

Cornell University

College of Agriculture & Life Sciences

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January 12, 2012

Mr. Jamie Ascher,
Division of Environmental Remediation
NYS Department of Environmental Conservation
Region 1 Headquarters
Building 40 – SUNY Stony Brook
Stony Brook, NY 11790-2356

Re: Long Island Horticultural Research Site #V00234
Voluntary Cleanup Agreement No.: D1-0002-01-03

Dear Mr. Ascher:

With regard to the Long Island Horticultural Research Site #V00234, I am writing to certify that the institutional controls and engineering controls put in place, pursuant to the executed voluntary agreement, are still in place, have not been altered and are still effective.

Please feel free to contact me at 607-255-0485 should you have any questions about this certification.

Sincerely,

Eric Harrington
Director, Occupational and Environmental Health

Enc.

xc: Dr. M. Bridgen, LIHREC
B. English, EH&S
E. Delaney, CALS
P. Paradise, CALS

M. Ferguson, CALS
M. Hoffmann, CUAES
G. Evans, CUAES
S. Sechler, Cornell Counsel



Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site No. V00234 Site Details Box 1

Site Name Long Island Horticultural Research Lab

Site Address: 3059 Sound Avenue Zip Code: 11901

City/Town: Riverhead

County: Suffolk

Site Acreage: 3.7

Reporting Period: December 17, 2010 to December 17, 2011

- | | YES | NO |
|---|-------------------------------------|-------------------------------------|
| 1. Is the information above correct? | ☒ | ☐ |
| If NO, include handwritten above or on a separate sheet. | | |
| 2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period? | ☐ | ☒ |
| 3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))? | ☐ | ☒ |
| 4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period? | ☐ | ☒ |
| If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form. | | |
| 5. Is the site currently undergoing development? | ☐ | ☒ |

Box 2

- | | YES | NO |
|--|-------------------------------------|--------------------------|
| 6. Is the current site use consistent with the use(s) listed below?
Commercial and Industrial | ☒ | ☐ |
| 7. Are all ICs/ECs in place and functioning as designed? | ☒ | ☐ |

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. V00234

Box 3

Description of Institutional Controls

Parcel

Owner

Institutional Control

041-02-007

State University of New York

Ground Water Use Restriction
Landuse Restriction

041-02-007

State University of New York

Box 4

Description of Engineering Controls

Parcel

Engineering Control

041-02-007

Cover System

Engineering Control Details for Site No. V00234

Parcel: 041-02-007

The deed restriction limits the use of on-site groundwater without treatment and appropriate approval. Limits the use, construction or occupancy of the capped area and requires annual certification that the ECs/ICs are in place, have not been altered and are still effective.

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and complete.

YES NO

☒ ☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

(d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES NO

☒ ☐

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and
DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. V00234

Box 6

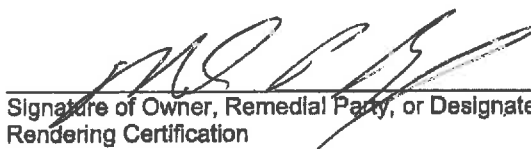
SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1, 2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Mark Brindley at 3059 South Ave. LIVERHEAD, NY
print name print business address 11901

am certifying as REMEDIAL PARTY (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.


Signature of Owner, Remedial Party, or Designated Representative
Rendering Certification

3 Jan 2012
Date

IC/EC CERTIFICATIONS

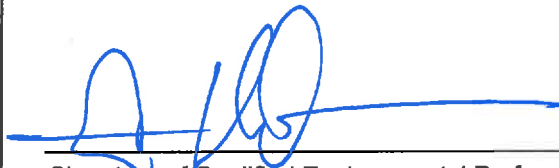
Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I ERIC HARRINGTON at 241 ROBERTS HALL, CORNELL UNIV.
print name print business address ITHACA, NY 14853

am certifying as a Qualified Environmental Professional for the OWNER
(Owner or Remedial Party)



Signature of Qualified Environmental Professional, for
the Owner or Remedial Party, Rendering Certification

Stamp
(Required for PE)

1/12/12
Date

Enclosure 1

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the three questions in the Verification of Site Details Section. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional Controls/ Engineering Controls (IC/ECs)(Boxes 3, 4, and 5)

1.1.1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party should petition the Department separately to request approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you cannot certify "YES" for each Control listed in Box 3 & Box 4, sign and date the form in Box 5. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a plan of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) must be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

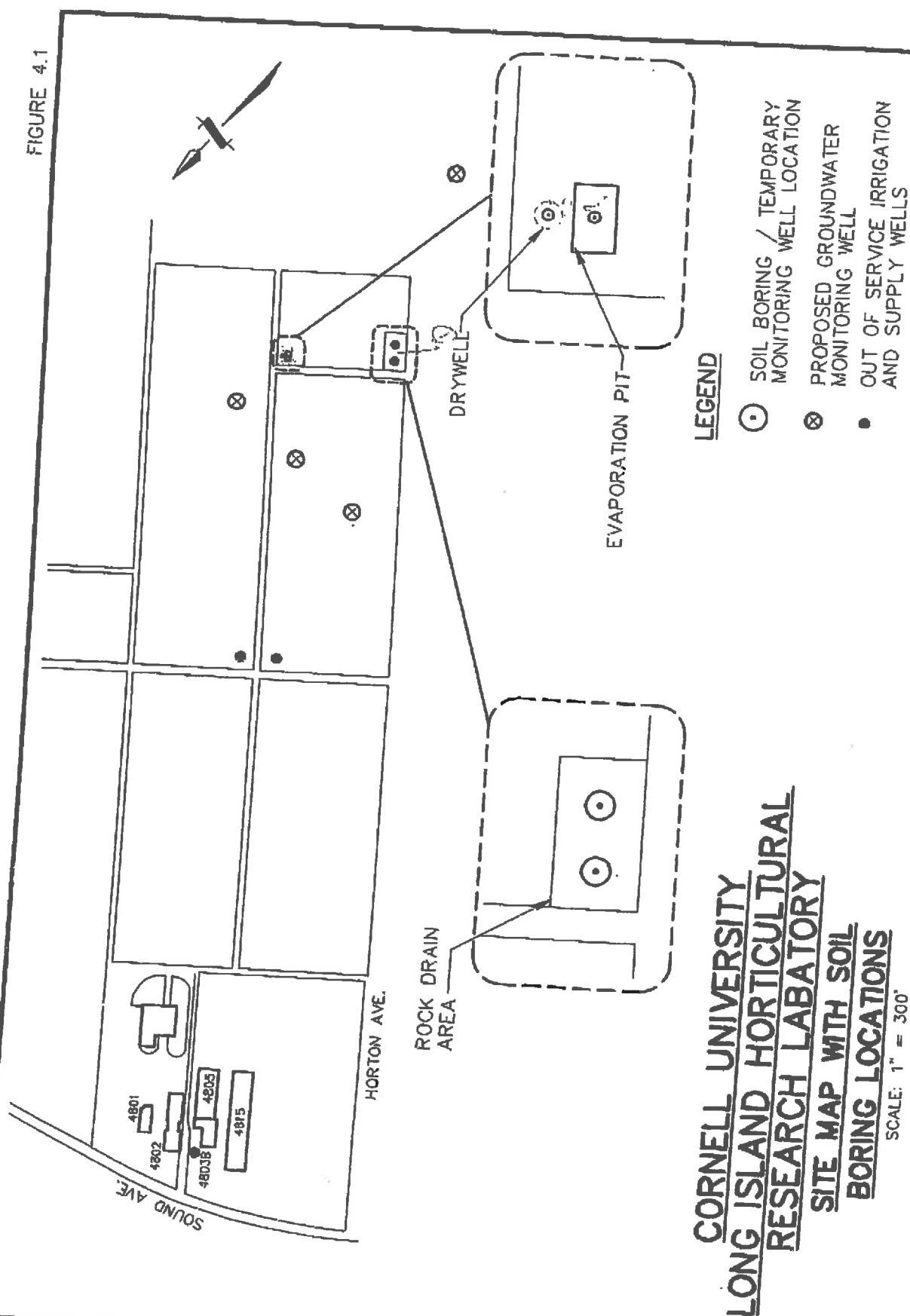
III. IC/EC Certification by Signature (Box 6 and Box 7):

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page as follows:

- For the Institutional Controls on the use of the property, the certification statement in Box 6 shall be completed and may be made by the property owner or designated representative.
- For the Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional, as noted on the form.



FIGURE 4.1



H2M GROUP

ENGINEERS • ARCHITECTS • PLANNERS • SCIENTISTS • SURVEYORS
MELVILLE, N.Y.
TOTOWA, N.J.

Periodic Review Report for Cornell LIHREC

I. Introduction

A. The Long Island Horticulture Research and Extension Center (LIHREC) is a horticultural research center administered by Cornell University and the State University of New York. Horticultural research conducted at the facility includes the planting and care of diverse crops in small experimental land plots located both in open fields and in greenhouses. Various pesticides, including proprietary products, were mixed and applied to crops in different experimental plots. Upon completing a specific pesticide application, the application tank was rinsed clean. The rinse water from the application tank was discharged into an evaporation pit and overflow drywell system for disposal. Prior to the construction of the evaporation pit/overflow drywell system, rinse water was reportedly discharged to a rock drain area.

Results of previous NYSDEC laboratory analyses indicated that endosulfan I, endosulfan II, endosulfan sulfate and chlordane were detected in an evaporation pit liquid sample at concentrations ranging from 80 to 320 micrograms per liter (ug/l). NYSDEC laboratory analyses of a sediment sample collected from the bottom of the evaporation pit detected heptachlor, alpha chlordane, and gamma chlordane at concentrations of 720, 1,900 and 2,000 milligrams per kilogram (mg/kg) respectively. Other NYSDEC evaporation pit bottom sample analyses detected endosulfan I, endosulfan II and chlordane at 7,900, 2,900 and 4,000 mg/kg respectively. Finally, NYSDEC analyses of a bottom sediment sample from the overflow drywell indicated the presence of endosulfan I, endosulfan II and chlordane. Analyses performed by an LIHREC-contracted laboratory indicated the presence of chlordane in an evaporation pit liquid sample (529 ug/l), evaporation bottom sediments (251 mg/kg) and overflow drywell sediments (75.3 mg/kg).

In consideration of the above, Cornell submitted a work plan to NYSDEC for removal of all liquids and sludge from both the evaporation pit and overflow drywell in approximately January 1994. The remediation work plan was approved by the NYSDEC in November 1994 with the remediation work conducted in December 1994. The remediation work included removing liquid phase waste material from the evaporation pit and removing all sludge/solids from both the evaporation pit and overflow drywell. After all of the sludge/solids were removed, the evaporation pit and overflow piping were decontaminated utilizing a high-pressure water tri-sodium phosphate rinse. A total of twenty-one (21) drums of liquid waste and three (3) drums of sludge/solids were generated as a result of the remediation work.

In 1997, Cornell retained H2M to conduct a Preliminary Site Assessment

(PSA) to evaluate the nature and extent of the potential impacts associated with the past disposal of pesticide residues in the evaporation pit/overflow drywell system and former rock drain area. The report was submitted to NYSDEC and is the basis for the proposed soil remediation program.

As part of the PSA, H2M conducted two soil borings in each of the two source areas. At the evaporation pit/overflow drywell, one boring was advanced directly through the evaporation pit and one directly through the overflow drywell. Although several pesticides were detected in the soils beneath the evaporation pit, because none were detected at concentrations above the NYSDEC Recommended Soil Cleanup Objectives (RSCOs), remediation of soils beneath the evaporation pit was deemed unnecessary. A second soil boring was conducted through the center of the overflow drywell. Aldrin, chlordane, DDE, endosulfan I, endosulfan II, endosulfan sulfate and heptachlor were detected at concentrations above their respective RSCOs. The highest reported pesticide concentrations were detected in the soils immediately below the bottom of the drywell, approximately 10 feet below grade surface (bgs). Results of the two soil borings completed through the rock drain area indicated elevated levels of pesticides to a total depth of ten to twelve feet below grade. DDT, endosulfan I, endosulfan II, endosulfan sulfate and methoxychlor were detected at concentrations above their respective RSCOs.

Upon completing the PSA, Cornell/ LIHREC entered into a Voluntary Agreement with the NYSDEC to conduct additional investigations and to remediate two areas documented to contain elevated levels of pesticides (i.e., Overflow Drywell and Rock Drain Area). In accordance with the Voluntary Agreement, a work plan describing the additional investigation and remediation was submitted to and approved by the NYSDEC.

D. Annual certification will be provided until the NYSDEC notifies Cornell in writing that this certification is no longer needed.

II. Site Overview

According to LIHREC records, the evaporation pit/drywell system was constructed in 1979 and consisted of a rectangular poured-concrete treatment pit with dimensions of 10 x 6 x 6 feet. The walls and bottom of the pit were constructed with 6-inch thick concrete. A valved 4-inch diameter overflow line, set one foot off the bottom of the evaporation pit, connected the pit with an adjacent drywell (i.e., leaching pool) consisting of two 8-foot diameter, four foot high leaching pool rings and one 8-foot diameter, 4-foot high chimney. The base of the leaching pool structure is approximately 12 feet below ground surface (bgs) according to the LIHREC-supplied drawings. When the liquid level in the evaporation pit exceeded one foot, the rinse waters would overflow into the drywell. When originally constructed, the

evaporation pit had an open top allowing rain water to enter. In 1981, a rain hood was constructed over the evaporation pit, thereby, preventing rain water from entering. In 1989, the overflow line was valved closed to prevent further overflow discharge to the drywell. The location of the evaporation pit/drywell system is approximately 1,700 feet south of the lab's main buildings and 280 feet east of Horton Road.

The location of the rock-drain area is approximately 1,700 feet south of the lab's main buildings and is marked by an area of one- to two-inch diameter gravel along the east side of Horton Avenue. According to LIHREC personnel, rinsate waters were disposed of in the rock-drain area prior to the construction of the evaporation pit/drywell system.

In November 1993, the NYSDEC collected a liquid and sediment sample from the evaporation pit and a sediment sample from the bottom of the overflow drywell, and analyzed the samples for pesticides by EPA Method 8080. Five inches of sediment and 12 inches of liquid were present in the bottom of the evaporation pit at the time the samples were collected.

The samples were submitted to two NYSDEC-contracted laboratories and to a LIHREC-contracted laboratory. Endosulfan I, Endosulfan II, Endosulfan Sulfate and Chlordane were detected in the liquid sample collected from the evaporation pit at 80, 80, 80, and 320 micrograms per liter (ug/l), respectively by one of the NYSDEC-contracted laboratories. Pesticides were not detected above contract-required detection limits (CRDLs) in the liquid sample analyzed by the other NYSDEC contracted laboratory. Chlordane, at 529 ug/l, was the only pesticide detected in the evaporation pit liquid sample submitted to the LIHREC-contracted laboratory.

Heptachlor, Alpha Chlordane, and Gamma Chlordane were detected in the bottom sediment collected from the evaporation pit by one of the NYSDEC-contracted laboratories (Weston) at 720,000, 1,900,000, and 2,000,000J micrograms per kilogram (ug/kg), respectively.

The second NYSDEC-contracted laboratory (NYSDOH) detected Endosulfan I, Endosulfan II, and Chlordane in the bottom sediments from the evaporation pit at 7,900,000, 2,900,000, and 4,000,000 ug/kg, respectively. Chlordane, at 251,000 ug/kg, was the only pesticide detected by the LIHREC-contracted laboratory in the evaporation pit sediments.

Both NYSDEC-contracted laboratories detected high concentrations of Endosulfan I, Endosulfan II and Chlordane in the bottom sediments collected from the bottom of the leaching pool. Chlordane (75,300 ug/kg) was the only pesticide detected in the bottom sediments from the leaching pool by the LIHREC-contracted laboratory.

Figures attached [2] illustrating site location, boundaries, significant features and surrounding area.

III. Evaluate Remedy Performance, Effectiveness, and Protectiveness

A. Initial work including cleaning and removal of a pesticide-contaminated sump, removal of visually-impacted soils, and development and testing of groundwater wells was completed under an Interim Remedial Measure (IRM). This IRM work occurred in 1994.

Following the IRM work, the following remediation was conducted:

Collection and analysis of water samples from five wells, four of which existed prior to the work plan approval and one additional well installed and developed as part of the Work Plan scope.

Removal and disposal of an overflow drywell (precast structure) and rock drain, as well as contaminated soils beneath the drywell and drain structures, including the following sub-tasks:

- Installation of sheeting and shoring in the two work areas.
- Excavation of pesticide-impacted soils from beneath the Overflow Drywell (to approximately 16' below grade) and from the Rock Drain Area (to approximately 12' below grade).
- Waste characterization sampling and analysis.
- Confirmatory soil sampling at the terminus (bottom and sidewalls) of the excavations to document the level of pesticide residuals that remained in the soil.
- Transportation and disposal of pesticide-impacted media.
- Removal and decontamination of sheeting and shoring.
- Backfilling of the excavated Overflow Drywell and Rock Drain Area.

Removal of impacted soil and structures during the IRM and remedial work eliminated principal areas of contamination at the site and severely reduced the potential of future migration of contaminants from these areas into surrounding soils or groundwater.

The remedial action as described continues to protect human health and the environment.

IV. Not Applicable

V. Not Applicable

VI. Not Applicable

VII. Overall PRR Conclusions and Recommendations

C.1. Cornell will continue to provide certification that the institutional and engineering controls put in place, pursuant to the executed voluntary cleanup agreement, are still in place, have not been altered and are still effective. Annual certification will be provided until the NYSDEC notifies Cornell in writing that this certification is no longer needed.