW-100	Bladder Pump	51.70	53.90	40.62	13.28	11/01/83
MW-101R	Bladder Pump	54.50	55.84	40.37	15.47	07/01/92
MW-200	Tubing	29.10	30.64	14.45	16.19	12/01/88
MW-CEE1	Tubing	N/A	34.59	12.35	22.24	11/24/92
MW-CEE2	Tubing	N/A	37.48	18.18	19.30	11/24/92
MW-CEE3	Tubing	N/A	31.46	13.88	17.58	11/11/92
MW-CEE4	Tubing	N/A	30.37	14.54	15.83	03/26/93
MW-CEE5	Tubing	N/A	37.82	14.13	23.69	03/25/93
MW-CEE6	Tubing	N/A	34.95	14.02	20.93	03/29/93
MW-CEE7	Tubing	N/A	30.88	14.87	16.01	03/26/93
MW-CEE8	Tubing	N/A	29.05	14.80	14.25	03/29/93
MW-CEE9	Tubing	N/A	27.99	14.52	13.47	03/26/93
MW-CEE10	Tubing	N/A	32.15	14.82	17.33	03/29/93
Lower Aquifer						
MW-1	Bladder Pump	60.70	60.71	71.00	-10.29	10/23/01
MW-3A	Bladder Pump	35.60	37.02	165.00[a]	-127.98	01/01/89
MW-9A	Bladder Pump	44.35	47.75	161.30[a]	-113.55	09/11/02
MW-11A	Bladder Pump	49.70	51.19	186.00[a]	-134.81	12/01/88
MW-12A	Bladder Pump	36.59	38.91	150.40[a]	-111.49	09/16/02
MW-100A	Bladder Pump	52.00	53.30	136.00[a]	-82.70	12/01/88
MW-101A	Bladder Pump	54.10	55.35	142.00[a]	-86.65	12/01/88
MW-CEE6D	Grundfos Pump	N/A	34.45	174.5	-140.05	04/30/93
MW-CEE9D	Grundfos Pump	N/A	27.70	148.0	-120.30	04/16/93
MW-CEE10D	Grundfos Pump	N/A	31.86	151.5	-119.64	04/21/93

[a] Historical depth to bottom of well casing
[b] As measured from top of steel casing
Wells designated "MW-CEE-__" are located on the former Barberino property. All other wells are located on the Wallingford Landfill property.
N/A = Not Available

Table 2 Monitoring Parameters Wallingford Landfill and Former Barberino Property Wallingford, Connecticut			
	Wallingford Landfill	Former Barberino Property	
Parameters	Twenty-Two (22) Wells[1]	Thirteen (13) Wells[1]	Ten (10) Surface Water
Field Parameters:			
Depth to Water	S	S	
Water Elevation (msl)	S	S	
pH	S	S	S
Temperature	S	S	S
Specific Conductance	S	S	S
Dissolved Oxygen	S	S	S
Redox Potential	S	S	S
Turbidity	S	S	S
Inorganic Leachate Indicator Parameters:			
pH (Lab Analysis)	S	S	S
Specific Conductance (Lab Analysis)	S	S	S
Total Dissolved Solids (TDS)	S	S	S
Total Suspended Solids (TSS)	S	S	S
Alkalinity, Total	S	S	S
Hardness	S	S	S
Biochemical Oxygen Demand (BOD5)	S		
Chemical Oxygen Demand (COD)	S	S	S
Chloride	S	S	S
Nitrate (N)	S		
Ammonia (N)	S	S	S
Total Organic Carbon (TOC)	S		
Sulfate, Total	S	S	S
Fluoride	S		
Cyanide, Total	S		
Coliform Bacteria, Total	S		
Metals[2]:			
Aluminum	S	S	S
Antimony	S	S	S
Arsenic	S	S	S
Barium	S	S	S
Beryllium	S	S	S
Cadmium	S	S	S
Calcium	S	S	
Chromium, Total	S	S	S
Chromium, Hexavalent	S	S	
Cobalt	S	S	
Copper	S	S	S
Iron	S	S	S
Lead	S	S	S
Magnesium	S	S	S
Manganese	S	S	S

Table 2 Monitoring Parameters Wallingford Landfill and Former Barberino Property Wallingford, Connecticut			
	Wallingford Landfill	Former Barberino Property	
Parameters	Twenty-Two (22) Wells[1]	Thirteen (13) Wells[1]	Ten (10) Surface Water
Mercury	S	S	S
Nickel	S	S	S
Potassium	S	S	S
Selenium	S	S	S
Silver	S	S	S
Sodium	S	S	S
Thallium	S	S	S
Vanadium	S	S	S
Zinc	S	S	S
Volatile Organic Compounds:			
VOC's in Appendix I of 40 CFR 258 via EPA Method 8260	S	S	
Acrylamide via EPA Method 8032A	S	S	
Phenol & Total Phenolics:			
Method 9065	S		
Dioxins / Furans:			
Method 8280	A[3]		

S = Tested Semi-Annually in April and October A = Tested Annually in April

Notes:

1. For QA/QC purposes, one duplicate sample is to be collected from one well at the Wallingford Landfill, and one duplicate sample is to be collected from one well at the former Barberino property.
2. Groundwater samples to be analyzed for total metals concentrations. Surface water samples to be analyzed for dissolved metals concentrations.
3. MW-3, MW-101A, and MW-200 only.

Table 3 Required Containers, Preservation Techniques, and Holding Times Wallingford Landfill and Former Barberino Property Wallingford, Connecticut				
Parameters	**Minimum Sample Size**	**Container**	**Preservation**	**Maximum holding time**
Inorganic Leachate Indicator Parameters:				
pH (Lab Analysis)	100 mL	Plastic†	None Required	Analyze within 15 minutes
Specific Conductance (Lab Analysis)	100 mL	Plastic†	Cool to 4 ± 2° C	28 Days
Total Dissolved Solids (TDS)	100 mL	Plastic†	Cool to 4 ± 2° C	7 Days
Total Suspended Solids (TSS)	100 mL	Plastic†	Cool to 4 ± 2° C	7 Days
Alkalinity, Total	100 mL	Plastic†	Cool to 4 ± 2° C	14 Days
Hardness	100 mL	Plastic†	Nitric Acid or Sulfuric Acid to pH <2	6 Months
Biochemical Oxygen Demand (BOD5)	1 L	Plastic†	Cool to 4 ± 2° C	48 Hours
Chemical Oxygen Demand (COD)	100 mL	Plastic†	Sulfuric Acid to pH <2, Cool to 4 ± 2° C	28 Days
Chloride	100 mL	Plastic†	None Required	28 Days
Nitrate (N)	100 mL	Plastic†	Cool to 4 ± 2° C	48 Hours
Ammonia (N)	1 L	Plastic†	Sulfuric Acid to pH <2, Cool to 4 ± 2° C	28 Days
Total Organic Carbon (TOC)	100 mL	Plastic†	Hydrochloric Acid or Sulfuric Acid to pH <2, Cool to 4 ± 2° C	28 Days
Sulfate, Total	100 mL	Plastic†	Cool to 4 ± 2° C	28 Days
Fluoride	100 mL	Plastic†	None Required	28 Days
Cyanide, Total	1L	Plastic†	NaOH to pH >12, Cool to 4 ± 2° C	14 Days
Coliform Bacteria, Total	100 mL	Sterilized Plastic†	Cool to <10° C	6 Hours
Metals:				
Mercury, Total	500 mL	Plastic†	Nitric Acid to pH <2	28 days
Chromium, Hexavalent	500 mL	Plastic†	Cool to 4 ± 2° C	24 hours
All Other Total Metals	1 L	Plastic†	Nitric Acid to pH <2	180 days
All Dissolved Metals	1 L	Plastic†	Field-Filter with a 0.45 µm Membrane Filter, then Nitric Acid to pH <2	180 days
Volatile Organic Compounds:				
VOC's in Appendix I of 40 CFR 258 via EPA Method 8260	(2) x 40-mL	VOC vials with Teflon lined screw caps protected from light	Adjust to pH < 2 with either HCl or sodium bisulfate at time of collection (Note 1). Store at 4 ± 2° C.	14 days (Note 1)
Acrylamide	(2) x 40-mL	VOC vials with Teflon lined screw caps protected from light	Adjust to pH < 2 with either HCl or sodium bisulfate at time of collection (Note 1). Store at 4 ± 2° C.	14 days (Note 1)

Table 3
Required Containers, Preservation Techniques, and Holding Times
Wallingford Landfill and Former Barberino Property
Wallingford, Connecticut

Parameters	Minimum Sample Size	Container	Preservation	Maximum holding time
Phenol & Total Phenolics:				
Total Phenols	250 mL	Glass with Teflon lined screw caps	Store at 4 ± 2° C.	7 days to extraction. 40 days from extraction to analysis.
Dioxins / Furans:				
Polychlorinated Dibenzo-*p*-Dioxins and Polychlorinated Dibenzofurans	1 L	Amber glass bottle with Teflon lined cap	Store at 4 ± 2° C.	7 days to extraction. 40 days from extraction to analysis.

Notes:

† Plastic bottles must be acid rinsed and either high density polyethylene or Teflon

Note 1: If samples effervesce upon addition of hydrochloric acid, samples must be collected unpreserved and stored at 4 ± 2° C. Holding time is 7-days from collection.

Table 4 Laboratory Analytical Procedures Wallingford Landfill and Former Barberino Property Wallingford, Connecticut			
Parameters	**RCP Method Number(s)**	**EPA Method Number**	**Standard Methods Test Number**
Inorganic Leachate Indicator Parameters:			
pH (Lab Analysis)		9045	SM4500-H B
Specific Conductance (Lab Analysis)			SM2510B
Total Dissolved Solids (TDS)			SM2540C
Total Suspended Solids (TSS)			SM2540D
Alkalinity, Total			SM2320B
Hardness		200.7	
Biochemical Oxygen Demand (BOD5)			SM5210B
Chemical Oxygen Demand (COD)			SM5220D
Chloride		300.0	
Nitrate (N)		300.0; 9056	
Ammonia (N)		350.1	
Total Organic Carbon (TOC)			SM5310B
Sulfate, Total		300.0	
Fluoride		300.0; 9056	
Cyanide, Total	9010; 9012; 9014		
Coliform Bacteria, Total			SM9223B
Metals:			
Aluminum		6010; 6020; 7000	
Antimony	6010; 6020; 7000		
Arsenic	6010; 6020; 7000		
Barium	6010; 6020; 7000		
Beryllium	6010; 6020; 7000		
Cadmium	6010; 6020; 7000		
Calcium		6010; 6020; 7000	
Chromium, Total	6010; 6020; 7000		
Chromium, Hexavalent	7196		
Cobalt		6010; 6020; 7000	
Copper	6010; 6020; 7000		
Iron		6010; 6020; 7000	
Lead	6010; 6020; 7000		
Magnesium		6010; 6020; 7000	
Manganese		6010; 6020; 7000	
Mercury	6020; 7470; 7471		
Nickel	6010; 6020; 7000		
Potassium		6010; 6020; 7000	
Selenium	6010; 6020; 7000		
Silver	6010; 6020; 7000		
Sodium		6010; 6020; 7000	
Thallium	6010; 6020; 7000		
Vanadium	6010; 6020; 7000		
Zinc	6010; 6020; 7000		

Table 4 Laboratory Analytical Procedures Wallingford Landfill and Former Barberino Property Wallingford, Connecticut			
Parameters	**RCP Method Number(s)**	**EPA Method Number**	**Standard Methods Test Number**
Volatile Organic Compounds:			
VOC's in Appendix I of 40 CFR 258 via EPA Method 8260	8260		
Acrylamide		8032A	
Phenol & Total Phenolics:			
Method		9065	
Dioxins / Furans:			
Polychlorinated Dibenzo-*p*-Dioxins and Polychlorinated Dibenzofurans		1613B; 8280B; 8290A	

Note:
Where an RCP Method is specified, that method is to be utilized for sample analyses. The listed EPA Methods and/or Standard Methods Tests will only be used if an RCP Method is not available.

SECTION III

Stewardship Permit
Compliance Schedule

Connecticut Resources Recovery Authority
Wallingford Landfill

EPA ID No. CTD991288960
Permit No. DEP/HWM/CS-148-004

SECTION III
COMPLIANCE SCHEDULE

A. All conditions set forth in Section III.A. of this permit shall be conducted within thirty (30) calendar days of the effective date of this permit. Otherwise, the Permittee may be subject to formal enforcement actions.

1. Consultant. The Permittee shall designate and assign an environmental compliance expert who may be a full-time employee of the Permitee, and/or retain one or more qualified consultants, acceptable to the Commissioner to prepare the documents required by Condition Nos. II.B.2. and III.C.2. and shall, by that date, notify the Commissioner in writing of the identity of such environmental compliance expert and/or consultants. The Permitee shall assign such environmental compliance expert and/or retain such qualified consultant, acceptable to the Commissioner, until Condition Nos. II.B.2. and III.C.1. of this permit is fully complied with. The Permittee shall notify the Commissioner in writing of the identity of any environmental compliance expert or consultant other than the one approved by the Commissioner, within ten (10) days after assigning or retaining any environmental compliance expert or consultant for the purpose of addressing the actions required by this permit. The Permittee shall submit to the Commissioner a description of the assigned environmental compliance expert's and/or consultant's education, experience and training which is relevant to the work required by this permit within ten (10) days after a request for such a description has been made. Nothing in this paragraph shall preclude the Commissioner from finding a previously acceptable environmental compliance expert or consultant unacceptable.

2. Cost Estimate. The Permittee shall submit for the Commissioner's review and written approval the cost estimate for performing post-closure care inclusive of surface and groundwater monitoring and landfill decomposition gas monitoring in accordance with the requirements of Condition No. II.C.1. of this permit.

B. All conditions set forth in Section III.B. of this permit shall be conducted within one hundred twenty (120) calendar days of the effective date of this permit. Otherwise, the Permittee may be subject to formal enforcement actions.

1. Public Participation Plan. The Permittee shall submit for the Commissioner's review and written approval the public participation plan prepared in accordance with the requirements of Condition No. II.A.10. of this permit.

C. All conditions set forth in Section III.C. of this permit, shall be conducted within one hundred eighty (180) calendar days of the effective date of this permit. Otherwise, the Permittee may be subject to formal enforcement actions.

1. Revised Water Quality Monitoring Plan. The Permittee shall submit for the Commissioner's review and written approval a revised Water Quality Monitoring Plan prepared in accordance with the requirements of Condition No. II.B.2. of this permit.

2. Quality Assurance Project Plan. The Permittee shall submit for the Commissioner's review and written approval a Quality Assurance Project Plan prepared in accordance with the requirements of Condition No. II.B.6. of this permit.

D. All conditions set forth in Section III.D. of this permit, shall be conducted within three hundred sixty five (365) calendar days of the effective date of this permit. Otherwise, the Permittee may be subject to formal enforcement actions.

1. Progress Reports. The Permittee shall submit a progress report for the Commissioner's review describing the actions which the Permittee has taken to date to comply with the terms and conditions of this permit and annually thereafter until all actions required by this Permit have been completed to the Commissioner's satisfaction.

E. All conditions set forth in Section III.E. of this permit, shall be conducted within the timeframe specified. Otherwise, the Permittee may be subject to formal enforcement actions.

1. Financial Assurance. Within one hundred fifty (150) calendar days of the Commissioner's written approval of the cost estimate submitted in accordance with Condition No. III.A.2. of this permit, the Permittee shall establish and continually maintain financial assurance using one or more financial assurance mechanisms prescribed by the Commissioner for post-closure care inclusive of surface and groundwater monitoring and landfill decomposition gas monitoring of the Site or areas affected by the Site.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF	:	*APPLICATION NO.: 200901180*
STEWARDSHIP PERMIT FOR CT RESOURCES RECOVERY AUTHORITY WALLINGFORD LANDFILL	:	*SEPTEMBER 16, 2009*

FINAL DECISION

I have reviewed the hearing officer's Proposed Final Decision in this matter, which adopts the agreed draft decision of the parties. This agreement, is attached to his decision as Attachment A. I affirm his decision and accept his recommendation to issue the requested permit, a copy of which is attached to the Proposed Final Decision as Attachment B.

Amey W. Marella

Amey W. Marrella, Commissioner

7-21-89

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PERMIT

Connecticut Resource Recovery Authority
179 Allyn Street
Hartford, Conn. 06103

Re: DEP/WPC-148-113
Facility: Wallingford Landfill
Town of Wallingford
Quinnipiac River Watershed

Attention: Dennis J. Martin

This PERMIT modification is issued in accordance with Section 22a-430 of the Connecticut General Statutes, as amended. The Commissioner of Environmental Protection (hereinafter "the Commissioner") has found that the discharge from the operation and maintenance of the Wallingford Sanitary Landfill, as described below, will not cause pollution of the waters of the state.

Description - Sanitary Landfill Leachate (Code 305002)
Discharge Location - Groundwaters in the watershed of the Quinnipiac River (Basin Code 5200)
Present/Future Water Quality Standard - GB/GC
Average Daily Discharge Rate - 27,300 gallons per day
Disposal Area Design Size 42.6 (acres)

The Commissioner, acting under Section 22a-430, hereby permits the Connecticut Resource Recovery Authority to operate and maintain a sanitary landfill with the resultant leachate discharged to the groundwaters of the state in accordance with the following conditions:

1) The sanitary landfill shall be operated and maintained in accordance with plans and specifications approved by the Assistant Director of Water Compliance on February 16, 1988. The sanitary landfill site consists of an 82 - acre parcel of land adjacent to the east bank of the Quinnipiac River and south of the Wallingford Sewage Treatment Plant. This permit allows landfilling to occur in a 32.1 - acre parcel as shown on plate No. 2, Landfill Expansion Study, Wallingford Landfill, Proposed Horizontal Expansion prepared by Fuss & O'Neill, Consulting Engineers, Revised November 4, 1987, in a 3.1 acre parcel as shown on the plan entitled As-Built Plan, By-Pass Area, Southwest Corner-Wallingford Landfill prepared by Fuss & O'Neill, Inc. dated February 1989 and in a 7.4 acre ash/residue disposal area as shown on plate No. 3, Groundwater Monitoring Program, Wallingford Landfill, prepared by Fuss & O'Neill, Consulting Engineers, dated December, 1988.

2) The groundwaters shall be monitored as follows:

A) Groundwater monitoring shall be conducted at the following locations; as identified on plate No. 3 of the report entitled "Groundwater Monitoring Program", prepared by Fuss & O'Neill, Inc. revised December, 1988.

W-1:	Well #1	(up-gradient)
W-2:	Well #1A	(up-gradient)
W-3:	Well #1B	
W-4:	Well #2A	
W-5:	Well #3	
W-6:	Well #3A	
W-7:	Well #4	
W-8:	Well #5	
W-9:	Well #9	
W-10:	Well #9A	
W-11:	Well #10	MW4R
W-12:	Well #10A	MW101R
W-13:	Well #11	
W-14:	Well #11A	
W-15:	Well #100	
W-16:	Well #100A	
W-17:	Well #101	
W-18:	Well #101A	
W-19:	Well #12	
W-20:	Well #12A	
W-21:	Well #13	
W-22:	Well #200	
W-23:	LC-1	
W-24:	DX-1	

B) Groundwater samples from each of the monitoring locations described in paragraph 2(A) shall be collected quarterly (four times per year) and analyzed for the following parameters:

1.	Water level	(706)	18.	Aluminum	(101)
2.	Total Dissolved Solids (TDS)	(613)	19.	Arsenic	(103)
3.	Total Suspended Solids (TSS)	(614)	20.	Barium	(104)
4.	Alkalinity	(602)	21.	Cadmium	(140)
5.	COD	(303)	22.	Chromium-Total	(109)
6.	BOD-20 day	(302)	23.	Copper	(111)
7.	Dissolved Iron	(134)	24.	Potassium	(142)
8.	Dissolved Manganese	(139)	25.	Lead	(136)
9.	Ammonia	(201)	26.	Magnesium	(135)
10.	Nitrate	(204)	27.	Mercury	(117)
11.	Chloride	(502)	28.	Nickel	(119)
12.	Sodium	(620)	29.	Vanadium	(126)
13.	Hardness	(606)	30.	Selenium	(120)
14.	T.O.C.	(306)	31.	Silver	(122)
15.	pH	(609)	32.	Sulfates	(507)
16.	Conductivity	(611)	33.	Zinc	(138)
17.	Volatile Organics (EPA Methods 8010 & 8020	(892)			

In addition at groundwater monitoring locations W-1, W-5, W-22, W-23, and W-24 groundwater samples shall be analyzed for the following parameters annually (in the July Sampling period):

34. Total Dioxins and Furans (EPA Method 8280) (985)
35. PCB's (582)

C) Following measurement of the water level in the monitoring wells, the wells shall be pumped immediately prior to sampling until at least three (3) times the volume of water standing in the well is evacuated to insure that a representative sample of the groundwater is obtained. All ground water samples shall be filtered in the field to remove excess suspended solids except for those samples to be analyzed for volatile organic compounds. The samples shall be analyzed by a laboratory certified by the State Health Department. All samples shall be placed in the appropriate container for the test to be conducted.

3) The pollutant load from the landfill, as defined by the Ultimate Oxygen Demand (U.O.D.) of the leachate will be added to and accounted for, in the NPDES Permit No. CT0100617 for the Town of Wallingford Water Pollution Control Facility after installation of facilities as required by Order No. 1262. The Connecticut Resource Recovery Authority shall be considered in compliance with this permit for Ultimate Oxygen Demand if the following condition is met:

Total average monthly quantity of ultimate oxygen demand as given in paragraph 2A of NPDES Permit No. CT0100617 is less than or equal to the summation of average monthly quantity ultimate oxygen demand for discharge Serial No. 001 - NPDES Permit No. CT0100617 (Wallingford Water Pollution Control Facility) and the Average Monthly Quantity Ultimate Oxygen Demand for the Wallingford Landfill, DEP/WPC-148-113 as calculated in paragraph 5 below.

A) The average monthly quantity of U.O.D. shall be computed as kg/day. The U.O.D. is defined as: U.O.D. = BOD_{20} + 4.6 (NH_3). BOD_{20} = Biochemical Oxygen Demand (20 Day); NH_3 = Ammonia. The Wallingford Landfill pollutant load is defined by the Ultimate Oxygen Demand (U.O.D.) of the leachate. The U.O.D. of the leachate shall be determined as the arithmetic average of the U.O.D. for monitor wells W-3, W-5, W-10A, W-100 and W-101 using computed groundwater flow at the time of sampling as follows:

1. The July monitoring data shall be used to compute the average monthly U.O.D. to determine compliance for the June 1 to September 30 period.

2. The October monitoring data shall be used to compute the average monthly U.O.D. to determine compliance for the October 1 to October 30 period.

3. The January monitoring data shall be used to compute the average monthly U.O.D. to determine compliance for the November 1 to March 31 period.

4. The April monitoring data shall be used to compute the average monthly U.O.D. to determine compliance for the April 1 to May 31 period.

5. The U.O.D. analysis of Wells 3, 5, 10A, 100, and 101 shall be averaged based on the relative transmissivities at the individual wells in accordance with the formula below:

$$E_{average} = E_3(T/T_{Total}) + \ldots\ldots + E_{101}(T_{101}/T_{Total})$$

Where E average = average chemical quality
E_3 = quality at Well 3
T_3 = transmissivity at Well 3
T_{Total} = transmissivity at pertinent observation wells (i.e. wells 3, 5, 10A, 100 and 101)

6. Transmissivities (see Analyses of Wallingford Landfill Ultimate Oxygen Demand, Dec. 1987 and letter dated Jan. 14, 1988, prepared by Fuss & O'Neill)

Well	Transmissivity
3	146
5	327
10A	86
100	105
101	118

7. Leachate Flow Determination

   a. Flow to River (Q) = K (permeability) x A(area of downgradient system) x i(hydraulic gradient)

   b. However, A area = b(saturated thickness) x W(width of plume)

   c. Therefore Q = K x b x W x i or TWI

   d. W = 1970' (effective): T = defined in F above.

4) The sampling, testing and pollutant load determination performed according to paragraphs 2 and 3 shall be done according to this schedule:

SAMPLES SHALL BE COLLECTED IN THE FOLLOWING MONTHS	RESULTS SHALL BE REPORTED BY:
JANUARY	FEBRUARY 28
APRIL	MAY 31
JULY	AUGUST 31
OCTOBER	NOVEMBER 30

The results shall be reported to the Director of the Solid Waste Unit and Director of the Water Compliance Unit of the Department of Environmental Protection at 122 Washington Street, Hartford, Connecticut 06106. A copy of the sampling results shall also be sent to the Health Officer of the Town of Wallingford. A copy of the pollutant load determination shall also be sent to the Environmental Coordinator of the Town of Wallingford.

5) Beginning on December 31, 1988 and annually on that date thereafter, a summary report of the monitoring program shall be submitted for the review and approval of the Commissioner. The report shall include an assessment of changing trends in leachate concentration or constituents, impact on adjacent surface waters, changes in plume location, changes in the ground water levels, and potential impact on nearby water supply wells.

6) The zone of influence of the discharge which is hereby permitted is restricted to property owned by the Town of Wallingford. The zone of influence is defined as the soil and groundwater area needed to allow the treatment of leachate by soils and mixing of leachate with groundwaters and in which the groundwaters could be in violation of pertinent Federal and State drinking water standards.

7) Prior to disposing of ash/residue in any section of the 7.4 acre interim ash disposal area other than the shaded area shown on the as-built plan of the ash residue disposal area submitted on December 9, 1988, by Fuss & O'Neill, Inc., submit verification that the site has been prepared in accordance with the plans and specifications approved by the Assistant Director of Water Compliance on February 16, 1988.

This PERMIT requires the payment of an annual compliance determination fee as set forth in Section 22a-430-7 of the Regulations of State Agencies.

This PERMIT modification is issued under Section 22a-430 and shall expire on March 4, 1993.

The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Clean Water Act or the Connecticut General Statutes. The PERMIT as modified or reissued under this paragraph may also contain any other requirements of the Clean Water Act or Connecticut General Statutes then applicable.

This permit shall be subject to the following sections of the Regulations of Connecticut State Agencies which are hereby incorporated into this permit:

Section 22a-430-3 General Conditions

(a)Definitions
(b)General
(c)Inspection and Entry
(d)Effect of a Permit
(e)Duty
(f)Proper Operation and Maintenance
(g)Sludge Disposal
(h)Duty to Mitigate

(i)Facility Modifications; Notification
(j)Monitoring, Records and Reporting Requirements
(k)Bypass
(l)Conditions Applicable to POTWs
(m)Effluent Limitation Violations (Upsets)
(n)Enforcement
(o)Resource Conservation
(p)Spill Prevention and Control
(q)Instrumentation, Alarms, Flow Recorders
(r)Equalization

22a-430-4 Procedures and Criteria

(a)Duty to Apply
(b)Duty to Reapply
(c)Application Requirements
(d)Preliminary Review
(e)Tentative Determination
(f)Draft Permits, Fact Sheets
(g)Public Notice, Notice of Hearing
(h)Public Comments
(i)Final Determination
(j)Public Hearings
(k)Submission of Plans and Specifications. Approval.
(l)Establishing Effluent Limitations and Conditions
(m)Case by Case Determinations
(n)Permit Issuance or Renewal
(o)Permit Transfer
(p)Permit Revocation, Denial or Modification
(q)Variances
(r)Secondary Treatment Requirements
(s)Treatment Requirements for Metals and Cyanide
(t)Discharges to POTWs - Prohibitions

Your attention is especially drawn to the notification requirements of subsection (i)(2), (i)(3), (j)(6), (j)(9)(C), (j)(11)(C), (D), (E), and (F), (k)(3) and (4) and (l)(2) of Section 22a-430-3.

Entered as a Permit modification of the Commissioner of the Department of Environmental Protection on the 18th day of July, 1989.

John W. Anderson
Deputy Commissioner

APPLICATION NO. 84-273
PERMIT NO. LF0000028
ORDER NO. WC9051M