CleanHarbors®
ENVIRONMENTAL SERVICES, INC.

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Jules B. Selden
Vice President of
Commercial Litigation

1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048

SDMS DocID 282335

Law Department
781.849.1800 Ext. 4182
Fax 781.356.1375
seldenj@cleanharbors.com
www.cleanharbors.com

VIA FIRST CLASS MAIL

June 22, 2005

U.S. Environmental Protection Agency
Attn: Martha Bosworth, Enforcement Coordinator
Office of Site Remediation and Restoration (HBS)
One Congress Street, Suite 1100
Boston, MA 02114

Re: Murphy's Waste Oil Service, Inc.
Response to CERCLA Section 104(e) Request for Information

Dear Ms. Bosworth:

Enclosed please find Murphy's Waste Oil Service, Inc.'s response to EPA's CERCLA Section 104(e) Request For Information that was contained in the Agency's letter dated April 14, 2005. As stated in Response No. 1.c, all future communications on this matter are to be directed to my attention. An executed Declaration is also enclosed.

Very truly yours,

Jules B. Selden
Vice President
Chief of Commercial Litigation

Enclosures

0089-0026

WELLS G & H

ENCLOSURE F - DECLARATION

I declare under penalty of perjury that I am authorized to

respond on behalf of Murrphy's Waste Oil Service, Inc. and that the Respondent

foregoing is complete, true, and correct.

Executed on June 22, 2005

Signature

Jules B. Selden

Type Name

Vice President, Chief of Commercial Litigation
Clean Harbors Environmental Services, Inc.

Title [if any]

MURPHY'S WASTE OIL SERVICE, INC.'S
RESPONSE TO CERCLA SECTION 104(e) INFORMATION REQUEST

1. *General Information About Respondent*

NOTE: All questions in this section refer to the present time unless otherwise indicated.

a. Provide the full legal name and mailing address of the Respondent.

Murphy's Waste Oil Service, Inc.
1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048

b. For each person answering these questions on behalf of Respondent, provide:
i. full name;
ii. title;
iii. business address; and
iv. business telephone number.

Jules B. Selden
Vice President and Chief of Commercial Litigation
Clean Harbors Environmental Services, Inc.
1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048
(781) 849-1800, extension 4182

Sean K. McFaul
Risk Manager
Clean Harbors Environmental Services, Inc.
1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048
(781) 849-1800*

Scott Day
Director of Oil Companies
Clean Harbors Environmental Services, Inc.
1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048
(781) 849-1800*

Christopher Moran
General Manager, Murphy's Waste Oil Facility
c/o Clean Harbors Environmental Services, Inc.
1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048
(781) 849-1800*

* Contact with these individuals should only be made through the person designated in Response No. 1.c below.

c. If Respondent wishes to designate an individual for all future correspondence concerning this Site, including any legal notices, please so indicate here by providing that individual's name, address, and telephone number.

Jules B. Selden, Esquire – Law Department
Clean Harbors Environmental Services, Inc.
1501 Washington Street
P.O. Box 859048
Braintree, MA 02185-9048
(781) 849-1800, extension 4182
seldenj@cleanharbors.com

d. Provide the names of the current officers, directors, and the current shareholders owning more than 5% of the stock of Clean Harbors, Inc. and/or Clean Harbors Environmental Services, Inc. Provide the names of the current officers, directors, and shareholders owning more than 5% of Murphy's Waste Oil Service, Inc.'s stock. Describe how these directors and officers were hired, elected, or assigned.

[Response by Jules B. Selden]

Respondent objects to this request on the grounds that it is overly broad, unduly burdensome, and not reasonably related to EPA's investigation. Notwithstanding said objection, and without waiving the same, Respondent states as follows:

Clean Harbors, Inc. is a publicly-traded corporation. The names of shareholders owning more than 5% of its stock were most recently reported in its April 15, 2005 Notice of Annual Meeting of Shareholders, a copy of which is appended hereto as Exhibit 1.d. Directors of Clean Harbors, Inc. are elected by shareholders, and Officers of Clean Harbors, Inc. are appointed by the Board of Directors.

Clean Harbors, Inc. owns 100% of the stock of Clean Harbors Environmental Services, Inc. No individual person owns such stock.

Clean Harbors, Inc. owns 100% of the stock of Murphy's Waste Oil Service, Inc. No individual person owns such stock.

e. Provide the names of all officers, directors, and shareholders that owned more than 5% of the stock of Clean Harbors, Inc. and/or Clean Harbors Environmental Services, Inc. during the time period from 1986 through the present time. Provide the names of all officers, directors, and shareholders owning more than 5% of Murphy's Waste Oil Service, Inc.'s stock during that same time period.

[Response by Jules B. Selden]

Respondent objects to this request with respect to Clean Harbors, Inc. on the grounds that it is overly broad, unduly burdensome, and not reasonably related to EPA's investigation. Notwithstanding said objection, and without waiving the same, Respondent states that Clean Harbors, Inc. is a publicly-traded corporation and the names of shareholders owning more than 5% of its stock during the years in question are documented in filings made with the United States Securities and Exchange Commission and are publicly available to the EPA.

From 1986 to present, Clean Harbors, Inc. owned 100% of the stock of Clean Harbors Environmental Services, Inc. No individual persons owned or owns such stock.

Prior to February 6, 1989, 90% of the stock of Murphy's Waste Oil Service, Inc. was owned by the late John F. Murphy and 10% of the stock was owned by his spouse, Joan E. Murphy. After February 6, 1989, 100% of the stock was owned (and still is owned) by Clean Harbors, Inc.

2. *Respondent's Operations (Pre-1987)*

NOTE: All questions in this section refer to the period 1977 through 1987.

a. Joan Murphy of Murphy's Waste Oil Service, Inc. identified Clean Harbors, Inc. [a/k/a Clean Harbors Environmental Services, Inc. (collectively, "Clean Harbors")] as a "large quantity generator[s]" of waste oil at the facility in her response to a CERCLA Section 104(e) Information Request dated February 9, 1988. Provide any information you may have regarding the waste oil sent to the facility by Clean Harbors including:

[Responses by Scott Day]

i. the time period during which Clean Harbors transported waste oil to the facility;

Clean Harbors of Kingston, Inc., n/k/a Clean Harbors Environmental Services, Inc. transported waste oil to the facility from during or about

April 1980 through 1986.

ii. *the types of waste oil transported to the facility;*

Used oil, primarily from tank cleaning jobs.

iii. *the annual volume of each type of waste oil sent to the facility; and*

After diligent investigation, Respondent states that it has no information responsive to this request.

iv. *provide any documentation regarding the transport of this waste oil to the facility, including but not limited to all manifests, invoices, bills of lading, and contracts.*

After diligent investigation, Respondent states that it has no documentation responsive to this request.

b. *Provide any documentation or information you may have regarding waste oil sent to the facility by other generators or transporters, including but not limited to:*

i. *all manifests, invoices, bills of lading, and contracts;*
ii. *the types of waste oil sent by each generator or transporter; and*
iii. *the annual volume of each type of waste oil the facility accepted from each generator or transporter.*

[Response by Scott Day]

After diligent investigation, Respondent states that it has no information or documentation responsive to this request.

c. *Describe the nature of Clean Harbors* [sic] *involvement with operations at the facility, including but not limited to any planning, site development, remediation, and business development activities.*

[Response by Scott Day]

During or about 1981, Clean Harbors of Kingston, Inc. located a centrifuge on the site of the facility to process waste oil it brought to the facility prior to transferring the waste oil to Murphy's Waste Oil Service, Inc.

During the period in question, Clean Harbors' only other involvement was some site investigation activities that were carried out prior to its purchase of Murphy's Waste Oil Service, Inc. See Response No. 3.a below.

d. *Describe Clean Harbors involvement, if any, in the expansion of the oil tank farm at the facility in 1986. Provide any documentation or information you may have regarding this expansion.*

[Response by Jules B. Selden]

Respondent knows of no such 1986 "expansion" of the oil tank farm. However, based upon a Massachusetts DEQE letter dated March 21, 1988 to William F. Murphy, a copy of which is appended hereto as Exhibit 2.d, Respondent is aware that William F. Murphy d/b/a Bill Murphy's Waste Oil (and neither of which were or are related to Respondent) illegally installed a tank at the facility site during August and/or September 1986 and removed it during or about December 1987. Clean Harbors had nothing to do with the aforementioned events.

3. *Respondent's Operations (Post-1987)*

NOTE: All questions in this section refer to the period 1987 through 1990.

a. *Identify all activities conducted by Clean Harbors at the Murphy's Waste Oil Service, Inc. facility including:*
   - i. *the dates each activity commenced and concluded;*
   - ii. *the types of work performed and the area(s) of the facility in which the work was performed, including the removal of any above-ground tanks, soil excavation, and oil and groundwater sampling;*
   - iii. *the contractors hired to perform the work;*
   - iv. *the foreman or manager responsible for the oversight of the work;*
   - v. *the results of any soil and/or groundwater sampling;*
   - vi. *the location where removed materials were taken for disposal and the transporter(s) who hauled the materials; and*
   - vii. *provide copies of any documents related to these activities.*

[Response by Jules B. Selden]

Respondent objects to this request on the grounds that the term "activities" is overly broad and vague and is undefined as to whether it relates to commercial activities or site investigation and/or remediation activities. Notwithstanding its objection, without waiving the same, and based upon its interpretation that the Request seeks information related to site investigation and/or remediation activities, Respondent states as follows:

Commencing during or about December 1987, Clean Harbors performed some soil boring and analyses in the northern portion of the facility site. During February 1988, additional borings were advanced on the site, and additional analyses were performed. Groundwater samples were collected and analyzed during 1987, 1988 and 1989. Some of the borings advanced by Clean Harbors,

were completed as groundwater monitoring wells. Other borings were structural borings for use in siting the new tank farm that Clean Harbors subsequently constructed. In March 1989 the Massachusetts DEQE (n/k/a the Massachusetts DEP) approved a Short-Term Remedial Measure in the area of the new tank farm, and Clean Harbors excavated approximately 1,100 cubic yards of contaminated soil that was subsequently disposed of off-site.

Respondent has conducted a diligent search for the records of the activities described above and which are responsive to this Request for Information, and cannot locate all of the records. However, Respondent was able to locate some of the responsive documentation, copies of which are attached hereto as Exhibit 3.a.

The following Clean Harbors employees were involved in the aforementioned activities:

- Paul Whiting, Vice President of Facilities for Clean Harbors, was the overall manager for the 1988-1989 site improvements;
- William St. Hillaire, former Vice President of Clean Harbors Environmental Engineering, Inc. and n/f employed at United Retek coordinated with the Massachusetts DEQE (n/k/a Massachusetts DEP) with respect to the 1989 discovery of historical contamination;
- Joseph Higgins, former Engineer at Clean Harbors Environmental Engineering, Inc. and n/f employed at EarthTech, had oversight of site investigations during 1987 through 1989;
- Sherry Walker, former Engineer at Clean Harbors Environmental Engineering, Inc., worked for Joseph Higgins on the Murphy's site;
- Carolyn Kohrs, former Engineer at Clean Harbors Environmental Engineering, Inc., worked for Joseph Higgins on the Murphy's site; and
- John O'Brien, former employee of Clean Harbors of Kingston, Inc. and n/f Northeast Tank Removal, oversaw the removal of the old tanks at the Murphy's site.

b. *Describe Clean Harbors' involvement, if any, with the siting of the new oil storage facility in the central portion of the property, including:*

i. *the dates that all facility siting activities commenced and concluded;*
ii. *the types of work performed and the area(s) of the facility in which the work was performed, including any tank removals, soil excavation, and*

soil and groundwater sampling;

iii. *the contractors hired to perform the work;*

iv. *the foreman or manager responsible for the oversight of the new facility siting work;*

v. *the results of any soil and/or groundwater sampling;*

vi. *the individuals or companies that transported the removed materials and the disposal location(s) for the removed materials; and*

vii. *provide copies of any documents related to these siting activities.*

[Response by Jules B. Selden]

See Response No. 3.a above.

c. *Describe the nature of Clean Harbors involvement, if any, in the August/September 1988 petition for a height variance for the fence at the facility, including:*

[Responses by Scott Day and Christopher Moran]

i. *the reason for the fence installation;*

The fence was a requirement of the RCRA Part B Permit that was being prepared by the Massachusetts DEQE (n/k/a Massachusetts DEP). The DEQE required a six-foot-high fence topped with two feet of barbed wire. The City of Woburn's ordinances limited such fences to six feet and prohibited barbed wire. A variance was sought and the DEQE and City of Woburn compromised on an eight-foot-high fence without barbed wire.

ii. *any other actions Clean Harbors took to ensure the security of the facility; and*

Reference is made to the RCRA Part B Permit which was issued by the Massachusetts DEP, which is in the public domain and copies of which were furnished to the U.S. Environmental Protection Agency.

iii. *provide copies of any documents related to the fence installation or any other security measures implemented by Clean Harbors.*

See Exhibit 3.c attached hereto. Also see Response No. 3.c.ii above.

4. *Respondent's Operations (1987-present)*

Note: All questions in this section refer to Clean Harbors' operation of the facility unless otherwise indicated. Questions in this section refer to the period 1987 to present.

a. *Describe how Clean Harbors publicly announced its purchase of Murphy's*

Waste Oil Service, Inc.'s stock and its operation at the facility, including:

[Response by Scott Day and Jules B. Selden]

Clean Harbors issued various press releases announcing the purchase. The purchase was also noted in Clean Harbors' 1989 Annual Report and its Form 10-K, both of which were filed with the U.S. Securities and Exchange Commission.

i. how Clean Harbors represented itself and the facility in comparison to the old Murphy's Waste Oil Service, Inc.'s facility and management;

[Response by Scott Day]

No such representations were made. Clean Harbors purchased the stock of Murphy's Waste Oil Service, Inc., and the corporation continued to do business as Murphy's Waste Oil Service, Inc.

ii. how Clean Harbors marketed the facility; and

[Response by Scott Day]

Clean Harbors marketed the facility through press releases announcing its purchase of Murphy's Waste Oil Service, Inc., and it held an open house for its (Clean Harbors') customers.

iii. provide copies of any documents concerning the sale of the facility and Clean Harbors marketing of the facility's services.

[Response by Jules B. Selden and Scott Day]

Respondent objects to this request on the grounds that the term "any documents concerning the sale" is overly broad and vague, and could be interpreted to include documents not reasonably related to EPA's investigation and unrelated to the designation of the site as a Superfund site. Notwithstanding its objection, without waiving the same, a copy of the February 1989 Stock Purchase Agreement is attached hereto as Exhibit 4.a.iii.

With respect to documents relating to the marketing of the facility's services, Respondent objects to this request on the grounds that the request is overly broad and vague, is not reasonably related to EPA's investigation and is unrelated to the designation of the site as a Superfund site. Notwithstanding its objection, without waiving the same, Respondent states that, after diligent search, no historical documents responsive to this

Request can be located. Murphy's Waste Oil Service, Inc. does not separately market its services. References to its services may be found on the internet at www.cleanharbors.com.

b. *Please describe any arrangements between the City of Woburn (and its agencies) and Murphy's Waste Oil Service, Inc. for the provision of a waste motor oil tank at the facility, including:*

[Response by Scott Day]

Respondent knows of no particular arrangements. Prior to Clean Harbors' purchase of Murphy's Waste Oil Service, Inc. there was a 275-gallon underground storage tank ("UST") at the facility that was used for weekly waste oil collection days held for Woburn residents each Saturday. The tank was removed after Clean Harbors' purchase of Murphy's Waste Oil Service, Inc. in 1989, and an alternate tank was set up in the garage for the same use.

i. *any liabilities concerning the improper disposal of waste oil assumed by the City of Woburn under this arrangement;*

[Response by Scott Day]

Respondent has no such information.

ii. *any benefits Murphy's Waste Oil Service, Inc. derived from this use of the facility;*

[Response by Scott Day]

Respondent derived no particular benefit. The weekly collection day was performed as part of public relations and community service.

iii. any compensation Murphy's Waste Oil Service, Inc. received in return for providing this service; and

[Response by Scott Day]

None.

iv. *provide copies of any documents regarding the creation and management of this arrangement.*

[Response by Scott Day]

After diligent investigation, Respondent states that it has no

documentation responsive to this request.

c. *Provide copies of all lease agreements and related documents between Clean Harbors (a/k/a Murphy's Waste Oil Service, Inc.) and the Old Oil Realty Trust concerning the use of 250, 252, and/or 252R Salem Street.*

[Response by Jules B. Selden]

Clean Harbors is not and was not also known as Murphy's Waste Oil Service, Inc. The latter is a separate corporate entity. See Exhibit 4.c attached hereto.

d. *Describe Clean Harbors' (a/k/a Murphy's Waste Oil Service, Inc.) payment arrangement for the lease of the property at 252 and/or 252R Salem Street, Woburn, MA, including:*

[Responses by Jules B. Selden]

Clean Harbors is not also known as Murphy's Waste Oil Service, Inc. The latter is a separate corporate entity.

i. *the method of payment (e.g., cash, check, money order);*

Payment is made by check.

ii. *to whom those payments were made; and*

Payment is made to Old Oil Realty Trust. Until during or about June 1998 payments were sent to Joan Murphy, Trustee. From and after about July 1998, payments were sent to George P. Luker, Esquire, counsel for Old Oil Realty Trust.

iii. *the identity of the Murphy's Waste Oil Service, Inc. employee/agent in charge of accounting for and making such payments.*

Rent payments are handled by Clean Harbors Environmental Services, Inc.'s Finance Department's Accounts Payable Section on behalf of Murphy's Waste Oil Service, Inc.

e. *Describe any claims Clean Harbors (a/k/a Murphy's Waste Oil Service, Inc.) has made against Old Oil Realty Trust pursuant to Paragraph 14 of the February 1989 Lease Agreement between said parties. Please provide copies of any documents regarding or supporting these claims.*

[Response by Jules B. Selden]

Clean Harbors is not also known as Murphy's Waste Oil Service, Inc. Murphy's Waste Oil Service, Inc. ("Murphy's") is a separate corporate entity. During 1997 Murphy's made a claim against Old Oil Realty Trust for reimbursement of past and future RCRA Corrective Action and CERCLA expenditures. This claim led to two lawsuits, one in the Massachusetts Land Court (Misc. No. 241639) and the other in Middlesex Superior Court (Civil Action No. 97-5163). The documentation associated with these lawsuits is voluminous and a matter of public record. It has been agreed by EPA's Enforcement Counsel that in responding to this Request for Information the Respondent could just provide a copy of the Settlement Agreement. Exhibit 4.e attached hereto consists of copies of the Settlement Agreement that ended the aforesaid claim and associated litigation and a copy of the Limited Release that was executed by the parties.

f. *Describe the nature of Clean Harbors current business at the Murphy's Waste Oil Service, Inc. facility, including but not limited to, a brief description of the major services Clean Harbors provides. If the nature or size of these operations changed over time, describe those changes and the dates they occurred.*

[Response by Scott Day]

Clean Harbors does not conduct business at the facility. Such business is conducted by Murphy's Waste Oil Service, Inc. The facility takes in waste oil, processes it and sells the processed oil as specification used oil fuel.

Murphy's Waste Oil Service, Inc. also takes in used oil filters for recycling. The filters are crushed, waste oil is extracted and processed, and the filters are then sold as scrap metal.

g. *Describe Clean Harbors' procedure for the acceptance of waste oil at the facility, including:*

[Responses by Scott Day and Christopher Moran]

See Murphy's Waste Oil Service, Inc.'s Waste Analysis Plan attached hereto as Exhibit 4.g.

i. *what is done to the waste oil after it is received at the facility; and*

After waste oil is received at the facility, it is placed in tanks, gravity separated, filtered, and then sold.

ii. *where the waste oil is disposed or otherwise placed at the facility.*

Waste oil is not disposed at the facility. It is placed in tanks from receipt until sale.

h. *If particular types of waste oils are placed or disposed in separate or specific areas of the facility indicate:*

[Responses by Scott Day and Christopher Moran]

As previously stated, waste oils are not disposed at the facility. Upon being taken in at the facility, waste oils are placed in various tanks according to characteristics such as water content or solids content and then processed.

i. *the types of waste oils so placed or disposed;*

Used oil is taken in by the facility and placed in tanks. Waste oil is not disposed of at the facility.

ii. *where on the facility those waste oils are placed or disposed; and*

See Response No. h.i above.

iii. *how those waste oils are placed or disposed (e.g., facility operator crushed full pails with bulldozer or Respondent emptied full 55 gallon metal barrels into a pit and facility operator then crushed and buried the barrels).*

Waste oils are pumped from the transporting vehicle into the facility's tanks. Waste oil is not disposed at the facility, nor are containers such as drums, pails or barrels.

i. *If particular customers' waste oils are placed or disposed in separate or specific areas of the facility, indicate:*

[Response by Scott Day and Christopher Moran]

Customers' waste oils are not segregated. Waste oils received by the facility are commingled.

i. *the identity of each such customer;*

Not applicable.

ii. *the nature and chemical composition of each such customer's type of waste oil so placed or disposed;*

Not applicable.

iii. *the quantity of each such customer's waste oil so placed or disposed; and*

Not applicable.

iv. *where on the facility each such customer's waste oil is so placed or disposed.*

Not applicable.

j. If drums are placed or disposed at the facility, indicate:

i. *where they are placed or disposed;*
ii. *their condition when placed or disposed (e.g., if they are left open or closed, intact or punctured, whole or crushed); and*
iii. *if there was any consolidation, where the consolidation took place and what considerations were given to the consolidation practice.*

[Responses by Scott Day and Christopher Moran]

The facility is not allowed to take in customers' waste oil in drums. If a customer's waste oil arrives in drums, the drums are not off-loaded from the truck. The contents of the drums are pumped directly into the facility's tanks, and drums are then transported and disposed of off-site.

The facility itself sets up drums in two satellite accumulation areas, one in the garage and one on the tank farm truck pad. These drums are used solely to contain used absorbents from facility spills and/or drips. The drums and their contents are then transported and disposed of off-site.

k. If liquids are placed or disposed at the facility, indicate whether and how liquids are:

[Responses by Scott Day and Christopher Moran]

i. *mixed at the facility;*

Customers' waste oils arriving at the facility are co-mingled in the facility's tanks.

ii. *placed or disposed in a separate area(s); and*

Waste oils taken in by the facility are placed in various tanks according to

characteristics such as water content or solids content.

iii. placed or disposed in their containers or removed from their containers.

About 99.9% of the waste oil coming into the facility is in bulk form (i.e., in tankers). The waste oil is pumped from the tanker into the facility's tanks. As stated previously, the facility is not allowed to take in customers' waste oil in drums. If a customer's waste oil arrives in drums, the drums are not off-loaded from the truck. The contents of the drums are pumped directly into the facility tanks and the drums are then transported off-site.

l. Describe the methods used to clean up spills of liquid or solid materials, including but not limited to:

[Responses by Scott Day and Christopher Moran]

i. the types of materials spilled in Respondent's operations;

Waste oil.

ii. the materials used to clean up those spills;

Commercial absorbents such as pads and Speedy-Dri.

iii. the methods used to clean up those spills;

Manual labor.

iv. the method used to dispose of the materials used to clean up spills; and

The materials are placed in drums and transported off-site for disposal.

v. any Clean Harbors' affiliates involved in the transportation and disposal of materials used to clean up spills.

Clean Harbors Environmental Services, Inc. and Clean Harbors of Braintree, Inc.

m. Describe the drums, if any, that Clean Harbors sent to Whitney Barrel Company, Inc. for recycling/reclamation, including:

i. the time period during which drums were sent;
ii. the types of drums sent;
iii. the names and chemical composition of the materials stored in the drums;

iv. *the quantity of materials contained in the drums;*
v. *the quantity of drums of each material sent; and*
vi. *information on any labels included on the drums.*

[Response by Scott Day and Christopher Moran]

Neither Respondent nor Clean Harbors sent any drums to Whitney Barrel Company.

n. *Identify any other drum/barrel recycling facilities that Clean Harbors sent drums to, including:*

[Responses by Scott Day and Christopher Moran]
[Objections by Jules B. Selden]

i. *the name and address of each facility;*

Respondent objects to this request on the grounds that it is overly broad, unduly burdensome, and not reasonably related to EPA's investigation. Respondent further objects on the grounds that the term "Clean Harbors" would include activities totally unrelated to Murphy's Waste Oil Service, Inc. Notwithstanding said objection, and without waiving the same, Respondent states that it has no responsive information regarding pre-2001 drum shipments from Murphy's Waste Oil Service, Inc.'s facility. Drum shipments from Murphy's Waste Oil Service, Inc.'s facility for 2001 to present are attached in Exhibit 4.n.

ii. *the types of drums/materials sent to each facility (including the chemical composition of each material);*

Respondent objects to this request on the grounds that it is overly broad, unduly burdensome, and not reasonably related to EPA's investigation. Notwithstanding said objection, and without waiving the same, Respondent states that drums sent to recycling facilities were RCRA empty. Respondent further states that it has no responsive information regarding pre-2001 drum shipments and the types of drums shipped from 2001 to present are identified in Exhibit 4.n.

iii. *the quantity of materials contained in the drums;*

None. Drums sent to recycling facilities are RCRA empty.

iv. *the quantity of drums of each material sent to each facility; and*

See response immediately above.

v. *information on any labels included on the drums.*

None. Labels on such drums are obliterated prior to being sent to a drum recycling facility.

o. *Identify all Clean Harbors employees who currently have and those who have had knowledge of, or responsibility for the disposal, treatment, storage, or recycling of waste oils at the Murphy's Waste Oil Service, Inc. facility.*

[Response by Jules B. Selden, Scott Day and Christopher Moran]

Respondent objects to this request on the grounds that it is overly broad, unduly burdensome, and not reasonably related to EPA's investigation. Specifically, Respondent objects to the extent that the request includes individuals whose knowledge of such activities postdates the designation of the site as a Superfund Site and postdates the purchase of Respondent's stock by Clean Harbors. Notwithstanding said objection, and without waiving the same, Respondent states that the following individuals have knowledge that is or may be pertinent to EPA's investigation.

Scott Day

i. job title: Director of Oil Companies

ii. duties: Management oversight

iii. dates performing those duties: 1991 to present.

iv. supervisors for those duties: Michael Hatch
Brian House
Eugene Cookson
Terry Fellner

v. current position: Director of Oil Companies

vi. the nature of the information possessed by such individuals concerning Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility: Working knowledge of operations.

Christopher Moran

i. job title: General Manager, Murphy's Waste Oil Facility

ii. duties: Daily management of facility and employees.

iii. dates performing those duties: 1990 to present

iv. supervisors for those duties: Scott Day

v. current position: General Manager, Murphy's Waste Oil Facility

vi. the nature of the information possessed by such individuals concerning Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility: Working knowledge of customers, employees, drivers and operations.

Mark Sullivan

i. job title: Manager, Murphy's Waste Oil Facility

ii. duties: Managed all operations at the facility.

iii. dates performing those duties: February 6, 1989 to approximately November 1990.

iv. supervisors for those duties: Michael Hatch, Vice President

v. current position: Director, Technical Administration, MIS Department, Clean Harbors Environmental Services, Inc.

vi. the nature of the information possessed by such individuals concerning Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility: Information concerning the day-to-day activities at the facility during his tenure as Manager.

Thomas Covert

i. title: Operations Manager, Murphy's Waste Oil Facility

ii. duties: Daily management of drivers and facility operations

iii. dates performing those duties: 1991 to present

iv. supervisors for those duties: Christopher Moran

v. current position: Operations Manager, Murphy's Waste Oil Facility

vi. the nature of the information possessed by such individuals concerning

Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility: Working knowledge of Customers, drivers and facility operations

Alan S. McKim

i. title: Chairman, President and CEO of Clean Harbors, Inc.; President of Clean Harbors Environmental Services, Inc.;

ii. duties: Senior Executive of Clean Harbors, Inc. and Clean Harbors Environmental Services, Inc.

iii. dates performing those duties: 1980 through present

iv. supervisors for those duties: N/A

v. current position: See Paragraph "i" above.

vi. the nature of the information possessed by such individuals concerning Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility: Mr. McKim was involved in activities in the early to mid-1980's when Clean Harbors transported waste oil to the Murphy's Waste Oil Service, Inc. facility and recycled it on-site.

In addition to the above-named individuals, the following Clean Harbors Environmental Services, Inc. employees work or worked as technicians at the Murphy's Waste Oil Service, Inc. facility:

Current employee: Stanley H. Osinski

Former employees: David M. Benedict
James R. McSweeney
William E. Jackson
Jeffrey S. Benedict

p. *Identify all Clean Harbors employees who currently and those who have had knowledge or, or responsibility for collecting waste oil from customers and transporting the waste oil to the Murphy's Waste Oil Service, Inc. facility.*

[Response by Jules B. Selden, Scott Day and Christopher Moran]

Respondent objects to this request on the grounds that it is overly broad, unduly burdensome, and not reasonably related to EPA's investigation. Specifically, Respondent objects to the extent that the request includes individuals whose knowledge of or responsibility for such activities postdates the designation of the site as a Superfund Site and postdates the purchase of Respondent's stock by

Clean Harbors. Notwithstanding said objection, and without waiving the same, Respondent states that the following individuals have knowledge that is or may be pertinent to EPA's investigation.

For those individuals having knowledge, see Response No. 4.o above. Those individuals having knowledge and responsibility are as follows:

Francis A. Tampone (05/22/89 – present)
Fred Cogan (03/07/92 – present)
Joseph W. Walls (04/15/04 – present)
Anthony G. O'Neill (04/05/04 – present)
Steven Cadigan (11/04/91 – present)
Edward C. Brooks (04/05/93 – present)
Joseph G. Smith, Jr. (05/24/93 – present)
Scott P. Rose (04/18/94 – present)
Paul R. Beaulieu (10/04/04 – present)
Kenneth E. Blanchard (07/25/94 – present)
Frederick Sorrentino (01/01/87 – present)
John K. Fortin (10/02/95 – present)
Paul A. Malloy (11/20/95 – present)
Robert B. West (01/01/00 – present)
David P. Janos (05/17/99 – present)
John P. Ebbe (07/19/99 – present)
Brian D. Thompson (07/19/99 – present)
Adrian B. Crossley (05/21/02 – present)

David A. Invester (01/17/90 – 04/26/96)
Larry W. Gauldin (08/12/02 – 08/09/03)
George D. Perry (10/07/02 – 02/22/03)
Petar Stojanovic (05/129/03 – 08/28/04)
Charles E. Clarke (11/15/04 – 05/26/05)
Darren M. Lund (10/07/91 – 10/01/04)
Jay D. Setterlund 08/03/92 – 09/29/95)
Raymond J. Landry (06/07/93 – 04/29/00)
Paul M. Chiavaroli (07/26/93 – 07/02/99)
Robert S. Smalley (08/15/94 – 06/25/99)
Alan J. Schwager (05/08/95 – 03/20/04)
Jabie A. Roy (11/13/95 – 02/02/96)
Robert Harrell (03/25/96 – 01/08/00)
Ernest Lord (09/27/99 – 08/19/00)
Brian K. Ozenne (11/05/02 – 09/04/04)
William d. Cruz 06/05/00 – 02/03/04)
Francis K. LaPlume (10/30/00 – 11/12/02)
Richard Pakkila (11/12/01 – 06/24/03)
Kevin A. Hornstra 01/22/90 – 04/02/93

Bruce E. Feener (07/09/90 – 10/19/90)
Jack Gaffney (01/01/87 – 06/26/91)

i. title: Driver

ii. duties: Collection of used waste oil from Customers

iii. dates performing those duties: See above. The dates are dates of each respective employee's employment with Clean Harbors, part or all of which was as a driver for Murphy's Waste Oil Service, Inc.'s business unit.

iv. supervisors for those duties: Scott Day or Christopher Moran or Thomas Covert

v. current position: Driver

vi. the nature of the information possessed by such individuals concerning Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility: Collection of waste oil from customers and the transportation or shipping of the waste oil to the Murphy's Waste Oil service, Inc. facility.

q. *For the previous three responses, also provide each individual's:*
i. job title;
ii. duties;
iii. dates performing those duties;
iv. supervisors for those duties;
v. current position or, if such individual is no longer employed by Clean Harbors, the date of the individual's resignation; and
vi. the nature of the information possessed by such individuals concerning Clean Harbors waste management at the Murphy's Waste Oil Service, Inc. facility.

[Response by Jules B. Selden]

Respondent objects to this Request to the extent it references "the previous three responses" on the grounds that the request is applicable to only the previous two (2) responses. Notwithstanding said objection, and without waiving the same, Respondent states as follows:

See Responses 4.o and 4.p above

r. *Identify all Clean Harbors customers who currently and those who have in the past transported their own waste oil to the Murphy's Waste Oil Service, Inc. facility for disposal, treatment, storage, or recycling. For each customer, identify*

the dates during which the customer hauled its waste oil to the facility.

[Response by Jules B. Selden, Scott Day and Christopher Moran]

Respondent objects to this request on the grounds that it is unduly burdensome and is unrelated to the designation of the facility as part of the Wells G&H Superfund Site. Notwithstanding said objection, and without waiving the same, Respondent states that it has no list of said customers. Such customers' identification would appear on individual hazardous waste manifests. Said manifests number an average of 12,000 per year, and are available for inspection at the facility. Furthermore, all of said documentation is dated post February 6, 1989. As agreed by EPA's Enforcement Counsel, Respondent need only to describe and quantify the responsive documents in lieu of producing them.

s. *Describe how Clean Harbors managed pickups of waste oil, including:*

[Response by Scott Day and Christopher Moran]

i. the method for inventorying each type of waste; and

It is not clear as what EPA means by "inventorying". All of the waste oil accepted by the facility is co-mingled and placed in tanks according the characteristics of the waste oil (i.e., water content, solids content, etc.).

ii. the amount charged or the rate charged for the pickup of the waste oil.

[Response by Jules B. Selden, Scott Day and Christopher Moran]

Respondent objects to this request on the grounds that it is overbroad, burdensome, is not calculated to produce relevant information, and is unrelated to the designation of the facility as part of the Wells G&H Superfund Site. Notwithstanding said objection, and without waiving the same, Respondent states that its rates have varied over the years and are dependent upon the market and the customers' business. The rates charged to customers in each instances were documented on hundreds of thousands of invoices generated by or on behalf of respondent.

t. Describe Clean Harbors' procedures for accepting payment for the disposal/placement of waste oil at the facility, including but not limited to:

[Responses by Scott Day and Christopher Moran]
[Objections by Jules B. Selden]

i. *the types of payment received (e.g., cash, check, money order);*

Customers usually made and make payment in the form of cash or check. Wire transfers and credit card payments are also made on occasion.

iii. *the frequency of the payments that were received;*

Payments were and are received daily from customers.

iii. *from whom those payments were received;*

Payments are received from customers.

iv. *the total amount of those payments and the rates paid;*

Respondent objects to this request on the grounds that it is overbroad, burdensome, not calculated to produce relevant information, and is unrelated to the designation of the facility as part of the Wells G&H Superfund Site. See the initial response to Request No. 4.s.ii above.

v. *where those payments were made (e.g., at the facility, sent in mail, etc.); and*

Payments were and are made to drivers or mailed to the facility, or mailed to Clean Harbors Environmental Services, Inc.'s lockbox, or mailed to Clean Harbors Environmental Services, Inc.'s corporate office, or wired to Clean Harbors Environmental Services, Inc.'s bank account.

vi. *provide the identity of the Murphy's Waste Oil Service, Inc. employee/agent in charge of receiving and accounting for such payments.*

If payments are not made directly to Respondent's driver or facility, they are received by Clean Harbors Environmental Services, Inc., on behalf of Respondent.

u. *Provide copies of all documents (including but not limited to log books, dump slips, manifests, receipts, and invoices) created or kept by Clean Harbors related to the collection of materials (including, but not limited to, composition and quantity of materials) from customers whose materials were taken to the Murphy's Waste Oil Service, Inc. facility.*

[Response by Jules B. Selden, Scott Day and Christopher Moran]

Respondent objects to this request on the grounds that it is unduly burdensome, overbroad, is not calculated to produce relevant information, and is unrelated to

the designation of the facility as part of the Wells G&H Superfund Site. The documents requested are associated and filed with the hazardous waste manifests of which an average of 12,000 per year were generated. The supporting documentation such as receiving logs consists of thousands and thousands of pages, as each entry reflects a manifested load. All of said documentation relates to events occurring after February 6, 1989. As agreed by EPA's Enforcement Counsel, Respondent need only to describe and quantify the responsive documents in lieu of producing them.

v. *Identify all liability insurance policies held by Murphy's Waste Oil Service, Inc. and Clean Harbors. In identifying such policies, state:*

i. the name and address of each insurer and of the insured;
ii. the amount of coverage under each policy;
iv. the effective dates (policy period) for each policy;
v. whether the policy contains a "pollution exclusion" clause; and
vi. whether the policy covers sudden, non-sudden, or both types of accidents.

In lieu of providing this information, you may submit complete copies of all insurance policies that may cover the release or threatened release of hazardous materials at the Murphy's Waste Oil Service, Inc. facility.

[Response by Jules B. Selden and Sean K. McFaul]

Respondent and Clean Harbors object to this request to the extent that (a) it requests information on insurance policies which did not/do not cover the release or threatened release of hazardous materials at the Murphy's Waste Oil Service, Inc. facility and (b) it requests information on insurance policies which, although they covered or cover the release or threatened release of hazardous materials at the Murphy's Waste Oil Service, Inc. facility at specific times, do not cover historical releases at said facility that are the subject of CERCLA potential liability. Notwithstanding said objections, and without waiving the same, Respondent states as follows:

After a diligent search, Respondent is unable to locate any policies or provide information regarding such insurance policies that were or may have been in effect prior to the purchase of the stock of Murphy's Waste Oil Service, Inc. by Clean Harbors on February 6, 1989. For insurance policies in effect during or after February 6, 1989 see Exhibit 4.v appended hereto. [Note: The dark/blank spaces on Exhibit 4.v denote information that cannot be currently located or ascertained. Respondent reserves the right to seasonably supplement its response should responsive information be located.]

w. *In its response to a CERCLA Section 104(e) Information Request for the Beede Waste Oil Site dated December 27, 1999, Clean Harbors stated that it hired a*

former employee of Murphy's Waste Oil Service in approximately 1992. Identify this employee, including:

[Responses by Scott Day and Christopher Moran]

The name of the individual is Fred Cogan.

i. *the time period during which this individual was an employee of Murphy's Waste Oil Service; and*

Fred Cogan was an employee of Murphy's Waste Oil Service, Inc. prior to its acquisition by Clean Harbors on February 6, 1989. Upon said acquisition he left the Company. Mr. Cogan rejoined Clean Harbors Environmental Services, Inc. in 1992 to work at Murphy's Waste Oil Service, Inc.

ii. *the individual's day-to-day responsibilities.*

Mr. Cogan's day-to-day responsibilities were (and are) a collection driver. He drives to customers' places of business, picks up waste oil and delivers it to the facility.

x. *Identify whether Joan Murphy served as a consultant for Murphy's Waste Oil Service, Inc., including:*

[Responses by Jules B. Selden and Scott Day]

i. *the time period during which she provided consulting services;*

Joan Murphy was a consultant for a brief period of time subsequent to February 6, 1989, and was available for consultation thereafter. (Thereafter, she worked in the office of Murphy's Waste Oil Service, Inc., performing administrative tasks.)

ii. *the type of services she provided in this role;*

Mrs. Murphy assisted Clean Harbors in learning the details of Murphy's Waste Oil Service, Inc.'s business immediately after the acquisition of its stock by Clean Harbors.

iii. *if Joan Murphy's responsibility included marketing Murphy's Waste Oil Service, Inc. to the public; and*

Mrs. Murphy's responsibilities did not include marketing.

iv. *provide copies of any documents regarding or related to this arrangement and the services provided by Joan Murphy.*

See Exhibit 4.x.iv attached hereto.

y. *Identify all current or former Clean Harbors employees and all other persons who have not been identified in response to the previous questions who have any knowledge of or information about the subject matter of any of the foregoing questions.*

[Response by Jules B. Selden]

Respondent cannot identify any current or former Clean Harbors employees fitting the description. All "other persons" include the following:

- Joan E. Murphy, former owner of Murphy's Waste Oil Service, Inc. and current Trustee of Old Oil Realty Trust.; and
- Bill Murphy Waste Oil, Inc., n/f Woburn, Massachusetts
- John Carrigan, n/f Massachusetts DEP, Boston, MA
- Ralph Fine, n/f Massachusetts DEP, Boston, MA
- Jeffrey Chormann, n/f Massachusetts DEP, Boston, MA
- Peg Carson, n/f Massachusetts DEP, Northeast Region
- Mary Garren, n/f U.S. EPA Region I, Boston, MA

z. *Joan Murphy stated in her response to a CERCLA Section 104(e) Information Request dated February 9, 1988 that she had documentation for all of the Murphy's Waste Oil Service, Inc. small volume generators. Clean Harbors stated in its response to a CERCLA Section 104(e) Information Request dated December 27, 1999 for the Beede Waste Oil Site that a pre-transaction officer of Murphy's Waste Oil Service, Inc. prepared a list of customers for Clean Harbors after the sale. Identify those customers of Clean Harbors that were former Murphy's Waste Oil Service, Inc. customers. Provide any documentation Clean Harbors has regarding the pre-transaction customers of Murphy's Waste Oil Service, Inc. and any customer lists Clean Harbors has from late 1989 through the early 1990s.*

[Response by Scott Day and Christopher Moran]

To the best of Respondent's recollection, Joan Murphy prepared a list of the Murphy's Waste Oil Service, Inc. customers that existed prior to February 6, 1989. This list no longer exists. Upon the acquisition of Murphy's Waste Oil Service, Inc. on February 6, 1989, there were no customers. All former customers of Murphy's Waste Oil Service, Inc. had switched to another company, Bill Murphy Waste Oil, Inc. (which is totally unrelated to, and a competitor of, the Respondent and Clean Harbors). Respondent has no customer lists from the time in question.

aa. *Describe the process, if any, Clean Harbors used to contact former Murphy's Waste Oil Service, Inc. customers, including:*

[Responses by Scott Day and Christopher Moran]

i. *how these customers were contacted;*

To the best of Respondent's recollection, telephone calls and personal visits were made to the former customers.

ii. *how Clean Harbors characterized its relationship to Murphy's Waste Oil Service, Inc. in these communications; and*

Former customers (and everyone else to whom communications were made, including federal and state regulatory agencies) were told that Clean Harbors had purchased the stock of Murphy's Waste Oil Service, Inc. and that Murphy's Waste Oil Service, Inc. was a "Clean Harbors company".

iii. *provide copies of any letters sent to these customers or related information concerning the operation of the facility by Clean Harbors.*

Respondent has no such documentation.

5. *Information About Others*

[Responses by Jules B. Selden]

a. If you have information concerning the operation of the facility or the Site or the source, content or quantity of materials placed/disposed at the facility or the Site which is not included in the information you have already provided, provide all such information.

Pursuant to the corrective action provisions of the RCRA Part B Permit issued to Murphy's Waste Oil Service, Inc., site investigation activities were carried out at the site. All reports and data were submitted to the Massachusetts DEP and copies were submitted to USEPA. All of the information is in the public domain and available to USEPA.

b. If not already included in your response, if you have reason to believe that there may be persons, including persons currently or formerly employed by Respondent, who are able to provide a more detailed or complete response to any of these questions or who may be able to provide additional responsive documents, identify such persons and the additional information or documents that they may have.

Not Applicable.

c. If not already provided, identify all persons, including Respondent's current and former employees, who have knowledge or information about the generation, use, purchase, treatment, storage, disposal, placement or other handling of materials at, or transportation of materials to, the facility or the Site.

Not Applicable.

6. *Compliance with This Request*

a. Describe all sources reviewed or consulted in responding to this request, including but not limited to:

- *i. the names of all individuals consulted;*
- *ii. the current job title and job description of each individual consulted;*
- *iii. the job title and job description during the period being investigated of each individual consulted;*
- *iv. whether each individual consulted is a current or past employee of Respondent;*
- *v. the names of all divisions or offices of Respondent for which records were reviewed;*
- *vi. the nature of all documents reviewed; and*
- *vii. the locations where those documents reviewed were kept prior to review; and*
- *viii. the location where those documents reviewed are currently kept.*

[Response by Jules B. Selden]

i. Scott Day, Director of Oil Companies, Clean Harbors Environmental Services

Christopher Moran, General Manager, Murphy's Waste Oil Service, Inc. Facility

Mark Sullivan, Director, Technical Administration, MIS Department, Clean Harbors Environmental Services

Thomas Covert, Operations Manager, Murphy's Waste Oil Service, Inc. Facility

William F. O'Connor, Senior Vice President, Clean Harbors Environmental Services, Inc.

Sean K. McFaul, Risk Manager, Clean Harbors Environmental Services, Inc.

Alan S. McKim, Chairman, President and CEO of Clean Harbors, Inc.; President of Clean Harbors Environmental Services, Inc.

Charles J. McCreery, Senior Project Manager, Clean Harbors Environmental Services, Inc.

Steven Applebaum, Project Manager, Clean Harbors Environmental Services, Inc.

Paul Whiting, Vice President, Facilities, Clean Harbors Environmental Services, Inc.

William Connors, Vice President, Clean Harbors Environmental Services, Inc.

Monica Murphy-Rogers, Law Department Administrator, Clean Harbors Environmental Services, Inc.

ii. See Paragraph 6.i above.

iii. See Response 4.o above.

iv. All of the individuals identified in Paragraph 6.i above are current employees of Clean Harbors Environmental Services, Inc.

v. Records kept at the Murphy's Waste Oil Service, Inc. Facility in Woburn, Massachusetts and records kept (or stored off-site by) Clean Harbors Environmental Services, Inc.'s Corporate Headquarters in Braintree, Massachusetts were reviewed.

vi. Documents that were or had the potential to be responsive to EPA's requests for information were reviewed.

vii. The records were kept at the Murphy's Waste Oil Service, Inc. Facility in Woburn, Massachusetts, Clean Harbors Environmental Services, Inc.'s Corporate Headquarters in Braintree, Massachusetts, and off-site Clean Harbors' archives maintained by a commercial records storage company.

viii. See Paragraph 6.vii above.

MURPHY'S WASTE OIL SERVICE, INC.'S
RESPONSE TO CERCLA SECTION 104(e) INFORMATION REQUEST

LIST OF EXHIBITS

Exhibit No.	Title(s) of Document(s)
1.d	Clean Harbors, Inc. Notice of Annual Meeting (04/15/05)
2.d	Massachusetts DEQE Letter to William F. Murphy/Bill Murphy's Waste Oil (03/21/88)
3.a	Application for Permit; Woburn's Wetland Ordinance Notice of Intent (08/12/88) Woburn Conservation Commission Order of Conditions/Permit (09/15/88) Application for Building Permit (09/26/88) Building Permit (12/2/88) Preliminary Site Assessment (01/89) Letter to Woburn Conservation Commission Re: Amendment to Notice of Intent Submitted August 12, 1988 (02/13/89) Letter to Massachusetts DEQE; Request for DEQE for Short-Term Measures Approval (02/17/89) Letter to Woburn Conservation Commission; Temporary Stockpile Locations (03/06/89) Woburn Conservation Commission Order of Conditions/Permit Amendment (03/09/89) Massachusetts DEQE Letter; Approval of Proposal to Temporarily Stockpile Contaminated Soil (03/16/89) Field Summary Report No. 1; 03/16/89 Field Summary Report No. 2; 03/17/89 Field Summary Report No. 3; 03/20/89 Field Summary Report No. 4; 03/21/89 Field Summary Report No. 5; 03/22/89 Field Summary Report No. 6; 03/23/89 Field Summary Report No. 7; 03/24/89 Field Summary Report No. 8; 03/27/89 Field Summary Report No. 9; 03/28/89 Field Summary Report No. 10; 03/29/89 Field Summary Report No. 11; 03/30/89 Field Summary Report No. 12; 03/31/89 Field Summary Report No. 13; 04/03/89 Field Summary Report No. 14; 04/04/89 Field Summary Report No. 15; 04/05/89 Field Summary Report No. 16; 04/06/89 Field Summary Report No. 17; 04/07/89

	Field Summary Report No. 18; 04/10/89 Field Summary Report No. 19; 04/11/89 Field Summary Report No. 20; 04/12/89 Field Summary Report No. 21; 04/13/89 Field Summary Report No. 22; 04/14/89 Clean Harbors Memorandum re: Horizontal Diked Tank Location for the Murphy's Waste Oil Facility (06/06/89) Massachusetts DEQE Letter re: Facility Upgrade Storage Tanks (07/13/89) Hydrogeologic Characterization Report (02/01/94)
3.c	City of Woburn Notice of Variance (11/25/88)
4.a.iii	Stock Purchase Agreement (02/08/89)
4.c	Lease Agreement (02/08/89) Exercise of Option to Extend Lease (letter dated 10/13/93) Amendment 1 to Lease Agreement (04/01/98) Exercise of Option to Extend Lease (letter dated 10/07/98) Amendment 2 to Lease Agreement (02/01/99)
4.e	Settlement Agreement (04/01/98) Limited Release (06/18/98)
4.g	Waste Analysis Plan
4.n	Drum Disposal 2001 et seq.
4.v	Insurance Policy Information Spreadsheet
4.x.iv	Consulting Agreement dated February 8, 1989 Settlement Agreement dated April 1, 1998.

EXHIBIT 1.d

Clean Harbors
Environmental Services

April 15, 2005

Corporate Headquarters
1501 Washington Street
Braintree, Massachusetts 02185
Tel. 781-849-1800

To Our Fellow Shareholders:

On behalf of the Board of Directors, it is my pleasure to invite you to attend the 2005 Annual Meeting of Shareholders, to be held on Thursday, May 12, 2005 in Boston, Massachusetts.

Information about the Annual Meeting is presented on the following pages. In addition to the formal items of business, the meeting will include a report by members of management on Company operations. You will have an opportunity to ask questions of our management team if you attend the meeting in person.

Your vote is important. You can be sure your shares are represented at the meeting by completing, signing, and returning your proxy form in the enclosed envelope, even if you plan to attend the meeting. Sending in your proxy will not prevent you from voting in person at the meeting should you wish to do so.

*Thank you for your continued support of Clean Harbors. We look forward to seeing those share*holders who are able to attend the Annual Meeting on May 12.

Sincerely,

Alan S. McKim
Chairman of the Board

"People and Technology Creating a Better Environment"

CLEAN HARBORS, INC.
1501 Washington Street
Braintree, Massachusetts 02185

NOTICE OF ANNUAL MEETING OF SHAREHOLDERS

Notice is hereby given that the Annual Meeting of Shareholders of Clean Harbors, Inc. (the "Company"), will be held at 9:00 a.m., local time, on Thursday, May 12, 2005 at the Bank of America Conference and Training Center, Seventh Floor, The Berkeley Room, One Federal Street, Boston, Massachusetts, for the following purposes:

1. To elect two (2) Class I members of the Board of Directors of the Company to serve until the 2008 Annual Meeting of Shareholders and until their respective successors are duly elected;
2. To consider and act upon a proposal to amend and restate the Company's Articles of Organization (as amended to date) to (i) increase the number of authorized shares of common stock, $.01 par value, from 20,000,000 to 40,000,000, and (ii) revise the provisions of Article VI ("Other Lawful Provisions") of such Articles to conform to certain recent changes in Massachusetts corporate law;
3. To consider and act upon a proposal to amend the Company's 2000 Stock Incentive Plan to (i) increase the number of shares of common stock subject to the Plan from 1,500,000 to 2,000,000, and (ii) make certain other changes as described in the attached Proxy Statement;
4. To consider and act upon a proposal to amend the Company's Employee Stock Purchase Plan to increase the number of shares of common stock subject to the Plan from 1,000,000 to 1,500,000 shares; and
5. To consider and act upon such other business as may properly come before the meeting and any adjournment thereof.

Shareholders of record at the close of business on March 28, 2005, will be entitled to notice and to vote at the meeting.

You are cordially invited to attend the meeting. Whether or not you plan to attend the meeting in person, please date, sign and mail your proxy in the enclosed envelope to ensure that your shares will be represented at the meeting.

By order of the Board of Directors

C. Michael Malm, Secretary

April 15, 2005
Boston, Massachusetts

YOUR VOTE IS IMPORTANT. WHETHER OR NOT YOU PLAN TO ATTEND THE MEETING, PLEASE COMPLETE, DATE, SIGN AND RETURN THE ENCLOSED PROXY IN THE ENVELOPE PROVIDED.

CLEAN HARBORS, INC.
1501 Washington Street
Braintree, MA 02185

PROXY STATEMENT

This Proxy Statement and the accompanying Notice of Annual Meeting of Shareholders are being furnished in connection with the solicitation of proxies by the Board of Directors of Clean Harbors, Inc., a Massachusetts corporation (the "Company"), for use at the Annual Meeting of Shareholders of the Company to be held at the Bank of America Conference and Training Center, Seventh Floor, The Berkeley Room, One Federal Street in Boston, Massachusetts, on May 12, 2005, commencing at 9:00 a.m., local time, and any adjournment thereof.

PROXY SOLICITATION

Proxies in the accompanying form properly executed and received prior to the meeting and not revoked, will be voted as specified or, if no instructions are given, will be voted in favor of the proposals described herein. Proxies may be revoked at any time prior to the meeting by written notice given to the Secretary of the Company. The cost of this solicitation shall be borne by the Company. Solicitations of proxies by telephone or in person may be made by the Company's directors, officers or other employees, but any such solicitation will be carried on during working hours and for no additional cost, other than the time expended and telephone charges in making such solicitation. This Proxy Statement and the accompanying proxy form are scheduled to be mailed to shareholders beginning on or about April 18, 2005.

INFORMATION AS TO VOTING SECURITIES

The holders of the Company's Common Stock, $.01 par value ("Common Stock"), and Series B Convertible Preferred Stock, $.01 par value ("Series B Preferred Stock"), vote as a single group with respect to the election of directors and most other matters, including the three other matters proposed to be considered at the Annual Meeting. Each issued and outstanding share of the Company's Common Stock and Series B Preferred Stock is entitled to one vote. Only shareholders of record at the close of business on March 28, 2005 will be entitled to vote at the meeting. On March 28, 2005, there were 14,961,345 shares of Common Stock and 70,000 shares of Series B Preferred Stock outstanding. Votes cast by proxy or in person at the Annual Meeting will be counted by persons appointed by the Company to act as election inspectors for the meeting.

At the Annual Meeting, the shareholders will vote upon proposals to elect two Class I directors and to amend the Company's Articles of Organization, the Company's 2000 Stock Incentive Plan, and the Company's Employee Stock Purchase Plan. Election of the Class I directors will require the affirmative vote of the holders of a plurality of the total shares of Common Stock and Series B Preferred Stock represented at the meeting. Approval of each of the other three proposals will require the affirmative vote of a majority of the outstanding shares of Common Stock and Series B Preferred Stock, in each case with the holders of the Common Stock and Series B Preferred Stock voting as a single group, which are either outstanding (in the case of the amendment of the Articles of Organization) or represented at the meeting (in the case of the amendments to the two Plans). Votes withheld from any nominee for election as a director, abstentions on any of three other proposals, and broker "non-votes" will be counted as present or represented for purposes of determining the presence of a quorum for the meeting, but will have the effect of "against" votes. Broker "non-votes" occur when a broker holding shares in "street name" votes on one proposal, but does not vote on another proposal because the broker does not have discretionary voting power and has not received instructions from the beneficial owner of such shares. Usually, this would occur when brokers holding stock in "street name" have not received any instructions from clients, in which case the brokers (as holders of record) are permitted to vote on "routine" matters but not on "non-routine" matters. The election of directors is a "routine" matter, and brokers are

therefore able to vote shares held in "street name" on such election without receiving instructions from the beneficial holders of such shares. However, the other three proposals to be considered at the meeting are "non-routine" matters, and brokers are therefore not allowed to vote shares held in "street name" on any of such matters without receiving instructions from the beneficial holders of such shares. If such beneficial holders fail to provide to their brokers instructions on how such shares held in "street name" should be voted, the failure to provide such instructions therefore has the effect of "against" votes on such proposals.

DIRECTORS AND EXECUTIVE OFFICERS OF THE COMPANY

Name	Age	Position
Alan S. McKim	50	Chairman of the Board of Directors, President and Chief Executive Officer
John D. Barr	57	Director
John P. DeVillars	56	Director
John F. Kaslow	72	Director
Daniel J. McCarthy	73	Lead Director
John T. Preston	55	Director
Andrea Robertson	47	Director
Thomas J. Shields	58	Director
Lorne R. Waxlax	71	Director
Guy R. Adam	54	Vice President, Canadian Operations **
Mark S. Burgess	46	Executive Vice President, Administration and Chief Financial Officer
Eugene A. Cookson, Jr.	47	President, Site Services *
Jerry E. Correll	55	Senior Vice President of Sales *
George L. Curtis	46	Vice President, Transportation and Disposal Services *
William J. Geary	57	Executive Vice President and General Counsel *
Eric W. Gerstenberg	36	Senior Vice President, U.S. Disposal Operations *
Stephen H. Moynihan	49	Senior Vice President, Planning & Development
William F. O'Connor	55	Senior Vice President, Risk Management *
David M. Parry	39	Senior Vice President, Technical Services *
Carl D. Paschetag, Jr.	45	Vice President, Treasurer and Controller
Anthony Pucillo	48	Executive Vice President, Sales, Marketing and Central Services *
Michael J. Twohig	42	Senior Vice President and Chief Information Officer *
Brian P. Weber	37	Senior Vice President, Central Services *

* Officer of Clean Harbors Environmental Services, Inc., a wholly-owned subsidiary of the parent holding company, Clean Harbors, Inc.

** Officer of Clean Harbors Canada, Inc., a wholly-owned subsidiary of the parent holding company, Clean Harbors, Inc.

Alan S. McKim founded the Company in 1980 and is Chairman of the Board of Directors, President and Chief Executive Officer. He serves as a director of most of the Company's subsidiaries. Mr. McKim holds an MBA from Northeastern University. He has been a director of the Company since its formation.

0089-0063

His current term as a Class I director expires this year, and he is standing for re-election for a three-year term.

John D. Barr is the Vice Chairman of Papa Murphy's International, Inc., a privately owned company which is the largest take-and-bake pizza chain in the United States. From 1999 to 2004, he served as President and Chief Executive Officer of Automotive Performance Industries, a privately owned company providing a variety of logistical services to the major automotive manufacturers. From 1995 to 1999, he served as President and Chief Operating Officer and a Director of Quaker State Corporation, where he was involved in a number of acquisitions and divestitures prior to the acquisition of Quaker State Corporation by Pennzoil Company in 1999. From 1970 to 1995, Mr. Barr served in various capacities with the Valvoline Company, a subsidiary of Ashland, Inc., which culminated in an eight-year tenure as President and Chief Executive Officer. Mr. Barr serves as a director of United Auto Group, Inc., James Hardie Industries, N.V. and UST, Inc. Mr. Barr has served as a director of the Company since August 2003. His current term as a Class II director expires in 2006.

John P. DeVillars is the Managing Partner of BlueWave Strategies, LLC and BlueWave Capital, LLC, strategic advisory and merchant banking enterprises providing consulting and financial advisory services to environmental and renewable energy companies. From 2000 to 2003, Mr. DeVillars served as Executive Vice President of Brownfields Recovery Corporation, a privately owned company engaged in remediating, financing, and redeveloping environmentally impacted properties. From 1994 through 2000, Mr. DeVillars served as the New England Administrator for the U.S. Environmental Protection Agency. From 1991 to 1994, he was a Director of Environmental Advisory Services with Coopers & Lybrand, and from 1988 to 1991, he served as Secretary of Environmental Affairs for the Commonwealth of Massachusetts and Chairman of the Board of the Massachusetts Water Resources Authority. Mr. DeVillars holds a Masters in Public Administration from Harvard University and a Bachelor of Arts from the University of Pennsylvania and is a Visiting Lecturer in Environmental Policy at the Massachusetts Institute of Technology. He has served as a director of the Company since 2001. His current term as a Class III director expires in 2007.

John F. Kaslow is the retired Executive Vice President and Chief Operating Officer of New England Electric System ("NEES"). He also served as President of the NEES subsidiary, New England Power Company, and was a director of both companies. Following his retirement from NEES in 1990, he served as an Executive Advisor to the Electric Power Research Institute until 1998, and as an electric industry consultant. Mr. Kaslow is the Chairman of the Board of Doble Engineering Company and is a former director of the New England Council and Merrimack College. Mr. Kaslow holds a B.S. degree from the University of Massachusetts, Lowell, and is a graduate of the Advanced Management Program of the Harvard Business School. He has served as a director of the Company since 1991. His current term as a Class I director expires this year, and he has decided to retire from the Board and not stand for re-election for a three-year term.

Daniel J. McCarthy has been a Professor of Strategic Management at Northeastern University since 1972, prior to which he was President of Computer Environments Corporation, a computer services company. In the past, he served on five boards, most recently at Tufts Associated Health Maintenance Organization, as a member of its Audit Committee and as Chairman of its Investment Committee. Mr. McCarthy also served as director and member of the Audit and Compensation Committees of MANAGEDCOMP, Inc. Mr. McCarthy holds AB and MBA degrees from Dartmouth College and a DBA degree from Harvard Business School. He has served as a director of the Company since 1987. He was recently elected by the Board as Lead Director, an independent director who presides in executive sessions of the Board and serves as the shareholder contact person for the Board. His current term as a Class III director expires in 2007.

John T. Preston is President and Chief Executive Officer of Atomic Ordered Materials LLC and Senior Lecturer at the Massachusetts Institute of Technology ("MIT"). From 1992 through 1995, he

served as Director of Technology Development at MIT. From 1986 to 1992 he was Director of the MIT. Technology Licensing Office where he was responsible for the commercialization of intellectual property developed at MIT. Some of Mr. Preston's prior appointments include director or advisory positions for the Governor of Massachusetts, the U.S. Department of Defense, The National Aeronautics and Space Administration and the Technology Board of Singapore. He holds an MBA from Northwestern University and a BS in Physics from the University of Wisconsin. Prior to joining the Board of the Company, Mr. Preston served on the board of Clean Harbors Technology Corporation. He has served as a director of the Company since 1995. His current term as a Class II director expires in 2006.

Andrea Robertson is the Senior Vice President, Treasurer of Mastercard International. From 1996 to 2003, she held financial management positions with RR Donnelley & Sons Company, and from 1984 to 1996 with International Business Machines Corporation. From 1979 to 1982, she was an auditor with Coopers & Lybrand. She holds a BS in Accounting from Merrimack College and an MBA in Finance/ Management Information Systems from the University of Chicago. She has served as a director of the Company since June 2004. Her current term as a Class III director expires in 2007.

Thomas J. Shields is Managing Director of Shields & Company, Inc., an investment-banking firm that he co-founded in 1991. He is currently a director of B.J.'s Wholesale Club, Inc. Mr. Shields is a graduate of Harvard College and Harvard Business School. He has served as a director of the Company since 1999. His current term as a Class I director expires this year, and he is standing for re-election for a three-year term.

Lorne R. Waxlax served as Executive Vice President of The Gillette Company from 1985 to 1993, with worldwide responsibility for Braun AG, Oral-B Laboratories and Jafra Cosmetics International. He is currently a director of B.J.'s Wholesale Club, Inc. Mr. Waxlax holds a BBA degree from the University of Minnesota and an MBA degree from Northwestern University. He has served as a director of the Company since 1994. His current term as a Class II director expires in 2006.

Guy R. Adam is Vice President of Canadian Operations. Mr. Adam joined the Company in 2002. From 1980 to 2002, Mr. Adam held a variety of waste management operation positions with Safety-Kleen Corp. and predecessor companies including Facility Manager, Regional Director and Vice President for Eastern Canada. From 1974 to 1980, Mr. Adam held various process engineering and management positions for the ICI group of companies in Canada. Mr. Adam holds a Chemical Engineering Degree and a Management Diploma from the University of Montréal.

Mark S. Burgess is Executive Vice President, Administration and Chief Financial Officer. Mr. Burgess joined the Company in June 2003. From 2000 to 2002, Mr. Burgess served as Executive Vice President of Finance and Administration and Chief Financial Officer of JL French Automotive Castings, Inc. From 1991 to 2000, he was with Trailmobile Corporation, where he served as President of Trailmobile Canada Limited from 1999 to 2000. Mr. Burgess holds a Bachelor of Arts Degree from Dickinson College and an MBA in Finance from the Fuqua School of Business at Duke University.

Eugene A. Cookson, Jr. is President of the Site Services business unit. Mr. Cookson rejoined the Company in 1998 as Senior Vice President, Field Services & Operations. From 1996 to 1998, Mr. Cookson was the Vice President of Operations of The Flatley Group, a privately owned real estate management company, and he was in charge of major accounts at the Gartner Group. From 1991 to 1996, Mr. Cookson held a variety of management positions with the Company including Director of Sales, Director of the CleanPack Product Line and Field Services General Manager. Mr. Cookson holds a Masters Degree in Civil Environmental Engineering from Northeastern University.

Jerry E. Correll is Senior Vice President of Sales. Mr. Correll joined the Company in 2002. From 1986 to 2002 Mr. Correll held a variety of sales and operations management positions with Safety-Kleen Corp. including Regional Vice President—Central U.S. Operations, Vice President of Corporate Accounts and

Senior Vice President of Sales. Mr. Correll holds a Bachelor of Sciences Degree in Business Administration from the University of Tennessee and a JD from the Nashville School of Law.

George L. Curtis is Vice President, Transportation and Disposal Services. Mr. Curtis joined the Company in 1980, and has served in a variety of management positions the most recent of which were Vice President of Marketing and Vice President of Business Development. Mr. Curtis holds an MBA from Northeastern University and a Bachelor of Arts in Biology from Columbia University.

William J. Geary is Executive Vice President and General Counsel of the Company. He joined the Company in 1989 and he has served as Vice President of Government Relations and as Special Counsel for the Company. Prior to joining the Company, Mr. Geary served as the Commissioner of the Metropolitan Police and Chairman and Chief Executive Officer of the Metropolitan District Commission and previously served as Deputy Secretary of State and Special Assistant to The Governor of Massachusetts. Mr. Geary has been a consultant to numerous members of the U.S. Congress and The White House and holds a B.S. in Political Science & History from the University of Massachusetts/Boston, an MA in Government & Management from Northeastern University, and a JD from Suffolk University Law School. He was awarded a Loeb Fellowship in Advanced Environmental Studies at Harvard University. Mr. Geary is admitted to the Bar in Massachusetts and the District of Columbia as well as the Bar of the United States Supreme Court.

Eric W. Gerstenberg is Senior Vice President, US Disposal Operations. Mr. Gerstenberg rejoined the Company in June 1999 as Vice President of Disposal Services of Clean Harbors Environmental Services, Inc. From 1997 to 1999, Mr. Gerstenberg was the Vice President of Operations for Pollution Control Industries, a privately owned environmental services company. From 1989 to 1997, Mr. Gerstenberg held a variety of positions with the Company including General Manager of the Natick, Baltimore and Chicago facilities. Mr. Gerstenberg holds a Bachelor of Science degree in Engineering from Syracuse University.

Stephen H. Moynihan has served as an officer of either the Company and one or more of its subsidiaries since 1987. In 1996, he was appointed Senior Vice President Planning and Development, prior to which he served as Vice President and Treasurer. Mr. Moynihan served as Vice President of Strategic Planning of Clean Harbors Environmental Services, Inc. from 1990 until 1995. Prior to joining Clean Harbors, Mr. Moynihan was Audit Manager for Gerald T. Reilly and Company, a public accounting firm. Mr. Moynihan holds a BS degree in Accounting from Bentley College.

William F. O'Connor has served as Senior Vice President of Risk Management, after rejoining the Company in December 2002. Previously, Mr. O'Connor was Vice President of William Gallagher and Associates, an insurance broker that he joined in April of 2000. From 1989 to 2000 Mr. O'Connor held a variety of roles at the Company, the last being as Vice President of Human Resources and Risk Management.

David M. Parry is Senior Vice President, Technical Services. Mr. Parry joined the Company in 1988 and he has served in a variety of management positions including Senior Vice President of Eastern Operations. He has also previously held the positions of Regional Vice President, Northeast Region, District Sales Manager, Regional Manager of CleanPack® and T&D Services, Plant Manager and CleanPack Chemist. Mr. Parry holds a Bachelor of Science degree in Engineering from the Massachusetts Maritime Academy.

Carl D. Paschetag, Jr. joined the Company as Vice President, Treasurer and Controller in 1997. He also serves as Vice President and Treasurer of most of the Company's subsidiaries. From 1994 through 1997, Mr. Paschetag was the Controller of Cambridge Energy Research Associates, a privately owned international management consulting company. From 1987 through 1994, Mr. Paschetag held a variety of management positions with Draka Holdings B.V., a publicly held company traded on the Amsterdam

Exchange. Prior to that, Mr. Paschetag worked for KPMG Peat Marwick, an international accounting firm. He holds a BBA in Accounting from The University of Texas.

Anthony Pucillo is Executive Vice President, Sales, Marketing and Central Operations. Mr. Pucillo joined the Company in April 2003. From 2000 to 2002, Mr. Pucillo served as President, E-Business, for the America's Region of Siemens Corporation, a global lighting, medical products, automation, information and communication company, where Mr. Pucillo was responsible for Siemens' e-business efforts throughout North and South America. From 1995 to 2000, he was President and a member of the Board of Directors of OSRAMSYLVANIA LTD., a Siemens subsidiary headquartered in Ontario, Canada. From 1994 to 1995, he was the President of Tactician Corporation, a privately held software corporation headquartered in Andover, Massachusetts, and from 1985 to 1994, he held a variety of positions with GTE Product Corporation which is a division of GTE, Inc., a publicly-held lighting and components company which was acquired by Siemens in 1993. Mr. Pucillo holds a Bachelor of Arts degree from Harvard University and an MBA from Columbia University School of Business.

Michael J. Twohig is Senior Vice President and Chief Information Officer. Mr. Twohig joined the Company in 1999 and has served in a variety of management positions the most recent of which was the Vice President of Strategic Initiatives. From 1996 to 1999 he served a Vice President of Business Operations for Internet Commerce Expo, an International Data Group company. Prior to that he was the Controller for Tocco Corporation, a Building Systems company. Mr. Twohig holds an MBA from Rivier College and a Bachelor of Science degree in Accounting from Boston College.

Brian P. Weber is Senior Vice President, Strategic Initiatives. Mr. Weber joined the Company in 1990. He has served in a variety of management positions with the Company including, prior to his current position, Senior Vice President of Central Services, and Vice President, Technical Services. Mr. Weber holds a BS degree in Business Management from Westfield State College.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The table below describes the "beneficial ownership" of the Company's Common Stock as of March 1, 2005, by (i) each of the Company's directors and the five current executive officers who were the most highly compensated during the most recently completed fiscal year, and (ii) all of the Company's current directors and executive officers as a group. SEC Rule 13d-3 under the Securities Exchange Act of 1934 defines "beneficial ownership" to mean the right to vote or exercise investment power, or to share in the right to vote or exercise investment power, with respect to the specified securities, whether or not the specified person has any economic interest in the specified securities. No

director or executive officer beneficially owns any Series B Preferred Stock. Except as otherwise indicated below, the named owner has sole voting and investment power with respect to the specified shares.

Name of Beneficial Owner	Amount and Nature of *Beneficial Ownership (1)*	Percent of Class
Alan S. McKim	4,165,762(2)	28.1%
John D. Barr	8,778	*
John P. DeVillars	8,000	*
John F. Kaslow	20,300(3)	*
Daniel J. McCarthy	22,200(4)	*
John T. Preston	7,000	*
Andrea Robertson	2,000	*
Thomas J. Shields	6,500	*
Lorne R. Waxlax	86,200(5)	*
Mark S. Burgess	21,000	*
Gene A. Cookson	69,600	*
Eric W. Gerstenberg	26,000	*
Anthony Pucillo	16,000	*
All current directors and executive officers as a group (23 persons)	4,783,610	31.5%

* Less than 1%

(1) Beneficial ownership has been determined in accordance with Securities and Exchange Commission regulations and includes in the numerator and denominator used for the calculation of certain of the percents of total outstanding, as appropriate, the following number of shares of the Company's Common Stock which may be acquired under stock options which are exercisable within 60 days of March 1, 2005: Mr. Barr (3,778 shares), Mr. DeVillars (8,000 shares), Mr. Kaslow (16,000 shares), Mr. McCarthy (11,000 shares), Mr. Preston (4,000 shares), Ms. Robertson (2,000 shares), Mr. Shields (6,000 shares), Mr. Waxlax (20,000 shares), Mr. Burgess (21,000 shares), Mr. Cookson (66,000 shares), Mr. Gerstenberg (23,000 shares), Mr. Pucillo (16,000 shares) and all current directors and executive officers as a group (403,357 shares).

(2) Includes 200,000 shares subject to a three-year variable forward prepaid agreement dated December 31, 2002 between Mr. McKim and CSFB Cayman International, LDC as to which Mr. McKim retains sole voting power during the period of the agreement.

(3) Includes 1,000 shares held in a living trust for Mr. Kaslow's benefit and 300 shares held in a living trust for the benefit of his wife as to which Mr. Kaslow shares voting and investment power.

(4) Includes 200 shares owned by Mr. McCarthy's son as to which Mr. McCarthy shares voting and investment power.

(5) Includes 63,200 shares held in a living trust for Mr. Waxlax's benefit and 3,000 shares owned by Mr. Waxlax's son as to which Mr. Waxlax shares voting and investment power.

To the Company's knowledge, as of March 1, 2005, no person or entity "beneficially owned" (as that term is defined by the Securities and Exchange Commission) 5% or more of the total 14,805,615 shares of Common Stock or 70,000 shares of Series B Preferred Stock then outstanding, except as shown in the following table. Except as otherwise indicated below, the Company understands that the named person or entity has sole voting and investment power with respect to the specified shares. The holders of the

Company's Common Stock and Series B Preferred Stock vote as a single class with respect to the election of directors and most other matters.

Name and Address	Number of Shares	Percent and Class of Stock
Alan S. McKim Clean Harbors, Inc. 1501 Washington St. Braintree, MA 02184	4,165,762(1)	28.1% Common Stock
Kern Capital Management, LLC 114 West 47th Street Suite 1926 New York, NY 10036	1,174,400(2)	7.9% Common Stock
Stephen Feinberg 450 Park Avenue 28th Floor New York, NY 10022	1,229,250(3)	7.7% Common Stock
Tontine Capital Management, L.L.C. 55 Railroad Avenue, 3rd Floor Greenwich, CT 06830	1,049,175(4)	7.1% Common Stock
Gilder, Gagnon, Howe & Co. LLC 1775 Broadway, 26th Floor New York, NY 10019	820,675(5)	5.5% Common Stock
Grandview Capital Management, LLC 820 Manhattan Avenue Suite 200 Manhattan Beach, CA 90266	52,876	75.5% Series B *Preferred Stock*
Bankers Trust Company P.O. Box 704 Bowling Green Station New York, NY 100084	15,000	21.4% Series B Preferred Stock

(1) Includes 200,000 shares subject to a three-year variable forward prepaid agreement dated December 31, 2002 between Mr. McKim and CSFB Cayman International, LDC as to which Mr. McKim retains sole voting power during the period of the agreement.

(2) Based upon the Schedule 13G as amended through December 31, 2004, filed with the SEC, Kern Capital Management, LLC, is deemed to have beneficial ownership of 1,174,400 shares of Common Stock. As the principals and controlling members of Kern Capital Management, LLC, Robert E. Kern Jr. and David G. Kern may also be deemed beneficially to own the shares held by Kern Capital Management, LLC.

(3) Based upon the Schedule 13G as amended through November 30, 2005, filed with the SEC, and the Company's records as to outstanding warrants, Stephen Feinberg is deemed to have beneficial ownership of 1,229,250 shares of Common Stock, all of which are held by investment entities for which Mr. Feinberg possesses sole voting and investment power. Of such shares, 1,209,250 are issuable upon exercise of a warrant held by one such investment entity. Those warrant shares have been included in both the numerator and the denominator used for purposes of calculating the percentage of the total outstanding Common Stock beneficially owned by Mr. Feinberg.

(4) Based upon the Schedule 13G as amended through December 31, 2004, filed with the SEC, Tontine Capital Management, L.L.C. is deemed to have beneficial ownership of 1,049,175 shares of Common Stock, all of which are held by Tontine Capital Partners, L.P., which respect to which Tontine Capital Management, L.L.C. shares voting and investment power. As the managing member of Tontine Capital Management, L.L.C., Jeffrey Gendell may also be deemed beneficially to own the shares held by Tontine Capital Management, L.L.C.

(5) Based upon the Schedule 13G as amended through December 31, 2004, filed with the SEC, Gilder, Gagnon, Howe & Co. LLC is deemed to have beneficial ownership of 820,675 shares of Common Stock, which are owned by investment accounts over which Gilder, Gagnon, Howe & Co. LLC exercises sole voting and shared investment power.

ELECTION OF DIRECTORS
(Item 1 on Proxy Form)

The Board of Directors of the Company is currently composed of nine directors classified into three classes. There are now three Class I directors, three Class II directors, and three Class III directors. One class of directors is elected each year for a term of three years. The term of the Class I directors Alan S. McKim, John F. Kaslow and Thomas J. Shields, will expire at the 2005 Annual Meeting. On March 10, 2005, Mr. Kaslow notified the Board of Directors that he has decided to retire from the Board and not stand for re-election to an additional three-year term. Mr. Kaslow, who has served as a director since 1991, stated that his decision not to stand for re-election was for personal reasons and was not the result of any disagreement with the Company. In light of this notification from Mr. Kaslow, the Board of Directors has fixed the number of Class I directors to be elected at the Annual Meeting at two and nominated Messrs. McKim and Shields to continue to serve as Class I directors.

Elections of each of the Class I directors will require the affirmative vote of the holders of a plurality of the total shares of Common Stock and Series B Preferred Stock represented at the Annual Meeting, voting as a single group. Unless otherwise specified therein, shares represented by the enclosed proxy will be voted to elect Alan S. McKim and Thomas J. Shields as Class I directors of the Company for a three-year term, until the 2008 Annual Meeting of Shareholders and until their respective successors shall be duly elected. In the event that either or both of the nominees is unable to stand for election (which event is not now contemplated), the holders of the enclosed proxy will vote for the election of a nominee or nominees acceptable to the remaining members of the Company's Board of Directors. The Board of Directors recommends that shareholders vote "FOR" the election of Messrs. McKim and Shields as Class I directors.

Compensation of Directors

According to the Company's 2000 Stock Incentive Plan approved by shareholders at the 2000 Annual Meeting, each director who is not an employee of the Company receives upon election to the Board a grant of a five-year, non-qualified stock option to purchase that number of shares of the Company's Common Stock determined by multiplying 2,000 by the number of years or fraction thereof for which the director shall be elected, at the market price of the Common Stock on the date of election, vesting immediately as to the first 2,000 shares of any award and as to an additional 2,000 shares on each anniversary of the date of election. Awards to directors appointed to fill a vacancy on the Board for less than one year are prorated. During 2004, upon their election as directors to serve for a term of three years, Messrs. DeVillars and McCarthy, the only non-employees elected as directors during such year, received options for 6,000 shares at the market price of $8.08 per share. In addition, during 2004, upon her appointment as a director to serve for the remaining portion of a three year term, Ms. Robertson, the only non-employee appointed as a director during such year, received options for 5,833 shares at the market price of $7.52 per share.

The Company's policy during 2004 was to pay each director who is not an employee an annual retainer fee of $25,000 plus $2,000 for each board meeting attended, $1,000 for each committee meeting attended and $1,000 for meetings conducted by telephone conference call. The Company also pays non-employee directors an additional $1,000 for serving on the Audit Committee, Compensation Committee or Corporate Governance Committee, $7,500 for serving as Chairman of the Audit Committee, and $5,000 for serving as Chairman of the Compensation Committee or Corporate Governance Committee. The Company also pays an additional $5,000 to the Lead Director. Total fees paid to non-employee directors in 2004 were as follows: Mr. Barr, $41,000, Mr. DeVillars $37,000, Mr. Kaslow $71,500, Mr. McCarthy $64,500, Mr. Preston $49,000, Ms. Robertson $25,000, Mr. Shields $49,000, and Mr. Waxlax $56,000. Directors are also reimbursed for the expenses they incur in connection with service on the Board and its committees.

Board Committees and Meetings

The Board of Directors is the ultimate decision making body of the Company except with respect to those matters reserved by law or the By-laws of the Company to the shareholders. The Board is responsible for selection of the Chief Executive Officer and for advising the Chief Executive Officer with respect to the selection of a management team, providing oversight responsibility and direction to management and evaluating the performance of management on behalf of the shareholders.

During 2004, the Board held seven meetings of which two were held by conference call. All directors attended at least 75% of each of the meetings of the Board and the committees on which they served. All members of the Board attended the annual meeting of shareholders.

The Board has established three committees, the Audit Committee, Compensation Committee and Corporate Governance Committee. The Board has determined that a majority of its members are "independent directors" as defined by the rules of the Nasdaq Stock Market. The Board has also determined that each of the committees of the Board consists solely of non-employee "independent directors," as defined by the rules of the Nasdaq Stock Market which are applicable to membership on such committees, and that each member of each committee is free of any relationship that would interfere with his ability to exercise independent judgment. In addition, there are no interlocks between the members of the Compensation Committee and the compensation committee of any other entity. Based upon their training and experience as described above under "Directors and Executive Officers of the Company," the Board has also determined that each of Andrea Robertson and Thomas J. Shields qualifies as an "audit committee financial expert," as defined by Item 401(h) of Regulation S-K of the Securities Exchange Act of 1934. All members of the committees are appointed by the Board, and each committee operates under a charter approved by the Board. These charters are available on the Company's website at *www.cleanharbors.com*.

Audit Committee

During 2004, John Kaslow, Chairman, John Preston and Thomas Shields served on the Audit Committee for the full year, and Andrea Robertson became a member of the Audit Committee following her appointment to the Board of Directors in June 2004. The primary functions of the Audit Committee are to recommend the selection of independent public accountants, to review the scope of and approach to audit work, and to meet with and review the activities of the Company's internal accountants and the independent public accountants. During 2004, there were ten meetings of the Audit Committee, of which four were held by conference call.

Compensation Committee

During 2004, Daniel McCarthy, Chairman, John Barr and Lorne Waxlax served on the Compensation Committee for the entire year. The primary responsibilities of the Compensation Committee are the recommendation of a compensation package for the Chief Executive Officer to the full Board of Directors, review and approval of other senior executive officer compensation, review and approval of corporate management compensation policies and management of the Company's equity incentive and employee stock purchase plans. The Committee also works with the Chief Executive Officer in developing annual goals for the Chief Executive Officer and his senior executive staff and evaluates their success in achieving those goals at the end of each year. The Compensation Committee held five meetings during 2004, of which one was held by telephone conference call.

Corporate Governance Committee

During 2004, Lorne Waxlax, Chairman, John Kaslow and Daniel McCarthy served on the Corporate Governance Committee. The primary responsibilities of the Corporate Governance Committee are to serve as a nominating committee for directors and board officers, recommend committee structures,

review director compensation, monitor the Company's social responsibility programs and assist the Board in reviewing the performance of the Board and the Chief Executive Officer. The Committee met four times during 2004. None of these meetings were held by conference call.

The Corporate Governance Committee works with the Board on an annual basis to determine the appropriate characteristics, skills and experience for the Board as a whole and its individual members. In evaluating the suitability of individual Board members, the Board takes into account many factors which include, in addition to high personal and professional ethics, integrity and values, particular industry or geographic experience, understanding of the business of the Company, particular disciplines such as finance, marketing, sales and management, and personal, educational and professional background. The Board evaluates each individual in the context of the Board as a whole, with the objective of recommending directors who provide a diversity of experiences and will best perpetuate the success of the business and exercise sound judgment in representing the interests of shareholders. In determining whether to recommend a director for re-election, the Committee also considers the director's past attendance at meetings and contributions to the activities of the Board. In the past, nominees for the Board have been submitted by members of the Board. However, the Corporate Governance Committee will also consider shareholder recommendations for Board candidates. For the 2006 annual meeting of shareholders, names of potential Board candidates should be received no later than January 15, 2006. The Committee will use the same evaluation method described above in assessing candidates recommended by shareholders. The name of any recommended candidate for director, together with a brief biography, a document indicating the candidate's willingness to serve, and evidence of the nominating person's ownership of Company stock, should be sent to the Chairman, Corporate Governance Committee, at the address of the Company.

Shareholders and other interested parties may communicate with the Board by mail or electronically. To communicate with the Board, correspondence should be addressed to Daniel J. McCarthy, Lead Director, c/o General Counsel and Assistant Secretary, Clean Harbors, Inc., PO Box 859048, 1501 Washington Street, Braintree, MA 02185-9048, or gearyb@cleanharbors.com. All correspondence received as such will be opened by the office of the General Counsel for the sole purpose of determining whether the contents represent a message to directors. Any communication that is not in the nature of advertising, promotion of a product or service, or patently offensive material, will be forwarded promptly to the Lead Director for distribution to the other members of the Board.

Compensation Committee Report

The Compensation Committee of the Board of Directors (the "Committee") consists of three independent directors whose responsibilities include the recommendation to the full Board of Directors of a compensation package for the Chief Executive Officer; review and approval of other senior executive officer compensation; review and approval of corporate management compensation policies; and management of the Company's equity incentive and employee stock purchase plans.

Executive Compensation

The fundamental philosophy of the Committee regarding executive compensation is to offer competitive compensation opportunities and to align individual compensation with the goals, values and priorities of the Company. Compensation for executive officers currently consists of three basic elements: base compensation and benefits, salary "at-risk", and awards of long-term equity incentives through non-qualified stock options. In addition, in 1998 the Company instituted an Executive Retention Plan in order to help retain certain key employees.

Base compensation and benefits for 2004 were determined based upon a current analysis and previous studies of comparable industry groups. Bonuses for the Chief Executive Officer were to be based on the attainment of specific objectives. For other senior managers, the Committee approved an

incentive bonus programs for 2004. The Company's 2004 Management Incentive Program ("MIP") covered 154 management positions. Under the MIP, an individual could earn a bonus based upon Company-wide success in meeting management's goals, based upon thresholds of achievements of earnings before interest, taxes, depreciation and amortization ("EBITDA"), and certain individuals were eligible to receive an additional bonus based on specific goals and objectives. Payouts under the MIP for 2004 totaled $2,295,219 and payments to individual participants ranged from $74 to $98,920.

The final element of compensation for executives is long-term equity incentives through grants of non-qualified stock option awards. Awards are designed to align the interests of executives with those of shareholders of the Company and to encourage long-term retention of executives through periodic vesting. Awards were made during 2004 at current market prices, and most options vest as to 20% at the end of each successive year of service. During 2004, options were awarded to two employees of the Company. Individual awards were 5,000 shares each, based upon the individual's position and ability to positively impact Company results, adjusted according to his or her performance rating. The Chief Executive Officer, Alan S. McKim, did not receive any options during 2004, nor during any previous year.

In 1998, the Company instituted an Executive Retention Plan (the "Retention Plan"), which currently covers 13 members of senior management. The Retention Plan provides for severance payments for terminations other than for "cause" in exchange for one-year non-competition agreements. For terminations other than for cause and not related to a change in control, the Retention Plan calls for the payment of up to one year of base salary at the rate in effect at the time of termination of employment, payable periodically in accordance with the Company's normal executive salary payment polices, plus up to one year of continued medical, dental, life insurance and other benefits, if any, available to the executive at the time of his or her termination of employment.

Under the Retention Plan, in the event of a Change in Control (as defined in the Plan), the executive will receive severance benefits equal to one year's base salary and benefits if his or her employment with the Company is terminated for any reason within 30 days after a Change in Control. Also, an executive shall be entitled to receive the same severance benefits if the executive does not receive a position equal to the position that the executive held prior to the Change in Control or if the primary work location is not within 30 miles of such location prior to the Change in Control. If the executive accepts a position with the successor corporation after the Change in Control, and, within two years of the Change in Control, the executive's position changes so as not to be equal to his or her position prior to the Change in Control, then the executive shall be entitled to the same severance benefits. Under the Retention Plan, one year's base salary is payable within 30 days after termination of employment relating to a Change in Control.

Chief Executive Officer Compensation

During 2004, base compensation of the Chief Executive Officer, Alan S. McKim, was $450,000. Mr. McKim's incentive compensation for 2004 was to be based upon the Company's achievement of a base line EBITDA goal, refinancing and reduction of the Company's debt, improvement of health and safety, improvement of the collection of receivables, and various other goals. Based upon his accomplishments during 2004, Mr. McKim was awarded a bonus of $400,000.

Compliance with Internal Revenue Code Section 162(m)

Section 162(m) of the Internal Revenue Code, enacted in 1993, generally disallows a tax deduction to publicly held companies for compensation paid to certain executive officers, to the extent that annual compensation paid to any officer exceeds $1 million. Compensation paid to the Company's executive officers during the 2004 fiscal year did not exceed the $1 million individual limit. However, in order to facilitate the Company's future ability to fully deduct compensation income paid to its executive officers, the Compensation Committee has recommended amending the Company's 2000 Stock Incentive Plan so as to permit the Committee to structure stock option grants and restricted stock awards in a manner intended to allow deductions under Code Section 162(m) unless the Compensation Committee determines that such compliance would not be in the best interests of the Company or its shareholders.

Members of the Committee
Daniel J. McCarthy, Chairman
John D. Barr
Lorne R. Waxlax

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Compensation of Executive Officers

The following table sets forth compensation information for (i) the Chief Executive Officer, and (ii) the four other most highly compensated executive officers of the Company and its subsidiaries that were serving as executive officers at the end of 2004.

Summary Compensation Table

Name and Principal Position	Year	Annual Compensation Salary	Bonus	Other	Long-Term Compensation (1) Awards: Securities Underlying Options Granted (shares)	Payouts	All Other Compensation (2)
Alan S. McKim	2004	$450,000	$400,000	$360	—	—	$ —
Chairman of the Board,	2003	450,000	—	360	—	—	—
President and Chief	2002	450,000	—	360	—	—	—
Executive Officer							
Gene A. Cookson	2004	$300,000	$166,928	$360	—	—	$ —
President, Site Services *	2003	300,000	—	360	—	—	—
	2002	240,625	—	360	—	—	—
Mark S. Burgess (3)	2004	$300,000	$366,928	$360	—	—	$ —
Executive Vice President and	2003	161,538	25,000	110	105,000	—	126,867
Chief Financial Officer	2002	—	—	—	—	—	—
Eric W. Gerstenberg	2004	$200,000	$127,952	$216	—	—	$ —
Senior Vice President, U.S.	2003	200,000	—	216	40,000	—	—
Disposal Operations *	2002	152,500	14,782	192	—	—	—
Anthony Pucillo (4)	2004	$245,000	$295,491	$360	—	—	$ —
Executive Vice President,	2003	175,426		240	40,000	—	—
Sales, Marketing and Central	2002	—	—	—	—	—	—
Operations *							

* Clean Harbors Environmental Services, Inc.

(1) No restricted stock or stock appreciation rights were awarded during 2004, or held at the end of 2004. The Company does not have a long-term incentive plan or pension plan.

(2) Consists of relocation costs for Mr. Burgess paid in 2003.

(3) Mr. Burgess commenced active employment with the Company in June 2003. Mr. Burgess was paid a signing bonus of $25,000.

(4) Mr. Pucillo commenced active employment with the Company in April 2003.

Stock Option/SAR Grants

During 2004, there were no stock options or stock appreciation rights ("SARs") granted to individuals named in the Summary Compensation Table.

Under the terms of the Company's equity incentive plans, the Compensation Committee retains discretion, subject to plan limits, to modify the terms of outstanding options and to reprice the options. During 2004, no stock options were repriced.

Option Exercises and Year-End Option Values

The following table shows for the individuals named in the Summary Compensation Table the aggregate number of any options exercised, the value realized (market value of underlying shares on exercise minus the exercise price), the number of unexercised options held by each individual at year-end, and the value of unexercised in-the-money options at year-end. The high and low sales prices of the Company's Common Stock in 2004 were $15.09 and $6.45. The last sale price at year-end was $15.09. No stock appreciation rights were exercised during 2004 or held by such individuals at year-end.

Option Exercises in 2004

Name	Number of Shares Acquired on Exercise	Value Realized	Number of Securities Underlying Unexercised Options at Year-End		Value of Unexercised In-the-Money Options at Year-End	
			Exercisable	Unexercisable	Exercisable	Unexercisable
Alan S. McKim	—	$ —	—	—	$ —	$ —
Gene A. Cookson	—	—	72,000	46,000	890,560	548,740
Mark S. Burgess	—	—	21,000	84,000	145,520	582,080
Eric W. Gerstenberg	6,000	28,020	9,000	40,000	29,710	168,720
Anthony Pucillo	—	—	8,000	32,000	34,427	137,888

Termination of Employment and Change of Control Agreements

The Company does not have any employment agreements with its executive officers. The Company provides "change of control" protection under stock option agreements awarded to executive officers. Some of those agreements provide that options will automatically fully vest upon a change of control, while others provide that if an employee is involuntarily terminated or experiences a change of position and a reduction in salary or relocation within twelve months of a change of control, the employee's options become fully vested.

As discussed more fully in the Compensation Committee Report, the Company has an Executive Retention Plan ("Retention Plan") that now covers 13 members of executive and senior management. The Retention Plan provides for severance payments equal to one year's base salary for terminations that are due to a "Change in Control" of the Company as that term is defined in the Retention Plan. In addition to severance, the Retention Plan provides for up to one year of continued employee benefits, if any, available to the executive at the time of his or her termination of employment.

Certain Transactions

In October 2003, the Company engaged BlueWave Strategies, LLC ("BlueWave"), a company in which one of its directors, John P. DeVillars, is a controlling member, to provide advisory services on environmental regulatory matters and internal environmental operating systems. The engagement, which was originally for a six-month term, involves the payment of a retainer fee of $10,000 per month. After review and approval of the Audit Committee of the Company's Board of Directors, which is responsible for the review of related party transactions, the engagement has been extended at the same

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monthly fee. In addition, after review and approval by the Audit Committee, the Company entered in December 2004 into a separate consulting arrangement with BlueWave under which BlueWave has agreed to advise the Company with respect to a potential form of certification by the U.S. Environmental Protection Agency which will permit a level of self regulation by the Company. For providing such consulting services, the Company has agreed to pay BlueWave $30,000 plus certain expenses to be incurred by BlueWave in providing such services.

Independent Auditors Fees

In addition to retaining PricewaterhouseCoopers LLP ("PwC") to audit the consolidated financial statements, the Company and its subsidiaries retained PwC to provide tax and certain other services for 2004 and 2003. The aggregate fees and expenses billed by PwC for 2004 and 2003 for these services were:

	For the Year	
	2004	2003
Audit Fees	$2,564,020	$1,391,000
Audit-Related Fees	265,787	—
Tax Fees	512,140	310,595
All Other Fees	—	—
	$3,341,947	$1,701,595

Audit Fees ($2,564,020 for 2004 and $1,391,000 for 2003) include fees and expenses for services rendered in connection with the audits of the Company's consolidated annual financial statements and internal controls over financial reporting, reviews of quarterly financial statements included in the Company's Form 10-Q reports, and services that are normally provided by independent auditors in connection with statutory and regulatory filings or engagements for those fiscal years. This category also includes advice on audit and accounting matters that arose during, or as a result of, the audit or review of the financial statements and internal controls over financing reporting, and the preparation of an annual "management letter" on internal control matters.

Audit-Related Fees ($265,787 for 2004 and $0 for 2003) include fees and expenses for assurance and related services that are reasonably related to the performance of the audit or review of the Company's financial statements and are not reported above under "Audit Fees". The services for the fees disclosed under this category normally would include benefit plan audits, other accounting consulting, and vendor and customer compliance audits. For 2004 Audit-Related Fees include preparation of a "comfort letter" and performance of various other audit-related services relating to the issuance of Senior Secured Notes in connection with the refinancing of the Company's outstanding debt.

Tax Fees ($512,140 for 2004 and $310,595 for 2003) include fees and expenses for tax compliance, tax planning, and tax advice (including tax return preparation), refund claims, assistance with tax audits and appeals, and advice related to acquisitions. Tax Fees for 2004 include tax planning relating to the 2004 restructuring of the Company's Canadian subsidiaries and preparation and/or review of the Company's tax returns. Tax Fees for 2003 include tax planning related to the acquisition of the assets of the Chemical Services Division of Safety-Kleen Corp. and preparation and/or review of the Company's tax returns.

All Other Fees ($0 for each of 2004 and 2003) include fees and expenses for services which do not fall within the categories described above.

The Audit Committee of the Board of Directors follows procedures designed to ensure that all audit and permitted non-audit services provided after January 1, 2003 by PwC are pre-approved by the Audit Committee. All of the services described above for 2004 were pre-approved by the Audit Committee. The

Audit Committee has discussed these matters with PwC and the Company's management and monitors the Company's compliance with any new restrictions put in place to continue to ensure that the services provided by PwC are consistent with the maintenance of that firm's independence in the conduct of its auditing functions.

Audit Committee Report

The Audit Committee of the Board of Directors (the "Committee") is now comprised of the four directors named below. The Company's Board of Directors has determined that each member of the Committee is an independent director (as independence is defined in NASDAQ listing standards applicable to membership on audit committees). In addition, the Company's Board of Directors has determined, based upon their education and experience, that each of Andrea Robertson and Thomas J. Shields is an "audit committee financial expert" as defined by Item 401(h) of Regulation SK under the Securities Exchange Act of 1934. The Audit Committee has adopted a written charter, which has been approved by the Board of Directors. A copy of that charter, as most recently revised by the Board of Directors on February 7, 2004, is available on the Company's website at www.cleanharbors.com. The Committee has reviewed and discussed the Company's audited financial statements with management, which has primary responsibility for the financial statements, and with the Company's auditors, PricewaterhouseCoopers LLP ("PwC"). The Company's independent auditor for 2004, PwC, is responsible for expressing opinions on the conformity of the Company's audited financial statements with generally accepted accounting principles and on management's assessment of the Company's internal controls over financial reporting. The Committee has discussed with PwC the matters that are required to be discussed by Statement on Auditing Standards No. 61 "Communication With Audit Committees." PwC has provided to the Committee the written disclosures and the letter required by Independence Standards Board Standard No. 1 "Independence Discussions with Audit Committees," and the Committee discussed with PwC that firm's independence. The Committee also considered whether PwC's provision of non-audit related services, which for 2004 consisted exclusively of tax services, is compatible with PwC's independence.

Based on the considerations referred to above, the Committee recommended to the Board of Directors that the financial statements audited by PwC be included in the Company's Annual Report on Form 10-K for 2004 and that PWC be appointed independent auditors for the Company for 2005. The foregoing report is provided by the following independent directors, who constitute the Audit Committee:

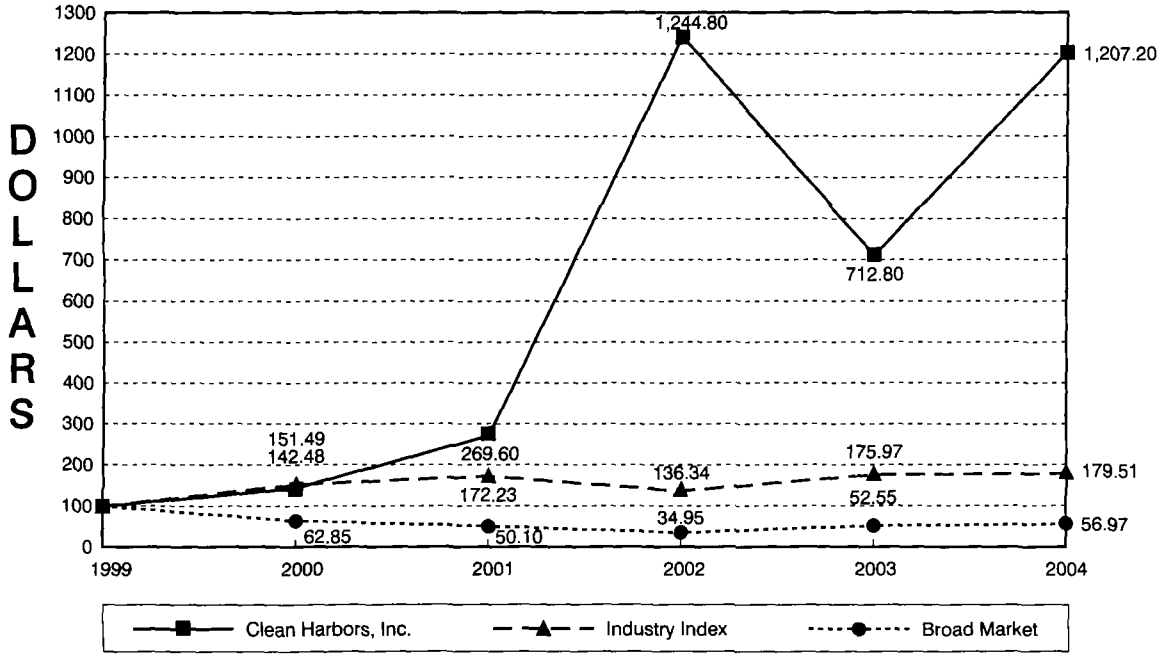
John F. Kaslow, Chairman
John T. Preston
Andrea Robertson
Thomas J. Shields

Appointment of Independent Accountants

The Company's independent public accountants are selected by the Audit Committee of the Board of Directors. The Audit Committee has selected PricewaterhouseCoopers LLP to serve as the Company's independent public accountants for the year ending December 31, 2005. PricewaterhouseCoopers LLP or its predecessor has served as the Company's independent public accountants since the fiscal year ended February 28, 1990. Representatives of PricewaterhouseCoopers are expected to be present at the Annual Meeting to respond to appropriate questions and will have the opportunity to make a statement if they so desire.

Performance Graph

The following graph compares the five-year return from investing $100 on January 1, 1999 in each of Clean Harbors, Inc. Common Stock, the NASDAQ Market Index of companies, and an index of environmental services companies, compiled by CoreData. The environmental services group used by CoreData includes all companies whose listed line-of-business is SIC Code 4953 (refuse systems), and assumes reinvestment of dividends on the ex-dividend date. An index compares relative performance since a particular starting date. In this instance, the starting date is December 31, 1999, when the Company's Common Stock closed at $1.50 per share.



Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Securities Exchange Act of 1934 requires the Company's executive officers and directors, and persons who beneficially own more than 5% of a registered class of the Company's equity securities, to file reports of ownership and changes of ownership with the Securities and Exchange Commission. Copies of those reports are to be furnished to the Company. Based solely on its review of copies of the reports received by it, or written representations from certain reporting persons, the Company believes that during 2004 such filing requirements were satisfied on a timely basis, except that Messrs. DeVillars, McCarthy, Preston and Weber were each late in filing one report on Form 4 describing a change of ownership of their respective shares, and Mr. Pucillo and Ms. Robertson were each late in filing a Form 3 describing their becoming subject to Section 16.

AMENDMENT AND RESTATEMENT OF ARTICLES OF ORGANIZATION
(Item 2 on Proxy Form)

On April 4, 2005, the Company's Board of Directors adopted, subject to shareholder approval, an amendment and restatement of the Company's Articles of Organization (as amended to date) to (i) increase the number of authorized shares of Common Stock from 20,000,000 to 40,000,000, and (ii) revise the provisions of Article VI ("Other Lawful Provisions") of such Articles to conform to certain recent changes in Massachusetts corporate law. These changes occurred primarily because the Massachusetts legislature replaced, effective July 1, 2004, the former Massachusetts Business Corporation Law (Chapter 156B of the Massachusetts General Laws) with a new Massachusetts Business Corporation Act (Chapter 156D of the Massachusetts General Laws) (the "New Act") which has governed the Company's affairs since July 1, 2004.

The form of the Company's amended and restated Articles of Organization adopted by the Company's Board of Directors (the "Amended Articles") is attached to this Proxy Statement as Exhibit A. The increase in the number of authorized shares of Common Stock is set forth in Articles III and IV, and the revised "Other Lawful Provisions" are set forth in Article VI. Since the Amended Articles restate in full the Company's Articles of Organization, the Amended Articles also reflect certain changes which have occurred since the Company's Articles of Organization were most recently amended and/or restated. Such changes include various statutory references to the New Act and the deletion from the authorized number of shares of preferred stock in Article III and the description of the separate classes of the Company's authorized capital stock in Article IV the previously authorized shares of Series A Convertible Preferred Stock and Series C Convertible Preferred Stock, all of which have been either converted into Common Stock or redeemed in accordance with the terms thereof. The only substantive changes to the Company's Articles of Organization (as previously amended) which will become effective if the Amended Articles are approved by the shareholders and filed with the Massachusetts Secretary of State are the increase in the number of authorized shares of Common Stock set forth in Articles III and IV and the revision of the "Other Lawful Provisions" set forth in Article VI.

Under the Company's Articles of Organization as now in effect, the Company is authorized to issue up to 20,000,000 shares of Common Stock. As of March 1, 2005, the Company had outstanding 14,805,615 shares of Common Stock and had reserved for potential future issuance an aggregate of 4,197,749 additional shares. As described below in this Proxy Statement under "Amendment of 2000 Stock Incentive Plan" and "Amendment of Employee Stock Purchase Plan," 1,807,260 of such shares were then reserved for potential future issuance upon exercise of stock options granted or then authorized to be granted under the Company's equity incentive plans and 119,749 were then reserved for potential future sale under the Company's Employee Stock Purchase Plan. If the shareholders approve the proposed amendments to the Company's 2000 Equity Incentive Plan and Employee Stock Purchase Plan described in those sections of this Proxy Statement, the number of shares of Common Stock reserved for potential future issuance under the Company's equity incentive plans and Employee Stock Purchase Plan will increase from an aggregate of 1,927,009 shares to an aggregate of 2,927,009 shares. In addition, the Company had reserved as of March 1, 2005 an aggregate of 212,800 shares of Common Stock for potential future issuance upon conversion of the 70,000 shares of Series B Convertible Preferred Stock then outstanding, and 2,057,940 shares of Common Stock for potential future issuance upon exercise of warrants then outstanding which are exercisable (at an exercise price of $8.00 per share) through September 10, 2009. Accordingly, as of March 1, 2005, the Company had only 996,636 authorized shares of Common Stock which were not already reserved for potential future issuance and, unless the Company's Articles of Organization are amended to provide for additional authorized shares of Common Stock, there would be insufficient authorized but unreserved shares if the shareholders approve the proposed amendments of the Company's 2000 Equity Incentive Plan and Employee Stock Purchase Plan.

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If the increase in the number of authorized shares of Common Stock set forth in the Amended Articles is approved by the shareholders, the Company will be able to issue the additional authorized shares in the future for any proper corporate purpose including, without limitation, financings, acquisitions, strategic business partnerships and joint ventures, stock splits and stock dividends, and equity incentive and employee benefit plans. Except as required by law, Securities and Exchange Commission rules or the listing requirements of the Nasdaq Stock Market or such other stock exchanges upon which the Company's Common Stock may then be listed, the Company's Board of Directors will be authorized to issue such additional shares upon such terms as the Board of Directors deems appropriate without further shareholder approval. Shares of the Company's Common Stock, including the proposed additional shares, do not have pre-emptive or similar rights, which means that current shareholders do not have the right to purchase any new shares in order to maintain their proportionate ownership in the Company. Holders of Common Stock are not entitled to dividends except as declared by the Board of Directors, and the Board of Directors has never declared any such dividends in the past. The Company has no plans to pay such dividends in the foreseeable future, and its current financing agreements would restrict the amount of any such dividends.

The proposed increase in the number of authorized shares of Common Stock will provide the Company with greater flexibility to enter into financings, acquisitions and other business transactions. While the proposed increase in the number of authorized shares of Common Stock will not have any immediate effect on existing shareholders, the future issuance of additional shares of Common Stock (other than in connection with stock splits and stock dividends) will dilute the percentage ownership of the current shareholders and could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from attempting to acquire, control of the Company. As described above in this Proxy Statement under "Election of Directors," the Company now has a Board of Directors consisting of three classes (of which one class is elected annually), and the inability of an acquirer or potential acquirer to replace all of the directors at a single meeting of shareholders may also make it more difficult for an acquirer or potential acquirer to acquire control of the Company. Other than in connection with the Company's existing equity incentive plans and Employee Stock Purchase Plan (as such plans are proposed to be amended as described below in this Proxy Statement) and pursuant to the Company's existing commitments to the holders of its outstanding Series B Preferred Stock and warrants, the Company has no present intention or plans to issue any shares of Common Stock. In particular, the Company is not now engaged in any pending or proposed acquisitions which would require an increase in the number of authorized shares of Common Stock.

In addition to the proposed increase in the number of authorized shares of Common Stock, the "Other Lawful Provisions" set forth in Article VI of the Amended Articles make certain changes to the comparable provisions of the Company's existing Articles of Organization in a manner consistent with the New Act. In particular, these provisions (i) permit action by shareholders, in place of meetings, by written consent of holders of sufficient shares to take the specified action (subject to certain notice requirements in the New Act for shareholders not executing such written consents), (ii) set forth the standards for indemnification by the Company of liabilities and expenses (including judgments, fines, penalties and attorneys' fees and amounts paid in compromise or settlement) which the directors and officers of the Company may incur while serving in such capacities or as directors and officers of other entities at the request of the Company, and (iii) limit personal liability of the directors to the Company and its shareholders except in situations involving breach of a director's duty of loyalty, intentional misconduct or knowing violation of law, authorization of distributions to shareholders when the Company is insolvent or rendered insolvent, or improper personal benefit to the director.

Approval of the amendment and restatement of the Company's Articles of Organization as described in the Amended Articles will require the affirmative vote of the holders of a majority of *the outstanding shares of Common Stock and Series B Preferred Stock, voting as a single group.* Unless otherwise specified therein, shares represented by the enclosed proxy will be voted at the

Annual Meeting in favor of approval of the Amended Articles. The Board of Directors recommends that shareholders vote "FOR" such approval.

AMENDMENT OF 2000 STOCK INCENTIVE PLAN
(Item 3 on Proxy Form)

On April 4, 2005, the Company's Board of Directors adopted, subject to shareholder approval, Amendment No. 1 to Clean Harbors, Inc. 2000 Stock Incentive Plan (the "Plan Amendment"), a copy of which is attached to this Proxy Statement as Exhibit B. The Plan Amendment amends the Company's 2000 Stock Incentive Plan (the "2000 Plan") by (i) increasing the total awards ("Awards") that can be issued under the Plan from the 1,500,000 shares of Common Stock approved at the 2002 Annual Meeting of Shareholders to 2,000,000 shares, (ii) limiting the number of shares for which Awards may be granted to any participant under the Plan in any fiscal year to a maximum of 200,000, (iii) permitting, upon such conditions as may be approved by the Company's Board of Directors, participants to gift stock options (other than Incentive Stock Options) granted under the Plan to immediate family members or family trusts, and (iv) adding a provision which will allow the Compensation Committee of the Company's Board of Directors (the "Committee") to grant performance-based restricted stock.

As of March 1, 2005, a total of 97,720 shares of Common Stock had been previously issued pursuant to Awards granted under the 2000 Plan, 1,193,199 shares were reserved for potential future issuance under Awards then outstanding under the Plan, and 209,081 shares were available for additional Awards to be granted under the Plan. Under the Plan Amendment, the number of shares available to be issued through additional Awards granted under the Plan as of March 1, 2005 will therefore be increased from 209,081 to 709,081. Under the terms of the Plan, shareholder approval is required for any amendment that increases the number of shares of Common Stock subject to the Plan (other than in connection with an adjustment upon a change in capitalization) and to make the other proposed modifications of the Plan which are needed in order to comply with Section 162(m) of the Internal Revenue Code of 1986, as amended (the "Code") as described below.

The 2000 Plan provides that the Committee may grant awards for up to the number of shares of Common Stock available under the Plan (subject to anti-dilution adjustments, at the sole discretion of the Committee). If any Award in respect of shares of Common Stock expires or is terminated before exercise or is forfeited for any reason without a payment in the form of stock being made to the participant, the shares of Common Stock subject to such Award, to the extent of such expiration, termination or forfeiture, again become available for award under the Plan. All employees, directors and consultants to the Company or any of its subsidiaries are eligible to participate in the Plan, except that directors who are not employees may participate only to the limited extent described below under "Types of Awards." At the discretion of the Committee, Awards may be in the form of incentive stock options ("ISOs") which qualify for special federal income tax treatment under Section 422 of the Code, options which are not qualified for special tax treatment ("Non-Qualified Stock Options") and restricted stock.

The 2000 Plan is now the only plan in effect under which Awards may be granted to the Company's employees and directors, although (as described below in this Proxy Statement under "Amendment of Employee Stock Purchase Plan") the Company also has an Employee Stock Purchase Plan under which employees of the Company and its subsidiaries may purchase shares of Common Stock at 85% of the current market price. The Company previously had in effect two other equity incentive plans (the "1987 Plan" and the "1992 Plan"). Under the 1987 Plan, the Committee could grant Non-Qualified Stock Options. The 1987 Plan expired in 1997, although stock options outstanding under the 1987 Plan (for a maximum of 28,775 shares as of March 1, 2005) may continue to be exercised until such options expire or are terminated in accordance with their respective terms. Under the 1992 Plan, the Committee could grant ISOs, Non-Qualified Stock Options, restricted stock, performance stock units, and stock appreciation rights. The 1992 Plan expired on March 15, 2002, although stock options outstanding under the

1992 Plan (for a maximum of 379,205 shares as of March 1, 2005) may continue to be exercised until such options expire or are terminated in accordance with their respective terms.

As more fully described below, the provisions of the Plan Amendment limiting to a maximum of 200,000 shares the number of shares for which Awards may be granted to any participant in any fiscal year and providing the Committee with authority to grant performance-based restricted stock are intended to comply with the requirements for performance-based compensation described in Section 162(m) of the Code. Section 162(m) limits the deductions a public company can claim for compensation in excess of $1 million in a given year paid to each of the chief executive officer and the four other most highly compensated executive officers serving on the last day of the fiscal year. "Performance-based" compensation that meets certain requirements is not counted against the $1 million deductibility cap, and therefore remains fully deductible. If the Plan Amendment is approved by the Company's stockholders, the Committee will be limited in the number of shares respecting which the Committee may grant Awards of all types to any participant in any fiscal year, and the Committee may structure Awards to be performance-based and therefore not subject to the $1 million deductibility cap under Section 162(m). However, to the extent the Committee determines in connection with any specific Award that compliance with the performance based criteria under Section 162(m) would not be in the best interests of the Company or its shareholders, the Committee will retain the ability which the Committee now has to grant Awards which do not satisfy such criteria provided that the total Awards of all types granted to any participant in any fiscal year satisfies the 200,000 share limitation.

Types of Awards

The 2000 Plan provides that the Committee may grant Awards to employees, directors, and consultants in any of the following forms:

Options. The Compensation Committee may award ISOs and Non-Qualified Stock Options (collectively, "Options") and determine the number of shares to be covered by each Option, the option price therefor, the term of the Option, and the other conditions and limitations applicable to the exercise of the Option. Except for automatic grants of certain options to Non-Employee Directors of the Company as described below and any additional awards which the Company's Board of Directors may elect to make to Non-Employee Directors, the 2000 Plan provides that the Committee will have full discretion (subject to the terms of the Plan) in making such grants. However, as required by the Code, the option price per share of Common Stock purchasable under an ISO shall not be less than 100% of the fair market value of the Common Stock on the date of award. Furthermore, if the grantee of an ISO then owns more than 10% of the voting power of all classes of the Company's capital stock then outstanding, the option price per share of Common Stock purchasable under an ISO shall be not less than 110% of the fair market value of the Common Stock on the date of award. The 2000 Plan provides that the option price per share of Common Stock purchasable under a Non-Qualified Stock Option shall be determined by the Committee in its discretion, and such price may be less than, equal to or greater than the fair market value of the Common Stock on the date of award. Options may be exercisable for not more than ten years after the date the Option is awarded.

In addition to the grant of Options at the Committee's discretion (or the discretion of the Company's Board of Directors in the case of any additional awards to the Company's Non-Employee Directors), the 2000 Plan also provides for non-discretionary grants of Non-Qualified Stock Options to all directors of the Company who are both neither employees nor providers of material amounts of consulting or other services to the Company ("Non-Employee Directors"). Each Non-Employee Director who is first elected a member of the Company's Board of Directors while the 2000 Plan is in effect shall automatically receive the grant of a Non-Qualified Stock Option to purchase that number of shares of Common Stock determined by multiplying 2,000 by the number of years or portion thereof for which the Director shall be elected to serve and rounding the result to the nearest whole number. After the initial grant of non-discretionary options under the 2000 Plan at the time of initial election, each Non-Employee Director

subsequently re-elected at any meeting of shareholders held while the 2000 Plan remains in effect shall receive as of the date of each such meeting the grant of a Non-Qualified Stock Option to purchase that same number of shares of Common Stock as determined for the initial election. Options granted to Non-Employee Directors elected for a term of one year are immediately exercisable. Options granted to Non-Employee Directors elected for a term of more than one year shall be exercisable immediately as to 2,000 shares and as to 2,000 additional shares (or such lesser number as shall have been awarded) at the commencement of each successive year of the term. The purchase price of the shares of Common Stock subject to each such Option shall be the closing price of a share of the Common Stock on the NASDAQ Stock Market on the date the Option is granted.

Restricted Stock. An Award of restricted stock ("Restricted Stock") entitles the participant to acquire shares of Common Stock subject to such conditions and restrictions as the Committee shall determine, which will normally include a right of the Company, during a specified period or periods, to repurchase such shares at their original purchase price (or to require forfeiture of such shares) upon the participant's termination of employment. Subject to the provisions of the 2000 Plan, the Committee may award shares of Restricted Stock and determine the purchase price therefor, the duration of the restricted period during which, and the conditions under which, the shares may be forfeited to or repurchased by the Company, and the other terms and conditions of such Awards. The Committee may also thereafter modify or waive the restrictions with respect to any Restricted Stock. Shares of Restricted Stock may be issued for cash equal to less than the fair market value of the Common Stock on the date of Award or no cash consideration. A participant shall have all the rights of a shareholder with respect to the Restricted Stock including voting and dividend rights, subject to non-transferability restrictions and Company repurchase or forfeiture rights and any other conditions contained in the Award.

Other Material Provisions of 2000 Plan

Granting of Awards. Each Award may be made alone, in addition to, or in relation to any other Award. The terms of each Award need not be identical, and the Committee need not treat participants uniformly. Except as otherwise provided by the 2000 Plan or a particular Award, any determination with respect to an Award may be made by the Committee at the time of award or at any time thereafter. The Committee determines whether Awards are to be settled in whole or in part in cash, Common Stock, other securities of the Company, or other property. The Committee may permit a participant to defer all or any portion of a payment under the Plan, including the crediting of interest on deferred amounts.

Outstanding Awards. Awards may not be made under the 2000 Plan after April 25, 2010, but outstanding Awards may extend beyond such date. Common Stock subject to Options which expire or are terminated prior to exercise and Common Stock which has been forfeited under the terms of Restricted Stock Awards will be available for future Awards under the Plan. Both treasury shares and authorized but unissued shares may be used to satisfy Awards under the Plan. Any proceeds received by the Company from transactions under the Plan will be used for the general purposes of the Company.

Administration. The Committee serves as the administrator of the 2000 Plan. In such capacity, the Committee determines, from among those employees and consultants eligible to receive Awards, those to whom Awards should be granted and the type of Awards to be granted. In addition, subject to certain limitations, the Committee has authority to resolve any disputes arising under the terms of the outstanding Awards.

Amendment. The Company's Board of Directors may amend, suspend, or terminate the Plan or any portion thereof at any time. However, no amendment shall be made without shareholder approval if such approval is necessary to comply with any applicable tax or regulatory requirement, including any requirements for exemptive relief under Section 16(b) of the Securities Exchange Act of 1934, or any successor provision. Accordingly, shareholder approval is required for any amendment that increases the number of shares of Common Stock subject to the 2000 Plan (other than in connection with an

adjustment upon a change in capitalization) or makes any change in the class of employees, directors or consultants of the Company eligible to be granted Awards by the Committee under the Plan.

Certain Tax Information

Incentive Stock Options. For federal income tax purposes, no taxable income results to the optionee upon the grant of an ISO or upon the issuance of shares to the optionee upon the exercise of the option, and no deduction is allowed to the Company upon either the grant or the exercise of the ISO. Rather, if shares acquired upon the exercise of an ISO are not disposed of either within the two-year period following the date the option is granted or within the one-year period following the date the shares are transferred to the optionee pursuant to exercise of the option, the difference between the amount realized on any disposition thereafter and the option price will be treated as long-term capital gain or loss to the optionee. If a disposition occurs before the expiration of the requisite holding periods, then the lower of (i) any excess of the fair market value of the shares at the time of exercise of the option over the option price or (ii) the actual gain realized on disposition, will be deemed to be compensation to the optionee and will be taxed at ordinary income rates. Any excess of the amount realized by the optionee on disposition over the fair market value of the shares at the time of exercise will be treated as capital gain. The 2000 Plan requires each employee granted an ISO under the 2000 Plan to notify the Committee in the event that the optionee disposes of Common Stock acquired upon exercise of an ISO either within the two-year period following the date the ISO was granted or within the one-year period following the date the optionee receives Common Stock upon the exercise of an ISO. If an optionee is required to recognize ordinary income as a result of a disqualifying disposition of shares acquired upon exercise of an ISO, the Company will be entitled (subject to certain limitations on employee remuneration in excess of $1 million under Section 162(m) of the Code as described below) to a corresponding deduction from its taxable income provided the Company complies with certain reporting requirements. Any such increase in the taxable income of the optionee or deduction from the taxable income of the Company attributable to such disposition is treated as an increase in taxable income or a deduction from taxable income in the taxable year in which the disposition occurs.

"Alternative minimum taxable income" in excess of a taxpayer's exemption amount is subject to the alternative minimum tax, which is currently imposed at a rate of 26% to 28% on individuals and is payable to the extent it exceeds the regular income tax. The excess of the fair market value on the date of exercise over the option price of shares acquired on exercise of ISOs generally constitutes an item of alternative minimum taxable income for the purpose of the alternative minimum tax. The optionee's basis for the shares acquired for regular income tax purposes will not be increased by the amount of alternative minimum taxable income recognized on exercise, but the optionee may be able to recover the amount of his or her alternative minimum tax liability through the alternative minimum tax credit against future gain from sale of the stock.

If the aggregate fair market value (determined at the time the option is granted) of the shares of Common Stock covered by ISOs granted to an individual optionee which become exercisable for the first time in a calendar year exceeds $100,000, the amount of the excess will not be treated as shares acquired through exercise of an ISO.

Non-Qualified Stock Options. For federal income tax purposes, a person who is granted a Non-Qualified Stock Option will not have taxable income at the date of grant; however, an optionee who thereafter exercises such an option will be deemed to have received compensation income in an amount equal to the difference between the option price and the fair market value of the shares on the date of exercise. The optionee's basis for such shares will be increased by the amount which is deemed compensation income. For the year in which a Non-Qualified Stock Option is exercised, the Company will be entitled (subject to certain potential limitations under Section 162(m) of the Code as described below) to a deduction in the same amount as the optionee is required to include in his or her income

provided the Company withholds and deducts as required by law. When the optionee disposes of such shares, he or she will recognize capital gain or loss.

Restricted Stock. A recipient of Restricted Stock generally will be subject to tax at ordinary income rates on the fair market value of the Common Stock at the time the Common Stock is no longer subject to forfeiture, minus the amount (if any) paid for such stock. However, a recipient who makes an election under Section 83(b) of the Code within 30 days of the date of issuance of the Restricted Stock will realize ordinary income on the date of issuance equal to the fair market value of the shares of Restricted Stock at the time (measured as if the shares were unrestricted and could be sold immediately), minus the amount (if any) paid for such stock. For the year in which any such ordinary income is realized by the recipient of Restricted Stock, the Company will be entitled (subject to certain potential limitations in Section 162(m) of the Code as described below) to a deduction in the same amount as the recipient is required to include in his or her income, provided the Company withholds and deducts as required by law. If the election is made, no taxable income will be realized when the shares subject to such election are no longer subject to forfeiture. If the shares subject to such election are forfeited, the recipient will not be entitled to any deduction, refund or loss for tax purposes with respect to the forfeited shares. Upon sale of the shares after the forfeiture period has expired, the holding period to determine whether the recipient has long-term or short-term capital gain or loss begins when the restriction period expires (or upon earlier issuance of the shares, if the recipient elected immediate realization of income under Section 83(b) of the Code).

Section 162(m) Limitations. The Omnibus Budget Reconciliation Act of 1993 added Section 162(m) to the Code. Section 162(m) generally disallows a public company's tax deduction in any tax year beginning on or after January 1, 1994 for compensation in excess of $1 million paid to certain "covered employees," which consist of the chief executive officer and the four other most highly compensated executive officers serving on the last day of the fiscal year. However, compensation that qualifies as "performance based compensation" is excluded from the $1 million deductibility cap, and therefore remains fully deductible by the company paying such compensation.

Under Section 162(m), stock options granted with exercise prices of not less than fair market value on the grant date, and which therefore result in compensation only to the extent of subsequent increases in the market price of the common stock subject to such options, are deemed to be performance based provided the plan under which such options are granted contains a limit on the total number of options which may be granted in any fiscal year to any single participant. Such stock options therefore need not be made subject to performance based vesting criteria. However, with respect to restricted stock, compliance with the exception to the application of Section 162(m) depends, in part, on stockholder approval of certain general business criteria which the committee administering the incentive plan may impose on the grant of such restricted shares and the establishment by the committee of such criteria in connection with each grant of restricted stock which is intended to be performance based. Stockholder approval of general business criteria, without specific targeted levels of performance, will therefore permit qualification of incentive awards granted during the next five (5) years for full tax deductibility under Section 162(m), provided the committee establishes specific performance objectives in connection with any award of restricted stock which is intended to comply with Section 162(m).

The Plan Amendment limits the number of Awards that the Committee may grant to any participant in any fiscal year to a maximum of 200,000, adds a provision permitting the Compensation Committee to grant Restricted Stock subject to certain performance based vesting criteria, and approves the general business criteria which the Committee may utilize in making Awards of Restricted Stock which are intended to comply with the performance based exception under Section 162(m). Under the Plan Amendment, along with the existing terms of the Plan, the Committee will have the ability to grant Options and Restricted Stock to employees (and in particular, those that the Compensation Committee believes may be covered employees) that will qualify as "performance based compensation." Accordingly, any compensation deduction otherwise available to the Company in connection with Awards

subsequently granted by the Committee under the 2000 Plan which consist of either Options or of performance-based Restricted Stock will not be subject to the deductibility limitation of Section 162(m). However, future changes in Section 162(m) or regulations promulgated thereunder might adversely effect the ability of the Company to ensure that Awards granted under the Plan will continue to qualify as "performance based compensation" that would otherwise have been fully deductible by the Company under Section 162(m).

Section 409A. Section 409A of the Code, enacted as part of the American Jobs Creation Act of 2004, imposes certain new requirements applicable to the payment of deferred compensation to employees and other service providers. Deferred compensation payments that do not meet these requirements are generally taxed to the employee or service provider when they vest, and may also be subject to a 20% penalty tax, payable by the employee or service provider. These new rules generally apply with respect to deferred compensation that becomes earned or vested on or after January 1, 2005. While guidance from the Internal Revenue Service on the scope and application of Section 409A is limited to date, the Company does not believe that the Options previously granted under the Plan will be subject to Section 409A and expects to structure future Option grants and other Awards in a manner that will either avoid the application of Section 409A or meet its requirements.

Other Tax Consequences. The foregoing is a general summary only of the principal federal income tax aspects of Awards granted under the 2000 Plan, and tax consequences may vary depending on the particular circumstances associated with any Award. In addition, the relevant provisions of the Code and the Regulations thereunder and administrative and judicial interpretations are subject to change. Furthermore, no information is given with respect to foreign, state or local taxes that may be applicable in the case of any Award in addition to, or in lieu of, U.S. federal income taxes.

Equity Compensation Plan Information.

All awards which have been made to date under the 2000 Plan have been in the form of Non-Qualified Stock Options, with exercise prices equal to at least 100% of the closing price of Common Stock on the NASDAQ Stock Market on the dates on which such awards were made. The following table shows all of the stock options which were granted through March 1, 2005 and had not expired as of March 1, 2005 under the 2000 Plan to each of the individuals named in the "Summary Compensation Table" earlier in this Proxy Statement and to the groups specified in the table. Of the total 1,457,369 stock options which have been granted under the 2000 Plan, a total of 166,450 terminated in accordance with their respective terms prior to exercise, and the shares originally subject to those terminated options therefore became available for purposes of additional grants under the Plan. See "Stock Option/SAR Grants" and "Option Exercises and Year-End Option Values" earlier in this Proxy Statement for a further description of the stock options which were previously granted to the Company's principal executive officers and those options which remained unexercised as of December 31, 2004.

Name and Principal Position	Amount of Option Shares
Alan S. McKim Chairman of the Board and Chef Executive Officer	—
Gene A. Cookson President, Site Services*	100,000
Mark S. Burgess Executive Vice President and Chief Financial Officer	105,000
Eric W. Gerstenberg Senior Vice President, U.S. Disposal Operations*	40,000
Anthony Pucillo Executive Vice President, Sales, Marketing and Central Operations*	40,000
All current executive officers as a group (15 persons)	473,194
All current directors who are not executive officers as a group (8 persons)	109,500
All employees, including all officers who are not executive officers, as a group (23 persons)	582,694

* Clean Harbors Environmental Services, Inc.

The following table includes information as of December 31, 2004 regarding shares of Common Stock authorized for issuance under all of the Company's equity compensation plans. The Company's shareholders previously approved each of the plans.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders(1)	1,635,768	$8.28	207,581

(1) Includes (i) the Company's 1987 Equity Incentive Plan (the "1987 Plan") which expired in 1997, but under which there were outstanding options on December 31, 2004 for an aggregate of 31,750

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shares, (ii) the Company's 1992 Equity Incentive Plan (the "1992 Plan") which expired in 2002, but under which there were outstanding options on December 31, 2004 for an aggregate of 401,265 shares, and (iii) the Company's 2000 Equity Incentive Plan under which there were outstanding options on December 31, 2004 for an aggregate of 1,202,753 shares and 207,581 shares were available for grant of future options.

Approval of the amendment of the 2000 Stock Incentive Plan to (i) increase the number of shares authorized for issuance under the Plan from 1,500,000 to 2,000,000 and (ii) make the other changes set forth in the Plan Amendment, will require the affirmative vote of the holders of a majority of the outstanding shares of Common Stock and Series B Preferred Stock, voting as a single group, which are represented at the Annual Meeting. Unless otherwise specified therein, shares represented by the enclosed proxy will be voted at the Annual Meeting in favor of such amendment. The Company's Board of Directors believes that increase in the number of shares authorized for issuance under the 2000 Equity Incentive Plan will materially assist in the Company's efforts to attract and retain the highly trained and motivated individuals which will be required to further the growth of the Company, and that the other changes set forth in the Plan Amendment are desirable particularly in order to facilitate the Company's ability to fully deduct compensation paid to the Company's executive officers for federal income tax purposes. The Board of Directors recommends that shareholders vote "FOR" such approval.

AMENDMENT OF EMPLOYEE STOCK PURCHASE PLAN
(Item 4 on Proxy Form)

In 1995, the Company's Board of Directors and shareholders adopted the Clean Harbors Employee Stock Purchase Plan (the "Employee Stock Purchase Plan") through which employees of the Company and its subsidiaries are given the opportunity to acquire a proprietary interest in the Company through the purchase of shares of Common Stock. As originally adopted, the Plan reserved a total of 1,000,000 shares of Common Stock for potential purchase. As of March 1, 2005, a total of 880,251 shares have been sold to employees under the Plan and therefore 119,749 shares remained reserved for potential future purchase.

All employees of the Company or its subsidiaries who have completed 90 days of employment and are regularly scheduled to work at least 20 hours per week, on a full or part-time basis, are eligible to participate in the Employee Stock Purchase Plan, except for any employee who owns 5% or more of the total outstanding voting stock of the Company. Employees who elect to participate may utilize up to 10% of their payroll for the purchase of Common Stock, provided, however, that no employee may purchase more than $25,000 in fair market value of the Company's Common Stock in any calendar year.

Under the Employee Stock Purchase Plan, the Company sells shares of Common Stock to participating employees through quarterly offerings on the first day of January, April, July and October of each year. Employees who elect to participate in any offering under the Plan have an option to purchase Common Stock at the end of such option period at 85% of the closing price of the stock on the first day of such quarterly offering or, if lower, 85% of the closing price on the last day of the offering or the nearest prior business day on which trading in the stock shall have occurred on the NASDAQ National Market System. An employee who elects to participate in an offering is deemed to have exercised his option to purchase Common Stock with payroll deductions for the purchase of that number of shares of stock which the accumulated payroll deductions at the end of the offering will purchase at the applicable option price.

If an employee ceases to participate in the Plan, any accumulated payroll deductions which have accumulated after an employee elects to terminate participation in the Employee Stock Purchase Plan are returned to the employee promptly following termination of an offering without interest. If an

employee terminates employment with the Company prior to the last day of any offering, other than by reason of death, payroll deductions credited to him or her are returned without interest.

Options to purchase Common Stock offered to employees under the Employee Stock Purchase Plan are exercisable only by the employee and are not transferable except by death, in which event the employee's beneficiary shall have until the earlier of the next offering termination date or the expiration of 60 days from the employee's date of death to either withdraw all of the payroll deductions credited to the participant during the offering outstanding at the time of his death, or exercise the participant's option for the purchase of stock on the next offering termination date.

The Plan is administered by the Compensation Committee (the "Committee") of the Company's Board of Directors. The Board of Directors has the sole power and authority to terminate or amend the Plan; provided, however, that the Board of Directors may not, without the approval of a majority of the shareholders, (i) increase the maximum number of shares which may be issued under any offering (except upon changes in capitalization of the Company), (ii) amend the requirements as to employees' eligible to purchase stock under the Plan, or (iii) permit members of the Committee to purchase stock under the Plan.

The Employee Stock Purchase Plan is designed to meet the requirements of an "employee stock purchase plan" within the meaning of Section 423 of the Internal Revenue Code of 1986, as amended (the "Code"). The Plan is neither a pension, profit-sharing, or stock bonus plan designed to qualify under Section 401(a) of the Code, nor an employee benefit plan subject to any of the provisions of the Employee Retirement Income Security Act of 1974. Amounts deducted from an employee's paycheck in order to purchase shares of Common Stock under the Plan are taxable as part of the employee's compensation. However, under Section 421(a) of the Code, the purchase of shares under the Plan is not itself a taxable event, even though the purchase price for the shares is less than market price for the shares. The difference between the market price and the purchase price—the 15% discount—is not taxable at the time of purchase. For federal income tax purposes, no taxable income results to the employee, and no deduction is allowed to the Company, when an employee purchases stock under the Plan. There is a statutory holding period equal to the greater of two years from the date of option grant or one year from the date of purchase to obtain capital gains treatment on the sale of shares (although all or a portion of the 15% discount will be taxable upon disposition as ordinary income). If the employee disposes of the stock acquired under the Plan before the expiration of the statutory holding period, at the time of disposition the employee must recognize as ordinary compensation income the difference between the stock's fair market value on the purchase date and the option price. The balance of any gain or loss will be treated as capital gain or loss. Shares of stock must have been held for more than one year in order to qualify for long-term capital gain or loss treatment. Shares held for one year or less will trigger short-term capital gain or less upon disposition thereof.

Approval of the amendment of the Employee Stock Purchase Plan to increase the number of shares authorized for issuance under the Plan from 1,000,000 to 1,500,000 will require the affirmative vote of the holders of a majority of the outstanding shares of Common Stock and Series B Preferred Stock, voting as a single group, which are represented at the Annual Meeting. Unless otherwise specified therein, shares represented by the enclosed proxy will be voted at the Annual Meeting in favor of such amendment. The Company's Board of Directors believes that the increase in the number of shares authorized for issuance under the Employee Stock Purchase Plan will assist the employees of the Company and its subsidiaries in acquiring a proprietary interest in the Company and thereby further the Company's growth. Accordingly, the Board recommends that the shareholders vote "FOR" the proposed amendment of the Employee Stock Purchase Plan.

NOTIFICATION REGARDING AMENDMENT OF BY-LAWS

On April 4, 2005, the Company's Board of Directors amended and restated the Company's By-Laws as previously in effect (the "Old By-Laws") through adoption of new By-Laws (the "New By-Laws"). A copy of the New By-Laws is attached to this Proxy Statement as Exhibit C. The principal reason for adoption of the New By-Laws was to make the Company's By-Laws conform to certain recent changes in Massachusetts law which resulted from the adoption by the Massachusetts legislature effective July 1, 2004 of the new Massachusetts Business Corporation Act (Chapter 156D of the Massachusetts General Laws) (the "New Act"). There is no requirement that the stockholders approve the New By-Laws, and the following description of the changes to the Old By-Laws constitutes the shareholder notice of such changes which is required by the Old By-Laws and the New Act.

The New By-Laws include revisions to most sections of the Old By-Laws, but most changes are minor. For example, the term "stockholder" is replaced with "shareholder," and the office of "Clerk" is replaced with the office of "Secretary." Only a few of the changes to the Old By-Laws are substantive, and these changes are summarized briefly below:

1. Unlike the Old By-Laws, the New By-Laws specify the procedures to be followed by shareholders who wish to make proposals for consideration at shareholder meetings. Article I, Section 4.

2. Written proxies executed by shareholders can be effective for up to 11, as opposed to 6, months. Article I, Section 8.

3. Shareholders can now take action through written consents signed by less than all of the shareholders provided that (i) such consents are signed by holders of sufficient shares to approve such action by law, the Company's Articles of Organization and the By-Laws, and (ii) notice of the action proposed to be taken by written consent is delivered to all other shareholders at least seven days prior to the action. Article I, Section 10.

4. The Board of Directors may now establish a record date for a shareholder meeting up to 70 days prior to the meeting date, rather than 60 days under the Old By-Laws. Article I, Section 11.

5. Subject to such procedures as the Board of Directors may adopt, participation in meetings of shareholders may take place by electronic communication. Article I, Sections 12 and 13.

6. Unlike the Old By-Laws, the New By-Laws specify the procedures to be followed by shareholders who wish to nominate candidates for election as directors. Article II, Section 2.

7. The division of the Board of Directors into three classes, with one of such classes being elected each year, is now stated in the By-Laws. Article II, Section 3. Although the Old By-Laws did not contain this provision, the Company has been subject to this provision since the adoption in 1990 by the Massachusetts Legislature of Section 50A of Chapter 156B of the Massachusetts General Laws, which provision is carried over by the New Act. Under these statutes, this provision is mandatory for all publicly-held business corporations organized under Massachusetts law except (in the case of both the old law and the New Act) for corporations which affirmatively "opt-out" of this requirement by following certain procedures set forth in such statutes.

8. Unlike the Old By-Laws, the New By-Laws specify the standards of conduct for directors and for dealing with situations involving conflicts of interest involving directors in a manner consistent with the New Act. Article II, Sections 19 and 20.

9. Notices to both directors and shareholders may now be given by electronic communication. Article III.

10. The Company's Board of Directors may now authorize the issuance of stock in consideration of an agreement to provide services, as opposed only to services already performed. Article V, Section 1.

11. Unlike the Old By-Laws, the New By-Laws specify the standards applicable to shareholders' rights to inspect corporate documents. Article VI, Sections 2 and 3.

12. Unlike the Old By-Laws, the New By-Laws specify the standards and procedures for indemnification of directors and officers of the Company and its subsidiaries in a manner consistent with the New Act, which are more specific than the prior law regarding such standards and procedures. Article VII.

SHAREHOLDER PROPOSALS

Proposals, which qualified shareholders intend to present at the 2006 Annual Meeting, must be received by the Company for inclusion in the Company's proxy statement and form of proxy relating to that meeting no later than January 15, 2006.

Shareholders of record who do not submit proposals for inclusion in the Proxy Statement but who intend to submit a proposal at the 2006 Annual Meeting, and shareholders of record who intend to submit nominations for directors at the meeting, must provide written notice. Such notice should be addressed to the Secretary and received at the Company's principal executive offices not later than January 15, 2006. The written notice must satisfy certain requirements specified in the Company's By-Laws. A copy of the By-Laws as now in effect is attached to this Proxy Statement as Exhibit C.

OTHER MATTERS

THE COMPANY FILES AN ANNUAL REPORT WITH THE SECURITIES AND EXCHANGE COMMISSION ON FORM 10-K WHICH INCLUDES ADDITIONAL INFORMATION ABOUT THE COMPANY. A COPY OF THE FORM 10-K, INCLUDING THE FINANCIAL STATEMENTS AND FINANCIAL STATEMENT SCHEDULES, MAY BE OBTAINED WITHOUT CHARGE, AND COPIES OF THE EXHIBITS WHICH ARE LISTED THEREIN WILL BE FURNISHED UPON PAYMENT OF THE COMPANY'S COSTS OF REPRODUCTION AND MAILING OF SUCH EXHIBITS. ALL SUCH REQUESTS SHOULD BE DIRECTED TO STEPHEN H. MOYNIHAN, SENIOR VICE PRESIDENT, PLANNING AND DEVELOPMENT, CLEAN HARBORS ENVIRONMENTAL SERVICES, INC., 1501 WASHINGTON STREET, BRAINTREE, MASSACHUSETTS 02184-7535, TELEPHONE (781) 849-1800, EXT. 4454.

Except for the matters set forth above, management knows of no other matter, which is to be brought before the meeting, but if any other matter shall properly come before the meeting, it is the intention of the persons named in the accompanying form of proxy to vote such proxy in accordance with their judgment on such matter.

By Order of the Board of Directors,

C. Michael Malm, Secretary

April 15, 2005

THE BOARD OF DIRECTORS HOPES THAT SHAREHOLDERS WILL ATTEND THE ANNUAL MEETING. REGARDLESS OF WHETHER YOU PLAN TO ATTEND, YOU ARE URGED TO COMPLETE, DATE, SIGN, AND RETURN THE ENCLOSED PROXY IN THE ACCOMPANYING ENVELOPE. A PROMPT RESPONSE WILL GREATLY FACILITATE ARRANGEMENTS FOR THE ANNUAL MEETING, AND YOUR COOPERATION WILL BE APPRECIATED. SHAREHOLDERS WHO ATTEND THE ANNUAL MEETING MAY VOTE THEIR STOCK PERSONALLY EVEN THOUGH THEY HAVE SENT IN THEIR PROXIES.

EXHIBIT A

The Commonwealth of Massachusetts

William Francis Galvin
Secretary of the Commonwealth
One Ashburton Place, Boston, Massachusetts 02108-1512

Restated Articles of Organization
(General Laws Chapter 156D, Section 10.07; 950 CMR 113.35)

(1) Exact name of corporation: Clean Harbors, Inc.

(2) Registered office address: 1501 Washington Street, Braintree, MA 02185
(number, street, city or town, state, zip code)

(3) Date adopted: May , 2005
(month, day, year)

(4) Approved by:

(check appropriate box)

☐ the directors without shareholder approval and shareholder approval was not required;

OR

☒ the board of directors and the shareholders in the manner required by G.L. Chapter 156D and the corporation's articles of organization.

(5) The following information is required to be included in the articles of organization pursuant to G.L. Chapter 156D, Section 2.02 except that the supplemental information provided for in Article VIII is not required:*

ARTICLE I

The exact name of the corporation is:

Clean Harbors, Inc.

ARTICLE II

Unless the articles of organization otherwise provide, all corporations formed pursuant to G.L. Chapter 156D have the purpose of engaging in any lawful business. Please specify if you want a more limited purpose:**

To operate as a holding company and to conduct any business permitted to business corporations under Chapter 156D of the General Laws of the Commonwealth of Massachusetts.

** Changes in Article VIII must be made by filing a statement of change of supplemental information form.*

*** Professional corporations governed by G. L. Chapter 156A must specify the professional activities of the corporation.*

ARTICLE III

State the total number of shares and par value, * if any, of each class of stock that the corporation is authorized to issue. All corporations must authorize stock. If only one class or series is authorized, *it* is not necessary to specify any particular designation.

WITHOUT PAR VALUE		WITH PAR VALUE		
TYPE	NUMBER OF SHARES	TYPE	NUMBER OF SHARES	PAR VALUE
		Preferred	1,080,415	$.01
		Common	40,000,000	$.01

ARTICLE IV

Prior to the issuance of shares of any class or series, the articles of organization must set forth the preferences, limitations and relative rights of that class or series. The articles may also limit the type or specify the minimum amount of consideration for which shares of any class or series may be issued, Please set forth the preferences, limitations and relative rights of each class or series and, if desired, the required type and minimum amount of consideration to be received.

See Continuation Sheets 4A through 4O attached hereto.

ARTICLE V

The restrictions, if any, imposed by the articles or organization upon the transfer of shares of any class or series of stock are:

None

ARTICLE VI

Other lawful provisions, and if there are no such provisions, this article may be left blank.

See Continuation Sheets 6A and 6B attached hereto.

Note: The preceding six (6) articles are considered to be permanent and maybe changed only by filing appropriate articles of amendment.

**G. L. Chapter 156D eliminates the concept of par value, however a corporation may specify par value in Article III. See G. L. Chapter 156D, Section 6. 21, and the comments relative thereto*

SECTION 1. *General.*

The total number of shares of stock which the Corporation shall have the authority to issue is forty million (40,000,000) shares of common stock, par value $.01 per share, and one million eighty thousand four hundred fifteen (1,080,415) shares of preferred stock, par value $.01 per share.

The shares authorized in this Article IV may be issued by the Corporation from time to time as approved by its Board of Directors without the approval of its stockholders.

The designations, powers, preferences and relative, participating, optional or other special rights of, and the qualifications, limitations or restrictions upon, each class or series of stock shall be as set forth below in Sections 2 and 3 of this Article IV.

SECTION 2. *Common Stock*

Except as provided by law or in this Article IV (or in any certificate of establishment of any series of preferred stock), the holders of the common stock shall exclusively possess all voting power. Each holder of shares of common stock shall be entitled to one vote on all matters for each share held by such holder.

Whenever there shall have been paid, or declared and set aside for payment, to the holders of the outstanding shares of any class of stock having preference over the common stock as to the payment of the dividends, the full amount of dividends and of sinking fund or retirement fund or other retirement payments, if any, to which such holders are respectively entitled in preference to the common stock, then dividends may be paid on the common stock and on any class of series of stock entitled to participate therewith to dividends, out of any assets legally available for the payment of dividends; but only when and as declared by the Board of Directors.

In the event of any liquidation, dissolution or winding up of the Corporation after there shall have been paid to or set aside for the holders of any class having preferences over the common stock in the event of liquidation, dissolution or winding up of the Company the full preferential amounts to which they are respectively entitled, the holders of the common stock, and of any class or series of stock entitled to participate therewith, in whole or in part, as to distribution of assets shall be entitled, after payment or provision for payment of all debts and liabilities of the Corporation to receive the remaining assets of the Corporation available for distribution, in cash or in kind, in proportion to their holding.

SECTION 3. *Preferred Stock.*

The Board of Directors of the Corporation is authorized within the limitations and restrictions stated in this Article IV by vote or votes from time to time adopted, to provide for the issuance of preferred stock in one or more series and to fix and state the voting powers, designations, preferences and relative, participating, optional or other special rights of the shares of each series and the qualifications, limitations and restrictions thereof, including, without limitation, the distinctive serial designation and the number of shares constituting such series and to increase or decrease the number of shares constituting any such series; and to increase or decrease the number of shares of any series subsequent to the issue of shares of that series, but not below the number of shares of such series then outstanding provided that, in case the number of shares of any series shall be so decreased, the shares then constituting such decreases shall resume the status which they had prior to the adoption of the resolution originally fixing the number of shares of such series and including further, without limitation, determination of one or more of the following:

(a) The dividend rates or the amount of dividends to be paid on the shares of such series, whether dividends shall be cumulative and, if so, from which date or dates, the payment date or dates for dividends, and the participating, preferences or other special rights, if any, with respect to dividends;

(b) The voting powers, if any, of shares of such series;

(c) Whether the shares of such series shall be redeemable and, if so, the price or prices at which, and the terms and conditions on which, such shares may be redeemed;

(d) The amount or amounts payable upon the shares of such series and any preferences applicable thereto in the event of voluntary or involuntary liquidation, dissolution or winding up of the Corporation;

(e) Whether the shares of such series shall be entitled to the benefit of a sinking or retirement fund to be applied to the purchase or redemption of such shares, and if so entitled, the amount of such fund and the manner of its application, including the price at which such shares may be redeemed or purchased through the application of such fund;

(f) Whether the shares of such series shall be convertible into, or exchangeable for, shares of any other class or classes or of any other series of the same or any other class or classes of stock of the Corporation and, if so, convertible or exchangeable, the conversion price or prices, or the rate or rates of exchange, and the adjustments thereof, if any, at which such conversion or exchange may be made, and any other terms and conditions of such conversion or exchange;

(g) The price or other consideration for which the shares of such series shall be issued;

(h) Whether the shares of such series which are redeemed or converted shall have the status of authorized but unissued shares of preferred stock and whether such shares may be reissued as shares of the same or any other series of stock; and

(i) Such other powers, preferences, special rights, qualifications, limitations and restrictions thereof as the Board of Directors of the Corporation may deem advisable.

Vote Adopted by the Board of Directors of the Corporation on January 4, 1993 Establishing the Terms of the Series B Convertible Preferred Stock

VOTED: That this Corporation issue a series of convertible preferred stock having the voting powers, designations, preferences and special or relative participating, optional and other rights and privileges as set forth in the "Description of Series B Convertible Preferred Stock" presented to this meeting; that such series of preferred stock shall be designated: "Series B Convertible Preferred Stock"; that said Series B Convertible Preferred Stock shall consist of 156,416 shares of Preferred Stock of this Corporation; and that the Clerk of the Corporation file a Certificate of Designation incorporating the Description of Series B Convertible Preferred Stock with the Massachusetts Secretary of State.

DESCRIPTION OF SERIES B CONVERTIBLE PREFERRED STOCK

1. *Designation.* A total of 156,416 shares of Preferred Stock, $.01 par value per share, authorized under the Articles of Organization of Clean Harbors, Inc. (the "Company"), shall be designated the "Series B Convertible Preferred Stock."

2. *Dividends.* The holders of the Series B Convertible Preferred Stock shall be entitled to receive, in preference to the holders of the Common Stock (as hereinafter defined) and any other capital stock of the Company, dividends on each outstanding share of Series B Convertible Preferred Stock on a cumulative (but non-compounded) basis during the first year after the Initial Issuance Date (as hereinafter defined) of such share at the annual rate of seven percent (7%), and thereafter eight percent (8%), of the Liquidation Preference (as defined in Section 3(b) hereof) of the Series B Convertible Preferred Stock as then in effect. Dividends shall accrue from day to day on each such share from the date on which such share is initially issued by the Company (the "Initial Issuance Date"), whether or not such dividends have been declared and whether or not there are profits, surplus or other funds of the Company legally available for the payment of dividends. Dividends shall be payable on the 15th day of January, April, July and October of each year to holders of record of the Series B Convertible Preferred Stock as of the first day of each such month, commencing on the first such date to occur after the Initial Issuance Date. At the election of the Company's Board of Directors, each such dividend shall be payable either in cash or by the issuance of shares of the Company's Common Stock, $.01 par value per share ("Common Stock"), having a Market Value as of the record date of such dividend equal to the amount of such dividend payable on the applicable payment date. "Market Value" shall mean the average closing price of Common Stock on the NASDAQ inter-dealer quotation system or, if applicable, the principal securities exchange on which Common Stock is then being traded, for the five trading days preceding the date as of which such Market Value is to be determined. If Common Stock is not then being traded on the NASDAQ inter-dealer quotation system or on any securities exchange, then "Market Value" shall mean the value of Common Stock as established by the Company's Board of Directors in good faith. In the event that full cumulative dividends on the Series B Convertible Preferred Stock have not been paid, the Company may not declare or pay or set apart for payment any dividends or make any other distributions on, or make any payment on account of the purchase, redemption or retirement of the Common Stock or any other capital stock of the Company.

3. *Liquidation, Dissolution or Winding Up.*

(a) In the event of any liquidation, dissolution or winding-up of the Company, whether voluntary or involuntary, holders of each share of Series B Convertible Preferred Stock shall be entitled to be paid out of the assets of the Company available for distribution to holders of the Company's capital stock of all classes, whether such assets are capital, surplus, or earnings, before any sums shall be paid or any assets distributed among the holders of shares of Common Stock or any other shares of capital stock of the Company, an amount per share equal to the greater of (i) the Liquidation Value (as defined in Section 3(b) hereof) per share of Series B Convertible Preferred Stock, or (ii) the amount per share of Series B Convertible Preferred Stock that would have been payable had each such share been converted, in accordance with and subject to the provisions of Section 5 hereof, into Common Stock immediately prior to such event of liquidation, dissolution or winding-up.

If the assets of the Company shall be insufficient to permit the payment in full to the holders of then outstanding shares of Series B Convertible Preferred Stock of the amount thus distributable, then the entire assets of the Company available for such distribution shall be distributed ratably among the holders of the then outstanding shares of Series B Convertible Preferred Stock based upon the respective Liquidation Values of such shares. After such payment shall have been made in full to the holders of the then outstanding shares of Series B Convertible Preferred Stock or funds necessary for such payment shall have been set aside by the Company in trust for the account of such holders so as to be available for such payment, holders of Series B Convertible Preferred Stock shall be entitled to no further participation in the distribution of the assets of the Company and shall have no further rights of conversion, and the remaining assets available for distribution shall be distributed ratably among the holders of Common Stock.

(b) The "Liquidation Preference" of the Series B Convertible Preferred Stock in effect at any time shall be equal to $50.00 per share unless such amount shall be hereafter adjusted in accordance with Section 3(c) hereof. The "Liquidation Value" of each outstanding share of Series B Convertible Preferred Stock in effect at any time shall be equal to the Liquidation Preference of such share plus the amount of any accrued but unpaid dividends thereon as calculated in accordance with Section 2 hereof.

(c) The Liquidation Preference for each share of Series B Convertible Preferred Stock shall be subject to equitable adjustment if and whenever there shall occur after the date on which this Certificate of Designation shall be filed with the Massachusetts Secretary of State (the "Filing Date") a stock split, combination, reclassification or other similar event involving the Series B Convertible Preferred Stock. A consolidation or merger of the Company in which the owners of voting stock of the Company immediately prior to such consolidation or merger own less than two-thirds of the voting stock of the surviving entity, or a sale of all or substantially all of the assets of the Company, shall be regarded as a liquidation, dissolution or winding-up of the affairs of the Company within the meaning of this Section 3; *provided, however,* that each holder of Series B Convertible Preferred Stock shall have the right to elect the benefits of the provisions of Section 5(d)(i) hereof in lieu of receiving payment in liquidation, dissolution or winding-up of the Company pursuant to this Section 3.

(d) Whenever the distribution provided for herein upon the liquidation, dissolution or winding-up of the Company shall be paid in property other than cash, the value of such distribution shall be the fair market value of such property as determined in good faith by the Company's Board of Directors.

4. *Voting Power.* The holders of the Series B Convertible Preferred Stock shall have the following voting rights:

(a) Each share of Series B Convertible Preferred Stock shall entitle the holder thereof to one vote for each share held and, except as provided herein or by law, the Series B Convertible Preferred Stock and the Common Stock (and any other capital stock of the Company at any time entitled to vote) shall vote together as one class.

(b) In addition to any provisions herein and any requirement of law, the Series B Convertible Preferred Stock shall vote as a single class with respect to any proposal (i) to change the dividend rate, liquidation Preference, Redemption Price, voting rights or conversion rights of the shares of the Series B Convertible Preferred Stock or to increase the number of authorized shares of Series B Convertible Preferred Stock; (ii) to increase the authorized amount of any class of capital stock of the Company unless the same ranks junior to the Series B Convertible Preferred Stock as to dividends and distribution of assets upon liquidation; (iii) to authorize, create, issue or sell any shares of any class (or any series of any class) of capital stock of the Company that ranks *pari passu* with or prior to the Series B Convertible Preferred Stock as to dividends or distribution of assets upon liquidation (collectively, the "Priority Stock"); or (iv) for the alteration, change or modification of the rights set forth in this Section 4.

(c) Unless the vote of a larger percentage is required by law or the Articles of Organization, the affirmative vote of the holders of a majority of the outstanding shares of Series B Convertible Preferred Stock shall be sufficient to take any action as to which a class vote of the holders of the Series B Convertible Preferred Stock is required by law or the Articles of Organization.

5. *Conversion Rights.* The holders of the Series B Convertible Preferred Stock shall have the following conversion rights:

(a) Subject to and in compliance with the provisions of this Section 5, any then outstanding shares of Series B Convertible Preferred Stock may be converted, at the option of the holder, into fully-paid and nonassessable shares (calculated as to each conversion to the largest whole share) of Common Stock. Such conversion may occur at any time or times on or after August 16, 1994 (the "Initial Conversion Date"), provided the holder shall give to the Company a Conversion Notice (as defined in Section 5(g) hereof) of the holder's election to make such a conversion. The number of shares of Common Stock to which a holder of Series B Convertible Preferred Stock shall be entitled upon conversion shall be the product obtained by multiplying the Applicable Conversion Rate (as calculated in accordance with Section 5(b) hereof) by the number of shares of Series B Convertible Preferred Stock being converted.

(b) The conversion rate in effect at any time (the "Applicable Conversion Rate") shall be the quotient obtained by dividing the liquidation Value (as calculated in accordance with Section 3(b) hereof) by the Applicable Conversion Value (as calculated in accordance with Section 5(c) hereof). The Applicable Conversion Rate and the Applicable Conversion Value in effect from time to time shall be calculated to four decimal places and rounded to the nearer thousandths.

(c) Subject to the occurrence of an Extraordinary Common Stock Event (as defined in Section 5(d) hereof), the "Applicable Conversion Value" in effect at any time shall be $18.630 per share of Series B Convertible Preferred Stock.

(d) The number and kind of securities issuable upon the conversion of the Series B Convertible Preferred Stock shall be subject to adjustment from time to time upon the happening of certain events (each an "Extraordinary Common Stock Event") occurring on or after the Filing Date as follows:

(i) In case of any reclassification or change of outstanding securities issuable upon conversion of the Series B Convertible Preferred Stock (other than a change in par value, or from par value to no par value, or from no par value to par value or as a result of a subdivision or combination), or in case of any consolidation or merger of the Company with or into another corporation (other than a merger with another corporation in which the Company is the surviving Company and which does not result in any reclassification or change—other than change in par value, or from par value to no par value, or from no par value to par value, or as a result of a subdivision or combination—of outstanding securities issuable upon exercise of these conversion rights), the holders of the Series B Convertible Preferred Stock shall have, and the Company, or such successor corporation, shall covenant in the constituent documents effecting any of the foregoing transactions that the holders of the Series B Convertible Preferred Stock do have, the right to obtain upon the exercise of these conversion rights, in lieu of each share of Common Stock theretofore issuable upon exercise of these conversion rights, the kind and amount of shares of stock, other securities, money and property receivable upon such reclassification, change, consolidation or merger by a holder of one share of Common Stock issuable upon exercise of these conversion rights as if they had been exercised immediately prior to such reclassification, change, consolidation or merger. The constituent documents effecting any reclassification, change, consolidation or merger shall provide for any adjustments which shall be as nearly equivalent as may be practicable to the adjustments provided in this Section 5(d). The provisions of this Section 5(d)(i) shall similarly apply to successive reclassifications, changes, consolidations or mergers.

(ii) If the Company at any time while any of the Series B Convertible Preferred Stock is outstanding, shall subdivide or combine its Common Stock, the Applicable Conversion Value shall be proportionately reduced, in case of subdivision of shares, as at the effective date of such subdivision, or if the Company shall take a record of holders of its Common Stock for the purpose of so subdividing, as at such record date, whichever is earlier, or shall be proportionately increased, in the case of combination of shares, as at the effective date of such combination or, if the Company shall take a record of holders of its Common Stock for the purpose of so combining, as at such record date, whichever is earlier.

(iii) If the Company at any time while any of the Series B Convertible Preferred Stock is outstanding shall pay a dividend payable in, or make any other distribution of, Common Stock, the Applicable Conversion Value shall be adjusted, as at the date the Company shall take a record of the holders of its Common Stock for the purpose of receiving such dividend or other distribution (or if no such record is taken, as at the date of such payment or other distribution), to that value determined by multiplying the Applicable Conversion Value in effect immediately prior to such record date (or if no such record is taken, then immediately prior to such payment or other distribution) by a fraction (1) the numerator of which shall be the total number of shares of Common Stock outstanding immediately prior to such dividend or distribution, and (2) the denominator of which shall be the total number of shares of Common Stock outstanding immediately after such dividend or distribution (plus in the event that the Company paid cash for fractional shares, the number of additional shares which would have been outstanding had the Company issued fractional shares in connection with said dividend, except to the extent such payment of cash is treated as a dividend payable out of earnings or surplus legally available for the payment of dividends under the laws of the Commonwealth of Massachusetts).

(iv) If the Company at any time while any of the Series B Convertible Preferred Stock is outstanding shall issue any additional shares of Common Stock (otherwise than as provided in Sections 5(d)(i) through 5(d)(iii) above) at a price per share less than ninety percent (90%) of the Market Value (as defined in Section 2 hereof) of Common Stock as of the date of the authorization of such issuance by the Company's Board of Directors, then the Applicable Conversion Value upon each such issuance shall be adjusted to that value determined by multiplying the Applicable Conversion Value by a fraction:

(A) the numerator of which shall be the sum of (1) the number of shares of Common Stock outstanding immediately prior to the issuance of such additional shares of Common Stock multiplied by such Market Value, and (2) the consideration, if any, received and deemed received by the Company upon the issuance of such additional shares of Common Stock, divided by (3) the total number of shares of Common Stock outstanding immediately after the issuance of such additional shares of Common Stock, and

(B) the denominator of which shall be such Market Value.

However, no adjustment of the Applicable Conversion Value shall be made in an amount less than $.05 per share, but any such lesser adjustment shall be carried forward and shall be made at the time together with the next subsequent adjustment which, together with any adjustment so carried forward, shall amount to $.05 per share or more. Further, no adjustment of the Applicable Conversion Value shall be made under this Section 5(d)(iv) upon the issuance of any additional shares of Common Stock that (x) are issued pursuant to thrift plans, stock purchase plans, stock bonus plans, stock option plans, employee stock ownership plans and other incentive or profit sharing arrangements for the benefit of employees, provided such plans or arrangements have been approved by a majority of either the disinterested members of the Board of Directors of the Company or the Company's stockholders ("Employee Benefit Plans"), or (y) are issued pursuant to the terms of any Convertible Security (as defined in Section 5(d)(v) below), warrant, option, or other security or contractual obligation outstanding as of the Filing Date (as defined in Section 3(c) hereof), or (z) are issued pursuant to any Common Stock Equivalent (as defined in Section 5(d)(v) below), if upon the issuance of any such Common Stock Equivalent, any such adjustment shall previously have been made pursuant to Section 5(d)(v) hereof or if no adjustment was required pursuant to Section 5(d)(v) hereof.

(v) In case the Company shall after the Filing Date (as defined in Section 3(c) hereof) issue any security or evidence of indebtedness which is convertible into or exchangeable for Common Stock ("Convertible Security"), or any warrant, option or other right to subscribe for or purchase Common Stock or any Convertible Security, other than pursuant to Employee Benefit Plans, ("Common Stock Equivalent"), or if, after any such issuance, the price per share for which additional shares of Common Stock may be issuable thereunder is amended, then the Applicable, Conversion Value upon each such issuance or amendment shall be adjusted as provided in Section 5(d)(iv) hereof on the basis that (A) the maximum number of additional shares of Common Stock issuable pursuant to all such Common Stock Equivalents shall be deemed to have been issued as of the earlier of (x) the date on which the Company shall enter into a firm contract for the issuance of such Common Stock Equivalent, or (y) the date of actual issuance of such Common Stock Equivalent; and (B) the aggregate consideration for such maximum number of additional shares of Common Stock shall be deemed to be the minimum consideration received and receivable by the Company for the issuance of such additional shares of Common Stock pursuant to such Common Stock Equivalent; provided, however, that no adjustment shall be made pursuant to this Section 5(d)(v) unless the consideration received and receivable by the Company per share of Common Stock for the issuance of such additional shares of Common Stock pursuant to such Common Stock Equivalent is less than the then Market Value of Common Stock. No adjustment of the Applicable Conversion Value shall be made under this Section 5(d)(v) upon the issuance of any Convertible Security which is issued pursuant to the exercise of any warrants or other subscription or purchase rights therefor, if any adjustment shall previously have been made in the Applicable Conversion Value then in effect upon the issuance of such warrants or other rights pursuant to this Section 5(d)(v).

(vi) The following provisions shall be applicable to the making of adjustments to the Applicable Conversion Value hereinbefore provided in this Section 5(d):

(A) The consideration received by the Company shall be deemed to be the following: to the extent that any additional shares of Common Stock or any Common Stock Equivalents shall be issued for cash consideration, the consideration received by the Company therefor, or, if such additional shares of Common Stock or Common Stock Equivalents are offered by the Company for subscription, the subscription price, or, if such additional shares of Common Stock or Common Stock Equivalents are sold to underwriters or dealers for public offering without a subscription offering, the initial public offering price, in any such case excluding any amounts paid or receivable for accrued interest or accrued dividends and without deduction of any compensation, discounts or expenses paid or incurred by the Company for and in the underwriting of, or otherwise in connection with the issue thereof; to the extent that such issuance shall be for a consideration other than cash, then, except as herein otherwise expressly provided, the fair market value of such consideration at the time of such issuance as determined in good faith by the Company's Board of Directors. The consideration for any additional shares of Common Stock issuable pursuant to any Common Stock Equivalents shall be the consideration received by the Company for issuing such Common Stock Equivalents, plus the additional consideration payable to the Company upon the exercise, conversion or exchange of such Common Stock Equivalents. In case of the issuance at any time of any additional shares of Common Stock or Common Stock Equivalents in payment or satisfaction of any dividend upon any class of stock other than Common Stock, the Company shall be deemed to have received for such additional shares of Common Stock or Common Stock Equivalents a consideration equal to the amount of such dividend so paid or satisfied. In any case in which the consideration to be received or paid shall be other than cash, the Board of Directors of the Company shall notify promptly each holder of the Series B Convertible Preferred Stock of its determination of the fair market value of such consideration.

(B) Upon the expiration of the right to convert, exchange or exercise any Common Stock Equivalent the issuance of which effected an adjustment in the Applicable Conversion Value, if any such Common Stock Equivalent shall not have been converted, exercised or exchanged, the number of shares of Common Stock deemed to be issued and outstanding by reason of the fact that they were issuable upon conversion, exchange or exercise of any such Common Stock Equivalent shall no longer be computed as set forth above, and the Applicable Conversion Value shall forthwith be readjusted and thereafter be the value which it would have been (but reflecting any other adjustments in the Applicable Conversion Value made pursuant to the provisions of Section 5(d)(iv) after the issuance of such Common Stock Equivalent) had the adjustment of the Applicable Conversion Value made upon the issuance or sale of such Common Stock Equivalent been made on the basis of the issuance only of the number of additional shares of Common Stock actually issued upon exercise, conversion or exchange of such Common Stock Equivalents and thereupon only the number of additional shares of Common Stock actually so issued shall be deemed to have been issued and only the consideration actually received by the Company (computed as in Subparagraph (A) of this Section 5(d)(vi)) shall be deemed to have been received by the Company.

(C) The number of shares of shares of Common Stock at any time outstanding shall not include any shares thereof then directly or indirectly owned or held by or for the account of the Company or its subsidiaries.

(e) Whenever the Applicable Conversion Value and the Applicable Conversion Rate are required to be adjusted as provided herein, the Company (i) shall forthwith compute the Applicable Conversion Value and the Applicable Conversion Rate, (ii) shall prepare a certificate signed by the Company's Treasurer setting forth such Applicable Conversion Value and Applicable Conversion Rate and showing in detail the facts upon which such adjustment is based, and (iii) shall mail a copy of such certificate to each holder of record of then outstanding shares of Series B Convertible Preferred Stock. A copy of such certificate shall also forthwith be filed with the transfer agent or agents for the Series B Convertible Preferred Stock (if any) and for the Common Stock. Until further adjusted, the Applicable Conversion Value and the Applicable Conversion Rate shall be as set forth in such certificate, provided that the computation of such Applicable Conversion Value and such Applicable Conversion Rate shall be reviewed at least annually by the independent public accountants regularly employed by the Company and said accountants shall file a corrected certificate, if required, with such transfer agent or agents. Upon any such filing of a corrected certificate, the Company shall forthwith mail a copy of such corrected certificate to each holder of record of then outstanding shares of Series B Convertible Preferred Stock.

(f) In the event the Company shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Company other than shares of Common Stock or in assets (excluding cash dividends or distributions), then and in each such event provision shall be made so that the holders of Series B Convertible Preferred Stock shall receive upon conversion thereof in addition to the number of shares of Common Stock receivable thereupon, the number of securities or such other assets of the Company that they would have received had their Series B Convertible Preferred Stock been converted into Common Stock on the date of such event and had they thereafter, during the period from the date of such event to and including the Conversion Date (as defined in Section 5(g) hereof), retained such securities or such other assets receivable by them as aforesaid during such period, giving application to all adjustments called for during such period under this Section 5 with respect to the rights of the holders of Series B Convertible Preferred Stock.

(g) To exercise conversion rights, a holder of Series B Convertible Preferred Stock shall give at least ten (10) days prior written notice (a "Conversion Notice") to the Company of the holder's election to exercise such conversion rights. Any such Conversion Notice shall be given by certified or registered first class mail, or by delivery to a nationally recognized overnight delivery service, to the Company at its principal office. On or prior to the date specified in such Conversion Notice as the effective date for the conversion (the "Conversion Date"), such holder shall surrender the certificate or certificate representing the shares being converted to the Company at its principal office. Such holder may in the Conversion Notice also state the name or names (with address or addresses) in which the certificate or certificates for shares of Common Stock issuable upon such conversion shall be issued, and if no such statement shall be made by the holder, then such shares of Common Stock shall be issued with the name or names (with address or addresses) as they then appear on the Company's stock transfer records. The certificate or certificates for shares of Series B Convertible Preferred Stock surrendered for conversion shall be accompanied by proper assignment thereof to the Company or endorsed in blank. As promptly as practicable' after the Conversion Date, the Company shall issue and shall deliver to the holder of the shares of Series B Convertible Preferred Stock being converted, or on the holder's written order, such certificate or certificates as the holder may request for the number of whole shares of Common Stock issuable upon the conversion of such shares of Series B Convertible Preferred Stock in accordance with the provisions of this Section 5, and cash as provided in Section 5(h), in respect of any fraction of a share of Common Stock issuable upon such conversion. Such conversion shall be deemed to have been effected immediately prior to the close of business on the Conversion Date, and at such time

(whether or not the certificate or certificates previously representing the relevant shares of Series B Convertible Preferred Stock shall have been surrendered to the Company) the rights of the holder as holder of the converted shares of Series B Convertible Preferred Stock shall cease and the person or persons in whose name or names any certificate or certificates for shares of Common Stock shall be issuable upon such conversion shall be deemed to have become the holder or holders of record of the shares of Common Stock represented thereby.

(h) No fractional shares of Common Stock or scrip representing fractional shares shall be issued upon the conversion of shares of Series B Convertible Preferred Stock. Instead of any fractional shares of Common Stock which would, otherwise be issuable upon conversion of Series B Convertible Preferred Stock, the Company shall pay to the holder of the shares of Series B Convertible Preferred Stock which were converted a cash adjustment in respect of such fractional shares in an amount equal to the same fraction of the Market Value (as defined in Section 2 hereof) per share of the Common Stock as of the Conversion Date. The determination as to whether or not any fractional shares are issuable shall be based upon the total number of shares of Series B Convertible Preferred Stock being converted at any one time by any holder thereof, not upon each share of Series B Convertible Preferred Stock being converted.

(i) In the event some but not all of the shares of Series B Convertible Preferred Stock represented by a certificate or certificates surrendered by a holder are converted, the Company shall execute and deliver to or on the order of the holder, at the expense of the Company, a new certificate representing the number of shares of Series B Convertible Preferred Stock which were not converted.

(j) The Company shall at all times reserve and keep available out of its authorized but unissued shares of Common Stock, solely for the purpose of effecting the conversion of the shares of Series B Convertible Preferred Stock, free from preemptive and other subscription rights, such number of shares of Common Stock as shall from time to time be sufficient to effect the conversion of all then outstanding shares of Series B Convertible Preferred Stock, and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares of Series B Convertible Preferred Stock, the Company shall take such corporate action as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose. The Company shall ensure that all shares of Common Stock which shall be so issuable shall upon issue be duly and validly issued and fully paid and nonassessable.

(k) If any shares of Common Stock required to be reserved for the purposes of conversion of Series B Convertible Preferred Stock hereunder require registration with or approval of any governmental authority under any federal or state law, or listing upon any national securities exchange, before such shares may be issued upon conversion, the Company will in good faith and as expeditiously as possible endeavor to cause such shares to be duly registered, approved or listed, as the case may be.

(l) The issuance of certificates for shares of Common Stock upon the conversion of Series B Convertible Preferred Stock shall be made without charge to the holders thereof for any transfer or similar taxes that may be payable in respect of the issue, delivery or acquisition of such certificates. Such certificates shall be issued in the respective names of the holders of the Series B Convertible Preferred Stock converted.

6. *Redemption.*

(a) Subject to and in compliance with the provisions of this, Section 6, the Company, at its option, shall have the right to redeem for cash any or all then outstanding shares of Series B Convertible Preferred Stock. The redemption price to be paid for each share of Series B Convertible Preferred Stock (the "Redemption Price") then to be redeemed shall be determined as follows: (i) if the Redemption Date (as defined in Section 6(b) hereof) shall occur on or prior to the Initial Conversion Date (as defined in Section 5(a) hereof), the Redemption Price of the shares of Series B Convertible Preferred Stock then to be redeemed shall be equal to their Liquidation Value (as defined in Section 3(b) hereof); and (ii) if the Redemption Date shall occur after the Initial Conversion Date, the Redemption Price of the shares of Series B Convertible Preferred Stock then to be redeemed shall be equal to the product obtained by multiplying their Liquidation Value by a premium (the "Redemption Premium") determined in accordance with the following table:

If Redemption Date Occurs Between:	Applicable Redemption Premium
August 17, 1994 and August 16, 1995	1.07
August 17, 1995 and August 16, 1996	1.06
August 17, 1996 and August 16, 1997	1.05
August 17, 1997 and August 16, 1998	1.04
August 17, 1998 and August 16, 1999	1.03
August 17, 1999 and August 16, 2000	1.02
August 17, 2000 and August 16, 2001	1.01
August 17, 2001 and thereafter	1.00

In case of the redemption of only part of the Series B.Convertible Preferred Stock at the time outstanding, such redemption shall be made *pro rata*; provided, however, if full cumulative dividends shall not have been paid, including dividends payable on the last payment date, the Company shall not call for redemption any shares of Series B Convertible Preferred Stock unless all such shares then outstanding are called for simultaneous redemption.

(b) At least thirty (30) days before the Redemption Date (as hereinafter defined), the Company shall give written notice (the "Redemption Notice") by certified or registered, first class mail, or by delivery to a nationally recognized overnight delivery service, to each holder of record of Series B Convertible Preferred Stock that is to be redeemed, at such holder's address shown on the Company's stock transfer records; provided, however, that the giving of the Redemption Notice shall not affect the conversion rights, if and to the extent then applicable, of such holder pursuant to Section 5 hereof until the Redemption Date shall have occurred. The Redemption Notice shall contain the following information:

(i) the number of shares of Series B Convertible Preferred Stock held by the holder which shall be redeemed by the Company, and the total number of shares of Series B Convertible Preferred Stock held by all holders to *be so* redeemed;

(ii) the date upon which the redemption is to become effective (the "Redemption Date") and the applicable Redemption Price; and

(iii) the address to which the holder is to surrender to the Company the certificate or certificates representing the shares of Series B Convertible Preferred Stock to be redeemed.

(c) On or prior to the Redemption Date, each holder of shares of Series B Convertible Preferred Stock to be redeemed shall surrender the certificate or certificates representing such shares to the Company at the address designated in the Redemption Notice. Such holder may by written notice to the Company given at least one (1) day prior to the Redemption Date state the name or names (with address or addresses) in which the payment for the redeemed shares shall be made, and if no such statement shall be made by the holder, then such payment shall be made to the name or names (with address or addresses) as they then appear on the Company's stock transfer records. The certificate or certificates for shares of Series B Convertible Preferred Stock surrendered for redemption shall be accompanied by proper assignment thereof to the Company or endorsed in blank. On the Redemption Date, the Company shall deliver to the holder of the shares of Series B Convertible Preferred Stock then being redeemed, or on such holder's written order, a certified or bank cashier's check in payment for the number of shares of Series B Convertible Preferred Stock then being redeemed in accordance with the provisions of this Section 6. Such redemption shall be deemed to have been effected immediately prior to the close of business on the Redemption Date, and at such time (whether or not the certificate or certificates previously representing the relevant shares of Series B Convertible Preferred Stock shall have been surrendered to the Company) the rights (other than the right to receive the Redemption Payment) of the holder as holder of the redeemed shares shall cease.

7. *No Reissuance of Series B Convertible Preferred Stock.* No share or shares of Series B Convertible Preferred Stock acquired by the Company by reason of redemption, purchase, repurchase, conversion or otherwise shall be reissued, and all such shares shall be cancelled, retired and eliminated from the shares of Series B Convertible Preferred Stock which the Company shall be authorized to issue. The Company may from time to time take such other appropriate corporate action as may be necessary or appropriate to reduce the authorized number of shares of Series B Convertible Preferred Stock accordingly (but not below the number of shares then outstanding), or to convert shares of Series B Convertible Preferred Stock which have been redeemed, purchased, repurchased, converted or otherwise acquired, back into shares of authorized but unissued shares of capital stock.

8. *No Dilution or Impairment.* The Company shall not, by amendment of its Articles of Organization or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of Series B Convertible Preferred Stock set forth herein, but will at all times in good faith assist in the carrying out of all terms and in the taking of all action that may be necessary or appropriate in order to protect the rights of the holders of then outstanding Series B Convertible Preferred Stock against dilution or other impairment. Without limiting the generality of the foregoing, the Company (a) shall not increase the par value of any shares of stock receivable on the conversion of Series B Convertible Preferred Stock above the amount payable therefor on such conversion, (b) shall take all action that may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable shares of stock on the conversion of all Series B Convertible Preferred Stock from time to time outstanding, (c) shall not issue any capital stock of any class that is preferred to the Series B Convertible Preferred Stock as to dividends or as to the distribution of assets upon voluntary or involuntary dissolution, liquidation or winding-up of the Company, unless such issuance has been approved by the holders of the then outstanding shares of Series B Convertible Preferred Stock in accordance with Section 4 hereof, and (d) shall not transfer all or substantially all of its properties and assets to any other entity (corporate or otherwise), or consolidate with or merge into any other entity or permit any other entity to consolidate with or merge into the Company unless the Company is the surviving entity or the surviving entity shall expressly assume in writing its agreement to be bound by all the terms of the Series B Convertible Preferred Stock set forth herein.

9. *Notices of Record Date.* In the event of:

(a) any taking by the Company of a record of the holders of any class of capital stock for the purpose of determining the holders thereof who are entitled to receive any dividend or other distribution, or any right to subscribe for, purchase or otherwise acquire any shares of stock of any class or any other securities or property, or to receive any other right; or

(b) any capital reorganization of the Company, any reclassification or recapitalization of the capital stock of the Company, any merger or consolidation of the Company, or any transfer of all or substantially all of the assets of the Company to any other corporation, or any other entity or person; or

(c) any voluntary or involuntary dissolution, liquidation or winding-up of the Company; then and in each such event the Company shall mail or cause to be mailed to each holder of Series B Convertible Preferred Stock a notice specifying (i) the date on which any such record is to be taken for the purpose of such dividend, distribution or right and a description of such dividend, distribution or right, (ii) the date on which any such reorganization, reclassification, recapitalization, transfer, consolidation, merger, dissolution, liquidation or winding-up is expected to become effective, and (iii) the time, if any, that is to be fixed, as to when the holders of record of Common Stock (or other securities) shall be entitled to exchange their shares of Common Stock (or other securities) for securities or other property deliverable upon such reorganization, reclassification, recapitalization, transfer, consolidation, merger, dissolution, liquidation or winding-up. Such notice shall be mailed at least 30 days prior to the date specified in such notice on which such dividend or other distribution or right is to be distributed or any reorganization, reclassification, recapitalization, transfer, consolidation, merger, dissolution, liquidation or winding-up is to be consummated.

10. *Definition.* If the day upon which any payment is to be made or any other action is to be taken or any event is scheduled to occur pursuant to the terms of this Description of Series B Convertible Preferred Stock is not a business day, the payment shall be made or the other action shall be taken on the next succeeding business day. A "business day" is defined as a day in the City of Boston, Commonwealth of Massachusetts, that is not a legal holiday or a day on which banking institutions are authorized or obligated by law to close.

11. *Notices.* Any notice, demand or other communication shall be deemed given and received as of the date of delivery in person or receipt set forth on the return receipt. The inability to deliver because of rejection or other refusal to accept any notice, demand or other communication, shall be deemed to be receipt of such notice, demand or other communication as of the date of such inability to deliver or rejection or refusal to accept.

Other Lawful Provisions

ONE: The Board of Directors is expressly authorized to make, amend or repeal the By-Laws of the Corporation in whole or in part, except with respect to any provision thereof which by law or the By-Laws requires action by the shareholders, and subject to the power of the shareholders to amend or repeal any By-Law adopted by the Board of Directors.

TWO: Any action which may be taken by shareholders may be taken without a meeting if (i) all shareholders entitled to vote on the matter or (ii) the shareholders having not less than the minimum number of votes necessary to take the action at a meeting at which all shareholders entitled to vote on the action are present and voting consent to the action in writing and the written consents are delivered to the Corporation for inclusion with the records of the meetings of shareholders within 60 days of the earliest dated consent delivered to the Corporation.

THREE: The Board of Directors may consist of one, two or more individuals regardless of the number of shareholders.

FOUR: The Corporation shall, to the extent legally permissible, indemnify each person (and his heirs, executors, administrators, or other legal representatives) who is, or shall have been, a director or officer of the Corporation or any person who is serving, or shall have served, at the request of the Corporation as a director or officer of another corporation, against all liabilities and expenses (including judgments, fines, penalties and attorneys' fees and all amounts paid in compromise or settlement) reasonably incurred by any such director, officer or person in connection with, or arising out of, any action, suit or proceeding in which any such director, officer or person may be a party defendant or with which he may be threatened or otherwise involved, directly or indirectly, by reason of his being or having been a director or officer of the Corporation or such other corporation, except in relation to matters as to which any such director, officer or person shall be finally adjudged, other than by consent, in such action, suit or proceeding not to have acted in good faith in the reasonable belief that his action was in the best interests of the Corporation; provided, however, that indemnity shall not be made with respect to such amounts paid in compromise or settlement, unless:

(a) such compromise or settlement shall have been approved as in the best interests of the Corporation, after notice that it involves such indemnification by:

(i) The Board of Directors by a majority of a quorum consisting of directors who were not parties to such action, suit or proceeding, or by

(ii) The shareholders of the Corporation by a majority vote of a quorum consisting of stockholders who were not parties to such action, suit or proceeding, or

(b) in the absence of action by disinterested directors or shareholders as above provided, there has been obtained at the request of a majority of the Board of Directors then in office a written opinion of independent legal counsel to the effect that the director or officer to be indemnified appears to have acted in good faith in the reasonable belief that his action was in the best interests of the Corporation.

Upon request therefor by any director, officer, or person enumerated in the preceding paragraph of this Article, the Corporation may from time to time, if authorized by the Board of Directors, prior to final adjudication or compromise or settlement of the matter or matters as to which indemnification is claimed, advance to such director, officer or person all expenses incurred by him to date of such request. Any advance made pursuant to this provision shall be made on the condition that the director, officer or person receiving such advance shall repay to the Corporation any amounts so advanced if, upon the termination of the matter or matters as to which such advances were made, such director, officer or person shall not be entitled to indemnification under the preceding paragraph of this Article.

The foregoing right to indemnification shall not be exclusive of any other rights to which any such director, officer or person is entitled under any agreement, vote of shareholders, statute, or as a matter of law, or otherwise.

The provisions of this Article are separable, and if any provision or portion hereof shall for any reason be held inapplicable, illegal or ineffective, this shall not prevent any other provision or portion hereof from applying, and shall not affect any right of indemnification existing otherwise than under this Article.

FIVE: No director shall be personally liable to the Corporation or its shareholders for monetary damages for breach of fiduciary duty as a director notwithstanding any provision of law imposing such liability; provided, however, that such limitation on liability will not eliminate or limit the liability of a director (i) for any breach of the director's duty of loyalty to the Corporation or its shareholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 6.40 of Chapter 156D of the Massachusetts General Laws, or (iv) for any transaction from which the director derived an improper personal benefit. If the Massachusetts Business Corporation Act is amended after the effective date of these Articles of Organization, to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the Massachusetts Business Corporation Act, as so amended.

SIX: Shareholders having the right to vote at least twenty-five percent (25%) of all votes entitled to be cast on any issue to be considered at a meeting of shareholders shall have the right to call a special meeting of shareholders to consider and act upon such issue.

ARTICLE VII

The effective date of organization of the corporation is the date and time the articles were received for filing if the articles are not rejected within the time prescribed by law. If a later effective date is desired, specify such date, which may not be later than the 90th day after the articles are received for filing:

Specify the number(s) of the article(s) being amended: II, III, IV AND VI

II To change the reference from Chapter 156B of the Massachusetts General Laws to Chapter 156D of the Massachusetts General Laws.

III To (i) increase the number of authorized shares of common stock, $.01 par value, from 20,000,000 to 40,000,000, and (ii) reduce the number of authorized shares of preferred stock, $.01 par value, from 2,000,000 to 1,080,415 to reflect the fact that the 894,585 authorized shares previously designated by the Board of Directors as Series A Convertible Preferred Stock and the 25,000 authorized shares previously designated by the Board of Directors as Series C Convertible Preferred Stock have all been either converted into common stock or redeemed and have ceased to be authorized shares of preferred stock in accordance with the terms of such series of preferred stock previously authorized by the Board of Directors.

IV To (i) amend the description of the different classes of stock to reflect the change in the number of authorized shares of common stock and preferred stock described in Article III, and (ii) incorporate into these Restated Articles of Organization the description of the terms of the Series B Convertible Preferred Stock established by the Board of Directors by their vote on January 4, 1993 (as previously reflected in the Certificate of Vote of Directors Establishing a Series of a Class of Stock filed by the Corporation with the Massachusetts Secretary of State on February 16, 1993). As of the date of these Restated Articles of Organization, the Series B Convertible Preferred Stock is the only series of preferred stock of the Corporation which remains authorized and outstanding.

VI To amend the "Other Lawful Provisions" of these Restated Articles of Organization.

Signed by: _____ ,

(signature of authorized individual) C. Michael Malm, Secretary

☐ Chairman of the board of directors,

☐ President,

☒ Other officer,

☐ Court-appointed fiduciary,

on this day of May, 2005

COMMONWEALTH OF MASSACHUSETTS

William Francis Galvin
Secretary of the Commonwealth
One Ashburton Place, Boston, Massachusetts 02108-1512

Restated Articles of Organization
(General Laws Chapter 156D, Section 10.07; 950 CMR 113.35)

I hereby certify that upon examination of these restated articles of organization, duly submitted to me, it appears that the provisions of the General Laws relative to the organization of corporations have been complied with, and I hereby approve said articles; and the filing fee in the amount of $
having been paid, said articles are deemed to have been filed with me this
day of , 20 , at a.m./p.m.
time

Examiner

Effective date: Not Applicable
(must be within 90 days of date submitted)

Name approval

WILLIAM FRANCIS GALVIN
Secretary of the Commonwealth

C

Filing fee: Minimum filing fee $200, plus $100 per article amended, stock increases $100 per 100,000 shares, plus $100 for each additional 100,000 shares or any fraction thereof.

M

TO BE FILLED IN BY CORPORATION
Contact Information:

C. Michael Malm, Esq.

Davis, Malm & D'Agostine, P.C.

One Boston Place, Boston, MA 02108

Telephone: 617-367-2500

Email: cmalm@davismalm.com

Upon filing, a copy of this filing will be available at www.sec.state.ma.us/cor.
If the document is rejected, a copy of the rejection sheet and rejected document will be available in the rejected queue.

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EXHIBIT B

First Amendment to Clean Harbors, Inc. 2000 Stock Incentive Plan

This First Amendment (the "Amendment") to the Clean Harbors, Inc. 2000 Stock Incentive Plan (the "Plan"), is hereby made and adopted by the Board of Directors of Clean Harbors, Inc. (the "Company"), such amendment to become effective subject to and on the date (the "Effective Date") on which this amendment shall be approved by the stockholders of the Company, all in accordance with Section 10(e) of the Plan.

As of the Effective Date, the Plan is amended as follows:

1. The first sentence of Section 5(a) is deleted in its entirety and replaced by the following two sentences:

"Awards may be made under the Plan for up to 2,000,000 shares of Common Stock. In addition, in any fiscal year of the Company during which the Plan is in effect, no Participant may be granted Awards with respect to more than 200,000 shares of Common Stock."

2. The following sentence is added following the first sentence subsection 6(e):

"Notwithstanding the foregoing, upon such conditions as may be approved by the Board, Participants may make gifts of Non-Qualified Stock Options to immediate family members and family trusts."

3. The following members is added following the first sentence of subsection 7(d):

"Notwithstanding the foregoing, upon such conditions as may be approved by the Board, Non-Employee Directors may make gifts of Non-Discretionary Options to immediate family members and family trusts."

4. The following subsection (k) is added to Section 9:

"(k) The Committee may, in its sole discretion, determine that a Restricted Stock Award being granted to a Participant may be subject to the limitations of Section 162(m) of the Code and shall have the discretion to make receipt or vesting of such Restricted Stock Award subject to the performance goals set forth in this Section 9(k) (hereafter a "Performance Award"). Such performance goals shall be objective and shall meet the requirements of Section 162(m) of the Code and the regulations promulgated thereunder, including the requirement that the levels of performance targeted by the Committee result in the achievement of performance goals being "substantially uncertain." One or more of the following business criteria for the Company, on a consolidated basis, and/or for any present or future parent or subsidiary of the Company, or for business or geographical units of the Company and/or any present or future parent or subsidiary of the Company (except with respect to the total shareholder return and earnings per share criteria), shall be used by the Committee in establishing performance goals for such Performance Awards: (1) earnings per share; (2) revenues or margins; (3) cash flow; (4) operating margin; (5) return on the net assets, investment, capital, or equity; (6) economic value added; (7) direct contribution; (8) net income; pretax earnings; earnings before interest and taxes; earnings before interest, taxes, depreciation and amortization; earnings after interest expense and before extraordinary or special items; operating income; income before interest income or expense, unusual items and income taxes, local, state or federal and excluding budgeted and actual bonuses which might be paid under any ongoing bonus plans of the Company; (9) working capital; (10) management of fixed costs or variable costs; (11) identification or consummation of investment opportunities or completion of specified projects in accordance with corporate business plans, including strategic mergers, acquisitions or divestitures; (12) total shareholder return; and (13) debt reduction. Any of the above goals may be determined on an absolute or relative basis or as compared to the performance of a published or special index deemed applicable by the Committee including, but not limited to, the Standard & Poor's 500

Stock Index or a group of companies that are comparable to the Company. The Committee may exclude the impact of an event or occurrence which the Committee determined should appropriately be excluded, including without limitation (i) restructurings, discontinued operations, extraordinary items, and other unusual or non-recurring charges, (ii) an event either not directly related to the operations of the Company or not within the reasonable control of the Company's management, or (iii) a change in accounting standards required by generally accepted accounting principles.

Achievement of performance goals in respect of such Performance Award shall be measured over a period no shorter than 12 months and no longer than five years, as specified by the Committee (the "Performance Period"). Performance goals shall be established not later than 90 days after the beginning of any period applicable to such Performance Awards, or at such other date as may be required or permitted for "performance-based compensation' under Section 162(m) of the Code or the regulations promulgated thereunder.

The Committee may, in its discretion, reduce the amount of a settlement otherwise to be made in connection with Performance Awards subject to this Section 9(k), but may not exercise discretion to increase any such amount payable to a Participant in respect of a Performance Award subject to this Section 9(k). The Committee shall specify the circumstances in which such Performance Awards shall be paid or forfeited in the event of termination of employment by the Participant prior to the end of a Performance Period or settlement of such Awards.

No Participant shall vest or receive any payment or Common Stock, as the case may be, under the Plan with respect to a Restricted Stock Award which is subject to this Section 9(k) unless the Committee has certified, by resolution or other appropriate action in writing, that the performance criteria and any other material terms previously established by the Committee or set forth in the Plan, have been satisfied to the extent necessary to qualify as "performance-based compensation' under Code Section 162(m)."

Except as amended herein, all other terms and conditions of the Plan shall continue in full force and effect and are hereby ratified.

CLEAN HARBORS, INC.

BY-LAWS

(Amended and Restated as of April 4, 2005)

ARTICLE I

Shareholders

Section 1. *Annual Meeting.* The corporation shall hold an annual meeting of shareholders at a time fixed by the Directors within six (6) months after the end of the corporation's fiscal year. The purposes for which the annual meeting is to be held, in addition to those prescribed by the Articles of Organization, shall be for electing directors and for such other purposes as shall be specified in the notice for the meeting pursuant to Section 4 of this Article, and only business within such purposes may be conducted at the meeting. In the event an annual meeting is not held at the time fixed in accordance with these By-Laws or the time for an annual meeting is not fixed in accordance with these By-Laws to be held within 13 months after the last annual meeting was held, the corporation may designate a special meeting held thereafter as a special meeting in lieu of the annual meeting, and the meeting shall have all of the effect of an annual meeting.

Section 2. *Special Meetings.* Special meetings of the shareholders may be called by the Chairman of the Board, the President or by the Directors, and shall be called by the Secretary, or in case of the death, absence, incapacity or refusal of the Secretary, by another officer, if the holders of at least twenty-five percent (25%), or such lesser percentage as the Articles of Organization permit, of all the votes entitled to be cast on any issue to be considered at the proposed special meeting sign, date, and deliver to the Secretary one or more written demands for the meeting describing the purpose for which it is to be held. Only business within the purpose or purposes described in the meeting notice may be conducted at a special shareholders' meeting.

Section 3. *Place of Meetings.* All meetings of shareholders shall be held at the principal office of the corporation unless a different place is fixed by the Board of Directors or the President and is specified in the notice of the meeting.

Section 4. *Notice of Business.* At any meeting of the shareholders, only such business shall be conducted as shall have been brought before the meeting (a) by or at the direction of the Board of Directors or (b) by any shareholder of the corporation who is a shareholder of record at the time of giving of the notice provided for in this Section, who shall be entitled to vote at such meeting and who complies with the notice procedures set forth in this Section. For business to be properly brought before a shareholder meeting by a shareholder, the shareholder must have given timely notice thereof in writing to the Secretary. To be timely, a shareholder's notice must be delivered to or mailed and received at the principal executive offices of the corporation in the case of an annual meeting not less than 150 days prior to the date such meeting was held in the prior year, or in the case of any other meeting no later than the close of business on the seventh day following the day on which notice of the date of the meeting was mailed or public disclosure was made, whichever is earlier. A shareholder's notice to the Secretary shall set forth as to each matter the shareholder proposes to bring before the meeting (a) a brief description of the business desired to be brought before the meeting and the reasons for conducting such business at the meeting, (b) the names and addresses, as they appear on the corporation's books, of the shareholder proposing such business and any other shareholders known by such shareholder to

be supporting such proposal, (c) the class and number of shares of the corporation which are beneficially owned by the shareholder and any other shareholders known by such shareholder to be supporting such proposal, and (d) any material interest of the shareholder in such business. Notwithstanding anything in these By-Laws to the contrary, no business shall be conducted at a shareholder meeting except in accordance with the procedures set forth in this Section. The Chairman of the meeting shall, if the facts warrant, determine and declare to the meeting that business was not properly brought before the meeting and in accordance with the provisions of the By-Laws, and if he should so determine, he shall so declare to the meeting and any such business not properly brought before the meeting shall not be transacted. Notwithstanding the foregoing provisions of this Section, a shareholder shall also comply with all applicable requirements of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder with respect to the matters set forth in this Section.

Section 5. *Requirement of Notice.* A written notice of the date, time, and place of each annual and special shareholders' meeting describing the purposes of the meeting shall be given to shareholders entitled to vote at the meeting and, to the extent required by law or the Articles of Organization, to shareholders not entitled to vote at the meeting, no fewer than seven nor more than 60 days before the meeting date. If an annual or special meeting of shareholders is adjourned to a different date, time or place, notice need not be given of the new date, time or place if the new date, time or place, if any, is announced at the meeting before adjournment. If a new record date for the adjourned meeting is fixed, however, notice of the adjourned meeting shall be given under this Section to persons who are shareholders as of the new record date. All notices to shareholders shall conform to the requirements of Article III.

Section 6. *Waiver of Notice.* A shareholder may waive any notice required by law, the Articles of Organization, or these By-Laws before or after the date and time stated in the notice. The waiver shall be in writing, be signed by the shareholder entitled to the notice, and be delivered to the corporation for inclusion with the records of the meeting. A shareholder's attendance at a meeting: (a) waives objection to lack of notice or defective notice of the meeting, unless the shareholder at the beginning of the meeting objects to holding the meeting or transacting business at the meeting; and (b) waives objection to consideration of a particular matter at the meeting that is not within the purpose or purposes described in the meeting notice, unless the shareholder objects to considering the matter when it is presented.

Section 7. *Quorum.*

(a) Unless otherwise provided by law, or in the Articles of Organization, these By-Laws or a resolution of the Directors requiring satisfaction of a greater quorum requirement for any voting group, a majority of the votes entitled to be cast on the matter by a voting group constitutes a quorum of that voting group for action on that matter. As used in these By-Laws, a voting group includes all shares of one or more classes or series that, under the Articles of Organization or the Massachusetts Business Corporation Act, as in effect from time to time (the "MBCA"), are entitled to vote and to be counted together collectively on a matter at a meeting of shareholders.

(b) A share once represented for any purpose at a meeting is deemed present for quorum purposes for the remainder of the meeting and for any adjournment of that meeting unless (1) the shareholder attends solely to object to lack of notice, defective notice or the conduct of the meeting on other grounds and does not vote the shares or otherwise consent that they are to be deemed present, or (2) in the case of an adjournment, a new record date is or shall be set for that adjourned meeting.

Section 8. *Voting and Proxies.* Unless the Articles of Organization provide otherwise, each outstanding share, regardless of class, is entitled to one vote on each matter voted on at a shareholders' meeting. A shareholder may vote his or her shares in person or may appoint a proxy to vote or otherwise act for him or her by signing an appointment form, either personally or by his or her attorney-in-fact. An appointment of a proxy is effective when received by the Secretary or other officer or agent authorized to

tabulate votes. Unless otherwise provided in the appointment form, an appointment is valid for a period of eleven (11) months from the date the shareholder signed the form or, if it is undated, from the date of its receipt by the officer or agent. An appointment of a proxy is revocable by the shareholder unless the appointment form conspicuously states that it is irrevocable and the appointment is coupled with an interest, as defined in the MBCA. An appointment made irrevocable is revoked when the interest with which it is coupled is extinguished. The death or incapacity of the shareholder appointing a proxy shall not affect the right of the corporation to accept the proxy's authority unless notice of the death or incapacity is received by the Secretary or other officer or agent authorized to tabulate votes before the proxy exercises his or her authority under the appointment. A transferee for value of shares subject to an irrevocable appointment may revoke the appointment if he or she did not know of its existence when he or she acquired the shares and the existence of the irrevocable appointment was not noted conspicuously on the certificate representing the shares or on the information statement for shares without certificates. Subject to the provisions of Section 7.24 of the MBCA and to any express limitation on the proxy's authority appearing on the face of the appointment form, the corporation is entitled to accept the proxy's vote or other action as that of the shareholder making the appointment.

Section 9. *Action at Meeting.* If a quorum of a voting group exists, favorable action on a matter, other than the election of Directors, is taken by a voting group (a) if it is approved by the affirmative vote of a majority of the shares outstanding and entitled to vote on the matter or (b) in the case of any matter that has been approved by vote of the Board of Directors taken at a meeting held prior to such meeting of shareholders, if the votes cast within the group favoring the action exceed the votes cast opposing the action, unless, in the case of either (a) or (b), a greater number of affirmative votes is required by law, or the Articles of Organization, these By-Laws or a resolution of the Board of Directors requiring receipt of a greater affirmative vote of the shareholders, including more separate voting groups. Directors are elected by a plurality of the votes cast by the shares entitled to vote in the election at a meeting at which a quorum is present. No ballot shall be required for such election unless requested by a shareholder present or represented at the meeting and entitled to vote in the election.

Section 10. *Action without Meeting by Written Consent.*

(a) Action which may be taken at a shareholders' meeting may be taken without a meeting if the action is taken either: (1) by all shareholders entitled to vote on the action; or (2) to the extent permitted by the Articles of Organization, by shareholders having not less than the minimum number of votes necessary to take the action at a meeting at which all shareholders entitled to vote on the action are present and voting. The action shall be evidenced by one or more written consents that describe the action taken, are signed by shareholders having the requisite votes, bear the date of the signatures of such shareholders, and are delivered to the corporation for inclusion with the records of meetings within 60 days of the earliest dated consent delivered to the corporation as required by this Section. A consent signed under this Section has the effect of a vote at a meeting.

(b) If action is to be taken pursuant to the consent of voting shareholders without a meeting, the corporation, at least seven days before the action pursuant to the consent is taken, shall give notice, which complies in form with the requirements of Article III, of the action (1) to nonvoting shareholders in any case where such notice would be required by law if the action were to be taken pursuant to a vote by voting shareholders at a meeting, and (2) if the action is to be taken pursuant to the consent of less than all the shareholders entitled to vote on the matter, to all shareholders entitled to vote who did not consent to the action. The notice shall contain, or be accompanied by, the same material that would have been required by law to be sent to shareholders in or with the notice of a meeting at which the action would have been submitted to the shareholders for approval.

Section 11. *Record Date.* The Directors may fix the record date in order to determine the shareholders entitled to notice of a shareholders' meeting, to demand a special meeting, to vote, or to take any other action. If a record date for a specific action is not fixed by the Board of Directors, and is not

supplied by law, the record date shall be the close of business either on the day before the first notice is sent to shareholders, or, if no notice is sent, on the day before the meeting or, in the case of action without a meeting by written consent, the date the first shareholder signs the consent. A record date fixed under this Section may not be more than 70 days before the meeting or action requiring a determination of shareholders. A determination of shareholders entitled to notice of or to vote at a shareholders' meeting is effective for any adjournment of the meeting unless the Board of Directors fixes a new record date, which it shall do if the meeting is adjourned to a date more than 120 days after the date fixed for the original meeting.

Section 12. *Meetings by Remote Communications.* Unless otherwise provided in the Articles of Organization, if authorized by the Directors: subject to such guidelines and procedures as the Board of Directors may adopt, shareholders and proxyholders not physically present at a meeting of shareholders may, by means of remote communications: (a) participate in a meeting of shareholders; and (b) be deemed present in person and vote at a meeting of shareholders, provided that: (1) the corporation shall implement reasonable measures to verify that each person deemed present and permitted to vote at the meeting by means of remote communication is a shareholder or proxyholder; (2) the corporation shall implement reasonable measures to provide such shareholders and proxyholders a reasonable opportunity to participate in the meeting and to vote on matters submitted to the shareholders, including an opportunity to read or hear the proceedings of the meeting substantially concurrently with such proceedings; and (3) if any shareholder or proxyholder votes or takes other action at the meeting by means of remote communication, a record of such vote or other action shall be maintained by the corporation.

Section 13. *Form of Shareholder Action.*

(a) Any vote, consent, waiver, proxy appointment or other action by a shareholder or by the proxy or other agent of any shareholder shall be considered given in writing, dated and signed, if, in lieu of any other means permitted by law, it consists of an electronic transmission that sets forth or is delivered with information from which the corporation can determine (i) that the electronic transmission was transmitted by the shareholder, proxy or agent or by a person authorized to act for the shareholder, proxy or agent; and (ii) the date on which such shareholder, proxy, agent or authorized person transmitted the electronic transmission. The date on which the electronic transmission is transmitted shall be considered to be the date on which it was signed. The electronic transmission shall be considered received by the corporation if it has been sent to any address specified by the corporation for the purpose or, if no address has been specified, to the principal office of the corporation, addressed to the Secretary or other officer or agent having custody of the records of proceedings of shareholders.

(b) Any copy, facsimile or other reliable reproduction of a vote, consent, waiver, proxy appointment or other action by a shareholder or by the proxy or other agent of any shareholder may be substituted or used in lieu of the original writing for any purpose for which the original writing could be used, but the copy, facsimile or other reproduction shall be a complete reproduction of the entire original writing.

Section 14. *Shareholders List for Meeting.*

(a) After fixing a record date for a shareholders' meeting, the corporation shall prepare an alphabetical list of the names of all its shareholders who are entitled to notice of the meeting. The list shall be arranged by voting group, and within each voting group by class or series of shares, and show the address of and number of shares held by each shareholder, but need not include an electronic mail address or other electronic contact information for any shareholder.

(b) The shareholders list shall be available for inspection by any shareholder, beginning two business days after notice is given of the meeting for which the list was prepared and continuing through the meeting: (1) at the corporation's principal office or at a place identified in the meeting notice in the city where the meeting will be held; or (2) on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of the meeting. If the

meeting is to be held solely by means of remote communication, the list shall be made available on an electronic network.

(c) A shareholder, his or her agent, or attorney is entitled on written demand to inspect and, subject to the requirements of Section 2 of Article VI of these By-Laws, to copy the list, during regular business hours and at his or her expense, during the period it is available for inspection.

(d) The corporation shall make the shareholders list available at the meeting, and any shareholder or his or her agent or attorney is entitled to inspect the list at any time during the meeting or any adjournment.

ARTICLE II

Directors

Section 1. *Powers.* All corporate power shall be exercised by or under the authority of, and the business and affairs of the corporation shall be managed under the direction of, its Board of Directors.

Section 2. *Nomination; Eligibility to Serve.* Except as otherwise provided in Section 4 of this Article concerning the filling of vacancies on the Board of Directors, only persons who are nominated in accordance with the procedures set forth in this Section shall be eligible to serve as Directors. Nominations of persons for election to the Board of Directors of the corporation may be made at a meeting of shareholders (a) by or at the direction of the Board of Directors or (b) by any shareholder of the corporation who is a shareholder of record at the time of giving of notice provided for in this Section, who shall be entitled to vote for the election of Directors at the meeting and who complies with the notice procedures set forth in this Section. Such nominations, other than those made by or at the direction of the Board of Directors, shall be made pursuant to timely notice in writing to the Secretary. To be timely, a shareholder's notice shall be delivered to or mailed and received at the principal executive offices of the corporation not less than 60 days nor more than 90 days prior to the meeting; provided, however, that in the event that less than 70 days' notice or prior public disclosure of the date of the meeting is given or made to shareholders, notice by the shareholder to be timely must be so received not later than the close of business on the seventh day following the day on which such notice of the date of the meeting was mailed or such public disclosure was made, whichever is earlier. Such shareholder's notice shall set forth (a) as to each person whom the shareholder proposes to nominate for election or reelection as a Director, all information relating to such person that is required to be disclosed in solicitations of proxies for election of Directors, or is otherwise required, in each case pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended (including such person's written consent to being named in the proxy statement as a nominee and to serving as a Director if elected), and (b) as to the shareholder giving the notice, (i) the names and addresses, as they appear on the corporation's books, of such shareholder and any other shareholders known by such shareholder to be supporting the election of the proposed nominee(s) and (ii) the class and number of shares of the corporation which are beneficially owned by such shareholder and any other shareholders known by such shareholder to be supporting the election of the proposed nominee(s). At the request of the Board of Directors, any person nominated by the Board of Directors for election as a Director shall furnish to the Secretary that information required to be set forth in a shareholder's notice of nomination which pertains to the nominee. The Chairman of the meeting shall, if the facts warrant, determine and declare to the meeting that a nomination was not made in accordance with the procedures prescribed by the By-Laws, and if he should so determine, he shall so declare to the meeting and the defective nomination shall be disregarded. Notwithstanding the foregoing provisions of this Section, a shareholder shall also comply with all applicable requirements of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder with respect to the matters set forth in this Section.

Section 3. *Number and Election.* The Board of Directors shall consist of not less than the minimum number of individuals permitted by law and shall be divided into three classes, such classes to be as nearly equal in number as possible. At each annual meeting, the successors to the class of Directors whose term expires at that meeting shall be elected. Subject to the foregoing requirements and applicable law, the Board of Directors may, from time to time, fix the number of Directors and their respective classifications, provided that any such action does not operate to remove a director elected by the shareholders or the Directors other than in the manner specified in the Articles of Organization or these By-Laws.

Section 4. *Vacancies.* Vacancies and newly created directorships, whether resulting from an increase in the size of the Board of Directors, from the death, resignation, disqualification or removal of a Director or otherwise, shall be filled solely by the affirmative vote of a majority of the remaining Directors then in office, even though less than a quorum of the Board of Directors. A vacancy that will occur at a specific later date may be filled before the vacancy occurs but the new Director may not take office until the vacancy occurs.

Section 5. *Change in Size of the Board of Directors.* The number of Directors may be fixed or changed from time to time by the Board of Directors.

Section 6. *Tenure.* The term of each class of Directors shall expire at the annual shareholders' meeting held in the third year following the year of the election of such class. No decrease in the number of Directors constituting the Board of Directors shall shorten the term of any incumbent Director. Any Director elected to fill a vacancy shall hold office for the remainder of the full term of the class of Directors in which the vacancy occurred or the new Directorship was created. Despite the expiration of a Director's term, he or she shall continue to serve until his or her successor is elected and qualified or until there is a decrease in the number of Directors eliminating the number of Directors whose terms have expired.

Section 7. *Resignation.* A Director may resign at any time by delivering written notice of resignation to the Board of Directors, its chairman, or to the corporation. A resignation is effective when the notice is delivered unless the notice specifies a later effective date.

Section 8. *Removal.* The removal of any Director or Directors or the entire Board of Directors may be effected only for cause by the affirmative vote of a majority of (a) the directors then in office or (b) the shares outstanding and entitled to vote in the election of Directors. "Cause" shall mean only (i) conviction of a felony, (ii) declaration of unsound mind by order of court, (iii) gross dereliction of duty, (iv) commission of an action involving moral turpitude, or (v) commission of an action which constitutes intentional misconduct or a knowing violation of law if such action in either event results both in an improper substantial personal benefit and a material injury to the corporation. A Director may be removed by the shareholders or the Directors only at a meeting called for the purpose of removing him or her, and the meeting notice must state that the purpose, or one of the purposes, of the meeting is removal of the Director.

Section 9. *Regular Meetings.* Regular meetings of the Board of Directors may be held at such times and places as shall from time to time be fixed by the Board of Directors without notice of the date, time, place or purpose of the meeting.

Section 10. *Special Meetings.* Special meetings of the Board of Directors may be called by the Chairman of the Board, by the President, by the Secretary, by any two Directors, or by one Director in the event that there is only one Director.

Section 11. *Notice.* Special meetings of the Board must be preceded by at least two days' notice of the date, time and place of the meeting. The notice need not describe the purpose of the special meeting. All notices to Directors shall conform to the requirements of Article III.

Section 12. *Waiver of Notice.* A Director may waive any notice before or after the date and time of the meeting. The waiver shall be in writing, signed by the Director entitled to the notice, or in the form of an electronic transmission by the Director to the corporation, and filed with the minutes or corporate records. A Director's attendance at or participation in a meeting waives any required notice to him or her of the meeting unless the Director at the beginning of the meeting, or promptly upon his or her arrival, objects to holding the meeting or transacting business at the meeting and does not thereafter vote for or assent to action taken at the meeting.

Section 13. *Quorum.* A quorum of the Board of Directors consists of a majority of the Directors then in office, provided always that any number of Directors (whether one or more and whether or not constituting a quorum) constituting a majority of Directors present at any meeting or at any adjourned meeting may make any reasonable adjournment thereof.

Section 14. *Action at Meeting.* If a quorum is present when a vote is taken, the affirmative vote of a majority of Directors present is the act of the Board of Directors. A Director who is present at a meeting of the Board of Directors or a committee of the Board of Directors when corporate action is taken is considered to have assented to the action taken unless: (a) he or she objects at the beginning of the meeting, or promptly upon his or her arrival, to holding it or transacting business at the meeting; (b) his or her dissent or abstention from the action taken is entered in the minutes of the meeting; or (c) he or she delivers written notice of his or her dissent or abstention to the presiding officer of the meeting before its adjournment or to the corporation immediately after adjournment of the meeting. The right of dissent or abstention is not available to a Director who votes in favor of the action taken.

Section 15. *Action Without Meeting.* Any action required or permitted to be taken by the Directors may be taken without a meeting if the action is taken by the unanimous consent of the members of the Board of Directors. The action must be evidenced by one or more consents describing the action taken, in writing, signed by each Director, or delivered to the corporation by electronic transmission, to the address specified by the corporation for the purpose or, if no address has been specified, to the principal office of the corporation, addressed to the Secretary or other officer or agent having custody of the records of proceedings of Directors, and included in the minutes or filed with the corporate records reflecting the action taken. Action taken under this Section is effective when the last Director signs or delivers the consent, unless the consent specifies a different effective date. A consent signed or delivered under this Section has the effect of a meeting vote and may be described as such in any document.

Section 16. *Telephone Conference Meetings.* The Board of Directors may permit any or all Directors to participate in a regular or special meeting by, or conduct the meeting through the use of, any means of communication by which all Directors participating may simultaneously hear each other during the meeting. A Director participating in a meeting by this means is considered to be present in person at the meeting.

Section 17. *Committees.* The Board of Directors may create one or more committees and appoint members of the Board of Directors to serve on them. Each committee may have one or more members, who serve at the pleasure of the Board of Directors. The creation of a committee and appointment of members to it must be approved by a majority of all the Directors in office when the action is taken. Article III and Sections 11 through 16 of this Article shall apply to committees and their members. To the extent specified by the Board of Directors, each committee may exercise the authority of the Board of Directors. A committee may not, however: (a) authorize distributions; (b) approve or propose to shareholders action that the MBCA requires be approved by shareholders; (c) change the number of the Board of Directors, remove Directors from office or fill vacancies on the Board of Directors; (d) amend the Articles of Organization; (e) adopt, amend or repeal By-Laws; or (f) authorize or approve reacquisition of shares, except according to a formula or method prescribed by the Board of Directors.

The creation of, delegation of authority to, or action by a committee does not alone constitute compliance by a Director with the standards of conduct described in Section 19 of this Article.

Section 18. *Compensation.* The Board of Directors may fix the compensation of Directors.

Section 19. *Standard of Conduct for Directors.*

(a) A Director shall discharge his or her duties as a Director, including his or her duties as a member of a committee: (1) in good faith; (2) with the care that a person in a like position would reasonably believe appropriate under similar circumstances; and (3) in a manner the Director reasonably believes to be in the best interests of the corporation. In determining what the Director reasonably believes to be in the best interests of the corporation, a Director may consider the interests of the corporation's employees, suppliers, creditors and customers, the economy of the state, the region and the nation, community and societal considerations, and the long-term and short-term interests of the corporation and its shareholders, including the possibility that these interests may be best served by the continued independence of the corporation.

(b) In discharging his or her duties, a Director who does not have knowledge that makes reliance unwarranted is entitled to rely on information, opinions, reports, or statements, including financial statements and other financial data, if prepared or presented by: (1) one or more officers or employees of the corporation whom the Director reasonably believes to be reliable and competent with respect to the information, opinions, reports or statements presented; (2) legal counsel, public accountants, or other persons retained by the corporation, as to matters involving skills or expertise the Director reasonably believes are matters (i) within the particular person's professional or expert competence or (ii) as to which the particular person merits confidence; or (3) a committee of the Board of Directors of which the Director is not a member if the Director reasonably believes the committee merits confidence.

(c) A Director is not liable for any action taken as a Director, or any failure to take any action, if he or she performed the duties of his or her office in compliance with this Section.

Section 20. *Conflict of Interest.*

(a) A conflict of interest transaction is a transaction with the corporation in which a Director of the corporation has a material direct or indirect interest. A conflict of interest transaction is not voidable by the corporation solely because of the Director's interest in the transaction if any one of the following is true:

(1) the material facts of the transaction and the Director's interest were disclosed or known to the Board of Directors or a committee of the Board of Directors and the Board of Directors or committee authorized, approved, or ratified the transaction;

(2) the material facts of the transaction and the Director's interest were disclosed or known to the shareholders entitled to vote and they authorized, approved, or ratified the transaction; or

(3) the transaction was fair to the corporation.

(b) For purposes of this Section, and without limiting the interests that may create conflict of interest transactions, a Director of the corporation has an indirect interest in a transaction if: (1) another entity in which he or she has a material financial interest or in which he or she is a general partner is a party to the transaction; or (2) another entity of which he or she is a director, officer, or trustee or in which he or she holds another position is a party to the transaction and the transaction is or should be considered by the Board of Directors of the corporation.

(c) For purposes of clause (1) of subsection (a), a conflict of interest transaction is authorized, approved, or ratified if it receives the affirmative vote of a majority of the Directors on the Board of Directors (or on the committee) who have no direct or indirect interest in the transaction, but a transaction may not be authorized, approved, or ratified under this Section by a single Director. If a majority of

the Directors who have no direct or indirect interest in the transaction vote to authorize, approve, or ratify the transaction, a quorum is present for the purpose of taking action under this Section. The presence of, or a vote cast by, a Director with a direct or indirect interest in the transaction does not affect the validity of any action taken under clause (1) of subsection (a) if the transaction is otherwise authorized, approved, or ratified as provided in that subsection.

(d) For purposes of clause (2) of subsection (a), a conflict of interest transaction is authorized, approved, or ratified if it receives the vote of a majority of the shares entitled to be counted under this subsection. Shares owned by or voted under the control of a Director who has a direct or indirect interest in the transaction, and shares owned by or voted under the control of an entity described in clause (1) of subsection (b), may not be counted in a vote of shareholders to determine whether to authorize, approve, or ratify a conflict of interest transaction under clause (2) of subsection (a). The vote of those shares, however, is counted in determining whether the transaction is approved under other Sections of these By-Laws. A majority of the shares, whether or not present, that are entitled to be counted in a vote on the transaction under this subsection constitutes a quorum for the purpose of taking action under this Section.

ARTICLE III
Manner of Notice

All notices under these By-Laws shall conform to the following requirements:

(a) Notice shall be in writing unless oral notice is reasonable under the circumstances. Notice by electronic transmission is written notice.

(b) Notice may be communicated in person; by telephone, voice mail, telegraph, teletype, or other electronic means; by mail; by electronic transmission; or by messenger or delivery service. If these forms of personal notice are impracticable, notice may be communicated by a newspaper of general circulation in the area where published; or by radio, television, or other form of public broadcast communication.

(c) Written notice, other than notice by electronic transmission, if in a comprehensible form, is effective upon deposit in the United States mail, if mailed postpaid and correctly addressed to the shareholder's address shown in the corporation's current record of shareholders.

(d) Written notice by electronic transmission, if in comprehensible form, is effective: (1) if by facsimile telecommunication, when directed to a number furnished by the shareholder for the purpose; (2) if by electronic mail, when directed to an electronic mail address furnished by the shareholder for the purpose; (3) if by a posting on an electronic network together with separate notice to the shareholder of such specific posting, directed to an electronic mail address furnished by the shareholder for the purpose, upon the later of (i) such posting and (ii) the giving of such separate notice; and (4) if by any other form of electronic transmission, when directed to the shareholder in such manner as the shareholder shall have specified to the corporation. An affidavit of the Secretary or an Assistant Secretary of the corporation, the transfer agent or other agent of the corporation that the notice has been given by a form of electronic transmission shall, in the absence of fraud, be prima facie evidence of the facts stated therein.

(e) Except as provided in subsection (c), written notice, other than notice by electronic transmission, if in a comprehensible form, is effective at the earliest of the following: (1) when received; (2) five days after its deposit in the United States mail, if mailed postpaid and correctly addressed; (3) on the date shown on the return receipt, if sent by registered or certified mail, return receipt requested; or if sent by messenger or delivery service, on the date shown on the return receipt signed by or on behalf of the addressee; or (4) on the date of publication if notice by publication is permitted.

(f) Oral notice is effective when communicated if communicated in a comprehensible manner.

ARTICLE IV

Officers

Section 1. *Enumeration.* The corporation shall have a Chairman of the Board of Directors, a President, a Treasurer, a Secretary and such other officers, including one or more Vice Presidents, Assistant Treasurers and Assistant Secretaries, as may be appointed by the Board of Directors from time to time in accordance with these By-Laws. The Board may appoint one of its members to the office of Chairman of the Board and from time to time define the powers and duties of that office notwithstanding any other provisions of these By-Laws.

Section 2. *Appointment.* The officers shall be appointed by the Board of Directors. A duly appointed officer may appoint one or more officers or assistant officers if authorized by the Board of Directors. Each officer has the authority and shall perform the duties set forth in these By-Laws or, to the extent consistent with these By-Laws, the duties prescribed by the Board of Directors or by direction of an officer authorized by the Board of Directors to prescribe the duties of other officers.

Section 3. *Qualification.* The same individual may simultaneously hold more than one office in the corporation.

Section 4. *Tenure.* Officers shall hold office until the first meeting of the Directors following the next annual meeting of shareholders after their appointment and until their respective successors are duly appointed, unless a shorter or longer term is specified in the vote appointing them. The appointment of an officer shall not itself create contract rights. An officer's removal shall not affect the officer's contract rights, if any, with the corporation. No contract right shall impair the right of the Board of Directors to remove any officer at any time in accordance with Section 6 of this Article.

Section 5. *Resignation.* An officer may resign at any time by delivering notice of the resignation to the corporation. A resignation is effective when the notice is delivered unless the notice specifies a later effective date. If a resignation is made effective at a later date and the corporation accepts the future effective date, the Board of Directors may fill the pending vacancy before the effective date if the Board of Directors provides that the successor shall not take office until the effective date. An officer's resignation shall not affect the corporation's contract rights, if any, with the officer.

Section 6. *Removal.* The Board of Directors may remove any officer at any time with or without cause.

Section 7. *Chairman of the Board.* The Chairman, unless otherwise designated by the Directors, shall be the Chief Executive Officer of the Corporation and shall, subject to the direction of the Directors, have general supervision and control of its business. Unless otherwise provided by the Directors he shall preside, when present, at all meetings of shareholders and of the Directors.

Section 8. *President and Vice Presidents.* The President, unless otherwise designated by the Directors shall be Chief Operating Officer of the corporation and shall possess the power of, and may perform the duties of the Chairman in his absence or disability, and shall perform such other duties as may be delegated to him by the Chairman or prescribed from time to time by the Directors. Any Vice President shall have such powers as the Directors may from time to time designate.

Section 9. *Chief Financial Officer and Treasurer.* The Board of Directors may designate a Chief Financial Officer of the corporation, who shall be either one of the other officers of the corporation or the Treasurer. If the Board of Directors shall not designate a Chief Financial Officer or the officer so designated shall cease to serve as an officer of the corporation, the Treasurer shall serve as the Chief Financial Officer. Subject to the direction of the Directors, the Chief Financial Officer shall have general charge of the financial affairs of the corporation and shall cause to be kept accurate books of accounts,

and the Treasurer shall have custody of all funds, securities, and valuable documents of the corporation, except as the Directors may otherwise provide. The Chief Financial Officer and the Treasurer shall perform such duties and have such powers additional to the foregoing as the Directors may designate.

Section 10. *Secretary.* The Secretary shall have responsibility for preparing minutes of the Directors' and shareholders' meetings and for authenticating records of the corporation. The Secretary shall perform such duties and have such powers additional to the foregoing as the Directors shall designate.

Section 11. *Standards Of Conduct For Officers.* An officer shall discharge his or her duties: (a) in good faith; (b) with the care that a person in a like position would reasonably exercise under similar circumstances; and (c) in a manner the officer reasonably believes to be in the best interests of the corporation. In discharging his or her duties, an officer, who does not have knowledge that makes reliance unwarranted, is entitled to rely on information, opinions, reports, or statements, including financial statements and other financial data, if prepared or presented by: (1) one or more officers or employees of the corporation whom the officer reasonably believes to be reliable and competent with respect to the information, opinions, reports or statements presented; or (2) legal counsel, public accountants, or other persons retained by the corporation as to matters involving skills or expertise the officer reasonably believes are matters (i) within the particular person's professional or expert competence or (ii) as to which the particular person merits confidence. An officer shall not be liable to the corporation or its shareholders for any decision to take or not to take any action taken, or any failure to take any action, as an officer, if the duties of the officer are performed in compliance with this Section.

ARTICLE V

Capital Stock

Section 1. *Issuance and Consideration.* The Board of Directors may issue the number of shares of each class or series authorized by the Articles of Organization. The Board of Directors may authorize shares to be issued for consideration consisting of any tangible or intangible property or benefit to the corporation, including cash, promissory notes, services performed, contracts for services to be performed, or other securities of the corporation. Before the corporation issues shares, the Board of Directors shall determine that the consideration received or to be received for shares to be issued is adequate. The Board of Directors shall determine the terms upon which the rights, options, or warrants for the purchase of shares or other securities of the corporation are issued and the terms, including the consideration, for which the shares or other securities are to be issued.

Section 2. *Share Certificates.* If shares are represented by certificates, at a minimum each share certificate shall state on its face: (a) the name of the corporation and that it is organized under the laws of the Commonwealth of Massachusetts; (b) the name of the person to whom issued; and (c) the number and class of shares and the designation of the series, if any, the certificate represents. If different classes of shares or different series within a class are authorized, then the variations in rights, preferences and limitations applicable to each class and series, and the authority of the Board of Directors to determine variations for any future class or series, must be summarized on the front or back of each certificate. Alternatively, each certificate may state conspicuously on its front or back that the corporation will furnish the shareholder this information on request in writing and without charge. Each share certificate shall be signed, either manually or in facsimile, by the Chairman, the President or a Vice President and by the Chief Financial Officer, the Treasurer or an Assistant Treasurer, or by any two other officers designated by the Board of Directors, and may bear the corporate seal or its facsimile. If the person who signed, either manually or in facsimile, a share certificate no longer holds office when the certificate is issued, the certificate shall be nevertheless valid.

Section 3. *Uncertificated Shares.* The Board of Directors may authorize the issue of some or all of the shares of any or all of the corporation's classes or series without certificates. The authorization shall not affect shares already represented by certificates until they are surrendered to the corporation. Within

a reasonable time after the issue or transfer of shares without certificates, the corporation shall send the shareholder a written statement of the information required by the MBCA to be on certificates.

Section 4. *Record and Beneficial Owners.* The corporation shall be entitled to treat as the shareholder the person in whose name shares are registered in the records of the corporation or, if the Board of Directors has established a procedure by which the beneficial owner of shares that are registered in the name of a nominee will be recognized by the corporation as a shareholder, the beneficial owner of shares to the extent of the rights granted by a nominee certificate on file with the corporation.

Section 5. *Lost or Destroyed Certificates.* The Board of Directors of the corporation may, subject to Massachusetts General Laws, Chapter 106, Section 8-405, determine the conditions upon which a new share certificate may be issued in place of any certificate alleged to have been lost, destroyed, or wrongfully taken. The Board of Directors may, in its discretion, require the owner of such share certificate, or his or her legal representative, to give a bond, sufficient in its opinion, with or without surety, to indemnify the corporation against any loss or claim which may arise by reason of the issue of the new certificate.

ARTICLE VI

Corporate Records

Section 1. *Records to be Kept.*

(a) The corporation shall keep as permanent records minutes of all meetings of its shareholders and Board of Directors, a record of all actions taken by the shareholders or Board of Directors without a meeting, and a record of all actions taken by a committee of the Board of Directors in place of the Board of Directors on behalf of the corporation. The corporation shall maintain appropriate accounting records. The corporation or its agent shall maintain a record of its shareholders, in a form that permits preparation of a list of the names and addresses of all shareholders, in alphabetical order by class of shares showing the number and class of shares held by each. The corporation shall maintain its records in written form or in another form capable of conversion into written form within a reasonable time.

(b) The corporation shall keep within the Commonwealth of Massachusetts a copy of the following records at its principal office or an office of its transfer agent or of its Secretary or Assistant Secretary or of its registered agent:

(i) its Articles or Restated Articles of Organization and all amendments to them currently in effect;

(ii) its By-Laws or restated By-Laws and all amendments to them currently in effect;

(iii) resolutions adopted by its Board of Directors creating one or more classes or series of shares, and fixing their relative rights, preferences, and limitations, if shares issued pursuant to those resolutions are outstanding;

(iv) the minutes of all shareholders' meetings, and records of all action taken by shareholders without a meeting, for the past three years;

(v) all written communications to shareholders generally within the past three years, including the financial statements furnished under Section 16.20 of the MBCA for the past three years;

(vi) a list of the names and business addresses of its current Directors and officers; and

(vii) its most recent annual report delivered to the Massachusetts Secretary of State.

Section 2. *Inspection of Records by Shareholders.*

(a) A shareholder is entitled to inspect and copy, during regular business hours at the office where they are maintained pursuant to Section 1(b) of this Article, copies of any of the records of the corporation described in said Section if he or she gives the corporation written notice of his or her demand at least five business days before the date on which he or she wishes to inspect and copy.

(b) A shareholder is entitled to inspect and copy, during regular business hours at a reasonable location specified by the corporation, any of the following records of the corporation if the shareholder meets the requirements of subsection (c) and gives the corporation written notice of his or her demand at least five business days before the date on which he or she wishes to inspect and copy:

(1) excerpts from minutes reflecting action taken at any meeting of the Board of Directors, records of any action of a committee of the Board of Directors while acting in place of the Board of Directors on behalf of the corporation, minutes of any meeting of the shareholders, and records of action taken by the shareholders or Board of Directors without a meeting, to the extent not subject to inspection under subsection (a) of this Section;

(2) accounting records of the corporation, but if the financial statements of the corporation are audited by a certified public accountant, inspection shall be limited to the financial statements and the supporting schedules reasonably necessary to verify any line item on those statements; and

(3) the record of shareholders described in Section 1(a) of this Article.

(c) A shareholder may inspect and copy the records described in subsection (b) only if:

(1) his or her demand is made in good faith and for a proper purpose;

(2) he or she describes with reasonable particularity his or her purpose and the records he or she desires to inspect;

(3) the records are directly connected with his or her purpose; and

(4) the corporation shall not have determined in good faith that disclosure of the records sought would adversely affect the corporation in the conduct of its business or, in the case of a public corporation, constitute material non-public information at the time when the shareholder's notice of demand to inspect and copy is received by the corporation.

(d) For purposes of this Section, "shareholder" includes a beneficial owner whose shares are held in a voting trust or by a nominee on his or her behalf.

Section 3. *Scope of Inspection Right.*

(a) A shareholder's agent or attorney has the same inspection and copying rights as the shareholder represented.

(b) The corporation may, if reasonable, satisfy the right of a shareholder to copy records under Section 2 of this Article by furnishing to the shareholder copies by photocopy or other means chosen by the corporation including copies furnished through an electronic transmission.

(c) The corporation may impose a reasonable charge, covering the costs of labor, material, transmission and delivery, for copies of any documents provided to the shareholder. The charge may not exceed the estimated cost of production, reproduction, transmission or delivery of the records.

(d) The corporation may comply at its expense, with a shareholder's demand to inspect the record of shareholders under Section 2(b)(3) of this Article by providing the shareholder with a list of shareholders that was compiled no earlier than the date of the shareholder's demand.

(e) The corporation may impose reasonable restrictions on the use or distribution of records by the demanding shareholder.

Section 4. *Inspection of Records by Directors.* A Director is entitled to inspect and copy the books, records and documents of the corporation at any reasonable time to the extent reasonably related to the performance of the Director's duties as a Director, including duties as a member of a committee, but not for any other purpose or in any manner that would violate any duty to the corporation.

ARTICLE VII

Indemnification

Section 1. *Definitions.* In this Article the following words shall have the following meanings unless the context requires otherwise:

"corporation", includes any domestic or foreign predecessor entity of the corporation in a merger.

"Director" or "officer", an individual who is or was a Director or officer, respectively, of the corporation or who, while a Director or officer of the corporation, is or was serving at the corporation's request as a director, officer, partner, trustee, employee, or agent of another domestic or foreign corporation, partnership, joint venture, trust, employee benefit plan, or other entity. A Director or officer is considered to be serving an employee benefit plan at the corporation's request if his or her duties to the corporation also impose duties on, or otherwise involve services by, him or her to the plan or to participants in or beneficiaries of the plan. "Director" or "officer" includes, unless the context requires otherwise, the estate or personal representative of a Director or officer.

"Disinterested Director", a Director who, at the time of a vote or selection referred to in Section 4 of this Article, is not (i) a party to the proceeding, or (ii) an individual having a familial, financial, professional, or employment relationship with the Director whose indemnification or advance for expenses is the subject of the decision being made, which relationship would, in the circumstances, reasonably be expected to exert an influence on the Director's judgment when voting on the decision being made.

"Expenses", includes counsel fees.

"Liability", the obligation to pay a judgment, settlement, penalty, fine including an excise tax assessed with respect to an employee benefit plan, or reasonable expenses incurred with respect to a proceeding.

"Party", an individual who was, is, or is threatened to be made, a defendant or respondent in a proceeding.

"Proceeding", any threatened, pending, or completed action, suit, or proceeding, whether civil, criminal, administrative, arbitrative, or investigative and whether formal or informal.

Section 2. *Indemnification of Directors and Officers.*

(a) Except as otherwise provided in this Section, the corporation shall indemnify to the fullest extent permitted by law an individual who is a party to a proceeding because he or she is a Director or officer against liability incurred in the proceeding if: (1) (i) he or she conducted himself or herself in good faith; and (ii) he or she reasonably believed that his or her conduct was in the best interests of the corporation or that his or her conduct was at least not opposed to the best interests of the corporation; and (iii) in the case of any criminal proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful; or (2) he or she engaged in conduct for which he or she shall not be liable under a provision of the Articles of Organization authorized by Section 2.02(b)(4) of the MBCA or any successor provision to such Section.

(b) A Director's or officer's conduct with respect to an employee benefit plan for a purpose he or she reasonably believed to be in the interests of the participants in, and the beneficiaries of, the plan is conduct that satisfies the requirement that his or her conduct was at least not opposed to the best interests of the corporation.

(c) The termination of a proceeding by judgment, order, settlement, or conviction, or upon a plea of nolo contendere or its equivalent, is not, of itself, determinative that the Director or officer did not meet the relevant standard of conduct described in this Section.

(d) Unless ordered by a court, the corporation may not indemnify a Director or officer under this Section if his or her conduct did not satisfy the standards set forth in subsection (a) or subsection (b).

Section 3. *Advance for Expenses.* The corporation shall, before final disposition of a proceeding, advance funds to pay for or reimburse the reasonable expenses incurred by a Director or officer who is a party to a proceeding because he or she is a Director or officer if he or she delivers to the corporation:

(a) a written affirmation of his or her good faith belief that he or she has met the relevant standard of conduct described in Section 2 of this Article or that the proceeding involves conduct for which liability has been eliminated under a provision of the Articles of Organization as authorized by Section 2.02(b)(4) of the MBCA or any successor provision to such Section; and

(b) his or her written undertaking to repay any funds advanced if he or she is not wholly successful, on the merits or otherwise, in the defense of such proceeding and it is ultimately determined pursuant to Section 4 of this Article or by a court of competent jurisdiction that he or she has not met the relevant standard of conduct described in Section 2 of this Article. Such undertaking must be an unlimited general obligation of the Director or officer but need not be secured and shall be accepted without reference to the financial ability of the Director or officer to make repayment.

Section 4. *Determination of Indemnification.* The determination of whether a Director or officer has met the relevant standard of conduct set forth in Section 2 shall be made:

(a) if there are two or more disinterested Directors, by the Board of Directors by a majority vote of all the disinterested Directors, a majority of whom shall for such purpose constitute a quorum, or by a majority of the members of a committee of two or more disinterested Directors appointed by vote;

(b) by special legal counsel (1) selected in the manner prescribed in clause (a); or (2) if there are fewer than two disinterested Directors, selected by the Board of Directors, in which selection Directors who do not qualify as disinterested Directors may participate; or

(c) by the shareholders, but shares owned by or voted under the control of a Director who at the time does not qualify as a disinterested Director may not be voted on the determination.

Section 5. *Notification and Defense of Claim; Settlements.*

(a) In addition to and without limiting the foregoing provisions of this Article and except to the extent otherwise required by law, it shall be a condition of the corporation's obligation to indemnify under Section 2 of this Article (in addition to any other condition provided in these By-Laws or by law) that the person asserting, or proposing to assert, the right to be indemnified, must notify the corporation in writing as soon as practicable of any action, suit, proceeding or investigation involving such person for which indemnity will or could be sought, but the failure to so notify shall not affect the corporation's objection to indemnify except to the extent the corporation is adversely affected thereby. With respect to any proceeding of which the corporation is so notified, the corporation will be entitled to participate therein at its own expense and/or to assume the defense thereof at its own expense, with legal counsel reasonably acceptable to such person. After notice from the corporation to such person of its election so to assume such defense, the corporation shall not be liable to such person for any legal or other expenses subsequently incurred by such person in connection with such action, suit, proceeding or

investigation other than as provided below in this subsection (a). Such person shall have the right to employ his or her own counsel in connection with such action, suit, proceeding or investigation, but the fees and expenses of such counsel incurred after notice from the corporation of its assumption of the defense thereof shall be at the expense of such person unless (1) the employment of counsel by such person has been authorized by the corporation, (2) counsel to such person shall have reasonably concluded that there may be a conflict of interest or position on any significant issue between the corporation and such person in the conduct of the defense of such action, suit, proceeding or investigation or (3) the corporation shall not in fact have employed counsel to assume the defense of such action, suit, proceeding or investigation, in each of which cases the fees and expenses of counsel for such person shall be at the expense of the corporation, except as otherwise expressly provided by this Article. The corporation shall not be entitled, without the consent of such person, to assume the defense of any claim brought by or in the right of the corporation or as to which counsel for such person shall have reasonably made the conclusion provided for in clause (2) above.

(b) The corporation shall not be required to indemnify such person under this Article for any amounts paid in settlement of any proceeding unless authorized in the same manner as the determination that indemnification is permissible under Section 4 of this Article, except that if there are fewer than two disinterested Directors, authorization of indemnification shall be made by the Board of Directors, in which authorization Directors who do not qualify as disinterested Directors may participate. The corporation shall not settle any action, suit, proceeding or investigation in any manner which would impose any penalty or limitation on such person without such person's written consent. Neither the corporation nor such person will unreasonably withhold their consent to any proposed settlement.

Section 6. *Insurance.* The corporation may purchase and maintain insurance on behalf of an individual who is a Director or officer of the corporation, or who, while a Director or officer of the corporation, serves at the corporation's request as a director, officer, partner, trustee, employee, or agent of another domestic or foreign corporation, partnership, joint venture, trust, employee benefit plan, or other entity, against liability asserted against or incurred by him or her in that capacity or arising from his or her status as a Director or officer, whether or not the corporation would have power to indemnify or advance expenses to him or her against the same liability under this Article.

Section 7. *Application of this Article.*

(a) The corporation shall not be obligated to indemnify or advance expenses to a Director or officer of a predecessor of the corporation, pertaining to conduct with respect to the predecessor, unless otherwise specifically provided.

(b) This Article shall not limit the corporation's power to (1) pay or reimburse expenses incurred by a Director or an officer in connection with his or her appearance as a witness in a proceeding at a time when he or she is not a party or (2) indemnify, advance expenses to or provide or maintain insurance on behalf of an employee or agent.

(c) The indemnification and advancement of expenses provided by, or granted pursuant to, this Article shall not be considered exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled.

(d) Each person who is or becomes a Director or officer shall be deemed to have served or to have continued to serve in such capacity in reliance upon the indemnity provided for in this Article. All rights to indemnification under this Article shall be deemed to be provided by a contract between the corporation and the person who serves as a Director or officer of the corporation at any time while these By-Laws and the relevant provisions of the MBCA are in effect. Any repeal or modification thereof shall not affect any rights or obligations then existing.

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(e) If the laws of the Commonwealth of Massachusetts are hereafter amended from time to time to increase the scope of permitted indemnification, indemnification hereunder shall be provided to the fullest extent permitted or required by any such amendment.

ARTICLE VIII

Miscellaneous Provisions

Section 1. *Fiscal Year.* Except as from time to time otherwise determined by the Directors, the fiscal year of the corporation shall be the twelve months ending on December 31 of each year.

Section 2. *Seal.* The corporation shall have a seal in such form as the Directors may adopt and from time to time alter at their pleasure.

Section 3. *Execution of Instruments.* All deeds, leases, transfers, contracts, bonds, notes and other obligations authorized to be executed by an officer of the corporation in its name and on its behalf shall be signed by the Chairman of the Board, the Chief Executive Officer, the President, the Chief Financial Officer or the Treasurer except as the Directors may generally or in particular cases otherwise direct.

Section 4. *Voting of Securities.* Except as the Directors may otherwise direct, the Chairman of the Board, the President, the Chief Financial Officer or the Treasurer may waive notice of, and appoint any person or persons to act as proxy or attorney in fact for this corporation (with or without power of substitution) at any meeting of stockholders or shareholders of any other corporation or organization, the securities of which may be held by this corporation.

Section 5. *Articles of Organization.* All references in these By-Laws to the Articles of Organization shall be deemed to refer to the Articles of Organization of the corporation, as amended and in effect from time to time.

Section 6. *Amendments.*

(a) These By-Laws may at any time be amended by the affirmative vote of the holders of a majority of each voting group of the shareholders outstanding and entitled to vote on the matter. If authorized by the Articles of Organization, the Board of Directors may also make, amend or repeal these By-Laws in whole or in part, except with respect to any provision thereof which by virtue of an express provision in the MBCA, the Articles of Organization, or these By-Laws, requires action by the shareholders.

(b) Not later than the time of giving notice of the meeting of shareholders next following the making, amending or repealing by the Board of Directors of any By-Law, notice stating the substance of the action taken by the Board of Directors shall be given to all shareholders entitled to vote on amending the By-Laws. Any action taken by the Board of Directors with respect to the By-Laws may be amended or repealed by the affirmative vote of the holders of a majority of each voting group entitled to vote on the matter.

(c) Approval of an amendment to the By-Laws that changes or deletes a quorum or voting requirement for action by shareholders must satisfy both the applicable quorum and voting requirements for action by shareholders with respect to amendment of these By-Laws and also the particular quorum and voting requirements sought to be changed or deleted.

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EXHIBIT 2.d

Kenneth A. Hagg
Acting Commissioner

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Hazardous Waste
One Winter Street, Boston, Mass. 02108

3/25/88
Rec'd

March 21, 1988

William F. Murphy
Bill Murphy's Waste Oil
10 Millyan Road
Woburn, MA 01801

Re: "Show-Cause" Conference

Dear Mr. Murphy:

It has come to the attention of the Department that during the period, August-September, 1986, William F. Murphy ("Bill Murphy") installed a 20,000 gallon aboveground storage tank at Murphy's Waste Oil Service ("MWOS"), 252 Rear Salem Street, Woburn, MA. The tank was installed to provide storage of waste oil collected by Bill Murphy in the course of doing business as Bill Murphy Waste Oil ("BMWO"). During the period, September, 1986 - December, 1987, BMWO stored waste oil in this tank. During the period, August - September, 1986 - December, 1987, William Murphy signed hazardous waste manifests for BMWO as the owner/operator of a hazardous waste storage, treatment or disposal facility ("TSDF") located at 252 Salem Street, Woburn. This TSDF received off-specification used oil from off-site. During the same period in question, Bill Murphy submitted monthly operating reports to the Department that indicate that BMWO operated a TSDF. In December, 1987, Bill Murphy collected the accumulated waste oil in his 20,000 gal. tank at MWOS and transported it to Cyn Oil Corp.'s TSDF, Stoughton, MA. Bill Murphy then arranged for Harmon Riggers to remove the empty tank and transport it to Beede Waste Oil Corp., Plaistow, New Hampshire.

By installing a new tank for the storage of waste oil at MWOS and by storing waste oil in this tank during the period, September, 1986 to December, 1987, without notification to the Department of this activity, BMWO has violated Massachusetts General Laws, M.G.L. c. 21C, §5, Massachusetts Hazardous Waste Regulations, 310 CMR 30.000, sections 30.061, 30.840(1), and 30.801.

Accordingly, the Department requests that you attend a conference scheduled for 1:30 PM, April 13, 1988 to be conducted at the offices of the Division of Hazardous Waste, One Winter Street, 5th Floor, Boston, MA. This conference will provide you with the opportunity to show cause as to why the Department should not take enforcement action in response to the cited violations.

If you have any questions regarding this letter or the "show-cause" conference, please contact Bill Sirull of my staff at 617/292-5838.

Very truly yours,

Steven K. Dreeszen, Chief
Licensing and Engineering Branch

CERTIFIED MAIL
P 386 345 319

SKD/BS/pm

cc: Joan E. Murphy, Murphy's Waste Oil Service, Inc.
16 Harriet Avenue, Burlington, MA 01803

Ed Pawlowski, DHW - Compliance, NERO

30.030: continued

irreparable harm to the public health, safety, and welfare, and to the environment. Such presumption may be rebutted by the introduction of competent evidence.

(30.031 through 30.059: Reserved)

30.060: NOTIFICATION PROCEDURES

30.061: Who Must Notify and Obtain an EPA Identification Number

(1) Any person who generates or transports hazardous waste, or who owns or operates a facility for the treatment, storage, use, or disposal of hazardous waste, shall notify the Department of such activity.

(2) Persons who commence generating hazardous waste after July 1, 1982 shall apply to the Department for an EPA identification number, using the prescribed notification form, upon commencement of such generation.

(3) Any person who generates or transports hazardous waste, or who owns or operates a facility for the use, treatment, storage, or disposal of hazardous waste, and who has already notified EPA of such activity and has received an EPA identification number need not submit a notification form to the Department.

30.062: Form of the Notification

Except as provided in 310 CMR 30.061(4) notification shall be on a form prescribed by the Department and shall include the following *information:*

(1) The name and address of the generator, transporter, user, or facility for which notification is being given.

(2) The address of the site for which notification is being given.

(3) The EPA identification number of the generator, transporter, user, or facility if one has been assigned.

(4) The name and telephone number of the individual who should be contacted regarding information contained in the notification.

(5) The name of the legal owner of the generator, transporter, user, or facility.

(6) The type of hazardous waste activity for which notification is being given, i.e., generation, transportation, treatment, storage, use or disposal.

(7) For generators of hazardous waste, information showing whether or not the generator is a small quantity generator as defined in 310 CMR 30.351(1).

(8) The name and EPA or Massachusetts hazardous waste number of each hazardous waste handled by the generator, transporter, user, or facility.

(9) Certification, in compliance with 310 CMR 30.009.

30.063: Number of Forms

(1) Any person who generates or uses hazardous waste, or who owns or operates facilities, at more than one site shall submit a separate

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30.838: continued

date of the notice of the decision given pursuant to 310 CMR 30.838(1), unless:

(a) No comments requesting a change in the draft license were received, in which case the license shall become effective immediately upon issuance of the final license decision; or

(b) A request for an adjudicatory hearing is made pursuant to M.G.L. c. 21C and c. 30A, and 310 CMR 1.00.

30.839: Summary Response to Comments

At the time that any license is issued pursuant to 310 CMR 30.838, the Department shall prepare a summary response to comments which shall be available to the public and which shall describe any changes made to the draft license, including the reason(s) for each such change.

30.840: Inspection of New or Modified Facilities

For a new hazardous waste facility, the licensee may not begin treatment, use, storage, or disposal of hazardous waste, and for a facility being modified, the licensee may not treat, store, use, or dispose of hazardous waste in the modified portion of the facility, until:

(1) The licensee has submitted to the Department, by certified mail or hand delivery, a letter, signed by the owner or operator and by a Massachusetts registered professional engineer, stating that the facility has been constructed or modified in compliance with the license; and

(2) Either,

(a) The Department has inspected the modified or newly constructed facility and has determined in writing that it complies with the conditions of the license, or

(b) The Department has determined in writing that no inspection by the Department is required.

30.841: Compliance Schedules in Licenses

When the Department is persuaded that such action is appropriate to protect public health, safety, and welfare and the environment and that such action is not inconsistent with M.G.L. c. 21C and 310 CMR 30.000, the Department may specify in a license a schedule for the licensee to come into compliance with M.G.L. c. 21C and 310 CMR 30.000. Each compliance schedule shall be in accordance with the following requirements:

(1) Compliance shall be required as soon as possible.

(2) Except as provided in 310 CMR 30.841(3), if the compliance schedule exceeds one year from the date of issuance of the license, the schedule shall include interim requirements and interim dates for their achievement. In no event shall the time between any two (2) interim dates exceed one (1) year. If the time for completion of any interim requirement is more than one (1) year and is not readily divisible into stages for completion, the license shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date. Within fourteen (14) days after each interim date and the final date of compliance, the licensee shall notify the Department in writing of its compliance or noncompliance with the interim or final requirements, as the case may be.

(3) The compliance schedule may provide for cessation of activities authorized by the license.

30.800: LICENSING REQUIREMENTS AND PROCEDURES

310 CMR 30.801 through 30.899, cited collectively as 310 CMR 30.800, set forth the procedures and requirements for licensing hazardous waste facilities and transporters.

30.801: Who Must Have a License

No person shall transport, use, collect, store, treat, or dispose of hazardous waste or construct, operate or maintain any facility for the use, storage, treatment, or disposal of hazardous waste, unless said person has applied for and obtained, and has in effect, a valid license issued by the Department pursuant to M.G.L. c. 21C and 310 CMR 30.000, except that a license is not required for the following:

B.M. Violator

(1) The accumulation of hazardous waste at the site of generation by the generator thereof for up to and including 90 days, as provided in 310 CMR 30.340.

(2) The accumulation of hazardous waste by a small quantity generator at the site of generation thereof, as provided in 310 CMR 30.351.

(3) Treatment which is an integral part of a manufacturing process at the point of generation.

(4) Municipal or industrial wastewater treatment facilities which are permitted pursuant to M.G.L. c. 21, s. 43.

(5) The handling, treating, storing, use, processing or disposing of infectious hazardous waste which is regulated by the Department of Public Health pursuant to M.G.L. c. 111, ss. 3 and 51 - 56.

(6) The holding of manifested shipments of hazardous waste in transit in compliance with the requirements of 310 CMR 30.408.

(7) The emergency containment or treatment of a hazardous waste or hazardous material which becomes a waste at the time of the spill.

(8) The transport of hazardous waste by certain interstate carriers exempted pursuant to 310 CMR 30.401(4).

(9) The transport of hazardous waste by any air or rail transporter subject to regulation by the DOT.

(10) The transport of hazardous waste by bulk shipment water transporter subject to regulation by the U.S. Coast Guard.

(11) Any emergency action or remedial action initiated or ordered by the Department or by a court of competent jurisidiction and conducted by the Department or a contractor authorized by the Department to secure a site where hazardous waste has been deposited or abandoned.

(12) The storage, treatment, or disposal of hazardous wastes containing polychlorinated biphenyls (PCBs) in concentrations equal to or greater than 50 parts per million by facilities which meet all the requirements in 310 CMR 30.501(3)(a), (b) and (c).

30.802: Application Form

(1) Any person required to have a hazardous waste license shall complete, sign, and submit an original application, plus three copies, to the Department.

0089-0143

EXHIBIT 3.a

CleanHarbors®
Environmental Services, Inc.

APPLICATION FOR PERMIT
WOBURN'S WETLAND ORDINANCE
NOTICE OF INTENT
FOR
MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET, WOBURN, MA 01801
AUGUST 12, 1988

WOBURN
CONSERVATION COMMISSION

Kennedy J.H.S., Middle Street, Woburn, Ma. 01801
(617) 938-7561

APPLICATION FOR PERMIT
WOBURN WETLANDS ORDINANCE
PART A

DATE August 5, 1988

Notice is hereby given in accordance with the provisions of the Woburn Wetlands Ordinance that the proposed activity described herein is within the jurisdiction of the city of Woburn and is located at:

252 Salem Street, Woburn, MA 01801

as shown on Assessors Map P-16 Block B005 Parcel 41 and is recorded at the Registry of Deeds of Middlesex, Book 13231, Page 240 Certificate# N/A (registered land)

Under what name(s) and address(es) is the title to the property (on which work is proposed) recorded at the Registry of Deeds? (use additional sheet, if needed)

Name(s)	Address(es)
Old Oil Realty Trust	16 Harriet Avenue, Burlington, MA

The applicant submitting this application is:

Name	Address	Telephone No.
Murphy's Waste Oil Service, Inc.	252 Salem Street Woburn, MA 01801	935-9066

Plans describing and defining the work, included herewith and made part hereof, are titled and dated as follows:
A) USGS Site Map, July, 1988; B) Woburn Property Map July 1988 C)Grading and Erosion Control Plan August 1988 D)Site Plan, July 1988 E)Wetland Description August, 1988 F) Construction Details August, 1988 G) Run characteristics & Drainage Plan August 1988

5. Copies of this complete application (Parts A and B, if both are applicable) have been submitted by certified mail, or hand delivery, as follows:

	Date of Submittal
Conservation Commission (orginal and 7 copies)	8/10/88
Planning Board, City of Woburn (one copy)	8/10/88
City Engineer, City of Woburn (one copy)	8/10/88
Building Commissioner, City of Woburn (one copy)	8/10/88
City Clerk (one copy)	8/10/88

6. Have the abutters to the property on which the work is proposed, been notified about the filing of this application, on the form specified in the regulations, and in accordance with Section 5 of the Ordinance? Yes (attach a certified list of abutters who have been notified.)

0089-0148

Form 3

Commonwealth of Massachusetts

DEQE File No. _____ (To be provided by DEQE)

City/Town _____

Applicant _____

Notice of Intent
Under the
Massachusetts Wetlands Protection Act, G.L. c. 131, §40
and
Application for a Department of the Army Permit AND

PART "B", APPLICATION FOR WOBURN WETLANDS ORDINANCE PERMIT

Part I: General Information

1. Location: Street Address 252 Salem and 252 Rear Salem Street Woburn, MA 01801
   Lot Number 41; Map P16; Block 005

2. Project: Type Construction Description To improve the existing waste oil storage facility by constructing a tank storage concrete containment dike and truck loading pad for waste oil storage & transfer. An 8-inch, ductile-iron, Class 50 water line will be installed for a future proposed fire suppression system. A 6-foot high chain link fence with 2 ft. barbed wire will enclose the project area. Site will be fine-graded and compacted to finish grades. Proposed surface treatments include a crushed stone access road and loam, seeding of disturbed areas.

3. Registry: County Middlesex Current Book 13231 & Page 240
   Certificate (If Registered Land) N/A

4. Applicant Murphy's Waste Oil Service Inc. Tel. 935-9066
   Address 252 Salem Street, Woburn, MA 01801

5. Property Owner Old Oil Realty Trust Tel. _____
   Address 16 Harriet Avenue, Burlington, MA

6. Representative CHI Environmental Engineering Corp. Tel. 849-1200
   Address 325 Wood Road, Braintree, MA 02184

7. Have the Conservation Commission and the DEQE Regional Office each been sent, by certified mail or hand delivery, 2 copies of completed Notice of Intent, with supporting plans and documents?
   Yes ☒ No ☐

. What is the purpose of the proposed project?
To improve the existing Waste Oil Facility by constructing concrete dike and loading pad for Waste Oil storage and transfer.

. What are the alternatives to the project as outlined?
None

. What is the amount enclosed for the application fee? (if the fee is other than a flat rate, show calculations) $500.00 + (2000 sq. ft. x $.02/sq.ft.)=$540.00

0. Do you understand that notification of this application and the public hearing which will be held by the Conservation Commission, will be published in the Daily Times & Chronicle, 25 Montvale Avenue, at your expense? yes

11. If the owner of the land is other than the applicant, the owner must either sign this application in the space provided or provide written authorization for the applicant to seek a permit. Has this requirment been satisfied? Yes

Name of Owner (please print or type) Old Oil Realty Trust

Owner's Signature _____ Date _____

12. I hereby certify, under the pains and penalties of perjury, that the contents of this application are true and complete.

Signature of applicant: Joan E. Murphy Date 8-10-88

Note: PART B of this application consists of the completed Notice of Intent which may be required pursuant to MGL Chapter 131 s.40, as amended.

Occasionally, the meeting schedule of the Conservation Commission precludes holding a hearing precisely within 21 days. Hearings are always held as promptly as possible and always within 30 days of the receipt of the complete application. A waiver is sought to facilitate scheduling of hearings.

WAIVER

IF THE NEXT REGULAR MEETING OF THE CONSERVATION COMMISSION IS NOT SCHEDULED WITHIN 21 DAYS OF THE DATE OF MY FILING OF THIS APPLICATION I WAIVE THE 21-DAY REQUIREMENT AND AGREE TO A LATER DATE FOR THIS HEARING PURSUANT TO MGL CH 131 s. 40, PROVIDED THAT THE HEARING IS HELD NOT LATER THAN 30 DAYS FROM THE DATE OF FILING A COMPLETE APPLICATION.

Signature of applicant _____ Date _____

8. Have all obtainable permits, variances and approvals required by local by-law been obtained?
Yes ☐ No ☒

Obtained:	Applied For:	Not Applied For:
	Building Permit	
	Dimensional Variance	
	Board of Appeals	

9. Is any portion of the site subject to a Wetlands Restriction Order pursuant to G.L. c. 131, §40A or G.L. c. 130, §105? Yes ☐ No ☒

10. List all plans and supporting documents submitted with this Notice of Intent.

Identifying Number/Letter	Title, Date
Appendix A	U.S.G.S. Site Map, August 1988
Appendix B	Woburn Property Map, August 1988
Appendix C	Grading & Erosion Control Plan, August 1988
Appendix D	Site Plan, August 1988
Appendix E	Wetland Delineation and Description, August 1988
Appendix F	Construction Details, August 1988
Appendix G	Runoff Characteristics and Drainage Plan, August 1988
Appendix H	List of notified abutters
Appendix I	Description and assessment of Wetland Resource Areas

11. Check those resource areas within which work is proposed:

(a) ☒ Buffer Zone

(b) Inland:

- ☐ Bank*
- ☒ Bordering Vegetated Wetland*
- ☐ Land Under Water Body & Waterway*

Land Subject to Flooding,

- ☒ Bordering
- ☐ Isolated

(c) Coastal:

- ☐ Land Under the Ocean*
- ☐ Coastal Beach*
- ☐ Barrier Beach
- ☐ Rocky Intertidal Shore*
- ☐ Land Under Salt Pond*
- ☐ Fish Run*
- ☐ Designated Port Area*
- ☐ Coastal Dune
- ☐ Coastal Bank
- ☐ Salt Marsh*
- ☐ Land Containing Shellfish*

*Likely to involve U.S. Army Corps of Engineers concurrent jurisdiction. See General Instructions for Completing Notice of Intent.

0089-0151

12. Is the wetland resource area to be altered by the proposed work located on the most recent Estimated Habitat Map (if any) of rare, "state-listed" vertebrate and invertebrate animal species occurrences provided to the conservation commission by the Natural Heritage and Endangered Species Program?

YES [ ] NO [X] Date printed on the Estimated Habitat Map Issued
NO MAP AVAILABLE [ ] (if any) October 1987

If yes, have you completed an Appendix A and a Notice of Intent and filed them, along with supporting documentation with the Natural Heritage and Endangered Species Program by certified mail or hand delivery, so that the Program shall have received Appendix A prior to the filing of this Notice of Intent?

YES [ ] NO [ ]

Part II: Site Description

Indicate which of the following information has been provided (on a plan, in narrative description or calculations) to clearly, completely and accurately describe existing site conditions.

Identifying Number/Letter (of plan, narrative or calculations)	
	Natural Features:
D	Soils
F	Vegetation
A,C	Topography
A	Open water bodies (including ponds and lakes)
A	Flowing water bodies (including streams and rivers)
D	Public and private surface water and ground water supplies on or within 100 feet of site
N/A	Maximum annual ground water elevations with dates and location of test
D	Boundaries of resource areas checked under Part I, item 11 above
---	Other
	Man-made Features:
D	Structures (such as buildings, piers, towers and headwalls)
N/A	Drainage and flood control facilities at the site and immediately off the site, including culverts and open channels (with inverts), dams and dikes
D	Subsurface sewage disposal systems
D	Underground utilities
D	Roadways and parking areas
B,D	Property boundaries, easements and rights-of-way
I	Other

Part III: Work Description

Indicate which of the following information has been provided (on a plan, in narrative description or calculations) to clearly, completely and accurately describe work proposed within each of the resource areas checked in Part I, item 11 above.

Identifying Number/Letter (of plan, narrative or calculations)	
	Planview and Cross Section of:
C, D	Structures (such as buildings, piers, towers and headwalls)
D, G	Drainage and flood control facilities, including culverts and open channels (with inverts), dams and dikes
D	Subsurface sewage disposal systems & underground utilities
C	Filling, dredging and excavating, indicating volume and composition of material
N/A	Compensatory storage areas, where required in accordance with Part III, Section 10:57 (4) of the regulations
N/A	Wildlife habitat restoration or replication areas
I	Other
	Point Source Discharge
N/A	Description of characteristics of discharge from point source (both closed and open channel), when point of discharge falls within resource area checked under Part I, item 11 above, as supported by standard engineering calculations, data and plans, including but not limited to the following:

0089-0153

1. Delineation of the drainage area contributing to the point of discharge;
2. Pre- and post-development peak run-off from the drainage area, at the point of discharge, for at least the 10-year and 100-year frequency storm;
3. Pre- and post-development rate of infiltration contributing to the resource area checked under Part I, item 11 above;
4. Estimated water quality characteristics of pre- and post-development run-off at the point of discharge.

Part IV: Mitigating Measures

1. Clearly, completely and accurately describe, with reference to supporting plans and calculations where necessary:
   (a) All measures and designs proposed to meet the performance standards set forth under each resource area specified in Part II or Part III of the regulations; or
   (b) why the presumptions set forth under each resource area specified in Part II or Part III of the regulations do not apply.

☐ Coastal ☒ Inland Resource Area Type: Bordering Land Subject to Flooding	Identifying number or letter of support documents
There is no work proposed within the Bordering Land Subject to Flooding. A portion (approx. 2000 sq. ft. of the containment dike/loading pads is within Woburn's buffer zone, 150 ft. from the resource area.	C, D

☐ Coastal ☒ Inland Resource Area Type: Bordering Vegetated Wetland	Identifying number or letter of support documents
There is no work proposed within the Bordering Vegetated Wetland. A portion (approx. 2000 sq. ft. of the containment dike/loading pads is within Woburn's buffer zone, 150 ft. from the resource area.	C, D

0089-0154

☐ Coastal ☐ Inland Resource Area Type:	Identifying number or letter of support documents

2. Clearly, completely and accurately describe, with reference to supporting plans and calculations where necessary:

   (a) all measures and designs to regulate work within the Buffer Zone so as to ensure that said work does not alter an area specified in Part I, Section 10.02(1) (a) of these regulations; or

   (b) if work in the Buffer Zone will alter such an area, all measures and designs proposed to meet the performance standards established for the adjacent resource area specified in Part II or Part III of these regulations.

☐ Coastal ☒ Inland Resource Area Type Bordered By 100-Foot Discretionary Zone: Buffer Zone	Identifying number or letter of support documents
To control erosion and avoid sedimentation of the resource area, staked hay bales will be placed along the 100-year flood elevation (El. 46.00 NGVD). The staked hay bales will be maintained for the duration of said project. Permanent erosion control measures shall be the establishment of a stable turf for all loam and seed areas so designated on the enclosed plans.	C, F

Part V: Additional Information for a Department of the Army Permit

1. COE Application No. _____ 2. _____
   (to be provided by COE) (Name of waterway)

3. Names and addresses of property owners adjoining your property:

4. Document other project alternatives (i.e., other locations and/or construction methods, particularly those that would eliminate the discharge of dredged or fill material into waters or wetlands).

5. 8½" x 11" drawings in planview and cross-section, showing the resource area and the proposed activity within the resource area. Drawings must be to scale and should be clear enough for photocopying.

Certification is required from the Division of Water Pollution Control before the Federal permit can be issued. Certification may be obtained by contacting the Division of Water Pollution Control, 1 Winter Street, Boston, Massachusetts 02108.

Where the activity will take place within the area under the Massachusetts approved Coastal Zone Management Program, the applicant certifies that his proposed activity complies with and will be conducted in a manner that is consistent with the approved program.

Information provided will be used in evaluating the application for a permit and is made a matter of public record through issuance of a public notice. Disclosure of this information is voluntary, however, if necessary information is not provided, the application cannot be processed nor can a permit be issued.

I hereby certify under the pains and penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents and supporting data are true and complete, to the best of my knowledge.

Joan E. Murphy — 8-10-88
Signature of Applicant — Date

Kenneth A. Tarbell, P.E. — August 10, 1988
Signature of Applicant's Representative — Date

NED FORM 100 (TEST)
1 MAY 82

"Exception to ENG Form 4345 approved by HQUSACE, 6 May 1982".

"This document contains a joint Department of the Army and State of Massachusetts application for a permit to obtain permission to perform activities in United States waters. The Office of Management and Budget (OMB) has approved these questions required by the US Army Corps of Engineers. OMB Number 0702-0036 and expiration date of 30 September 1983 applies". This statement will be set in 6 point type.

0089-0156

APPENDIX A

0089-0157

APPENDIX A

U.S.G.S. SITE MAP
August, 1988

GH ENVIRONMENTAL ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY

PROJECT NO. E — 1656

SCALE 1" = 2083'

FIGURE A LOCUS MAP

MURPHY'S WASTE OIL SERVICE, INC.

252 AND 252 REAR SALEM STREET

WOBURN, MASSACHUSETTS

0089-0159

APPENDIX B

0089-0160

APPENDIX B

Woburn Property MAP
August, 1988

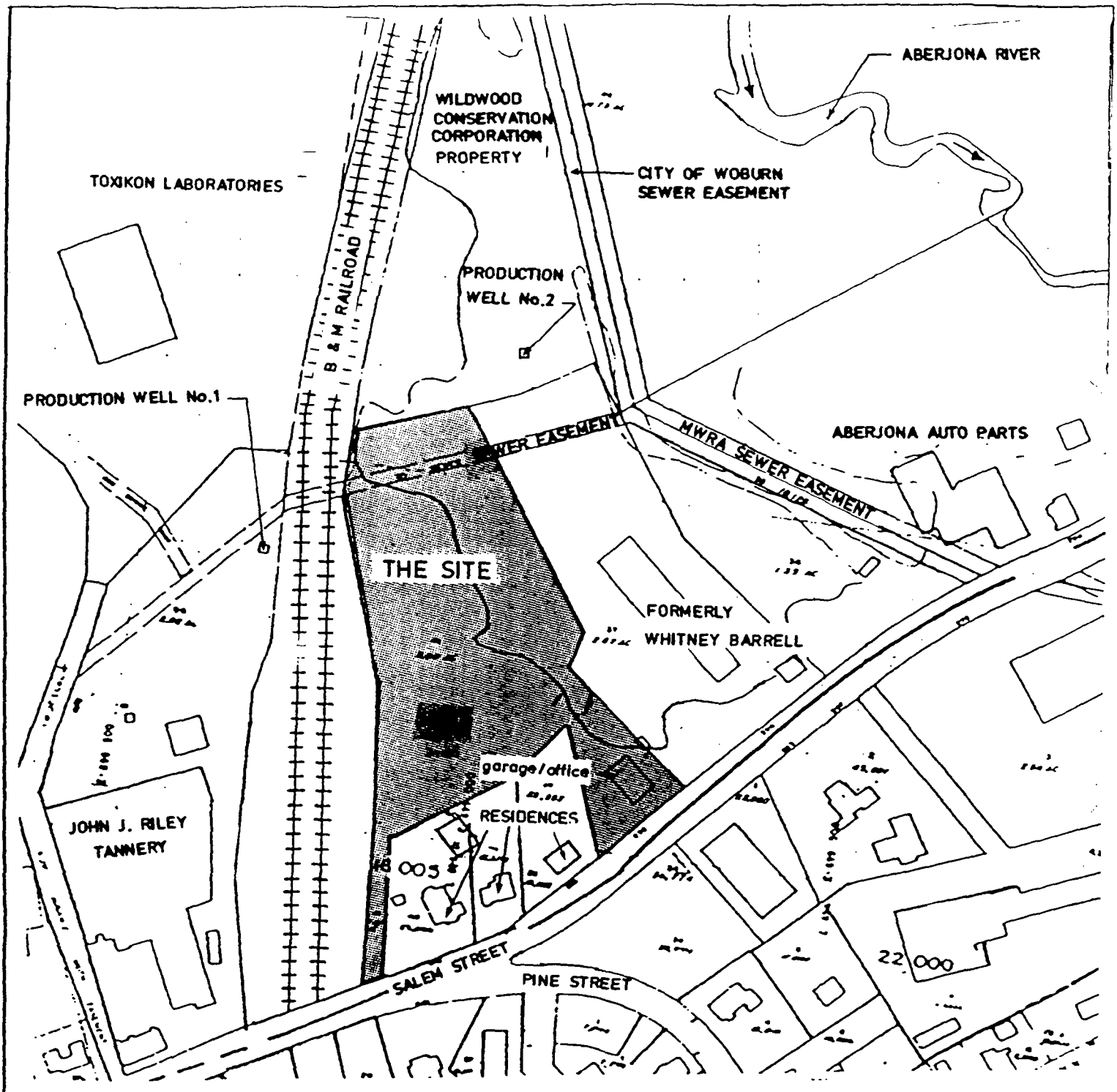


FIGURE B SITE AND ADJACENT PROPERTIES

ENVIRONMENTAL ENGINEERING CORPORATION, A CLEAN HARBORS COMPANY	MURPHY'S WASTE OIL SERVICE, INC.
PROJECT NO. E – 1656	252 AND 252 REAR SALEM STREET
SCALE 1" = 200'	WOBURN, MASSACHUSETTS
	DRAWING NO.

APPENDIX C

APPENDIX C

PROPOSED GRADING AND EROSION CONTROL PLAN
August, 1988

WOBURN BUILDING DEPARTMENT
INSPECTION REPORT/FOLLOW-UP COMPLAINT FORM

INSPECTION DATE Aug 26 1989 FOR: PLUMBING
OWNER:
BUSINESS NAME OR USE Clean Harbors
ADDRESS: 252R Salem St.

VIOLATIONS: None

Above ground Rough P-3
Toilet, Lav. & Shower
Hot water tank
Floor drains
Water Piping

Jeff Gunnell

NAME OF PERSON TO WHOM RECOMMENDATIONS WERE GIVEN:
AMOUNT OF TIME ALLOTED FOR REMEDIAL ACTION, WITH PUBLIC SAFETY IN MIND:

Time 8:25 INSPECTOR:

= = = =

APPENDIX D

0089-0166

APPENDIX D

SITE PLAN
August, 1988

APPENDIX E

APPENDIX E

Wetland Delineation and Description

INDEX

Reference.....E1

Wetland Delineation.....E2

Wetland Description.....E2-E7

National Wetlands Inventory Map.....E8

**Sanford Ecological Services-
Qualification Letter.....E9**

References

Information compiled within this section is taken from the following resources;

a) Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss., hereinafter referred to as the Manual.

b) "Commonwealth of Massachussetts Regulation 310 CMR 10.00 Wetlands Protection", hereinafter referred to as the Act.

c) Report, 1979. "Classification of Wetlands and Deepwater Habitats of the United States" and Map, 1977 "National Wetlands Inventory", U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C., 20240. Hereinafter referred to as the report, and the map, respectively.

Delineation -

In April, 1988, Sanford Ecological Systems, of Southboro, MA., delineated (by flagging) the wetlands according to vegetational and hydrological parameters (see qualification letter, page E9) This routine approach is utilized in a great number of wetland determinations. Wetland flags were located in relation to site property lines by Northeast Survey Inc., of Natick, MA.

Stated in the Manual:

> "Explicit in the definition (of a wetland) is the consideration of three environmental parameters: hydrology, soil and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. Although vegetation is often the most readily observed parameter, sole reliance on vegetation or either of the other parameters as the determinant of wetlands can sometimes by misleading."

Classification -

According to the report and map (see map Page E8) the wetlands in the vicinity of the site is classified as a Palustrine system. Following is the general definition and description from the Report.

Palustrine System

> "Definition: The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%.
>
> It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5%.

Limits. The Palustrine System is bounded by upland or by any of the other four Systems.

Description. The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers. The erosive forces of wind and water are of minor importance except during severe floods.

The emergent vegetation adjacent to rivers and lakes is often referred to as "the shore zone" or the "zone of emergent vegetation" (Reid and Wood 1986), and is generally considered separately from the river or lake. As an example, Hynes (1970:85) wrote in reference to riverine habitats, "We will not here consider the long list of emergent plants which may occur along the banks out of the current, as they do not belong, strictly speaking, to the running water habitat."

There are often great similarities between wetlands lying adjacent to lakes or rivers and isolated wetlands of the same class in basins without open water.

Subsystems. None.

Classes. Rock Bottom, Unconsolidated Bottom, Aquatic Bed, Unconsolidated Shore, Moss-Lichen Wetland, Emergent Wetland, Scrub-Shrub Wetland, and Forested Wetland."

The wetland is to a greater extent, described by its CLASS - EMERGENT WETLAND. From the report; "The CLASS . . .describes the general appearance of the habitat in terms of either the dominant life-form of the vegetation or the physiography and composition of the substrate-features that can be recognized without the aid of detailed environmental measurements.

Emergent Wetland

Definition. The Emergent Wetland Class is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtital and irregularly exposed.

Description. In areas with relatively stable climatic conditions, Emergent Wetlands maintain the same appearance year after year. In other areas, such as the prairies of the central United States, violent climatic fluctuations cause them to revert to an open water phase in some years (Steward and Kantrud 1972). Emergent Wetlands are found throughout the United States and occur in all Systems except the Marine. Emergent Wetlands are known by many names, including marsh, meadow, fen, prairie pothole, and slough. Areas that are dominated by pioneer plants which become established during periods of low water are not Emergent Wetlands and should be classified as Vegetated Unconsolidated Shores or Vegetated Streambeds."

Field investigations conducted by CHIEE in July, 1988, showed the wetland subclass to be persistent and is described in the Report as; "Persistent. - Persistent Emergent Wetlands are dominated by species that normally remain standing at least until the beginning of the next growing season. This Subclass is found only in the Estuarine and Palustrine Systems.

Palustrine Persistent Emergent Wetlands

Palustrine Persistent Emergent Wetlands contain a vast array of grasslike plants such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), saw grass (*Cladium jamaicense*), sedges (*Carex* spp.); and the true grasses such as reed (*Phragmites australis*), manna grasses (*Glyceria* spp.), slough grass (*Bechmannia syzigachne*), and whitetop (*Scolochloa fesucaacea*).

There is also a variety of broadleaved persistent emergents such as purple loossstrife (*Lythrum salicaria*), dock (*Rumex mexicanus*), waterwillow (*Decodon verticillatus*), and many species of smartweeds (*Polygonum*)."

Although an overland hydraulic connection, from the site wetlands to the Aberjona River System has not been field verified, it has been assumed. Description of the river and wetlands is; ecological system - Palustrine, Class - Scrub/Shrub, Subclass - Broad leaved deciduous.

From the Report;

Scrub-Shrub Wetland

"Definition. The Class Scrub-Shrub Wetland includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes except subtidal are included.

Description. Scrub-Shrub Wetlands may represent a successional stage leading to Forested Wetland, or they may be relatively stable communities. They occur only the Estuarine and Palustrine Systems, but are one of the most widespread classes in the United States (Shaw and Fredine 1956). Scrub-Shrub Wetlands are known by many names, such as shrub swamp (Shaw and Fredine 1956), shrub carr (Curtis 1959), bog (Heinselman 197), and pocosin (Kologiski 1977). For practical reasons we have also included forests composed of young trees less than 6 m tall.

Broad-leaved Deciduous.-In Estuarine System Wetlands the predominant deciduous and broad-leaved trees or shrubs are plants such as sea-myrtle (*Baccharis halimifolia*) and marsh elder (*Iva frutescens*). In the Palustrine System typical Dominance Types are alders (*alnus* spp.), willows (*Salix* spp.), buttonbush (*Cephalanthus occidentalis*), red osier dogwood (*Cornus stolonifera*), honeycup (*Zenobia pulverulenta*), spirea (*Spiraea douglasii*), bog birch (*Betula pumila*), and young trees of species such as red maple (*Acer rubrum*) or black spruce (*Picea mariana*)."

In accordance with the Act, resource areas identified on site are; Bordering Land Subject to Flooding, Bordering Vegetated Wetlands and Buffer Zone. Important to note is that propsed work is located within the Buffer Zone only.

From the Act;

Bordering Land Subject to Flooding:

"Bordering Land Subject to Flooding is an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, pondss or lakes. It extends from the banks of these waterways and woater bodies; where a bordering vegetated wetland occurs, it extends from said wetland.

The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm.

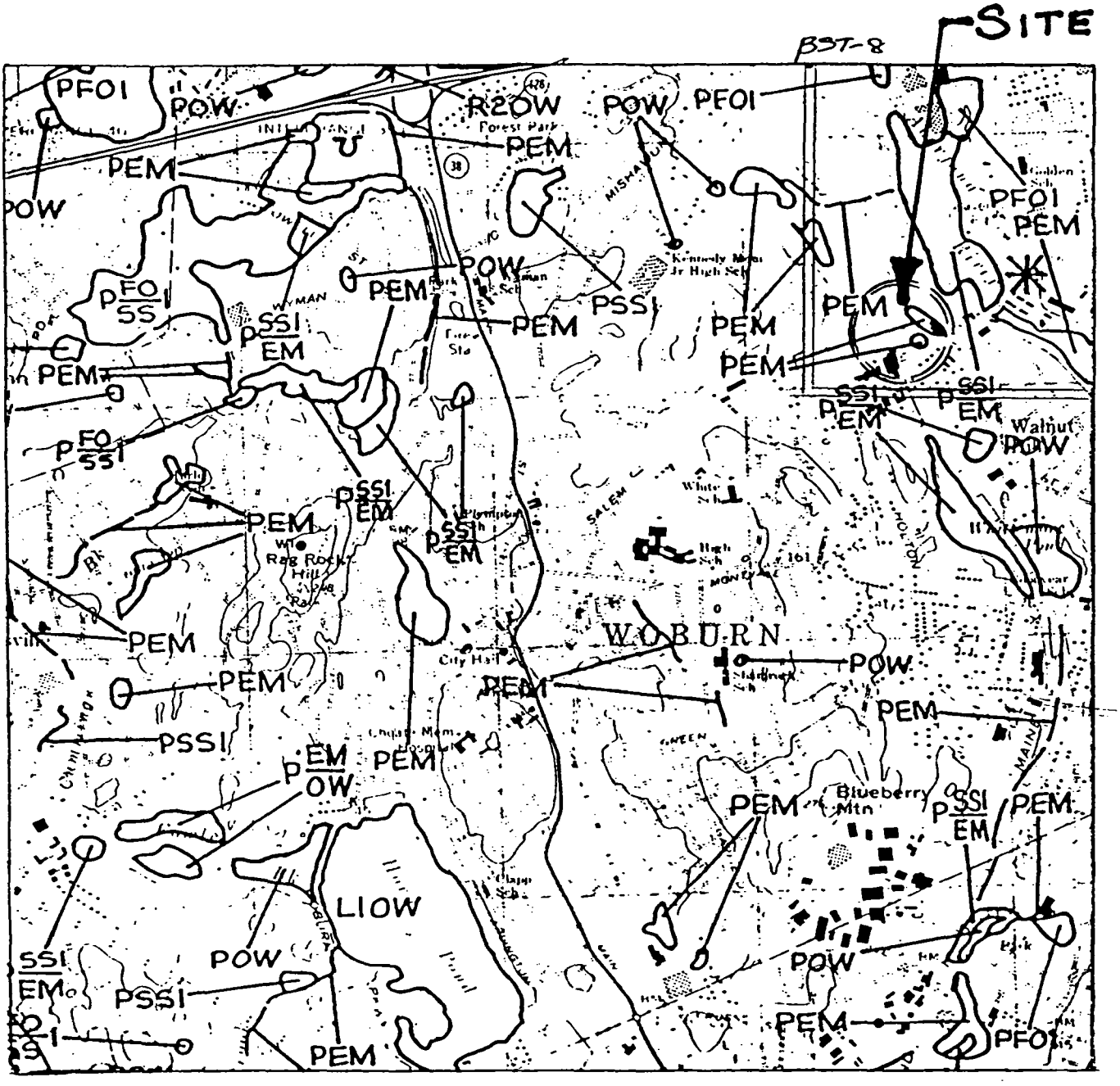
Bordering Vegetated Wetlands

Bordering Vegetated Wetlands are freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. They are areas where the topography is low and flat, and where the soils are annually saturated. The ground and surface water regime and the vegetational community which occur in each type of freshwater wetland are specified in the Act. The boundary of Bordering Vegetated Wetlands is the line within which 50 percent or more of the vegetational community consists of the wetland plan species identified in the Act."

In accordance with Woburn Wetlands Ordinance of 1985, (as amended in 1987), the Buffer Zone is defined as the area of land extending 150 feet horizontally outward from the boundary of any resource area. The limit of this 150 foot Buffer Zone is shown on Figure D - Site Plan.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NOTES TO THE USER

- Wetlands which have been field examined are indicated on the map by an asterisk (*).

AERIAL PHOTOGRAPHY

DATE: 4 / / 77

SCALE: 1:80000

TYPE: B-W

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

Prepared by Office of Biological Services for the National Wetlands Inventory

P — PALUSTRINE

ECOLOGICAL SYSTEM	RB – ROCK BOTTOM	UB – UNCONSOLIDATED BOTTOM	AB – AQUATIC BED	FL – FLAT	ML – MOSS/LICHEN	EM – EMERGENT	SS – SCRUB/SHRUB	FO – FORESTED	OW – OPEN UNKNOWN
No Subsystem	1 Bedrock 2 Boulder	1 Cobble/Gravel 2 Sand 3 Mud 4 Organic	1 Submergent Algal 2 Submergent Vascular 3 Submergent Moss 4 Floating-leaved 5 Floating 6 Unknown Submergent 7 Unknown Surface	1 Cobble/Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated Pioneer 6 Vegetated Non pioneer	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent 3 Narrow-leaved Nonpersistent 4 Broad-leaved Nonpersistent 5 Narrow-leaved Persistent 6 Broad-leaved Persistent	1 Broad-leaved Deciduous 2 Needle-leaved Deciduous 3 Broad-leaved Evergreen 4 Needle-leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-leaved Deciduous 2 Needle-leaved Deciduous 3 Broad-leaved Evergreen 4 Needle-leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	

CLASS

Subclass

E8

0089-0178

SANFORD ECOLOGICAL SERVICES, Inc.

Environmental Consultants

30 Turnpike Road, Southborough, Massachusetts 01772 • Telephone (617) 460-9900
FAX (617) 481-2009

August 9, 1988

Ms. Jill McGillivray
Clean Harbors of Braintree
325 Wood Road
Braibtree, MA 02184

Subject: Wetland Flagging of Property Located in Woburn, MA

Dear Ms. McGillivray:

On April 11, 1988, Sanford Ecological Services inspected the property located north of Salem Street (State Road) in Woburn, Massachusetts for the presence of wetlands as defined by the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, Section 40). Mr. Timothy Briggs (Botanist/Wetland Scientist) conducted the site inspection.

Aside from buffer zones, the Massachusetts Wetlands Protection Act regulations have established four freshwater wetland resource categories: (1) Bank, (2) Bordering Vegetated Wetlands, (3) Land Under Water Bodies and Waterways, and (4) Land Subject to Flooding. The site was examined and areas which could be suspected to qualify as any of the above resource categories identified. A total of 27 flags were set out to delineate resource areas. The following discusses the methodology that SES used to identify wetland resource areas

The method of vegetation analysis was based upon a consideration of regulations which implement the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, Section 40). These regulations state:

> The boundary of Bordering Vegetated Wetlands is the line within which 50 percent or more of the vegetational community consists of the wetland plant species identified in the Act.

DEQE policy requires the use of all wetland indicator species in determining wetland borders whether or not they are specifically listed in the Act. The border was established in accordance with the above definition and DEQE policy. Selected stations were established in order to document compliance with regulations. Each station consisted of a circular area approximately 30 feet in diameter. Stations were divided in half along the contour representing the wetland boundary. Separate analyses were conducted for upgradient and downgradient quadrants. Average wetland species contributions in the downgradient quadrant must equal or exceed 50% while contributions in the upgradient quadrant must be less than 50%. The method of vegetation evaluation is described below.

The vegetation within each station is divided into three layers: trees, shrubs, and herbaceous plants; and each layer analyzed separately. The tree layer consists of woody plants greater than 5 meters (16 feet) in height. The shrub layer consists of woody plants under 5 meters in height. Non-woody and selected very low-growing ground-cover perennial species are evaluated as part of the herbaceous layer. By utilizing woody versus non-woody criteria instead of height to separate shrub and herbaceous strata, the resulting layer evaluations can often be used to indicate time-dependent vegetational dynamics (i.e., ongoing changes in vegetation structure induced by alterations in moisture regime or disturbance).

The justification for analyzing by layers is well documented in the scientific literature. Researchers working in the field

of plant ecology have utilized this method since the late nineteenth century, and a description of vegetation structure based on layers is available in most introductory and advanced texts dealing with plant ecology. A major advantage of this approach is that trees are compared with trees, shrubs with shrubs, and herbaceous plants with herbaceous plants. The assumption is that the indicator value of a species is independent of its size. Hence, it would be incorrect to conclude that an area is a wetland if one red maple tree was found growing in conjunction with a dozen choke cherry shrubs simply because the tree, as a result of its size, outweighs the shrubs.

The regulatory criteria use the concept: "vegetational community." However, no definition of "vegetational community" is provided in the regulations. Therefore, the concept of vegetation is assumed to conform with the definition of vegetation used in the science of plant ecology. Barbour, Burk, and Pitts (1980) provide the following definition: "Vegetation consists of all the plant species in a region (the flora), and it is concerned with the pattern of how all these species are spatially or temporally distributed." Hence, the concept of vegetation greatly exceeds a simple plant list (flora) and includes structural features such as abundance and dominance.

The regulatory criteria identify a percentage composition (50%) which is to be used for wetland border determinations. However, no explanation of which vegetational parameter should be used to determine percentage is offered. Cover (percentage of ground surface which lies directly beneath plant canopies) was the parameter of choice. Barbour, Burk, and Pitts (1980) state: "It is assumed that a comparison of cover for each species in a given canopy layer will reveal the relative control or dominance that each species exerts on the community as a whole...." Hays, Summers, and Seitz (1981) state that cover "...is typically used for single strata (layers) in the vegetation."

At each station, total canopy cover for each layer is estimated using procedures described by the United States Fish and Wildlife Service (Hays, Summers, and Seitz, 1981). These procedures are described in detail within their book under Section 3.19 (Ocular Estimate of Cover). The procedure allows a visual estimate of cover to be made after following a prescribed set of steps.

Once total canopy cover for each layer is determined, the percent contribution of each species within a layer to the total canopy cover of that layer is estimated. To determine the percent contribution of wetland species within each layer, the cover of all species so identified is divided by total canopy cover of that layer. Such a percentage calculation is identical in concept to standard botanical practice for determining "relative cover" and is a standard method of analysis (see Barbour, Burk, and Pitts, 1980; Daubenmore, 1968; Cox, 1976; Curtis and Cottam, 1962; and most texts on plant ecology).

An unbiased means of estimating total contribution of wetland species to the vegetational community is to average all layers. By averaging the three layers, each strata is assumed to be of equal value as an indicator of wetlands. On occasions, a single layer may be absent or in very low abundance. In such a circumstance, inclusion of this layer produces a distortion in the average percent wetland composition value and an erroneous location of the wetland boundary. Experience of SES personnel has shown that, if total cover of a layer is below 10%, the layer should not be included in the average percent wetland composition calculation.

Wetland border determinations during winter lack the precision which may be obtained during the growing season. During winter conditions, cover values of tree and shrub layers are as accurate as during the growing season since the branch habit is utilized in the estimate. However, accuracy of

herbaceous layer estimates are reduced, especially when snow cover is present. In order to accumulate and utilize as much data as possible, herbaceous plants are identified from their remains and cover estimated based on a knowledge of species habits. It should be noted that a reduction in the data base relative to the herbaceous layer will increase the importance of the tree and shrub layers when calculating the average wetland species contribution. Since trees and shrubs can reach groundwater from greater elevations than herbaceous plants, this will generally result in a wetland border which is located at a slightly higher elevation than what might otherwise be determined. Hence, winter determinations are typically slightly more conservative (i.e., more inclusive) than growing season determinations.

The above analytical methods utilize criteria defined by regulations and botanical techniques well recognized in the plant sciences. Techniques which were chosen are standard within the discipline, have been employed by scientists since the late nineteenth century, and currently are used both for a plant ecological research and applied investigations.

If you have any questions or require additional information, please call me.

Cordially,
SANFORD ECOLOGICAL SERVICES, INC.

Timothy Briggs

0089-0183

REFERENCES

Barbour, M.G., J. Burke, and W.D. Pitts. 1980. Terrestrial Plant Ecology. The Benjamin/Cummings Publishing Company, Inc. 604 pp.

Cox, G.W. 1976. Laboratory Manual of General Ecology. Wm. C. Brown Company Publishers. 232 pp.

Curtis, J.T. and G. Cottam. 1962. Plant Ecology Workbook. Laboratory, Field and Reference Manual. Burgess Publishing Company. 193 pp.

Daubenmore, R. 1968. Plant Communities. A Textbook of Plant Synecology. Harper and Row Publishers. 300 pp.

Hays, R.L., C. Summers, and W. Seitz. 1981. Estimating Wildlife Habitat Variables. U.S.D.I. Fish and Wildlife Service. FWS/OBS-81/47. 111 pp.

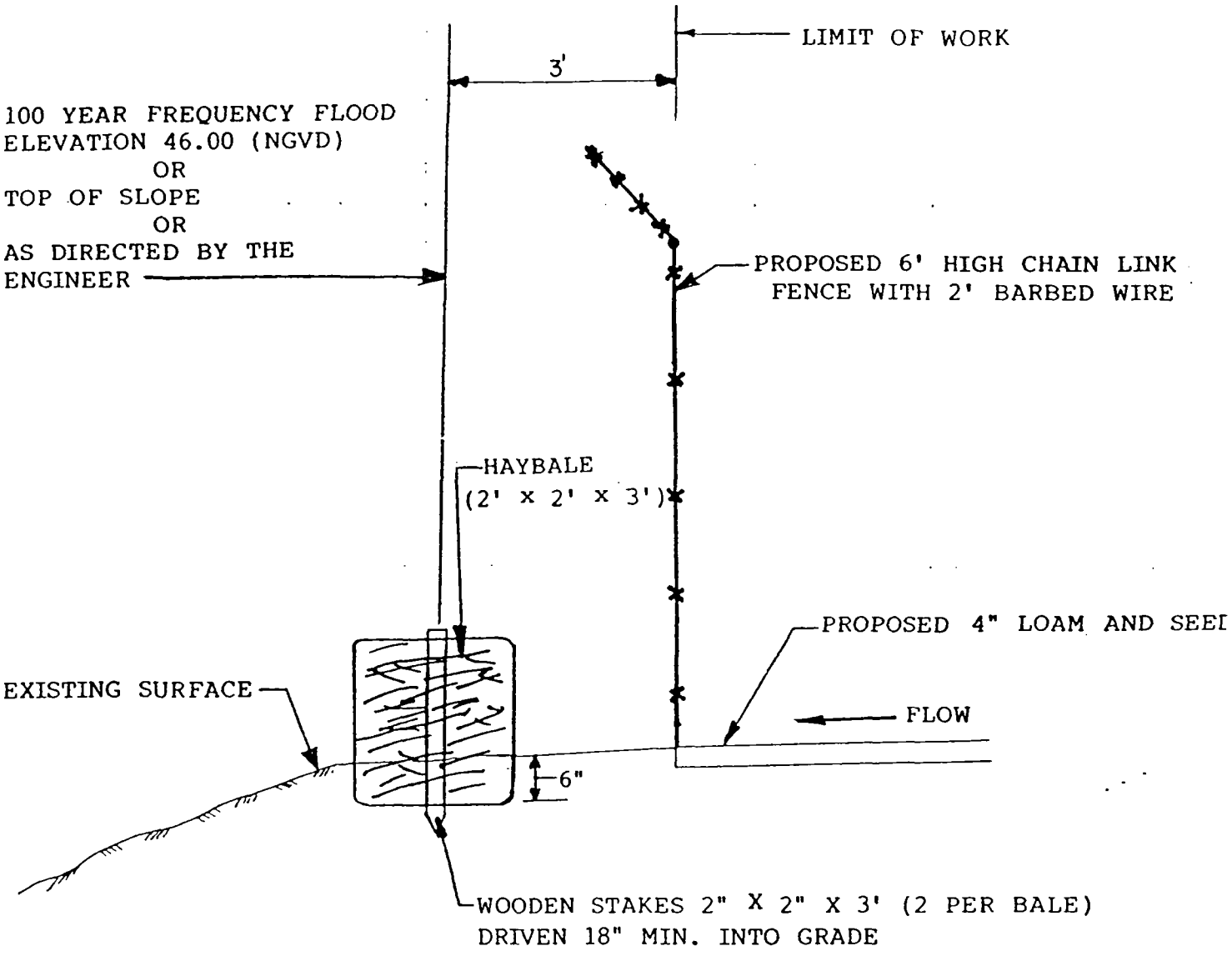
APPENDIX F

APPENDIX F

CONSTRUCTION DETAILS
August 1988

INDEX

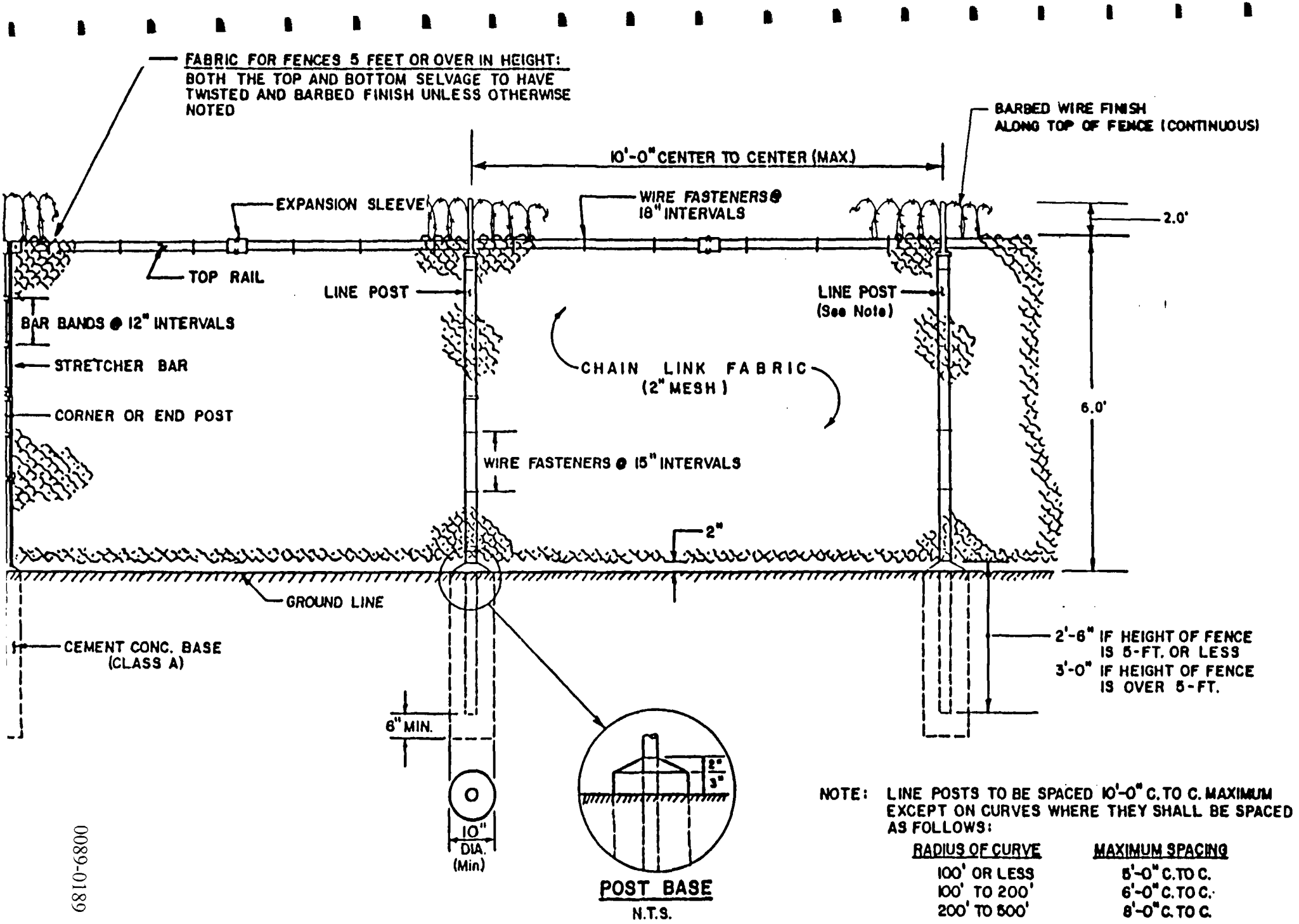
Description	Page
Erosion Control	F1
Chain Link Fence Detail	F2
Double Chain Link Gate Detail	F3
Water Main Trench Detail	F4
Prop. Foundation and Slab Plan	F5



NOTE: BALES TO BUTT TOGETHER END TO END TO FORM A CONTINUOUS BARRIER TO LIMITS AS SHOWN ON PLAN.

EROSION CONTROL

Not to Scale

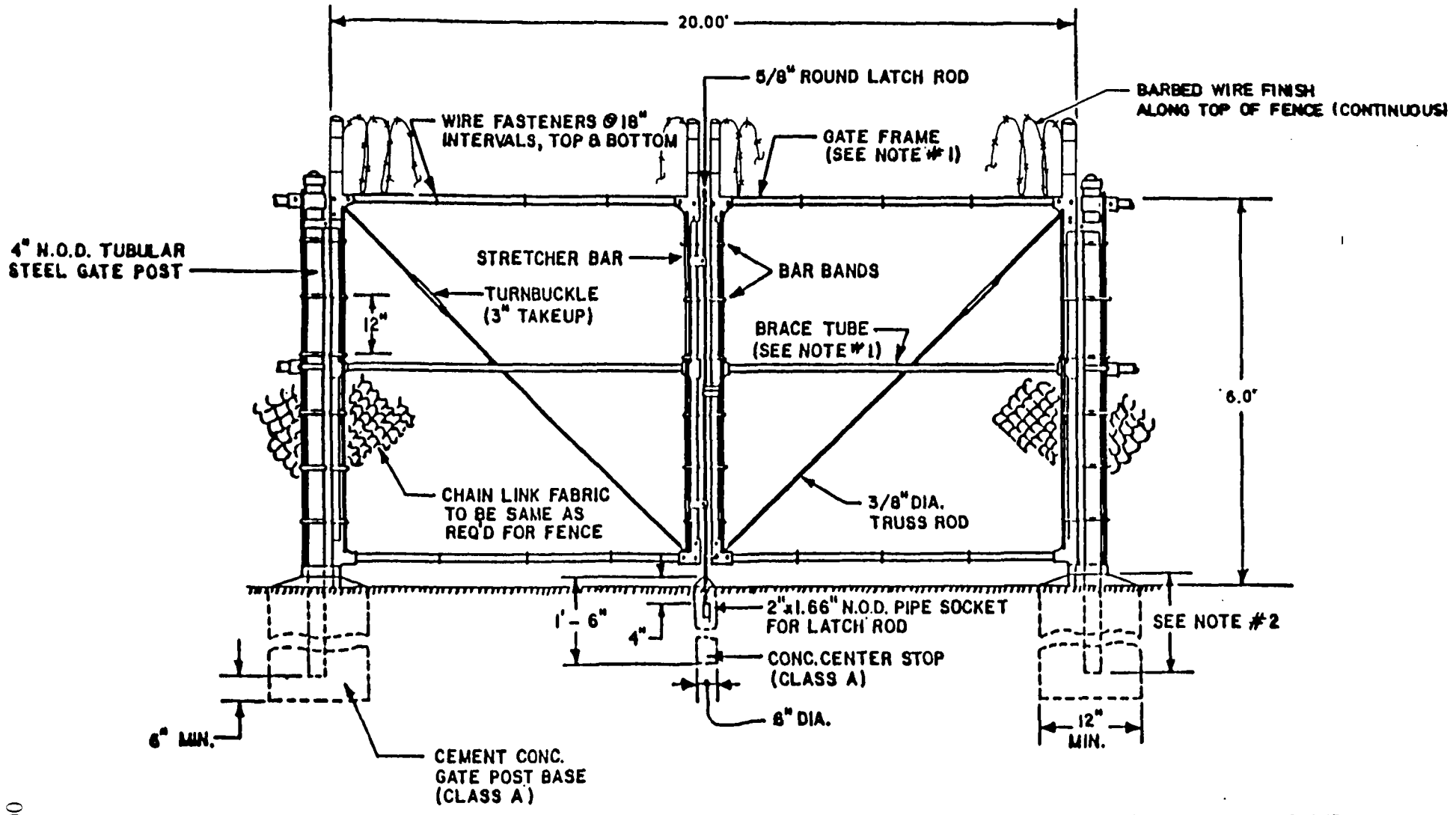


NOTE: LINE POSTS TO BE SPACED 10'-0" C. TO C. MAXIMUM EXCEPT ON CURVES WHERE THEY SHALL BE SPACED AS FOLLOWS:

RADIUS OF CURVE	MAXIMUM SPACING
100' OR LESS	5'-0" C. TO C.
100' TO 200'	6'-0" C. TO C.
200' TO 500'	8'-0" C. TO C.

6810-6800

CHAIN LINK FENCE DETAIL
WITH TOP RAIL

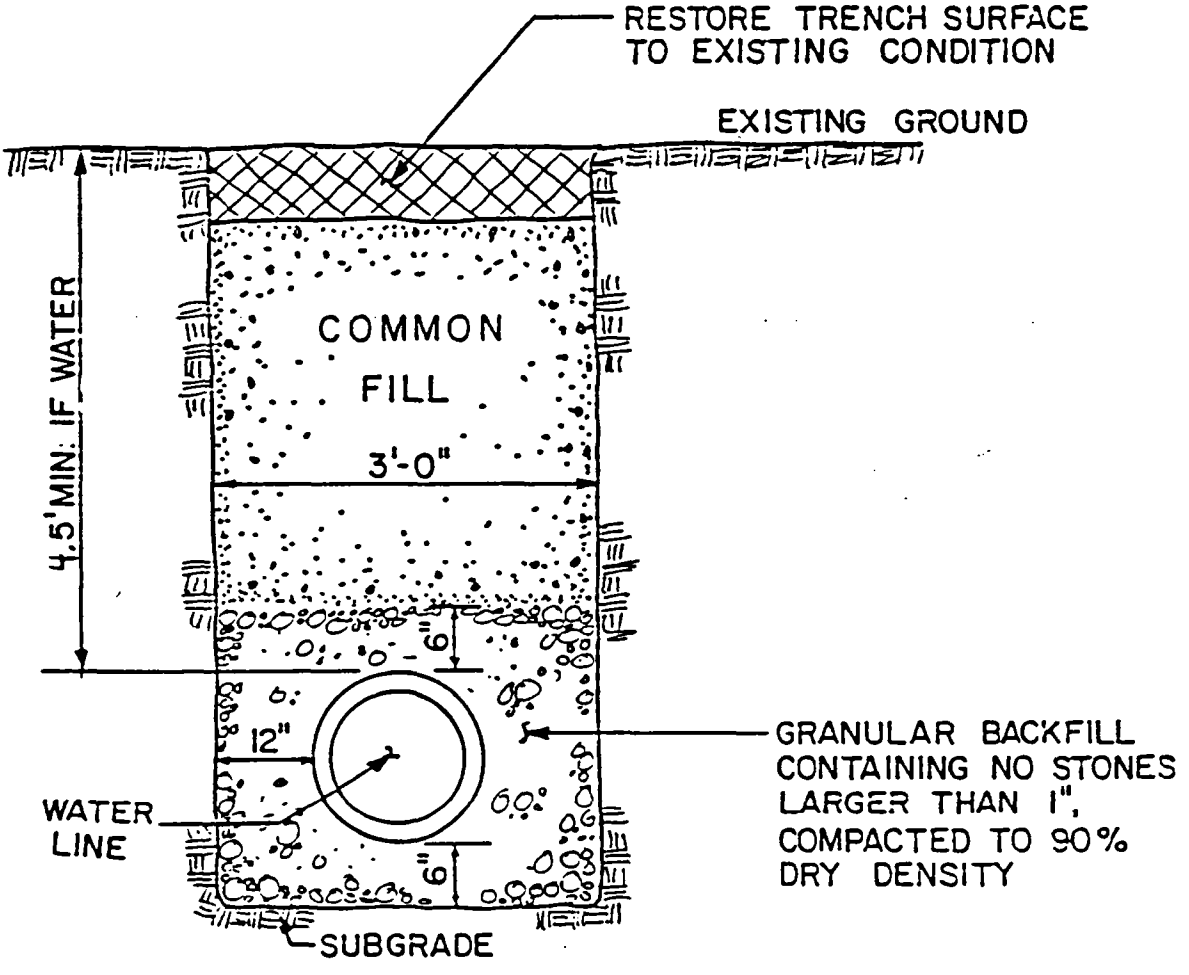


NOTE: 1. NOMINAL OUTSIDE DIAMETER (N.O.D.) OF GATE FRAME AND BRACE TUBE TO BE 1.66" UP TO 6' IN WIDTH, AND 1.90" IF OVER 6' IN WIDTH.

2. DIMENSION SHALL BE 2'-6" IF FENCE IS 5' HIGH OR LESS, AND 3'-0" IF OVER 5'.

0610-6800

DOUBLE CHAIN LINK GATE DETAIL



WATER MAIN TRENCH DETAIL

NOT TO SCALE

DANIEL S. GREENBAUM
Commissioner

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
5A Commonwealth Avenue
Woburn, Massachusetts 01801

March 16, 1989

William St. Hilaire, P.E.
Vice President
Clean Harbors Environmental
Engineering Corporation
325 Wood Road
Braintree, MA 02184

RE: WOBURN - Murphy's
Waste Oil Services
252 Salem Street
DEQE Case No. 3-2198

Dear Mr. St. Hilaire:

This Office is in receipt of two recent submittals from Clean Harbors Environmental Engineering Corporation (CHEE) relative to a proposal to perform a Short Term Measure at the above referenced site. Both submittals, dated February 17, 1989 and March 6, 1989, concern the stockpiling of contaminated soil that will result from the construction of a new building at the site.

At the present time, CHEE is in the process of completing a Phase I/Site Investigation at this property, the location of Murphy's Waste Oil Services, Inc. Preliminary data indicate the presence of low to high concentrations of petroleum hydrocarbons in the vicinity of the proposed new construction. Volatile Organic Compounds, Phenols and PCB's do not appear to be present in significant concentrations.

Based upon the information provided, under the provisions of 310 CMR 40.542, the Department approves of the proposal to temporarily stockpile contaminated soil, subject to the following conditions:

(1) Wetlands interests are addressed to the satisfaction of the Woburn Conservation Commission;
(2) Stockpiled soils are lined and covered with at least a 6-mil layer of polyethylene sheets;
(2) Stockpiled soils are disposed of or treated in accordance with applicable state and federals laws, regulations, and policies; and
(3) The notification provisions of 310 CMR 40.542(6)(a) are implemented.

The requirement for further site investigatory and remedial measures will need to be addressed following the completion of the Short Term Measure and submittal of the Phase I report.

If you have any questions regarding this matter, please contact John Fitzgerald at 935-2160. All Further communications regarding this site must reference the DEQE Case No. designated in the subject heading.

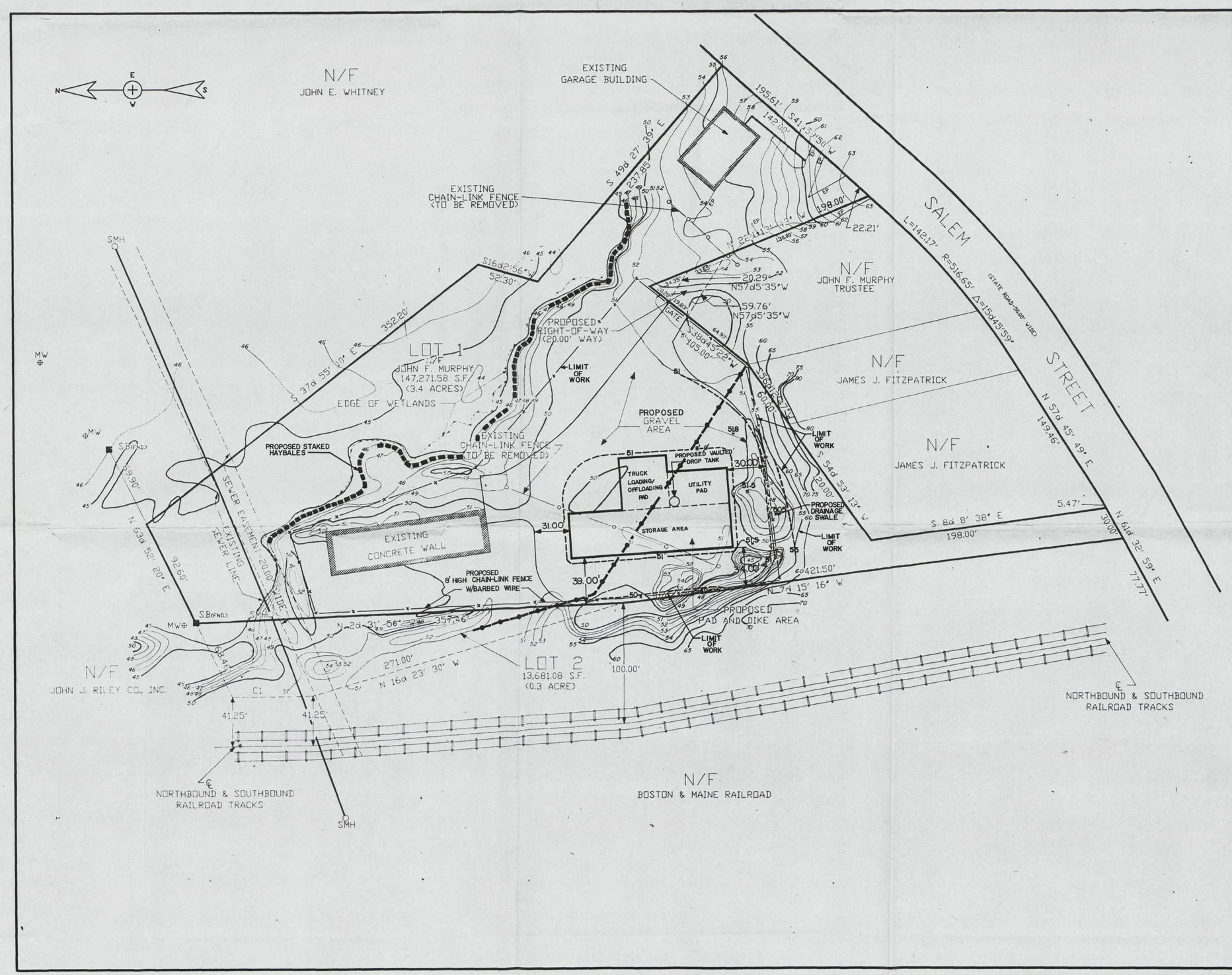
Very Truly Yours,

John J. Fitzgerald, P.E.
Chief, Site Assessment and
Cleanup Section

Richard J. Chalpin
Deputy Regional
Environmental Engineer

JJF/jjf

cc. Woburn Board of Health
Woburn Conservation Commission
DEQE, Boston Office, Site Assmt Sect
DEQE, Woburn Office, Attn: Ed Pawlowski



LEGEND

- LIMIT OF BUFFER ZONE (SEE NOTE 2)
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
2. BUFFER ZONE WAS DETERMINED AS THAT AREA OF LAND EXTENDING 150 FEET HORIZONTALLY OUTWARD FROM THE BOUNDARY OF LAND SUBJECT TO FLOODING, ELEVATION 46.00 NATIONAL GEODETIC VERTICAL DATUM (N.G.V.D.) THE SITE IS LOCATED OUTSIDE THE 100 YEAR & 500 YEAR FLOODPLAIN ZONES. (REF; FIRM MAP NO. 250229 0003B, JUNE 2, 1980) LAND SUBJECT TO FLOODING, ELEVATION 46.00 N.G.V.D. WAS TAKEN FROM THE 100 YEAR FLOOD ELEVATION IN PROXIMITY TO THE SITE.
3. TOPOGRAPHIC SURVEY TAKEN FROM BASE REFERENCE MARK RM8 ELEVATION 47.95 N.G.V.D. ON FIRM MAP NO. 250229 0003B, DATED JUNE 2, 1980, BY CHIEE 325 WOOD ROAD, BRAINTREE, MASSACHUSETTS 02184, DATED JUNE 1988.

FILE COPY

AUG 11 1988

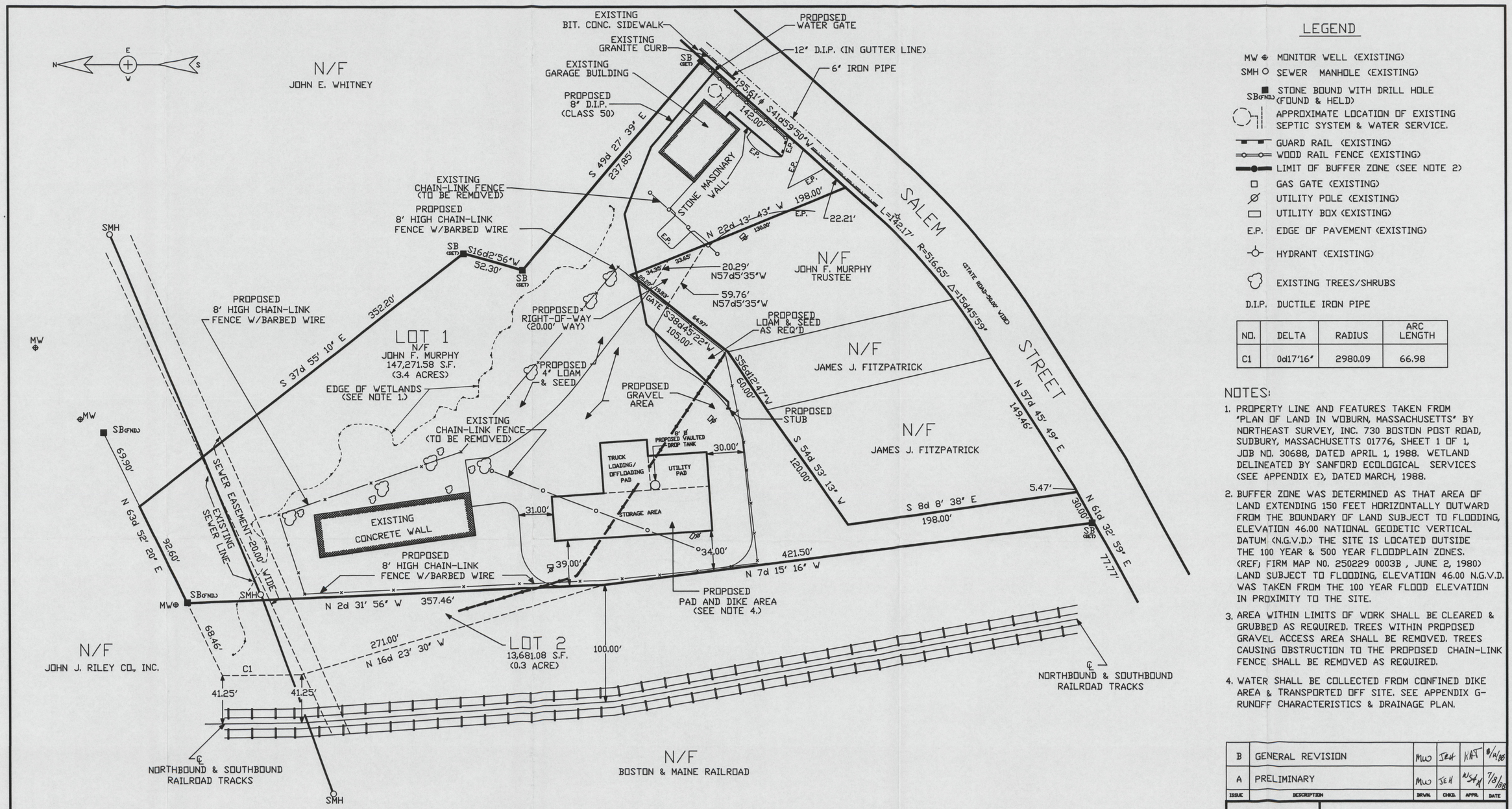
ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	PRELIMINARY	MW	JBH	KAT.	8/4/88

CHI ENVIRONMENTAL ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY
325 WOOD ROAD
BRAINTREE, MA 02184
TEL. (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS
GRADING & EROSION CONTROL PLAN

PROJECT NO. E-1656
SCALE 1"=40'
DRAWING NO. 1656-C-003

0089-0194



LEGEND

- MW — MONITOR WELL (EXISTING)
- SMH — SEWER MANHOLE (EXISTING)
- SB(FND.) — STONE BOUND WITH DRILL HOLE (FOUND & HELD)
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE.
- GUARD RAIL (EXISTING)
- WOOD RAIL FENCE (EXISTING)
- LIMIT OF BUFFER ZONE (SEE NOTE 2)
- GAS GATE (EXISTING)
- UTILITY POLE (EXISTING)
- UTILITY BOX (EXISTING)
- E.P. — EDGE OF PAVEMENT (EXISTING)
- HYDRANT (EXISTING)
- EXISTING TREES/SHRUBS
- D.I.P. — DUCTILE IRON PIPE

NO.	DELTA	RADIUS	ARC LENGTH
C1	0d17'16"	2980.09	66.98

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
2. BUFFER ZONE WAS DETERMINED AS THAT AREA OF LAND EXTENDING 150 FEET HORIZONTALLY OUTWARD FROM THE BOUNDARY OF LAND SUBJECT TO FLOODING, ELEVATION 46.00 NATIONAL GEODETIC VERTICAL DATUM (N.G.V.D.) THE SITE IS LOCATED OUTSIDE THE 100 YEAR & 500 YEAR FLOODPLAIN ZONES. (REF.) FIRM MAP NO. 250229 0003B , JUNE 2, 1980) LAND SUBJECT TO FLOODING, ELEVATION 46.00 N.G.V.D. WAS TAKEN FROM THE 100 YEAR FLOOD ELEVATION IN PROXIMITY TO THE SITE.
3. AREA WITHIN LIMITS OF WORK SHALL BE CLEARED & GRUBBED AS REQUIRED. TREES WITHIN PROPOSED GRAVEL ACCESS AREA SHALL BE REMOVED. TREES CAUSING OBSTRUCTION TO THE PROPOSED CHAIN-LINK FENCE SHALL BE REMOVED AS REQUIRED.
4. WATER SHALL BE COLLECTED FROM CONFINED DIKE AREA & TRANSPORTED OFF SITE. SEE APPENDIX G- RUNOFF CHARACTERISTICS & DRAINAGE PLAN.

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
B	GENERAL REVISION	MWJ	JEH	MAT	8/4/88
A	PRELIMINARY	MWJ	JEH	MAT	7/8/88

CHI ENVIRONMENTAL ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY
325 WOOD ROAD
BRAINTREE, MA 02184
TEL. (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.

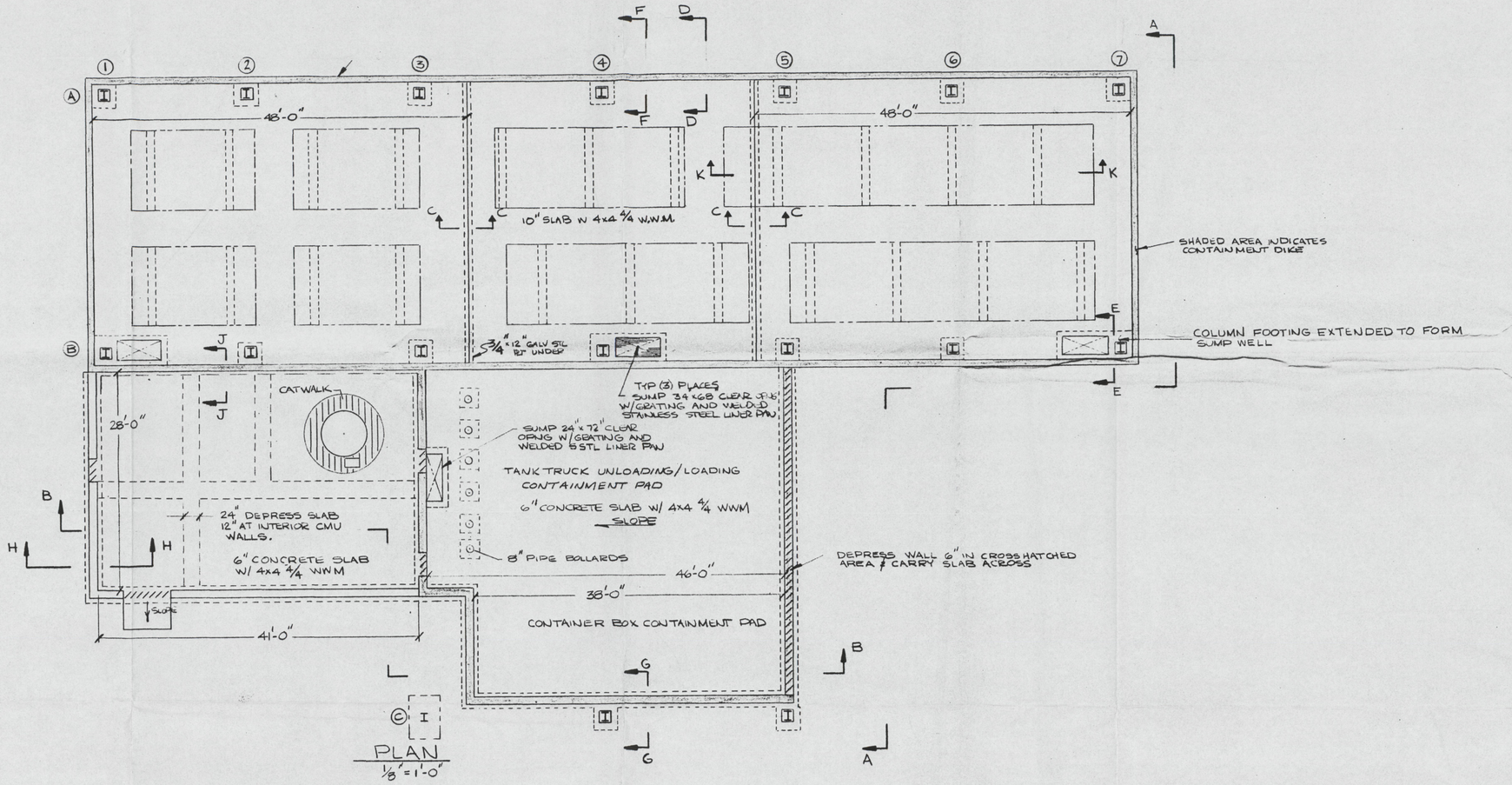
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

SITE PLAN

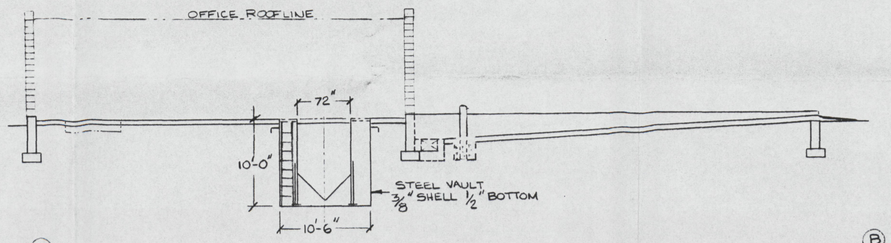
PROJECT NO. E-1656
SCALE 1"=40'
DRAWING NO. 1656-C-002

0089-0195

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A.	1. REVISED TO SUIT GW-01189 SHT 2.	4-15-88 4-15-88	LFM LF Mount



PLAN
1/8" = 1'-0"



ELEV B-B
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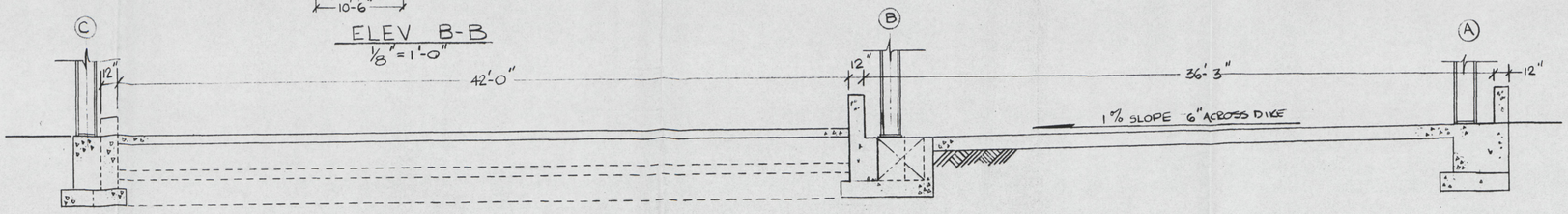


SECTION A-A
1/4" = 1'-0"

1. FOR SIZES & LAYOUT OF ANCHOR BOLTS SEE FLEXOSPAN DWG. NO. J6027
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS
3. CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318M-83) CYLINDER TEST REQUIREMENTS SHALL BE IN ACCORDANCE WITH PART 2, PARA. 4.7.1 OF ACI 318M-83
4. STEEL REINFORCING SHALL CONFORM TO ASTM 615 GR60
5. BACK FILL UNDER ANY PORTION OF THE BUILDING SHALL BE COMPACTED IN 6" LIFTS OF 95% COMPACTED CRUSHED BANK GRAVEL
6. SOIL BEARING PRESSURE UNDER SLAB ASSUMED AT 2 TONS PER SQUARE FOOT MINIMUM

Lee F Mount
25 Feb. 1988

General Welding & Design

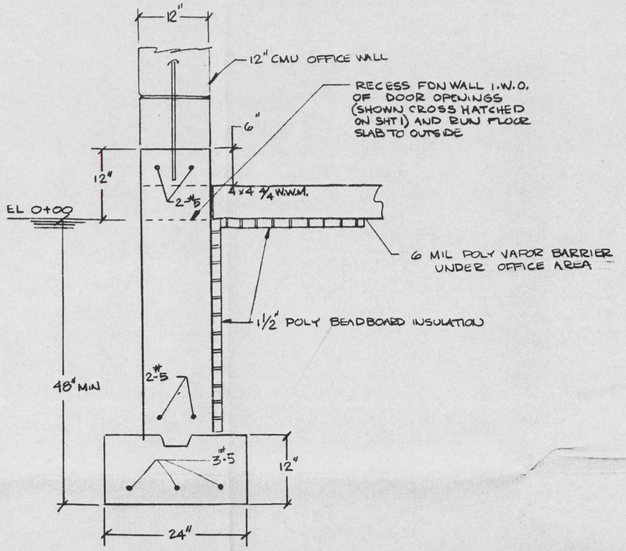
GENERAL WELDING & DESIGN, INC.
P.O. BOX 22
609 PLEASANT STREET
WEYMOUTH, MA 02189
617-331-5600

FOUNDATION & SLAB PLAN
MURPHY WASTE OIL CO.
WOBURN, MA.

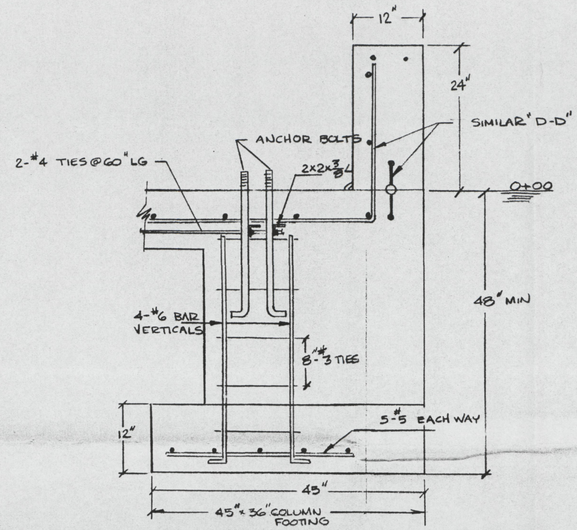
DATE 2/24/88	DRAWN BY PP	SIZE	FSCM NO	DWG NO GW-C1189	REV A
APPROVED		SCALE AS NOTED	WT	SHEET 1 of 2	

0089-0196

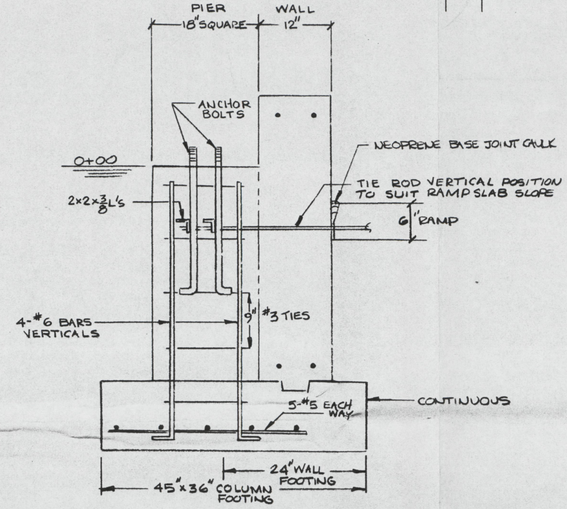
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	1. THIS SHEET REDRAWN TO INCORPORATE NEW DIKE.	4-15-88 4-15-88	PRW K.F. Mount



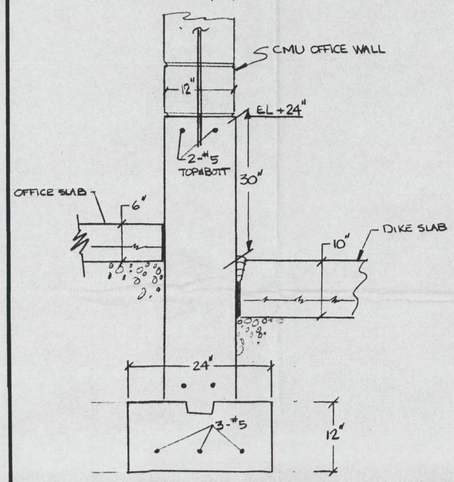
H-H
1"=1'-0"



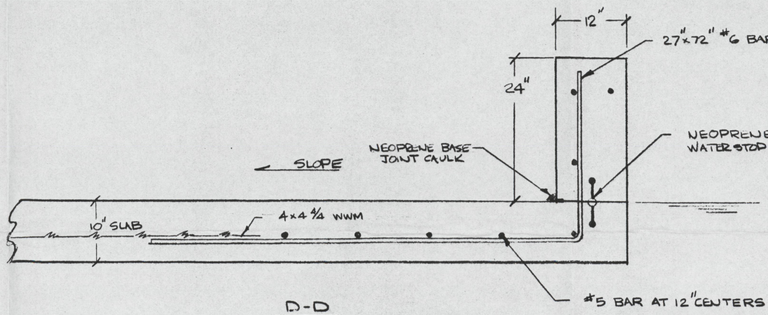
F-F
COLUMN FOOTING AT ROW A
1"=1'-0"



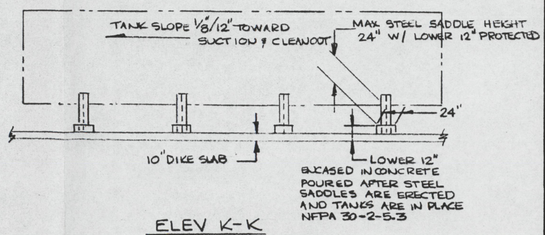
G-G
TYP COLUMN FOOTING AT ROW "C"
1"=1'-0"



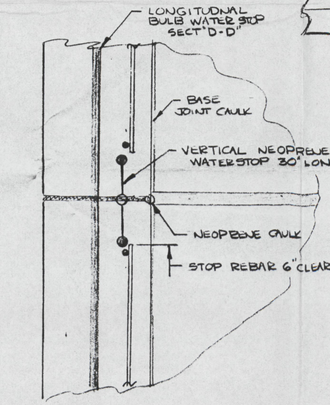
J-J
WALL SECTION ADJACENT TO ROW B
1"=1'-0"



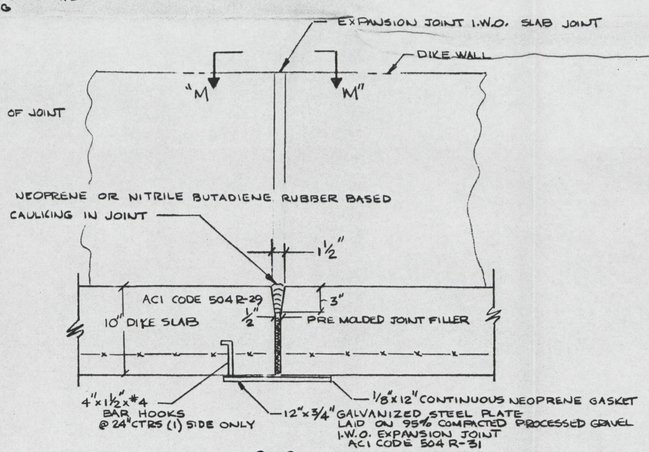
D-D
WALL & SLAB SECTION ADJACENT TO ROW A
1"=1'-0"



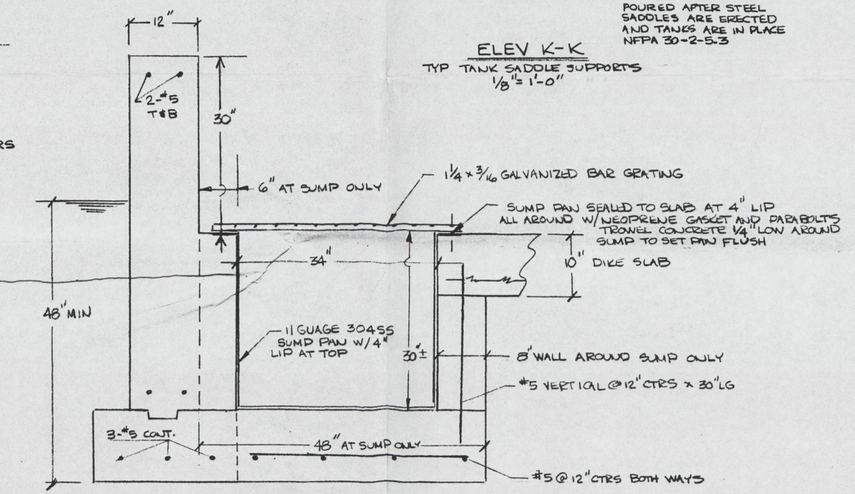
ELEV K-K
TYP TANK SADDLE SUPPORTS
1/8"=1'-0"



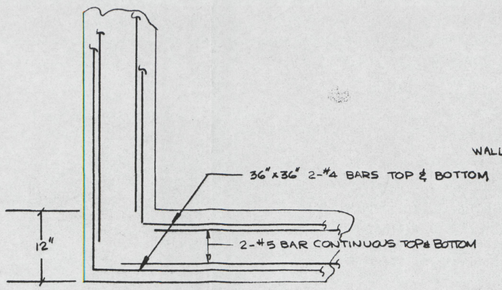
"M-M"
WALL EXPANSION JOINT
1½"=1'-0"
PLAN VIEW



C-C
SLAB EXPANSION JOINT DETAIL
1½"=1'-0"



E-E
SUMP SECTION DETAIL
1"=1'-0"



L-L
TYP. CORNER REINFORCING
1"=1'-0"
PLAN VIEW

LEE FOREST MOUNT 21193 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
Lee F. Mount
15 APRIL 1988

General Welding & Design

GENERAL WELDING & DESIGN, INC.
P.O. BOX 22
609 PLEASANT STREET
WEYMOUTH, MA 02189
617-331-5600

FOUNDATION & SLAB DETAILS
MURPHY WASTE OIL CO. WOBURN MA.

DATE 4/15/88	DRAWN BY PRW	SIZE	FSCM NO	DWG NO GW01189	REV A
APPROVED		SCALE 1/8 WORLD	WT	SHEET 2 of 2	

0089-0197

APPENDIX G

0089-0198

RUNOFF CHARACTERISTICS AND DRAINAGE PLAN

Existing

Existing site runoff, in general, follows the topography of the area and flows in an easterly direction. There are no manmade drainage facilities existing today on the site. The garage (3%±) and paved surface, cover almost 10% of the site. The remainder of the site is approximately 33% wetland, 20% miscellaneous grassed, wooded area, 17% flat graded, crushed stone/clay surface, 12% flat graded, gravel surface and 8% steep graded, forested area. Water tends to puddle in the crushed stone area due to a dense compacted upper layer. In December, 1987, and June 1988, ground water was encountered at approximate elevation 43.00 National Geodetic Vertical Datun (N.G.V.D).

Proposed

The proposed addition of the concrete dike and pad will increase total area covered by structures to 10%. The proposed slab will be sloped such that water will drain and collect in sumps, as shown on the Proposed Foundation and Slab Plan (See Construction Details - page F5). Collected water will be taken off site for treatment and released. Runoff will be reduced a negligible amount. No drainage structures are proposed throughout the site. Existing drainage runoff patterns will essentially remain the same.

APPENDIX H

0089-0200

APPENDIX H

LIST OF NOTIFIED ABUTTERS

ENVIRONMENTAL
ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

LIST OF NOTIFIED ABUTTORS

Mr. James J. Fitzpatrick
246 Salem Street
Woburn, MA 0180

Alarm Devices Supplies Inc.
245 Salem Street
Woburn, MA 01801

Amdur Braude Riley Inc.
226 Salem Street
Woburn, MA 01801

John J. Riley Tannery
228 Salem Street
Woburn, MA 01801

Toxicon Corporation
225 Wildwood Road
Woburn, MA 01801

Allen Glass Company
263 Salem Street
Woburn, MA 01801

Wildwood Conservation
228 Salem Street
Woburn, MA 01801

John E. Whitney
4 Campground Road
Boxford, MA 01921

Clean Harbors by:
Jill M. Killiway

Subscribed and sworn before me this
27th day of July
19 88

Rita Odell
Rita Odell, Notary Public
My commission expires 05/29/92.

0089-0202

APPENDIX I

APPENDIX I

DESCRIPTION AND ASSESSMENT OF WETLAND RESOURCE AREAS

DESCRIPTION AND ASSESSMENT OF WETLAND RESOURCE AREAS

This discussion assesses whether the resource areas are impacted by the proposed activity, and how the regulatory interests will be protected in accordance with applicable performance standards.

Buffer Zone

Installation of the water line in the Buffer Zone will not alter the wetland resource areas. Construction activity will involve some temporary excavation for the ductile iron piping. Such construction is of short duration and spatially confined to the immediate work areas. Excavated material shall be removed and trenches backfilled with suitable fill, to the original site grade. Excavated material displaced by the pipeline will be used on site as fill material, if suitable, for depressions in the area of the proposed access way (southwest of the proposed slab).

Installation of the 8' high chain link fence will not alter the wetland resource area. Excavated material displaced by fence post footings will be managed in the same manner, as previously discussed. All proposed site work in the Buffer Zone (with the exception of the water line) is within the area enclosed by the proposed fence. The proposed slab will be set at elevation 51.00 National Geodetic Vertical Datum (NGVD), and the surrounding area (within the Buffer Zone) will be minimally graded.

Areas proposed for loam and seed require the existing crushed stone-gravel surface be excavated and then replaced with loam to existing site grade.

The construction activities discussed above will not alter the resource area.

CleanHarbors®
Environmental Services, Inc.

PRELIMINARY SITE ASSESSMENT

Murphy's Waste Oil Service, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts

Prepared for:

Clean Harbors, Inc.
325 Wood Road
Braintree, Massachusetts 02184

Prepared by:

Clean Harbors Environmental Engineering Corporation
325 Wood Road
Braintree, Massachusetts 02184

January 1989

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APPENDIX C: Underground Tank Permit
APPENDIX D: DEQE - Division of Water Pollution Control
APPENDIX E: DEQE - Licensing Division Research

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

EXECUTIVE SUMMARY

Based on the findings of a Preliminary Site Assessment study, a subsurface investigation program should be conducted on the site. The purpose of the investigation should be to evaluate subsurface conditions for evidence of contamination. This recommendation is based on the historical uses of the site as a bulk oil storage facility and releases of oils and hazardous materials used on nearby properties. The on-site soil and groundwater testing parameters should include evidence of petroleum contamination and coincide with the United States Environmental Protection Agency (US-EPA) testing parameters for nearby properties; the site is situated within a one-square-mile US-EPA study area as listed on the National Priorities List (#312 of 770 sites). The study area was listed based on chlorinated solvent contamination of two municipal drinking water wells, located one-quarter of a mile from the site.

From the 1920's to 1987, the site was primarily used a bulk oil storage facility with a maximum storage capacity of 125,000 gallons. Land spreading of waste oils and incidental petroleum product releases would be the primary sources of the on-site petroleum contamination that may exist on the site. The land spreading of waste oils was an approved dust control measure until the late 1970's; site occupants ceased this activity in the late 1970's. Incidental releases of petroleum products on the site included: a surficial release of approximately 150 gallons of diesel fuel (1987), and an unknown quantity of a petroleum product, presumed to be diesel fuel or gasoline (1987). Apparently, a portion of the site was historically used as an "oil pit" (1950's); no documentation or other reports were found during this investigation to support this statement.

Abutting developed properties are occupied by a tannery, a former drum and tank reconditioning facility, a railroad line and residences. A strong, foul odor, resembling hydrogen sulfide, has often been noted emanating from the tannery property; an air-monitoring program for the site relative to this emission should also be considered. Many documented petroleum product and hazardous material releases as well as reported releases have occurred on most of these abutting properties. The northern abutting property is undeveloped land historically used for dumping of hazardous materials, particularly chlorinated solvents.

Some migratory pathways to be considered include: the sewer easement on the site used for tannery wastewater discharge (which has periodically overflowed); potentially contaminated groundwater flowing through the site from upgradient properties (groundwater flow patterns are and have been altered during pumping of nearby production wells for the tannery); and possibly contaminated surface water runoff/drainage. Details of the Preliminary Site Assessment study are presented in the attached report.

ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

Clean Harbors Environmental Engineering Corporation (CHEE) is pleased to submit this Preliminary Site Assessment report for the property located at 252 Salem Street and 252 Rear Salem Street in Woburn, Massachusetts (the site). The site is owned by Old Oil Realty Trust and is occupied by Murphy's Waste Oil Service, Inc., a waste oil and virgin oil storage facility.

This investigation was conducted to determine whether releases of oils and/or hazardous materials have occurred on the site. CHEE evaluated on-site conditions relative to uses and storage of these materials, and whether any releases of these materials on nearby properties has any impact on the site.

A series of soil borings and groundwater monitoring wells must be performed on the site to further evaluate subsurface conditions. Based on the findings of this investigation, waste oils were periodically spread along the access driveways on the site until the late 1970's. At that time, State agencies approved this as a dust control measure. Land spreading of waste oils and incidental petroleum product releases would be the primary sources of the on-site petroleum contamination that may exist on the site. The land spreading of waste oils was an approved dust control measure until the late 1970's; site occupants ceased this activity in the late 1970's. Incidental releases of petroleum products on the site included: a surficial release of approximately 150 gallons of diesel fuel (1987), and an unknown quantity of a petroleum product, presumed to be diesel fuel or gasoline (1987). Apparently, a portion of the site was historically used as an "oil pit" (1950's); no documentation or other reports were found during this investigation to support this statement.

The subsurface exploration program should also include evaluation of contaminants present on the site from off-site sources. Three abutting properties have historically been used for dumping oils and/or hazardous materials. Since nearby production wells alter groundwater flow patterns, it is likely that the contaminants on nearby properties, if any, migrated to the site. The US-EPA and State agencies are currently investigating these three properties (among all other nearby properties, including the site) for evidence of contamination of the two nearby municipal drinking wells, It does not appear likely, at this time, that the historical uses of the site impacted the water quality in the municipal wells.

SCOPE OF WORK

This report summarizes the findings of an assessment which includes interviews with local, State and Federal officials and area property occupants; review of local, State and Federal documents; site visits; and information provided by representatives of Murphy's Waste Oil Service, Inc. of Woburn, Massachusetts.

The information presented in this report is based solely on available documents for review and officials for interviews. Due to litigation factors pursuant to site area properties, some information was not available for public review. The information incorporated within this report was accumulated during the months of December 1987 and November 1988.

Massachusetts Department of Transportation regulations for oils (MOO1). Prior to their removal in March 1988, these tanks were located in an area on the northern portion of the site referred to as the "oil yard" (detailed later).

Chief Robert Doherty of the City of Woburn Fire Department and area property occupants interviewed reported that Murphy's Waste Oil Service, Inc. was considered to be a "very clean and well run operation." Chief Robert Doherty additionally reported no known incidents of any releases of oils and/or hazardous materials on the site. A copy of a Site Visit Report prepared by Chief Doherty on December 1, 1982 for the Department of Environmental Quality Engineering (DEQE) is attached in Appendix A.

Ms. Gretchen Latowsky of FACE (For A Cleaner Environment), a non-profit, community hazardous waste awareness organization headquartered in Woburn, Massachusetts, reported that their organization would prefer to have the Murphy's Waste Oil facility reopened for acceptance of waste oils. Ms. Latowsky mentioned that Murphy's Waste Oil Service, Inc. was considered to be a "service to the community since the Murphy's would keep their facility open on Saturday mornings to accept waste oils from community residents."

During the months of December 1987 and August 1988, CHEE representatives visited the site; their observations have been incorporated in the discussions below. Exterior surface conditions were observed for: evidence of staining, excavation, filling and dumping; the presence of installed underground storage tanks; storage of oils and/or hazardous materials; and other signs of potential contamination. Interior portions of the site were generally inspected by Clean Harbors, Inc. (CHI) personnel.

For purposes of discussion, the site has been divided into three sections: Northern, Central and Southern. These sections on the site are distinguished by a chain-link fence. Figure 5, the Site Plan, illustrates these sections.

Northern Section

The Northern Section is not paved and is referred to by property occupants and site plans (dated in the 1920's) as the "oil yard." A dirt pathway or roadway travels through this Section parallel with the Boston and Maine railroad lines. Five concrete blocks (one-cubic yard in size) are situated at the northwestern-most portion of this Section at the end of the dirt pathway. Seven aboveground storage tanks for temporary waste oil or virgin oil storage are situated in this area as well. The tank locations and sizes of the existing seven tanks and the former 13 tanks are displayed on Figure 5.

The seven aboveground storage tanks are situated on the eastern portion of this Section. The tanks are surrounded by a concrete dike which is constructed two feet above and below the ground surface. No evidence of contamination was encountered during installation of the concrete dike, which occurred in September 1986. Photographs taken during the concrete dike installation verify this information; the photographs are attached as Appendix B.

groundwater flow may have been in a north by northwesterly direction. This situation would have made the easterly abutting property (formerly occupied by the Whitney Barrell Company) hydrologically upgradient.

If pumping activities of both production wells ceased, groundwater would most likely follow the topography of the area and flow in an easterly or southeasterly direction toward the Aberjona River. Information regarding contaminants detected in the production wells is discussed in the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

Two other wells are situated within this portion of the Aberjona River basin. These wells are identified, by the City of Woburn Public Works Department, as public drinking water Wells G and H. These wells are situated approximately one-quarter mile northeast of and hydrologically (and topographically) downgradient from the site. Due to contamination levels detected in these wells, the wells were closed and pumping ceased in 1979.

The nearest actively used public drinking water supplies to the site are located approximately 2.5 miles west of and upgradient from the site. Additional information regarding the closure of Wells G and H and impacts of this contamination relative to the site area is discussed in the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

TOPOGRAPHY and GEOLOGY OF THE SITE

Topographically, the site generally slopes in an easterly direction toward the Aberjona River. The elevation on the western portion of the site is approximately 60 feet National Geodetic Vertical Datum (NGVD) of 1929, while the elevation on the eastern portion of the site is approximately 45 feet NGVD. The south-central portion of the site has a steep acclivity to an elevation of approximately 75 feet NGVD. These topographic features agree with the USGS study previously mentioned.

SITE LOCATION

The site is located at 252 Salem Street and 252 Rear Salem Street in the eastern portion of the City of Woburn, Massachusetts. The general location of the site is illustrated on Figure 1.

The site consists of one parcel of land zoned "industrial-park" which has a total area of approximately 3.4 acres. The City of Woburn Assessor's Office designates the site as Map 16, Block 005, Parcel 41. Site boundaries and other details are shown on Figure 4.

SITE DESCRIPTION

The site is primarily occupied by Murphy's Waste Oil Service, Inc., a waste oil and virgin oil storage facility. The operations of the Murphy's Waste Oil Service, Inc. facility have ceased since the summer of 1987.

In general, waste oils and occasionally virgin oils were transported to the site in bulk loads and temporarily stored on the site in aboveground storage tanks labeled according to the

Massachusetts Department of Transportation regulations for oils (MOO1). Prior to their removal in March 1988, these tanks were located in an area on the northern portion of the site referred to as the "oil yard" (detailed later).

Chief Robert Doherty of the City of Woburn Fire Department and area property occupants interviewed reported that Murphy's Waste Oil Service, Inc. was considered to be a "very clean and well run operation." Chief Robert Doherty additionally reported no known incidents of any releases of oils and/or hazardous materials on the site. A copy of a Site Visit Report prepared by Chief Doherty on December 1, 1982 for the Department of Environmental Quality Engineering (DEQE) is attached in Appendix A.

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The Northern Section is not paved and is referred to by property occupants and site plans (dated in the 1920's) as the "oil yard." A dirt pathway or roadway travels through this Section parallel with the Boston and Maine railroad lines. Five concrete blocks (one-cubic yard in size) are situated at the northwestern-most portion of this Section at the end of the dirt pathway. Seven aboveground storage tanks for temporary waste oil or virgin oil storage are situated in this area as well. The tank locations and sizes of the existing seven tanks and the former 13 tanks are displayed on Figure 5.

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An additional two-foot to four-foot earth dike encompasses the tank area and apparently consists of clay and sand. The 13 aboveground storage tanks and a 500-gallon tank truck body were removed in March 1988 from the western portion of this Section; these tanks were located within the earth dike area. Oil staining was observed on most of the former tank fill pipes, the former tank truck body and surrounding soils. An oil-like odor was additionally noted on soils near the tank truck body near the northern earth dike wall.

Soil contamination was encountered below one of the tanks during the tank removal process. The contaminated area appeared to be confined to the immediate vicinity of the tank. The contaminated soils were removed from the site for proper disposal in February 1988. The Uniform Hazardous Waste Manifest for this soil disposal activity is attached as Appendix C.

Materials observed protruding from the earth dike include toys, one-gallon and five-gallon metal containers, a tool box, fence, tree stumps, metal and rubber pipes, wire mesh, wood beams and other miscellaneous debris. No evidence of staining was observed by CHEE representatives on the soils of the earth dike. An empty, crushed 55-gallon plastic drum was additionally located in this area.

In December 1987, thirteen 55-gallon drums were situated along the outside western wall of the concrete dike; eight of the drums were empty, while the remaining drums most likely contained oils. According to CHI representatives, the drums were used for wastes generated during tank cleaning processes on the site. As of February 1988, these drums have been removed from the site for proper disposal.

Fire Department and City Clerk records reviewed indicate that a Certificate of Registration was granted in 1940 for the site for storage of "125,000 gallons." The certificate does not specify material stored, whether storage is in aboveground or underground containers, and the number and sizes of storage containers. Apparently, the seven tanks located within the concrete dike (eastern portion of this Section) have never been used. No additional information was found in these records reviewed indicating the presence of tanks on the site prior to 1940. No evidence of installed underground storage tanks or excavation was observed on this Section of the site.

A City of Woburn sanitary sewer easement traverses the north-central portion of the Northern Section with a west to east orientation. The sewer which occupies this easement originates at the westerly abutting property. The sewer is used by the John J. Riley Tannery and discharges into a main line of the City of Woburn sanitary sewer system. Site representatives indicated that the wastewater in the sewer periodically overflowed. At one point, the pressure of the wastewater in the sewer caused the manhole cover on the site to rise approximately six feet above the ground surface. The volume of wastewater that overflowed on the site was not estimated.

Both the Massachusetts Water Resources Authority (MWRA) sanitary sewer system and City of Woburn sewer system easements are situated approximately 175 feet east of the site. Additional information regarding a DEQE moratorium Administrative Order is attached as Appendix E.

Central Section

The Central Section of the site is occupied by the North Suburban Transportation Company of Woburn, Massachusetts for use as a school bus parking lot. The agreement established between the Murphy's Waste Oil Service, Inc. and the North Suburban Transportation Company was that the North Suburban Transportation Company would occupy the designated area of land (the Central Section of the site) as a Tenant at Will. This agreement was initiated September 1, 1987.

The Central Section is covered by a layer of gravel. The boundaries of the Central Section are defined by the Boston and Maine railroad tracks west of this Section and the easterly abutting Allen Glass and Mirror property.

Topographically, the western and southern portions of this Section have a sharp 25-foot to 30-foot acclivity, while the eastern portion has a sharp 5-foot declivity. This area was filled to the existing level in 1978.

Approximately 50 automobiles, two fuel oil trucks and school buses are parked in this section after school hours. The school buses are refueled daily on school days at approximately 10:00 am or 3:00 pm. Materials located along the perimeter of this section include batteries, tires, piles of brush, 55-gallon drums containing burned rubbish, automobile parts, an old pickup truck with household furniture, and other miscellaneous debris.

A parked trailer, apparently used as the office by the North Suburban Transportation Company, is located on the south-central portion of this section. Immediately south of this trailer is an area that appears to have been formerly used to store a large piece of equipment. Oil staining is present on the exposed soils and no vegetation exists in this 150-square-foot area.

During a site visit by CHEE representatives in November 1987, a representative of the North Suburban Transportation Company was observed burning rubbish in two 55-gallon drums. A liquid was applied to the rubbish through a hose to promote burning. The type of liquid used was not determined during this investigation.

Until March 1988, a partially buried tank was located on the southeastern portion of this section. The tank appeared to have a storage capacity of 275 gallons and was labeled "Waste Motor Oil Only." This tank was used by Murphy's Waste Oil Service, Inc. for community residents to dispose of their waste automotive oils. No staining was observed near the fill pipe for this tank. This tank was also removed from the site in March 1988.

Southern Section

The southern portion of this Section is occupied by a garage. The garage is constructed of steel siding over a four-foot concrete foundation. The floor is also constructed of concrete and reportedly does not contain any floor drains.

From 1979 to the summer of 1987, Murphy's Waste Oil Service, Inc. used the garage as an office and for company truck maintenance. Since the summer of 1987, the facility operations have ceased and the maintenance garage is no longer used. This building is served by an on-site

septic system. CHI representatives reported no staining in the restroom sinks; no other sinks are reportedly located in the building. No problems associated with the septic system associated with this building were reported by Mr. Francis Ryan of the Woburn Board of Health. Information detailing the location of the septic system was not found during this investigation.

The garage is heated by oil which is stored in a 1,000-gallon underground storage tank located at the southeastern corner of the building. No information was available with (Chief Robert Doherty of the Fire Department or found in Fire Department and City Clerk records reviewed) indicating the tank size and installation date. Ms. Joan Murphy, site owner, has a copy of the permit for this tank which was issued in 1979. The fill and vent pipes for the 1,000-gallon underground heating oil storage tank were free of staining. An additional covered pipe was also observed protruding from the ground surface in this area. This pipe is apparently associated with the same underground tank. A copy of the permit for the 1,000-gallon underground storage tank is attached in Appendix D.

The area immediately north of the garage is used for miscellaneous storage including approximately 50 tires, automobile parts, one 35-gallon drum and one 55-gallon drum (both empty), four automobile batteries, pieces of wood and hose. The areas west and south of the garage are well-maintained and vegetated with grass.

An oil-stained area (approximately five feet by one foot) was observed on the pavement southwest of the building. The staining appeared to be confined to the immediate area. Eleven bottles, labeled bleach and containing oil, were in this area as well. As of February 1988, these bottles were moved into the garage. No significant signs of leakage from these containers were observed. No evidence of excavation was observed in this section.

CURRENT and HISTORICAL USES OF THE SITE

Throughout most of its history, the site has been primarily used as a waste oil and/or virgin oil temporary storage facility. Records and plans of the site indicate that an oil yard was located on the Northern Section of the site in the 1920's. Additional information regarding the site indicates that sand and gravel may have been removed from the site at this time. According to Ms. Joan Murphy, site owner, this area was filled in 1950 and then filled again in 1978 to the existing grade. Operations of the waste/virgin oil facility temporarily ceased between 1976 and 1977. At that time, the aboveground storage tanks were empty.

Ms. Rebecca Backman, Attorney with Wright and Moehrke Counselors at Law of Boston, Massachusetts, performed a limited historical summary of the site in response to an US-EPA Request for Information. The Response letter was submitted to the US-EPA on February 9, 1988. The information incorporated below was obtained from this Response letter.

> Murphy's Waste Oil Service, Inc. has owned the site facility since July 7, 1977. The current owner of the site land is Old Oil Realty Trust which was deeded in 1980. Apparently, four deeds comprise the existing Parcel 41. In general, prior site owners include various members of the Frank Quinn Family which operated the facility as the Woburn Oil Company. The Woburn Oil Company reportedly began operations in the 1920's and only stored virgin oils. Ms. Mary Quinn, wife of Norman Quinn - former site owner, indicated that waste oils were additionally

accepted onto the site in the mid-1950's. Mr. Albert Shaevel, Joseph Flaherty and Mary Flaherty formerly owned portions of the site not considered as the oil yard.

Mr. William Murphy, a relative of the site owners, leased two of the tanks that where located on the northwestern portion of the Northern Section; these tanks were removed from the site in March 1988. Mr. William Murphy apparently used these tanks since the late 1970's as surplus waste oil storage to the storage facility he owned and operated at another location.

A 1966 aerial photograph of the site area shows seven aboveground storage tanks located in the Northern Section of the site. Significant oil staining of the soils is also evident in this photograph. The staining not only covers the area near the tanks and land east of the tanks, but also the right-of-way from Salem Street to the tank area. The 1966 aerial photograph also shows two contiguous buildings on the southeastern portion of the Southern Section. According to Building Department records reviewed, this structure was a dwelling which was razed in 1976. A Building Permit was issued in 1979 for the construction of a "warehouse" which is described as the garage in the **Site Description** section of this report. Figure 6 presents this 1966 aerial photograph of the site area.

A 1986 aerial photograph depicts the site with a total of 20 aboveground storage tanks and the existing garage. No significant evidence of the staining, as depicted in the 1966 aerial photograph, is shown. The two aboveground storage tanks shown on the Central Section of the site were relocated to the Northern Section of the site within the concrete dike area. These two tanks were removed from the site in March 1988. The existing concrete dike was installed around the tanks in the tank area in September 1986, subsequent to the March 1986 photograph. As previously mentioned, no signs of contamination were observed during the installation of this concrete dike. Figure 7 represents the 1986 aerial photograph. Additional information regarding former waste oil disposal practices is discussed in the **Petroleum and Chemical Spills/Releases** section.

CURRENT and HISTORICAL USES OF ADJACENT PROPERTIES

The properties near the site have historically been used for commercial and industrial purposes. Properties which abut the site include the John J. Riley Tannery and the Boston and Maine railroad tracks (west of the site); Toxikon Laboratories (northwest of the site); undeveloped wooded land known as the Wildwood Conservation Corporation property (north of the site); Allen Glass and Mirror - formerly the Whitney Barrell Company (east of the site); residences - one is equipped with garages used for lumber businesses (south of the site); and Alarm Device Supply and Associated Woodworks (the southern side of Salem Street). Figure 8 represents the current occupants of nearby properties and approximate locations of underground storage tanks.

John J. Riley Tannery - 228 Salem Street

This property is identified by the City of Woburn Assessor's Office as Map 16, Block 005, Parcels 95 and 96. This seven-acre property abuts the site on the western side of the Boston and Maine railroad tracks. This property is topographically and hydrologically upgradient from the site.

Since the late 1800's, this property has been used primarily by the John J. Riley Tannery to manufacture leather products by using hides of animals; this business was commonly referred to as leather tanning, tallow rendering, or japanning. Although this property was owned by various members of the John J. Riley Family since the late 1800's, the ownership has changed three times within the past nine years. In 1978, the John J. Riley Company became a division of Beatrice Foods, Inc. In 1983, Mr. John Riley regained ownership of the firm and then, in 1985, sold the tannery to its employees which continue to operate the facility as the John J. Riley Tannery.

Historical references regarding leather manufacturing (tannery) processes indicate that the hides of animals were placed in pits constructed below the ground surface. Various chemicals and preservatives were applied and, in the City of Woburn in particular, groundwater was flushed through the pits for rinsing purposes. This phase of leather manufacturing was typically a three- to six-month process.

Tannery Process and Wastes:

In general, hazardous materials and oils used during the leather manufacturing related processes included various solvents, lacquers and resins which are used in the finishing operation. Other chemicals used in the leather manufacturing operation include:

ammonium sulfate,
cyanide-based dyes,
mercury and chromium compounds,
naphthalene sulfonic acid,
phenolic detergents,
sodium sulfide,
sodium carbonate,
sulfuric acid,
lime, calcium hydroxide or other caustic powders,
kerosene, oils and emulsifiers,
and ammonium chloride.

Tannery wastes typically include high levels of: total solids, volatile organic compounds, protein, sodium chloride (salt), total hardness, sulfide, chromium, mercury, and ammonium nitrogen, and a high biochemical oxygen demand (BOD). The pH is between 11 and 12. The odor of tannery waste has been defined as "objectionable" and similar to rotten eggs, or hydrogen sulfide. Other tannery wastes include bones, manure and flesh of the animal skins. Investigation of other tanneries in the area found much of this debris buried either on the tannery property or on nearby properties. This property, in addition to other nearby properties, is currently under investigation by the US-EPA and DEQE due to its proximity to the City Wells G and H; its historical use as a tannery; and former disposal practices of hazardous materials (which are further discussed in the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

Production Well No. 1:

A production well is located on this property (known as the John J. Riley production well No. 1) and is situated on the eastern-most portion of the property adjacent to the Boston and Maine railroad tracks. Although the well has not been used within the past five to ten years, the well was

used to withdraw water which was utilized within the John J. Riley plant as process water since its installation date of 1945. The average daily gallonage acquired from this well is unknown; however, it has been reported that the well produced an estimated 300,000 gallons per day. The well was installed in "overburden" to a depth of approximately 35 feet below the ground surface. Information relative to the drawdown effects of this well relative to groundwater flow patterns on the site was previously discussed in the section entitled **Topography and Hydrogeology of the Site Area.**

Sludge Disposal Activities:

Situated slightly east of the well is a drainage culvert which discharges into a second drainage culvert located on the abutting railroad property between the tracks and the northwestern site boundary. A DEQE inspection discussion stated that:

> "Sludges, which are the skimmings and bottom solids from the waste water catch basins are being stock-piled on-site, on an embankment above the rail-road track and the company's well house [John J. Riley production well No. 1 (sic)]. This stockpile is not covered in any way. Some erosion of the stockpiled sludge is occurring down to the railroad drainage ditch."

The inspection discussion relative to the drainage culvert continued with "this drainage flows south to the wetlands upstream of Whittenmore Pond." The DEQE requested sampling of this stockpiled sludge; the laboratory results are discussed in the section entitled **Department of Environmental Quality Engineering (Northeast Region) Research.**

Tanks:

According to Fire Department and City Clerk records reviewed, this property is equipped with two underground storage tanks: a 5,000-gallon gasoline tank and a 45,000-gallon Bunker Oil (Number Six fuel oil) tank. The Certificate of Registrations were granted by the City of Woburn in 1945, 1946, 1951 and 1974. No information was available with Chief Robert Doherty of the Fire Prevention Office regarding any known releases of oils and/or hazardous materials on this property.

Wildwood Conservation Corporation - Off Olympia Avenue

This 16-acre parcel abuts the northern site boundary and is positioned topographically and hydrologically upgradient from the site. The City of Woburn Assessor's Office identifies this property as Map 16, Block 005, Parcel 42. This property is primarily undeveloped land which was established as the Wildwood Conservation Corporation in 1985.

Production Well No. 2:

A production well (known as the John J. Riley production well No. 2) is located on the southern portion of this property located approximately 200 feet north of the northern site boundary. Although the property is established as the Wildwood Conservation Company, John J. Riley Tannery, Inc. still retains the water rights to this well. The water from this well is used as process water by the tannery.

Historical Dumping:

The US-EPA "has determined that there is an imminent and substantial endangerment due to the release of hazardous substances" on this property. To implement mitigation measures, the US-EPA issued an Order to construct a fence along the property perimeter. The purpose of the fence was to eliminate access to the property and prohibit dumping activities. The hazardous waste release detected on this property resultant of abandoned drums is further discussed in later sections entitled **Petroleum and Chemical Spills/Releases, Department of Environmental Quality (Northeast Region) Research - Woburn** and **US-EPA: Contamination of the Aberjona River Basin.**

Former Whitney Barrell - 256 Salem Street

This property is identified by the City of Woburn Assessor's Office as Map 16, Block 005, Parcel 37. This property abuts the eastern site boundary and is topographically downgradient from the site. During pumping activities of the John J. Riley production well No. 2, this property is hydrologically at the same elevation as the site. This property is currently occupied by Allen Glass and Mirror. No significant amounts of oils or hazardous materials are used by the Allen Glass and Mirror Company.

Historical Barrel Cleaning Activities:

The Whitney Barrell Company used this property as a 55-gallon drum reconditioning facility. A representative of Aberjona Auto Parts, east of Whitney Barrell, reported that there was always a tremendous number of drums and tanks on the property. To his knowledge, Whitney Barrell not only reconditioned drums on this property, but also reconditioned and dismantled tanks, including underground storage tanks from gasoline stations. The tank and drum cleaning process reportedly created a very strong odor often resembling vinegar and/or solvents. No information regarding the former contents of the drums was known by either the Aberjona Auto Parts representative or the Fire Department and Board of Health officials interviewed. The overall condition of this property was described by former tenants and property abutters as very poor: "the property was always a mess." Figures 6 and 7 provide an aerial representation of this property during the years 1966 and 1986.

Tanks:

A Certificate of Registration, dated 1975, was granted by the City of Woburn to Mr. John Whitney, former Whitney Barrell property owner. The two underground tanks licensed include a 5,000-gallon gasoline tank and a 5,000-gallon diesel fuel tank. No information was found during this investigation indicating that these tanks were ever installed. Additional information regarding this property is discussed in the sections entitled **Petroleum and Chemical Spills/Releases** and **Department of Environmental Quality Engineering (Northeast Region) Research.**

Juniper Development Group - 60 Olympia Avenue

This property is identified by the City of Woburn Assessor's Office as Map 16, Block 005, Parcel 1. This parcel is situated approximately one-half mile northeast of and hydrologically upgradient from the site. The property is currently owned by the Juniper Development Group which purchased the property from Hemingway Transportation in 1985. Prior to 1985, this property was additionally occupied by United Truck Leasing: both Hemingway Transportation and United Truck Leasing are truck terminals.

Tanks:

In 1963, Hemingway Transportation was granted a Certificate of Registration by the City of Woburn for five underground storage tanks. These underground tanks include one 6,280-gallon gasoline tank, two 5,000-gallon diesel fuel tanks, one 1,000-gallon waste oil tank and one 5,000-gallon Number Two heating oil tank. Additional information regarding the integrity of these tanks and petroleum releases on this property are discussed in the sections entitled **Petroleum and Chemical Spills/Releases** and **Department of Environmental Quality Engineering (Northeast Region) Research.**

Residences - 246, 248 and 250 Salem Street

These properties are respectively identified by the City of Woburn Assessor's Office as Parcels 40, 39 and 38; they abut the southern site boundary and are topographically upgradient from the site. These parcels are primarily used for residential purposes. Parcel 39 is additionally occupied by a garage and a lumber business. Large trucks and other heavy equipment were observed on this property. Piles of debris consisting primarily of scrap metal were observed along the site boundaries adjacent to this property.

Other Nearby Properties

Properties additionally located within a one-quarter-mile radius of the site include a former leather manufacturer (Murrays Leather Company - Corner of Wood Street and Salem Street); distribution centers; automobile parts and repair shops (including the Aberjona Auto Parts, an automobile "junk yard"); a water, soil and hazardous waste testing laboratory (Toxikon Laboratories); and other commercial buildings. Most of these properties are equipped with underground and/or aboveground tanks for petroleum product storage. Additional information regarding properties near the site currently under investigation by the US-EPA and/or DEQE is discussed in their respective sections and the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

PETROLEUM and CHEMICAL SPILLS/RELEASES

This section addresses petroleum and chemical spills and/or releases which have occurred within the immediate vicinity of the site. This information has been compiled from review of the City of Woburn Fire Department records and interviews with Chief Robert Doherty of the Fire Prevention Office; Ms. Rodene Derice; Mr. Kingsley Ndi and Mr. Robert Cleary of the DEQE; Ms. Barbara Newman of the US-EPA; Ms. Joan Murphy, site owner, for spills/releases relative to the site. The spills and/or releases discussed below are shown on Figure 4.

Diesel Fuel Spill - Site (Central Section)

On December 17, 1987, CHEE representatives were conducting a site investigation on the Northern Section of the site and momentarily left the site between 9:30 am and 10:00 am. Upon their return, an estimated 100 to 150 gallons of diesel fuel had been released to the surface soils on the Central Section of the site from a North Suburban Transportation Company diesel fuel delivery truck.

Apparently, the diesel fuel release occurred during fueling of the school buses operated by the North Suburban Transportation Company. Several puddles of free-floating product were observed in the area of the spill. Cleanup measures undertaken by representatives of the North Suburban Transportation Company consisted of applying Speedi-Dri to the spill area and utilizing a "shop-vac" to retrieve the spilled product.

On December 18, 1987, CHEE representatives returned to the site to continue the investigations. Upon their arrival at approximately 9:00 am, a load of stone was being applied to the site in the area of the spill. A backhoe was used to apply the load of stone which consisted of approximately 15 to 20 cubic yards. The newly applied stone occupies approximately 50 feet by 75 feet. The spill area is on the north-central portion of the site near the chain-link fence between the Central and Northern Sections.

CHEE notified Ms. Joan Murphy (site owner) on December 17, 1987 and December 18, 1987 of these observations. Ms. Murphy was never contacted by the North Suburban Transportation Company regarding this spill. On December 18, 1987, Ms. Murphy contacted representatives of the North Suburban Transportation Company to acquire the details of the spill and provide information relative to proper cleanup measures (not utilized by North Suburban Transportation). North Suburban reported to Ms. Murphy that 10 to 15 gallons of diesel fuel were released to the site. In addition, two 30-gallon garbage containers of contaminated soil/Speedi-Dri were removed from the site and transported (without proper manifesting) to the North Suburban Transportation Company garage in Woburn, Massachusetts. CHI offered to properly dispose these soils provided North Suburban returned the containers to the site; they did not respond to this offer.

Gasoline/Kerosene Spill - Site (Central Section)

During a visit by a CHEE representative on December 7, 1987, a gasoline or kerosene spill was noted. This spill area was wet and occupied approximately three feet in diameter on the northern-most portion of the Central Section of the site (near the gateway of the chain-link fence). Site representatives had no information regarding this spill.

Waste Oil Deposition - Site (Northern Section and Right-of-Way)

As evidenced in the 1966 aerial photograph (attached as Figure 6), waste oils were applied to site soils. The soil staining not only covered the area near the tanks on the Northern Section but also the right-of-way through the site from the Northern Section to Salem Street. The staining also extended to the land east of the tanks on the site.

Oil deposition to property soils and nearby roadways was a common practice prior to the 1980's for most waste oil facilities. In fact, in 1978, the DEQE - Division of Water Pollution Control implemented a policy limiting land spreading of waste oils to the period of May 15 to October 15. In the early 1980's, the DEQE - Division of Solid and Hazardous Waste was formed and, under their jurisdiction, this practice of oil deposition on land was prohibited. Ms. Joan Murphy (site owner) reported that this method of disposal by Murphy's Waste Oil Service, Inc. has not occurred since 1979. A copy of a letter from the DEQE - Division of Water Pollution Control to a nearby waste oil facility explaining these policy limitations is included in Appendix E.

Abandoned Drums - Wildwood Conservation Corporation Property

The US-EPA, the DEQE and City of Woburn Representatives have performed numerous investigations and property visits relative to dumping activities and extensive contamination of underlying soils and groundwater on this property.

In the late 1970's, representatives of the US-EPA and DEQE responded to a complaint of abandoned drums on this property. Upon inspection, an estimated 15 to 20 drums, 55-gallons in size, were abandoned on this property adjacent to the Boston and Maine railroad tracks. The drums were empty at the time of their inspection.

An investigation, conducted by Woodward-Clyde Consultants performed in 1984 as reported by the US-EPA, suggested that the Wildwood Conservation Company property (known then as the Beatrice Foods site) was used for storage of large tanks and perhaps drums. The report implied that the "two companies located south of the Wildwood Conservation Corporation property (sic): Whitney Barrell Company and Murphy Waste Oil" were the source of these large tanks and drums. This implication was based on review of historical aerial photography (1966 to 1983) from which the following was obtained:

> "The existing unpaved access road was evident in past aerial photographs as were additional trails leading from both the Whitney Barrell and Murphy Waste Oil properties. Greater use of these trails was apparent from 1966 to 1969 than in 1978 to 1983."

Ms. Joan Murphy, site owner, reported that she remembered that those drums were there in the 1950's.

Diesel Fuel/Motor Oil/Waste Oils - Juniper Development Group

According to Fire Department records reviewed, activities occurring on the property in the summer of 1986 included the removal of three 30-year-old, 6,000-gallon underground storage tanks; one tank was observed leaking diesel fuel and product was observed on the groundwater in the excavated trench area. Installation of monitoring wells by an environmental consulting firm was subsequently required by the DEQE to assess the extent of contamination.

In the winter of 1987, a 1,000-gallon vertical aboveground storage tank exploded and released motor oil onto the property surface. In addition, Chief Doherty reported that a number of 55-gallon drums containing waste motor oil were observed leaking on the southern portion of the property.

The US-EPA issued an order in February 1986 for the Olympia Nominee Trust to "stabilize drums of hazardous waste at their Woburn, MA, property and to study the site to protect the public from the contaminants." "Trichloroethylene, tetrachloroethylene, 1,1-dichloroethane, 1,1,1-trichloroethane, toluenes, xylenes, polychlorinated biphenyl compounds (PCBs), and chlordane have been found in soil and drums at the site." The US-EPA discovered 12 exposed drums containing these materials in April 1985. As of February 1987, this property has been considered by the EPA as part of the Wells G & H Superfund Site in Woburn." Additional information relative to the Wells G & H Superfund Site is discussed in the section "US-EPA: Contamination of the Aberjona River Basin."

Unknown Chemical Releases - Former Whitney Barrell

Chief Robert Doherty of the City of Woburn Fire Prevention Department reported that within the past 20 years five chemical related fires occurred on this property. Chief Doherty additionally reported that a "colorful liquid" was released from the building during one of the more serious fires (which occurred between 1980 and 1982). Ms. Rodene DeRice of the DEQE Northeast Region stated that a Phase II - Full Evaluation study was recently completed for this property and that this report has not yet been reviewed by the DEQE.

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING (NORTHEAST REGION) RECORDS RESEARCH

The Department of Environmental Quality Engineering (DEQE) Oil and Hazardous Material Incident Response, RCRA Generator and Site Assessment Files for the City of Woburn were reviewed by a CHEE representative on December 21, 1987 and October 14, 1988. A review of the DEQE Spills and Sites Databases, the DEQE List of Confirmed Disposal Sites and Locations to be

Investigated (dated October 15, 1988), and the RCRA Generator/Transporter List was additionally performed. Additional information relative to most of the following properties discussed is addressed in the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

Wells G and H - Aberjona River Valley

Wells G and H are listed in the Sites Database, addressed Salem and Washington Streets, as Phase III project status and supervised by Ms. Rodene DeRice of the DEQE.

Aberjona Auto Parts - 278 Salem Street

This property is located approximately 500 feet east of and downgradient from the site. This property was listed in the Sites Database as "inactive." Additional information regarding the four monitoring wells installed on this property by the US-EPA relative to the US-EPA study area are further discussed in the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

Whitney Barrell - 256 Salem Street

As previously mentioned, a Phase II - Full Evaluation report for this property has been submitted to the DEQE. According to Ms. Rodene Rice of the DEQE, this report has not has not yet been reviewed. In January 1986, an estimated 10 gallons of Number Two oil was released on this property. No additional information regarding cleanup of this release was found in DEQE records reviewed.

John J. Riley Tannery - 228 Salem Street

As previously discussed, this property abuts the site on the western side of the Boston and Maine railroad tracks. This property is listed on the Sites Database as "inactive." The Spills Database listed this property in December 1986 as having a 500-gallon Number Six fuel oil release occur on this property. Imperial Transportation was reported as the Responsible Party for this release.

Additional DEQE records available for this property included a Formal Report of Analysis for a composite of two samples of sludge collected from a catch basin located on this property. The catch basin is apparently located along the eastern boundary of the property near the railroad tracks. This sample was collected as a result of the DEQE inspection discussed in the preceding section entitled **Current and Historical Uses of Adjacent Properties.**

The sludge sample collected from the catch basin was laboratory analyzed for E.P. Toxicity eight priority pollutant metals plus hexavalent chromium. The sludge sample was apparently analyzed by the analytical laboratory as a water sample and compared with US-EPA Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) guidelines. The only metal detected was total chromium at a concentration of 2.3 parts per million (ppm). The MCL for that constituent is 5.0 ppm.

The purpose of performing an E.P. Toxicity test on the sludge sample was apparently to determine whether any of the priority pollutant metals were leaching from the pile of sludge deposited on the property boundary and migrating down the embankment toward the railroad tracks, where the John J. Riley production well No. 1 is situated. The DEQE files indicate that additional laboratory analyses were performed on the sludge sample but were not submitted to the DEQE since the DEQE had not requested it.

According to Ms. Rodene DeRice of the DEQE, the US-EPA is responsible for activities performed on this property since it is currently under investigation as a potential source to the contamination of the City wells G and H.

Wildwood Conservation Corporation - Off Olympia Avenue

This property abuts the site to the north. No additional information, especially with regard to the abandoned drums found on this property, was available in these references reviewed.

Juniper Development Group - 60 Olympia Avenue

Sixty Olympia Avenue is located approximately one-half mile northeast of and upgradient from the site. This property is currently owned by the Juniper Development Group which purchased the property in February 1985. This property has been listed on the DEQE List of Confirmed Disposal Sites and Locations to be Investigated. This lists a petroleum release for the Olympia Nominee Trust property located at 60 Olympia Avenue. The cleanup status is Phase II by the responsible party. The Spills Database listed this property in February 1986 as having twelve 55-gallon drums of waste oil abandoned on the property. No additional information regarding the release or any other activities on this property was found in DEQE files reviewed.

Abandoned Drums - Mishawum Road Property

In May 1979, 184 55-gallon drums containing polyurethane and toluene di-isocyanate were found on a vacant lot, located approximately one and one-quarter miles north of and topographically upgradient from the site. The property is located on Mishawum Road and is owned by the Massachusetts Bay Transit

Authority (MBTA). The DEQE records reviewed indicate that: "The drums were removed by unknown parties during negotiations with the DEQE over removal of these drums. This incident prompted the DEQE to sample the nearest downgradient water supply, Woburn's municipal water supply from Wells G and H, as a precautionary measure." Additional information regarding this discovery is addressed in the section entitled **US-EPA: Contamination of the Aberjona River Basin.**

US-EPA: CONTAMINATION OF THE ABERJONA RIVER BASIN

As previously mentioned, the 184 drums of polyurethane and toluene di-isocyanate found on the Mishawum Road property (May 1979) prompted DEQE to sample the nearest downgradient water supply, Woburn's municipal water supply Wells G and H, as a precautionary measure. Prior to this DEQE sampling program of Wells G and H, area residents often complained about the water quality in the wells. Apparently, the parameters tested indicated elevated levels of manganese and iron, which often result in an unpleasant taste and/or odor of the water. Since this data correlated with the complaints reported, no additional testing was performed.

During the DEQE sampling program of City wells G & H, elevated levels of chlorinated volatile organic compounds were detected. Based on the levels detected, both wells were subsequently shut down by Order of the US-EPA. Health risks relative to these levels detected were then assessed.

"During the mid to late 1970's, the local community became concerned over the incidence of child-hood leukemia, particularly in the Pine Street area of east Woburn. After DEQE detected volatile organic contamination in Wells G & H in 1979, some members of the local community suspected that the incidence of leukemia was linked to the possible exposure to volatile organic chemicals through the Wells G & H water supply. The Massachusetts Department of Public Health (MDPH) began investigating the problem in December 1979. A higher than expected rate of childhood leukemia was confirmed by the MDPH in April 1980."

In May 1982, "a number of citizens whose children had developed leukemia filed a civil lawsuit against two companies [W.R. Grace/Cryovac Division and Beatrice Foods (now known as the John J. Riley Tannery)] suspected of contributing contamination to Wells G and H." In April 1985, the same citizen's group brought civil lawsuits against a third company: Uni-first Corporation.

Investigation by the US-EPA revealed that two major Superfund Sites exist within the Aberjona River Basin: The Industriplex Site, approximately two miles north of and upgradient from the Murphy Waste Oil Service, Inc. property; and the Wells G and H Site (referred to in this report as the US-EPA study area).

This US-EPA study area is "geographically defined as the valley and surrounding uplands associated with the Aberjona River Basin (sic) south of Interstate 95 and north of Salem Street. The aquifer area is hydrologically defined as the area (vertically and laterally) that is potentially

capable of supplying water to Wells G & H under pumping conditions." The US-EPA study area is somewhat larger than the aquifer area and consists of approximately 450 acres.

The US-EPA developed a "Hazard Ranking System (HRS) score" for the US-EPA study area utilizing available preliminary investigations and analytical data provided by the DEQE. The US-EPA study area was ranked 312 out of 770 sites on the National Priorities List.

In May 1983, three Administrative Orders were issued by the US-EPA to W.R.Grace and Company, Inc. - Cryovac Division (located approximately one mile northeast of the site on the eastern side of the Aberjona River); Uni-first Corporation - formerly Interstate Uniform Services Corporation (located approximately one mile north of the site on the eastern side of the Aberjona River); and Beatrice Foods, Inc. - for the Wildwood Conservation Corporation property (abuts the northern site boundary and is on the western side of the Aberjona River).

From the late-1970's to present, the US-EPA has contracted numerous environmental consulting firms to perform assessment investigations of the US-EPA study area. These investigations not only included historical investigations and inspections of the US-EPA study area, but also groundwater, surface water and sediment sampling, and installation of groundwater monitoring wells throughout the US-EPA study area. The purpose of these investigations was to address the degree and extent of contamination existing within the US-EPA study area; contaminant pathways and mechanisms; and a description of groundwater plumes, areas of contamination and their sources.

John J. Riley Production Wells No. 1 and No. 2

Volatile organic contaminants present in the John J. Riley production wells No. 1 and No. 2 include low part per billion (ppb) concentrations of 1,1-dichloroethane, trans-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene.

Two of the 13 monitoring wells located on the Wildwood Conservation Corporation property (identified by the US-EPA as BW-3 and BW-4) were installed between the site boundary and the John J. Riley production well No. 2. Monitoring well BW-4 is situated approximately 15 feet north of the site boundary, while BW-3 is situated approximately 20 feet northeast of the site boundary. Total volatile organic compounds detected in these wells were between 11 ppb and 100 ppb in BW-4 and between 101 ppb and 500 ppb in BW-3. The predominant compounds detected include trichloroethene and tetrachloroethene; however, low levels of the compounds present in the John J. Riley production wells were also present in the groundwater samples of these monitoring wells.

US-EPA: REQUEST FOR INFORMATION

On December 31, 1987, the US-EPA issued a Request for Information for "certain activities occurring at Murphy's Waste Oil Service, Inc. (sic)" at 252 Rear Salem Street. The purpose of the Request was for the US-EPA to acquire additional information pursuant to the "source, extent and nature of the release or threatened release of hazardous substances, pollutants or contaminants, or hazardous wastes on or about the Wells G & H Superfund Site" (the US-EPA study area). This Request for Information was issued to the owners of all properties located within the one-square-mile US-EPA study area.

Wright and Moehrke Professional Corporation, Counselors at Law, responded to this Request for Information as representatives for Murphy's Waste Oil Service, Inc. The Response letter was submitted to the US-EPA on February 9, 1988.

SUMMARY AND EVALUATION

The site has primarily been used as a bulk oil storage facility from the 1920's to 1987. In March 1987, the 13 aboveground storage tanks were removed from the site for proper disposal; seven new, unused aboveground storage tanks remain on the site within a concrete-diked tank farm. Only one underground storage tank is present on the site and is used for storing heating oil for the on-site garage. The tank was installed in 1979.

Releases of petroleum products have historically occurred on the site. Known releases include:

- land spreading of oils on the site until 1979 for dust control measures (this was a DEQE approved method until, at least, 1979);

- a 150-gallon release of diesel fuel to surface soils on the central portion of the site in 1987 (cleanup measures by the responsible party (a site tenant) were unsatisfactorily performed);

- an unknown quantity of either diesel fuel or gasoline product on the central portion of the site in 1987 (since the bulk oil facility was inactive at that time the responsible party is most likely a site tenant);

- and the central portion of the site was apparently used in the 1950's as an "oil pit" (no further documentation or other reports were found to support this statement).

Abutting developed properties are occupied by a tannery, a former drum and tank reconditioning facility, a railroad line and residences. Since the late 1800's, the tannery has been manufacturing leather products. Historically, the manufacturing process involved chemical applications to the product in below ground pits. Apparently, groundwater was flushed through the pits for rinsing purposes. Waste disposal practices by the tannery included dumping some of the waste products and sludges on the property. It is possible that surface water runoff from this upgradient property may be contaminated and impact the site. Wastewater from the tannery is discharged to a sewer system which traverses a portion of the site. The sewer manhole cover on the site was once observed six feet above the ground surface from sewer overflow; sewer overflows have periodically occurred on the site.

The former drum and tank reconditioning facility apparently rinsed the residual oils and hazardous materials from the tanks and drums with a vinegar and/or solvent solution. The discharge point of the spent solution was not discovered during this investigation. The City of Woburn Fire Department reported that they had responded to several chemical-related fires on this property. One of the more serious fires involved a "colorful liquid" that was released from within the building. This property is currently under investigation by the DEQE for evidence of contamination. The Phase II - Full Evaluation report for this property was submitted to the DEQE for review in January 1989; the study has not yet been evaluated by the DEQE, or CHEE.

The site is situated within a US-EPA study area which encompasses one square mile. The US-EPA became involved in this area based on the levels of chlorinated solvent contamination encountered in two municipal drinking water wells. The wells are situated approximately one quarter of a mile from the site. Although the contamination was discovered in 1979 and the drinking water wells were deactivated, the source(s) of the contamination have not been verified.

It appears that a major contributing factor to the drinking water well contamination is the historical dumping activities on the 16-acre undeveloped property which abuts the northern site boundary. A series of subsurface investigations have been conducted on the property indicating elevated levels of chlorinated solvent contamination. Although this property is positioned hydrologically upgradient from the site, it is likely that most of the contamination in the groundwater is intercepted by pumping activities of a large production well on this property (300,000 gallons per day). During pumping activities of this well, groundwater flow patterns on the site are altered, thereby, making the tannery and the former tank and drum reconditioning properties hydrologically upgradient from the site. A City of Woburn official indicated that the tannery property was recently implicated by the US-EPA for contributing to the contamination of nearby drinking water wells.

CONCLUSIONS

Based on the findings of this investigation, it appears that the site may be contaminated from petroleum products as well as hazardous materials. The source of the petroleum contamination is most likely attributed to historical uses of the site by the bulk oil facility and a site tenant. The source of the non-petroleum contamination (including hazardous materials) is most likely from releases and discharges of these materials on the site and from off-site sources. Further investigation of the site soils and groundwater for evidence of contamination should be performed.

RECOMMENDATIONS

A Phase I - Site Investigation assessment should be conducted on the site. The subsurface investigation should be performed to evaluate petroleum and/or hazardous material contamination that may be present in site soils and groundwater. Investigation points should be positioned to assess: the extent of contamination present on the site from on-site uses of petroleum products; the impact on the site of releases of these materials on nearby properties; the impact of pumping activities on the site groundwater flow patterns by the nearby production well; and whether releases on the site migrated to off-site properties.

The Phase I - Site Investigation assessment should be modified to include the following:

1. Surface soil and surface water, if any, samples should be collected in the vicinity of the sewer easement which periodically overflowed tannery wastewater. The samples should be submitted for laboratory analysis for evidence of contamination.

2. An air-monitoring program for the site should be implemented to determine whether the air emissions from the tannery, which resemble hydrogen sulfide, are impacting the air quality on the site.

3. Review of the Phase II - Full Evaluation report for the abutting property, occupied by a former drum and tank reconditioning facility, should be performed prior to positioning the investigation points and implementing the sampling program. The sampling program for the site should coincide with the contaminants, if any, detected on this property.

4. The sampling program for the on-site investigation should coincide, at a minimum, with the parameters tested by the US-EPA for the contamination encountered on nearby properties and the drinking water supplies. Data from this modified program will be necessary in evaluating the on-site contaminants, if any, relative to the levels of contaminants in the drinking water supplies.

5. In accordance with the Massachusetts Contingency Plan (effective October 3, 1988) a Risk Assessment study should be performed on the site. The sampling parameters necessary for a full evaluation should be incorporated. This study is necessary to evaluate the potential risk to human and non-human receptors from contamination emanating from the site and nearby properties. A key member of the Risk Assessment staff has performed an extensive wetland assessment of the site area for the US-EPA.

6. The CHEE remedial staff should incorporate any sampling parameters or testing requirements in the event that a remedial cleanup program for the site should be necessary. Acquiring this data during the Phase I - Site Investigation assessment will allow the CHEE remedial staff to prepare an accurate and thorough proposal for expedient DEQE approval.

LIMITATIONS

This Preliminary Site Assessment report was conducted in accordance with the 1983 "Massachusetts Oil and Hazardous Material Release Prevention and Response Act," of the Massachusetts General Laws and the Massachusetts Contingency Plan, effective 1988. The DEQE Guidance Policy 7 (dated June 22, 1987) and the updated Interim Policy (dated December 22, 1987) were used as guidelines during this investigation.

The purpose of this report was to assess the physical characteristics of the site with respect to the presence of oil or hazardous materials, as defined in the Massachusetts General Law, Chapter 21E. The recommendations presented in the report were based solely upon the service described therein, and not on scientific tasks or procedures beyond the scope of the services described herein. This study and report have been prepared on behalf of and for the exclusive use of Clean Harbors, Inc. for use as an environmental evaluation of the site. No other warranty, expressed, written or implied, was made.

CHEE will prepare a proposal detailing the additional work recommended above. If there are any questions or additional information is required, please feel free to call (617) 849-1200.

Sincerely,

Sherri L. Walker
Senior Environmental Scientist

Joseph E. Higgins
Manager, Site Investigations

William J. St. Hilaire, P.E.
Vice President

mac/SLW:Disk 1
QC:WJH/JEH/BEC/CHK

LIST OF CONTACTS

1. Ms. Joan Murphy, Site Owner, Murphy's Waste Oil Service, Inc., Woburn,
2. Mr. Francis Ryan, Acting Health Agent and Chairman, Board of Health, City of Woburn
3. Chief Robert Doherty, Fire Prevention Officer, City of Woburn Fire Department
4. Ms. Lee Garvey, Clerk, City of Woburn Conservation Commission
5. Ms. Carrol Cogan, Clerk, Engineering Department, City of Woburn
6. Mr. Robert Simonds, Superintendent, City of Woburn Public Works Department
7. Mr. Robert Cleary, Environmental Engineer, Department of Environmental Quality Engineering - Division of Hazardous Waste, Boston, Massachusetts
8. Ms. Rodene DeRice, Environmental Engineer, Department of Environmental Quality Engineering - Division of Hazardous Waste, Region I, Woburn, Massachusetts
9. Mr. David Diorio, Owner of Diorio Auto Service (employed in site area), Woburn, Massachusetts
10. Mr. Norman Saunders, General Manager and Site Area Occupant, Aberjona Auto Parts, Woburn, Massachusetts
11. Ms. Gretchen Latowsky, President, For A Cleaner Environment (FACE), a hazardous waste awareness community organization, Woburn, Massachusetts
12. Mr. Kingsley Ndi, Environmental Engineer, Department of Environmental Quality Engineering - Hazardous Waste Division, Region I, Woburn, Massachusetts
13. Ms. Barbara Newman, Project Manager, United States- Environmental Protection Agency, Boston, Massachusetts
14. Ms. Mary Quinn, Family Relative of the Murphy's and former Site Occupant, Westford, Massachusetts

LIST OF REFERENCES

1. Assessor's Field Cards, City of Woburn Assessor's Office

2. Building Permits, City of Woburn Building Department

3. Property Files, Board of Health, City of Woburn

4. Assessor's Property Maps, (Maps 16 and 21), dated January 1985, City of Woburn Engineering Department

5. "Flammable Masters Only" Certificates of Registration, City of Woburn City Clerk's Office

6. Certificates of Registration and Property Files, Fire Prevention Office, City of Woburn Fire Department

7. City of Woburn Zoning Map, effective date April 1985, City of Woburn Department of Public Works - Engineering Division

8. Aerial Photograph taken in March 1986 by City of Woburn Engineering Department, City of Woburn Engineering Department

9. Aerial Photograph taken in April 1966 by City of Woburn Engineering Department, City of Woburn Engineering Department

10. Sewer Locations Map, dated July 1980, City of Woburn Engineering Department

11. "An Introduction to Wetlands Regulation in Woburn," undated, City of Woburn Conservation Commission

12. "Woburn's Water Supply - The Facts of Woburn's Public Water Supply," dated June 1984, prepared by the Metropolitan Area Planning Council for the City of Woburn Conservation Commission

13. "An Introduction to Conservation Areas in Woburn, Massachusetts," undated, prepared by the City of Woburn Conservation Commission

14. Woburn and Winchester Directories, dates 1897, 1911, 1919- 1920, and 1925, available at the City of Woburn Public Library

15. City of Woburn Atlas, dated 1875, available at the City of Woburn Public Library

16. "The Woburn Health Study: Synopsis (with errata corrected)," undated, prepared by S.E. Lagakos, B.J. Wessen, M. Zelen, available at the City of Woburn Public Library

LIST OF REFERENCES (Cont.)

17. City of Woburn Daily Times Chronicle, dated February 6, 1968, available at the City of Woburn Public Library

18. "History of the Tanning Industry in Woburn," Shoe and Leather Reporter, dated May 20, 1920, pg.67, available at the City of Woburn Public Library

19. "Former Tanneries in Woburn and Vicinity," dated February 26, 1938, prepared by Thomas Marrinan, available at the City of Woburn Public Library

20. City of Woburn Atlas, dated 1950, available at the City of Woburn Public Library

21. "Plan for Investigation of Hazardous Waste Problems: Woburn, MA," dated March 1980, prepared by Fred C. Hart Associates, Inc. of New York, New York, available at the City of Woburn Public Library

22. City of Woburn Atlas, dated 1889, available at the City of Woburn Public Library

23. "Hazardous Wastes in Woburn - Department of Urban and Environmental Quality," dated May 1980, prepared by Tufts University, pg. 32, available at the City of Woburn Public Library

24. City of Woburn Oils and Hazardous Materials Incident Response, RCRA Generator and Site Assessment Files, **Spills Database** (dated 07/09/88), **Sites Database** (dated 07/07/88), Department of Environmental Quality Engineering, Northeast Region, Woburn, Massachusetts

25. **List of Confirmed Disposal Sites and Locations to be Investigated**, prepared by the Department of Environmental Quality Engineering Division of Hazardous Waste, dated October 15, 1988

26. **Industrial Water Pollution - Origins, Characteristics, and Treatment**, dated 1977, by Nelson L. Nemerow of Syracuse University, pgs. 334-340

27. "Woburn Administrative Order Docket No. 619," dated May 12, 1986, from the DEQE - Division of Water Pollution Control, available at the City of Woburn Building Department

28. US-EPA **Environmental News**, 12/16/85, 02/10/86, 02/18/87

29. **Area of Influence and Zone of Contribution to Superfund-Site Wells G and H**, dated 1987, prepared by the United States Geological Survey for the US-EPA, Water-Resources Investigations Report 87-4100

30. **Scope of Work for a Remedial Investigation at Wells G & H Site, Woburn, Massachusetts**, dated August 2, 1984, prepared by the NUS Corporation - Superfund Division for the Region I US-EPA

LIST OF REFERENCES (Cont.)

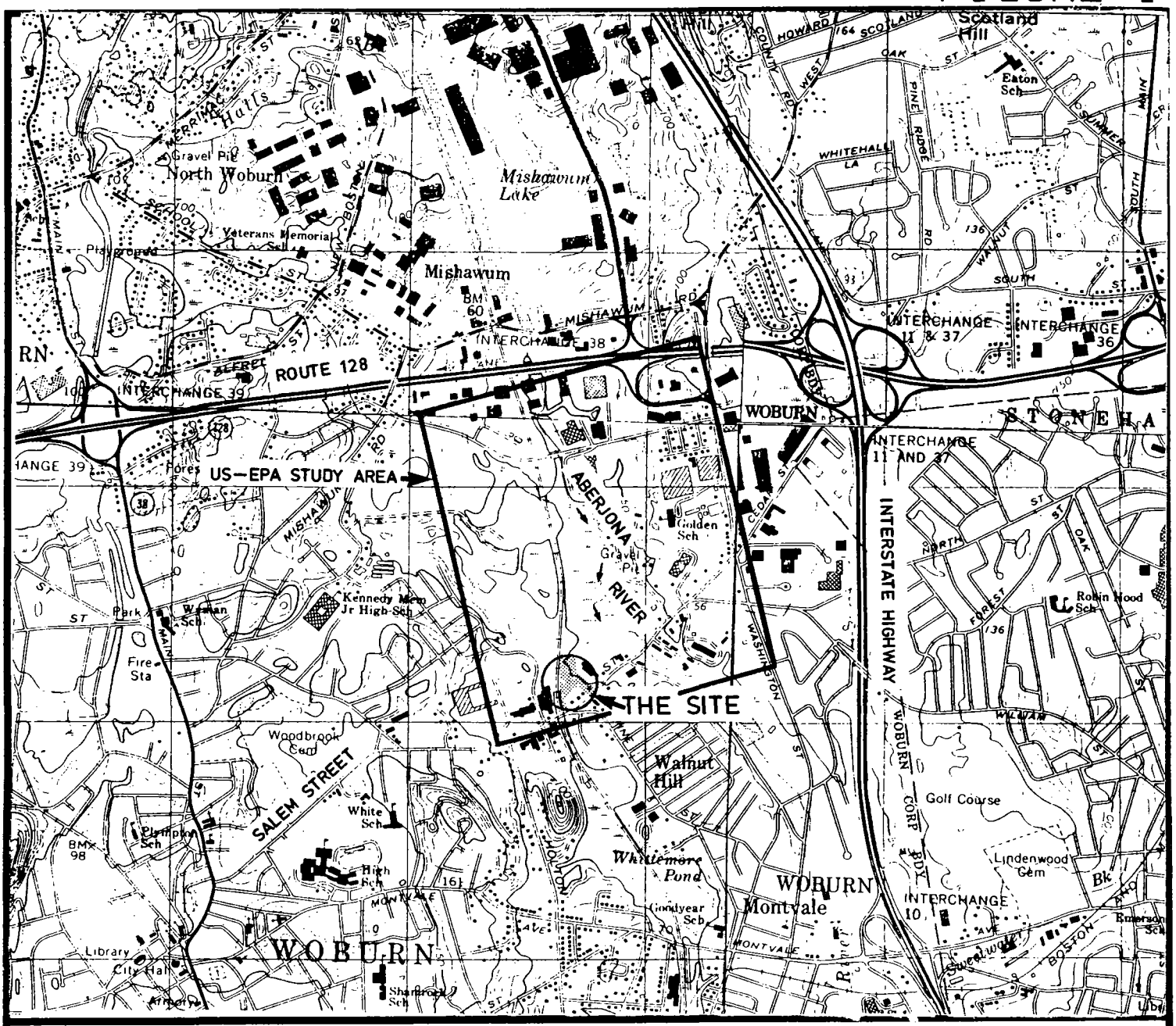
31. **Wells G & H Site Remedial Investigation Report, Part I, Woburn, Massachusetts**, Volumes I - V, dated October 17, 1986, prepared by the NUS Corporation - Superfund Division for the Region I US-EPA

32. United States Geological Survey Topographic Map, Wilmington, Massachusetts Quadrangle (dated 1965, revised 1979) and Lexington, Massachusetts Quadrangle (dated 1971)

33. "Response to US-EPA Request for Information," dated February 9, 1988, prepared by Rebecca Backman of Wright & Moehrke of Boston, Massachusetts for Murphy's Waste Oil Services, Inc. and submitted to the US-EPA - Massachusetts Waste Management Section, Waste Management Division

FIGURES

FIGURE 1



COORDINATES
UTM: 324682mE, 4706254mN
LONGITUDE: 71°8'0"W
LATITUDE: 42°29'48"N

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
		KMG			1/31/94

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

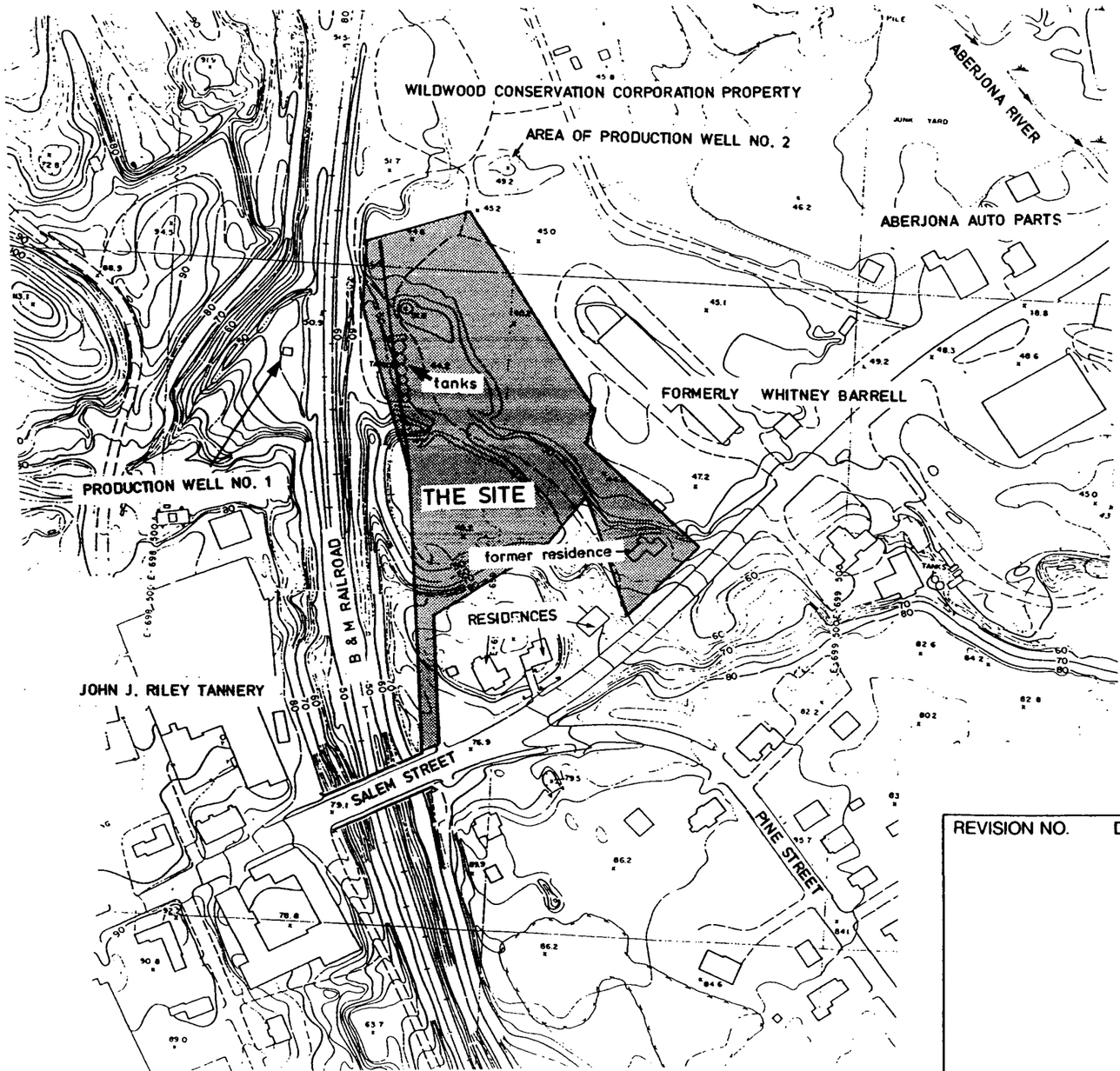
MURPHY'S WASTE OIL SERVICE, INC.
252 AND 252 REAR SALEM STREET
WOBURN, MASSACHUSETTS

LOCUS MAP

PROJECT NO.	E-1656	DWG. NO.	1656-L-001
SCALE	AS NOTED		

0089-0241

BASE MAP: UNITED STATES GEOLOGICAL SURVEY (USGS) LEXINGTON, MASSACHUSETTS QUADRANGLE



N

VERTICAL DATUM IS MEAN SEA LEVEL

MAP DATED APRIL 1966

REVISION NO.	DATE

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

PROJECT NO. E — 1656

SCALE 1" = 200'

FIGURE 2 TOPOGRAPHY MAP

MURPHY'S WASTE OIL SERVICE, INC.

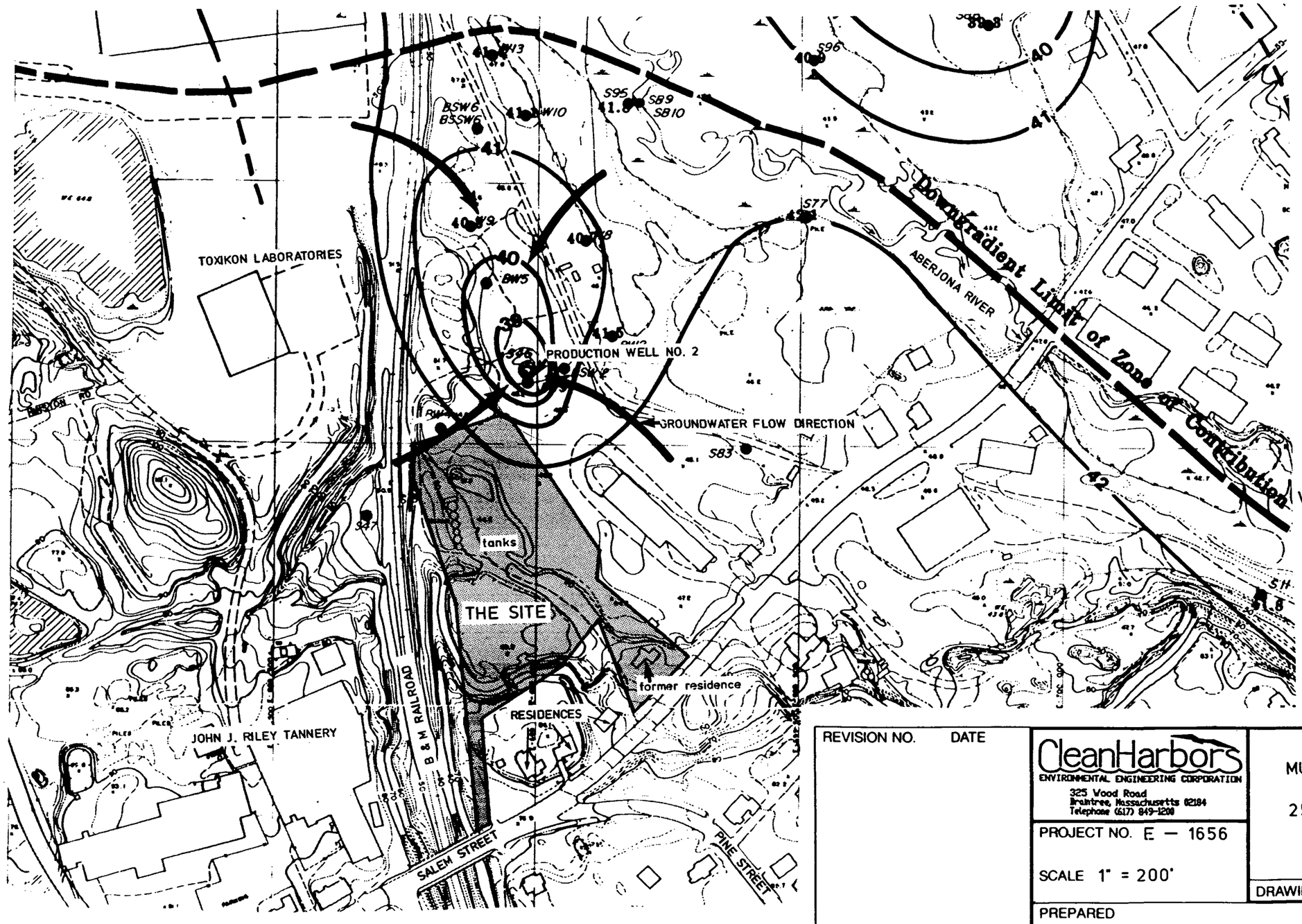
252 AND 252 REAR SALEM STREET

WOBURN, MASSACHUSETTS

PREPARED

APPROVED DATE

0089-0242



(DURING PUMPING OF PRODUCTION WELL NO. 2 IN 1986)

N

VERTICAL DATUM IS MEAN SEA LEVEL

FIGURE 3
GROUNDWATER FLOW MAP

REVISION NO.	DATE

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ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

PROJECT NO. E — 1656

SCALE 1" = 200'

MURPHY'S WASTE OIL SERVICE, INC.

252 AND 252 REAR SALEM STREET

WOBURN, MASSACHUSETTS

DRAWING NO.

PREPARED

APPROVED DATE

0089-0243

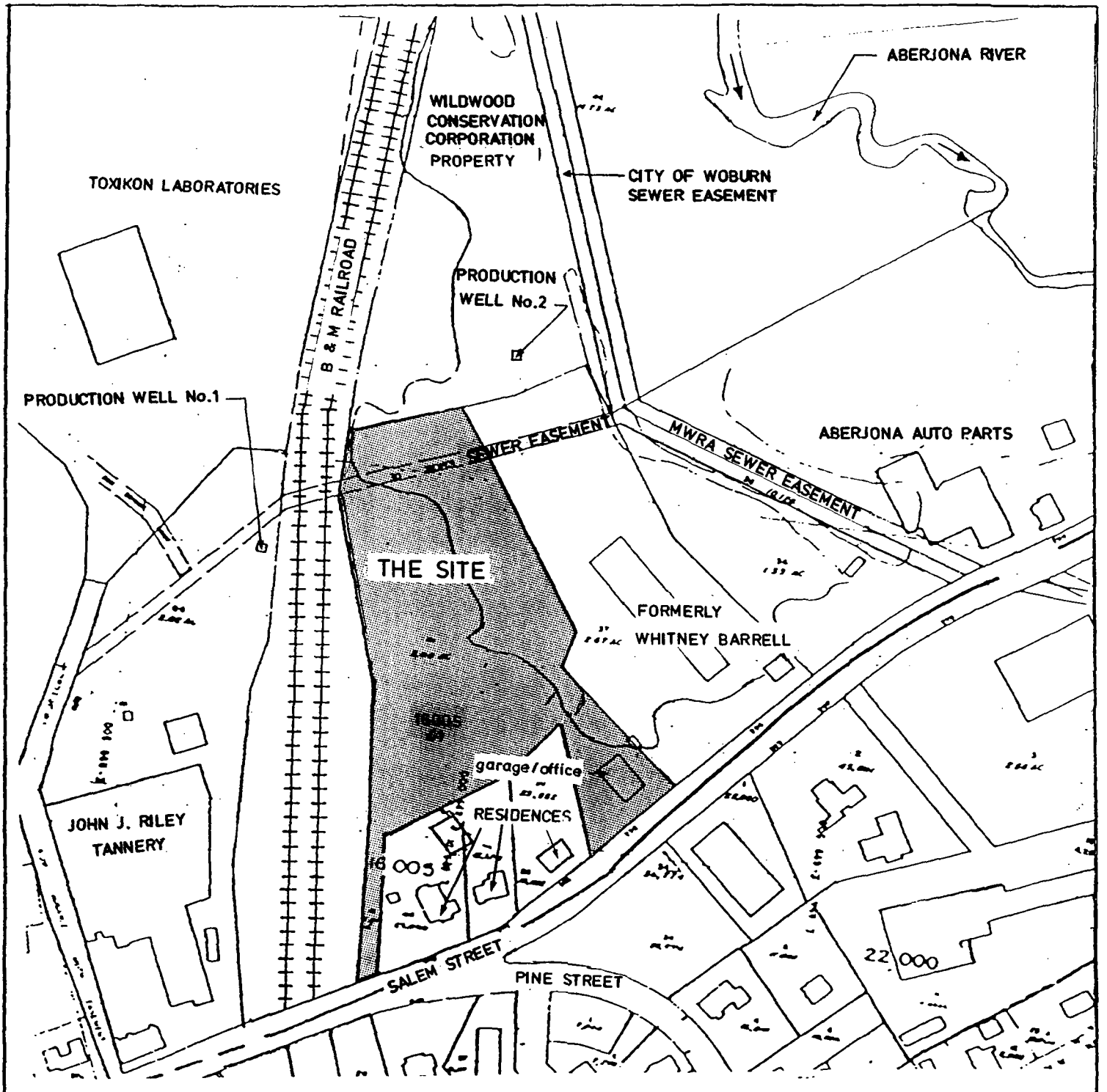


FIGURE 4 SITE AND ADJACENT PROPERTIES

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

PROJECT NO. E – 1656

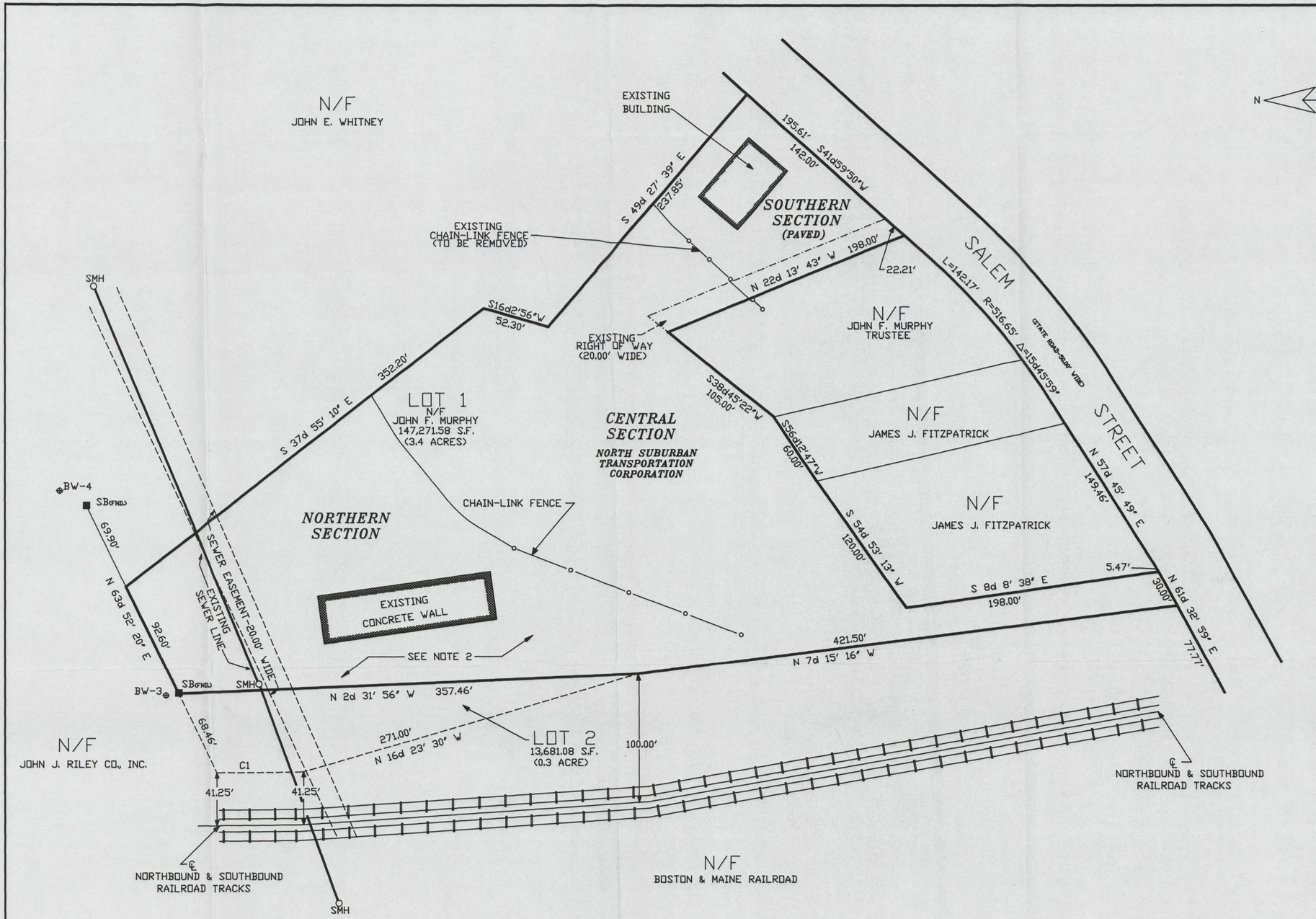
SCALE 1" = 200'

MURPHY'S WASTE OIL SERVICE, INC.

252 AND 252 REAR SALEM STREET

WOBURN, MASSACHUSETTS

DRAWING NO.



LEGEND

BW-3 ⊕ MONITORING WELL

SMH ○ SEWER MANHOLE

SB(FND) ■ STONE BOUND WITH DRILL HOLE (FOUND & HELD)

NO.	DELTA	RADIUS	ARC LENGTH
C1	0d17'16"	2980.09	66.98

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988.
2. FOR LOCATION OF ABOVEGROUND TANKS REMOVED IN MARCH 1988, SEE CHEE DWG. NO. 1656-C-005 REV. A.

FIGURE 5

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	PRELIMINARY	PMO	CHK	JEH	1/15/89

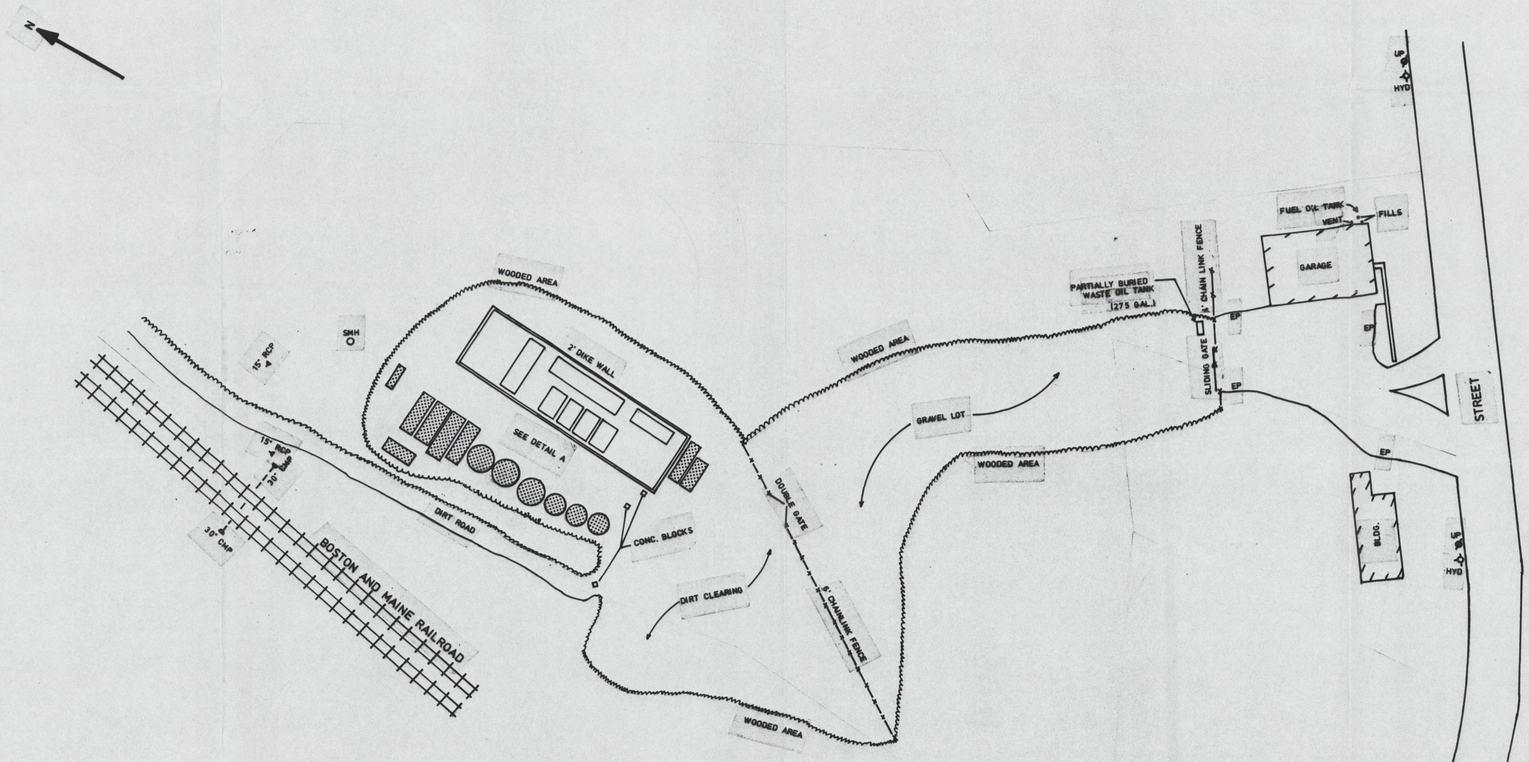
CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

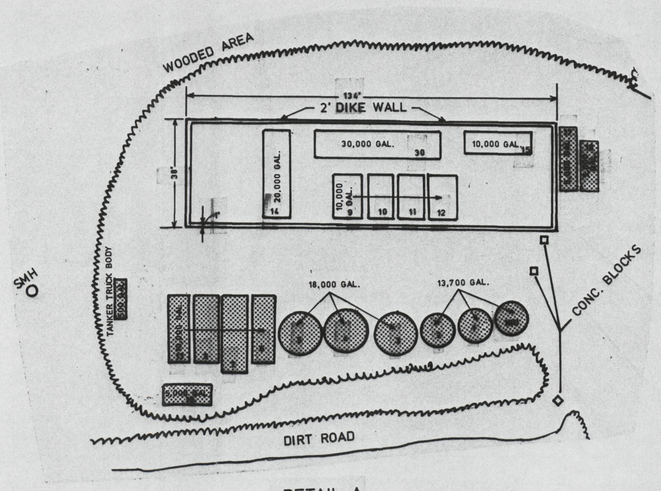
TITLE
MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

SITE PLAN-SECTION AREAS

PROJECT NO. E-1656
SCALE 1"=40'
DRAWING NO. 1656-C-004

0089-0245





DETAIL A
N.T.S.

LEGEND

HYD HYDRANT

UP UTILITY POLE

EP EDGE OF PAVEMENT

NORTH ARROW INDICATES MAGNETIC NORTH

ABOVEGROUND TANKS REMOVED MARCH 1988

FIGURE 5A

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	ADDED TANK NOTATION	[illegible]	CHK	[illegible]	1/13/89

CHI ENVIRONMENTAL ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY

SITE PLAN
MURPHY'S OIL
SALEM STREET
WOBURN, MASS.

PROJECT NO. E-1656

SCALE 1"=40'

DRAWING NO. 1656-C-005

PREPARED M. WHITESIDE

APPROVED

DATE OCT. 1987

0089-0246

WILDWOOD CONSERVATION CORPORATION PROPERTY
Production Well No. 2
Production Well No. 1
tanks
ABERJONA AUTO PARTS
drums
lagoon
B&M RAILROAD
staining
THE SITE
WHITNEY BARRELL
JOHN J. RILEY TANNERY
RESIDENCES
former residence
SALEM STREET
PINE STREET
FIGURE 6
0089-0247
ISSUE
DESCRIPTION
DRWN.
CHKD.
APPR.
DATE
CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200
MURPHY'S WASTE OIL SERVICE, INC.
252 AND 252 REAR SALEM STREET
WOBURN, MASSACHUSETTS
1966 AERIAL PHOTOGRAPH

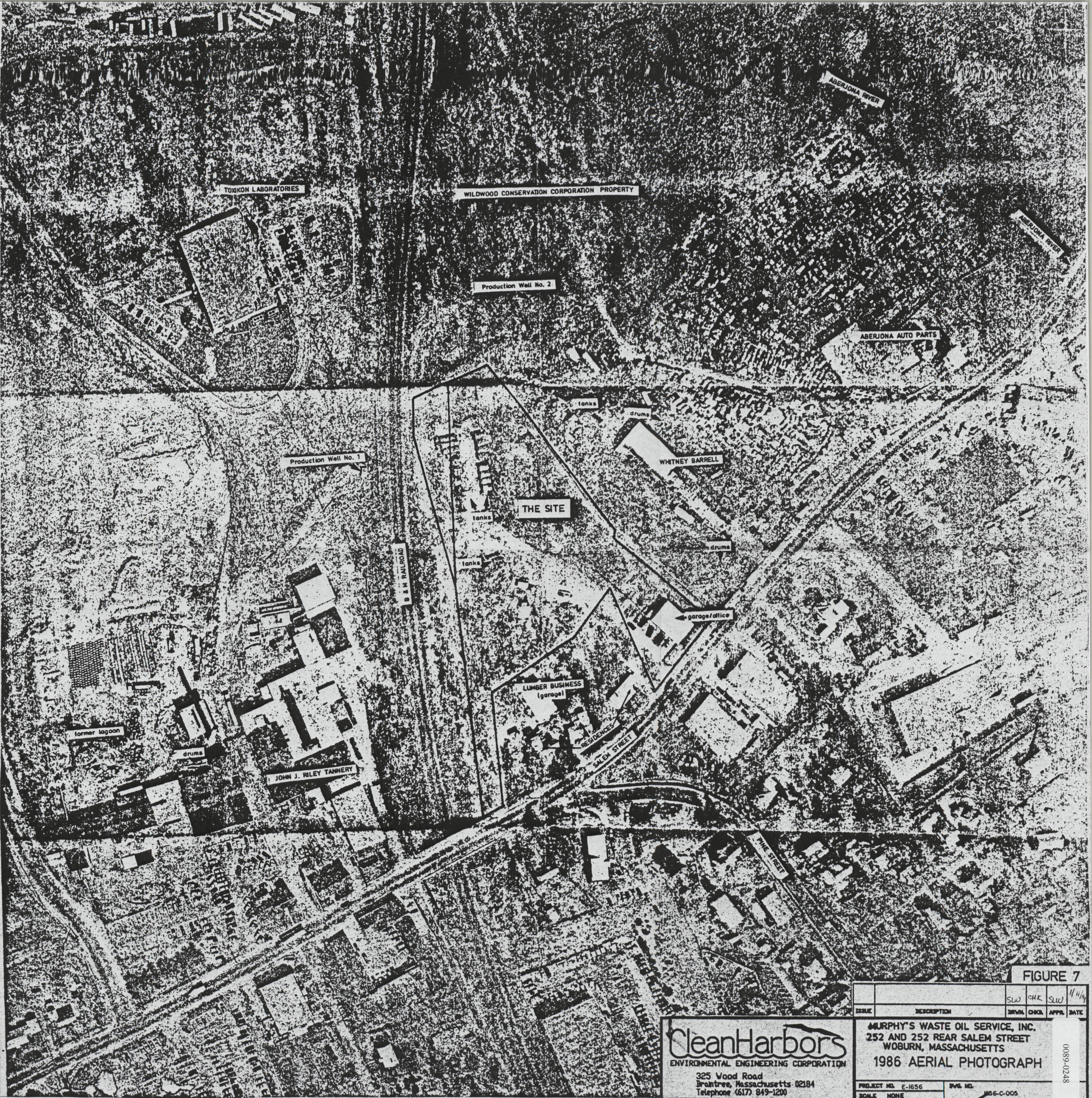


FIGURE 7

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
		SLW	CHK	SLW	11/4/87

Clean Harbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

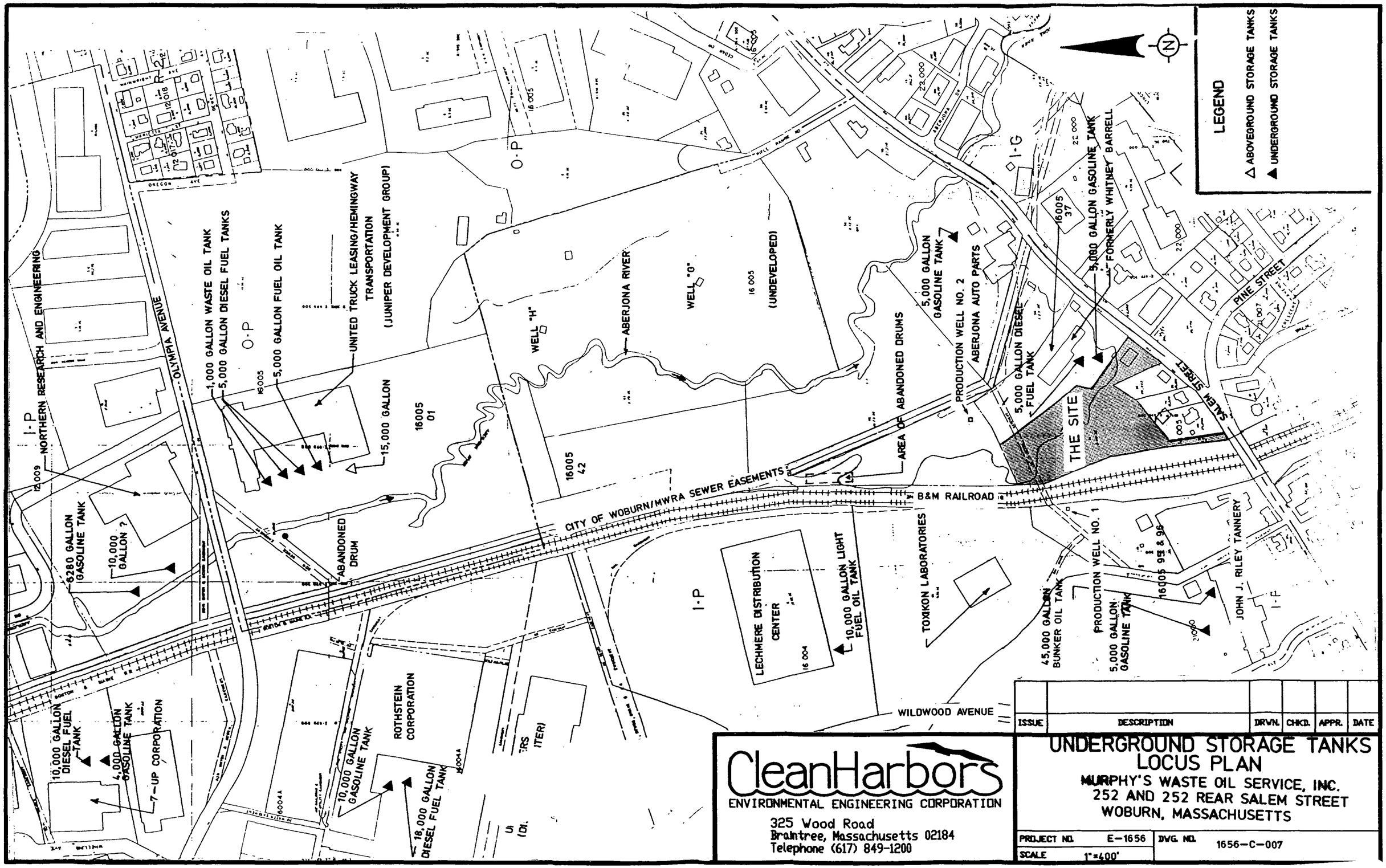
MURPHY'S WASTE OIL SERVICE, INC.
252 AND 252 REAR SALEM STREET
WOBURN, MASSACHUSETTS

1986 AERIAL PHOTOGRAPH

PROJECT NO. E-1656	DWG. NO. 1656-C-005
SCALE NONE	

0089-0248

FIGURE 8



ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

UNDERGROUND STORAGE TANKS LOCUS PLAN

MURPHY'S WASTE OIL SERVICE, INC.
252 AND 252 REAR SALEM STREET
WOBURN, MASSACHUSETTS

PROJECT NO.	E-1656	DWG. NO.	1656-C-007
SCALE	1"=400'		

BASE PLAN— CITY OF WOBURN ASSESSOR'S MAPS 16004 AND 16005

APPENDIX A

0089-0250

City of Woburn
Massachusetts

Telephone 935-1636

ROBERT E. DOHERTY
CHIEF OF DEPARTMENT

FIRE DEPARTMENT

124 Main Street - P. O. BOX 99
Woburn, Massachusetts 01801

December 1, 1982

Department of Environmental Quality Engineering
Division of Hazardous Wastes
One Winter Street
Boston, Massachusetts 02108

Re: Hazardous Waste Transportation
License Application
Murphy's Waste Oil Service

Dear Sir:

Mrs. Patricia Brady, director of the Woburn Conservation Commission, and I visited the waste motor and fuel oil facility in the rear of 252 alem Street on Tuesday, November 30, 1982. We spoke with both John and William Murphy, the owners, who provided us with a tour and description of their operation at this location. We also reviewed their contingency plan submitted to the Fire Department on November 19, 1982.

The Murphy family has conducted a waste oil business at this location for many years and in searching our files, I am unable to find a single incident where the department responded to this location.

Speaking with the fire prevention officer, Captain Robert MacDowell, he also has never had any problem with this location and has found the Murphy family to be very co-operative in the past.

The Woburn Fire Department has no objection to the issuance of a Hazardous Waste Transportation License to Murphy's Waste Oil Service. The operation is in compliance with the requirements of the department and appears to be well conducted.

Mrs. Brady noted the operation is not in the flood plane or wet lands and the Conservation Commission also has no objection to the issuance of this license.

Sincerely yours,

ROBERT E. DOHERTY
Fire Chief

cc: Mrs. Brady - Conservation Commission
Mr. Walker - Board of Health

0089-0251

APPENDIX B

0089-0252

APPENDIX B

Photographs (Concrete Dike Installation)

E-1652

E-1656

APPENDIX C

CleanHarbors

0089-0255

APPENDIX C

Underground Tank Permit

PLEASE POST ON PREMISE

CITY OF WOBURN

7369

PERMIT TO INSTALL — ALTER FUEL OIL BURNING EQUIPMENT

in accordance with provisions of Chapter 148, G. L., and Regulations made under authority thereof

Name John F. Murphy (Owner or occupant)

Address 252 Salem St.

Name Douglas W. Poole (Installer)

Address 16 Montvale Lane, Woburn, MA.

Burner

Name Wayne Burner (Bard)

Manufacturer Bard Furnace Mfg.

Model No. or Size 1-2

Type Gun Mass. Approval No. 147

Storage

Type of Tank Steel

Capacity 1000 (or) Size 11x4 ft.

Location Back of garage

____ gals. fuel oil may be temporarily stored and used for testing purposes.

Permit issued 11/13/79 expires ____

Head of Fire Department

Fee NONE Paid NONE By [illegible]

APPENDIX D

APPENDIX D

DEQE - Division Of Water Pollution Control

CleanHarbors

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF WATER POLLUTION CONTROL

On May 12, 1986, the DEQE - Division of Water Pollution Control issued an Administrative Order (Docket No. 619) to the City of Woburn in response to violations of the Clean Waters Act. The Order established a moratorium "on new connections to, and extensions of, the Woburn sewerage system and requires the City to undertake specific activities to upgrade the operation and maintenance of its sewerage system, and to submit periodic progress reports on the status of these activities." In December 1987, the sewer moratorium was lifted only for properties in the eastern portion of the City of Woburn. Wildwood Avenue, west of the site, depicts the area where the moratorium requirements are still imposed.

A letter prepared by the Division of Water Pollution Control addressed to a waste oil facility operator was found in DEQE Northeast Region files reviewed. This letter, dated November 3, 1978, addressed land spreading of waste oil. The letter stated that "to reduce any adverse environmental effects, the Division of Water Pollution Control has adopted the policy of limiting land spreading of waste oil to the period of May 15 to October 15 for this year. Therefore, please be advised that this method of disposal of waste oil by land spreading is to be suspended until May 15 of next year." Since the institution of the DEQE Division of Solid and Hazardous Waste in the early 1980's, this oil-spreading practice is no longer permissible. A copy of this letter is attached.

[redacted]

November 3, 1978

Bill Murphy Waste Oil
10 Millyan Road
[redacted], Massachusetts 01801

Re: [redacted]
Land Spreading of
Waste Oil

Gentlemen:

This letter is a follow up to the letter you received this past June concerning the land spreading of waste oil. To reduce any adverse environmental effects, the Division of Water Pollution Control has adopted the policy of limiting land spreading of waste oil to the period of May 15 to October 15 for this year. Therefore, please be advised that this method of disposal of waste oil by land spreading is to be suspended until May 15 of next year.

Thank you for your cooperation. If you have any questions please contact this office or the appropriate Division of Water Pollution Control Regional Office.

Very truly yours,

Thomas C. [illegible]
Director

TCM/[illegible]/rew

bcc: Southeast Regional Office
Western Regional Office

RECEIVED
EASTERN REGIONAL OFFICE
NOV 8 1978
MASS. DIVISION OF
WATER POLLUTION CONTROL

0089-0260

APPENDIX E

APPENDIX E

DEQE - Licensing Division Research

CleanHarbors

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING - LICENSING DIVISION RESEARCH

CHEE representatives reviewed the Murphy's Waste Oil Service, Inc. License File for the site on December 16, 1987 and February 10, 1988. In 1981, the DEQE - Division of Solid and Hazardous Waste was formed. Different divisions subsequently formed including the Licensing Division, relative to Massachusetts General Laws, Chapter 21C. Under this jurisdiction, Murphy's Waste Oil Service, Inc. was issued an Interim Hazardous Waste License (issued in 1981) and has been operating under this license since then. Prior to DEQE formation, the site operated under a US-EPA Hazardous Waste Permit. No additional information was available relative to site licensing in these DEQE files reviewed.

The Waste Analysis Plan by Murphy's Waste Oil Service, Inc. was included in these files reviewed. The waste oils were tested for: specific gravity, flash point, sulphur, water and sediment, BTU's per pound, BTU's per gallon, and chlorine. There was no information in these files indicating any violations relative to this Waste Analysis Plan.

Most of the documentation presented in the Murphy's Waste Oil Service, Inc. License File was relative to Notices of Non-compliance for late monthly reporting; license amendments and modifications; installation of the earth dike around the tanks; Notice of Violation (1981) relative to the Contingency Plan; and deficiencies in the insurance bond for the site. Each DEQE notification was accompanied with a Murphy's Waste Oil Service, Inc. correspondence.

Notations relative to the partially-buried 275-gallon tank, formerly located on the Central Section of the site, were also found in these files reviewed. The notes specified that the tank is a small home heating oil tank, which is half-buried. The tank was "brand new" and painted "Waste Oil ONLY - M001." Only "homeowners - mostly Woburn residents" were allowed to use the tank for waste oil disposal and the tank was then emptied each Saturday into a storage tank. The notation continued with there is a "paved area around the tank - no berm."

WOBURN
CONSERVATION COMMISSION
33 PLYMPTON STREET, WOBURN, MASSACHUSETTS 01801

(617) 938-7561

Date: September 15, 1988

Applicant's Name: Murphy's Waste Oil Service, Inc.
Applicant's Address: 252 Salem St., Woburn, MA 01801

Re: File #: 348-189/W88-10
Locus : 252 and 252 Rear Salem Street

Dear Sir/Madame:

Enclosed is the Order of Conditions/Permit which has been issued by the Woburn Conservation Commission for reference project.

It is respectfully suggested that you read this document carefully.

Please note that no work may proceed until the appeal period of ten days has elapsed (see condition #7), and until the Order has been recorded in the Registry of Deeds (see conditions #8 and #18). Also note that several other conditions must be met prior to commencement of work on site.

If you have any further questions on this matter, please contact the undersigned.

Sincerely,
Woburn Conservation Commission
Richard G. Cutts, P.E., Chairman

William J. Murphy
Conservation Administrator

WJM/gk

Enclosures

cc: DEQE, Wetlands Division, Northeast Region
Mayor
Building Commissioner
Ward Alderman

APPENDIX D

APPENDIX

Form 5

Commonwealth of Massachusetts

Woburn Wetlands
Permit # W88-10

DEQE File No. 348-189
(To be provided by DEQE)

City/Town WOBURN

Applicant Murphy's Waste Oil Service,

WETLANDS PERMIT.
Woburn Wetlands Ordinance
and

Order of Conditions
Massachusetts Wetlands Protection Act
G.L. c. 131, §40

From WOBURN CONSERVATION COMMISSION

To Murphy's Waste Oil Service, Inc. (Name of Applicant)
252 Salem Street
Address Woburn, MA 01801

Old Oil Realty Trust (Name of property owner)
16 Harriet Ave.
Address Burlington, MA 01803

This Order is issued and delivered as follows:

☐ by hand delivery to applicant or representative on September 15, 1988 (date)

☐ by certified mail, return receipt requested on _____ (date)

This project is located at 252 Salem Street

The property is recorded at the Registry of Middlesex

Book 13231 Page 240

Certificate (if registered) N/A

The Notice of Intent for this project was filed on August 17, 1988 (date)

The public hearing was closed on August 25, 1988 (date)

Findings

The Conservation Commission has reviewed the above-referenced Notice of Intent and plans and has held a public hearing on the project. Based on the information available to the Commission at this time, the Commission has determined that the area on which the proposed work is to be done is significant to the following interests in accordance with the Presumptions of Significance set forth in the regulations for each Area Subject to Protection Under the Act (check as appropriate):

☐ Public water supply
☐ Private water supply
☐ Ground water supply
☐ Flood control
☐ Storm damage prevention
☐ Prevention of pollution
☐ Land containing shellfish
☐ Fisheries
☐ Protection of wildlife habitat

APPENDIX D

0089-0266

Therefore, the Wob. Conservation Commission hereby finds that the following conditions are necessary, in accordance with the Performance Standards set forth in the regulations, to protect those interests checked above. The Commission orders that all work shall be performed in accordance with said conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications or other proposals submitted with the Notice of Intent, the conditions shall control.

General Conditions

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. This Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state or local statutes, ordinances, by-laws or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   (a) the work is a maintenance dredging project as provided for in the Act; or
   (b) the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance and both that date and the special circumstances warranting the extended time period are set forth in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. Any fill used in connection with this project shall be clean fill, containing no trash, refuse, rubbish or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper; cardboard, pipe, tires, ashes, refrigerators, motor vehicles or parts of any of the foregoing.
7. No work shall be undertaken until all administrative appeal periods from this Order have elapsed or, if such an appeal has been filed, until all proceedings before the Department have been completed.
8. No work shall be undertaken until the Final Order has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is to be done. The recording information shall be submitted to the Commission on the form at the end of this Order prior to commencement of the work.
9. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words, "Massachusetts Department of Environmental Quality Engineering, File Number 348-189 /W88-10 ".
10. Where the Department of Environmental Quality Engineering is requested to make a determination and to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before the Department.
11. Upon completion of the work described herein, the applicant shall forthwith request in writing that a Certificate of Compliance be issued stating that the work has been satisfactorily completed.
12. The work shall conform to the following plans and special conditions:

0089-0267

APPENDIX D

APPENDIX E

Plans:

Title	Dated	Signed and Stamped by:	On File with:
:ading and Erosion Control Plan	August 11,1988	Kenneth A Tarbell	Woburn Conservaiton Cc
Site Plan	7/8/88 revised 8/11/88	Kenneth A. Tarbell	" " "
'oundation and Slab Plan	2/24/88	Lee Forest Mount	" " "

**REVISION OF PLAN REQUIRED. SEE CONDITION #13.

Special Conditions (Use additional paper if necessary)

SEE ATTACHED SPECIAL CONDITIONS #13 - #30, ON PAGES 5-3C AND 5-3I

(Leave Space Blank)

APPENDIX D

APPENDIX E

0089-0268

(Leave Space Blank)

13. No work shall commence on site until the Commission has issued written approval of a revised plan which shall include the following: the relocation of erosion controls upgradient of the wetland boundary to the limit of work line.

14. Any change contemplated in the approved, revised plan (#13) shall be submitted to the Conservation Commission for its review and approval prior to implementation. If the Commission deems that a proposed change is major or substantial, a new hearing may be required.

15. Work shall conform in all respects to plans and supporting data cited in #12 & #13.

16. A copy of the Order of Conditions and Wetlands Permit shall be posted on site. Also maintained on site shall be copies of all plans, reports and supporting documents cited in condition #12 & #13.

17. Prior to the commencement of work on site, the petitioner or his/her agent shall provide to the Commission written notification giving the name, title, address and telephone numbers of the person or persons designated by the petitioner to be responsible for compliance with the conditions of this Order on site.

18. The petitioner shall provide to the Commission, prior to commencement of work on site, an attested copy of this Order of Conditions showing either the instrument number or the Book and Page number evidencing recordation at the Middlesex, South District, Registry of Deeds.

19. The petitioner shall provide to the Conservation Commission, prior to commencement of work on site, copies of all other permits, variances, licenses or determinations which may be issued by other regulatory agencies, such as Site Plan Review permit, Corps of Engineers permit, Massachusetts Waterway License, and DEQE hazardous waste facility permit.

20. The petitioner shall provide 48 hours notice to the Conservation Commission prior to commencement of activity on site.

21. Erosion controls, consistent with USDA Soil Conservation Service Guidelines, shall be installed and maintained so as to be effective for the duration of the project. The petitioner shall notify the Conservation Commission office when the controls have been installed.

22. If there is an interruption of more than thirty days between completion of grading and revegetation, the petitioner shall sow all disturbed areas with annual rye grass, to prevent erosion.

23. The members and agents of the Conservation Commission shall have the right to enter the site to verify compliance with this order and to require the submittal of additional data deemed necessary by the Commission for that verification.

24. This order is applicable to any successor in interest or in control.

25. Prior to requesting a Certificate of Compliance, the petitioner shall provide to the Commission the following: An as-built plan prepared and signed by a registered professional engineer or land surveyor; and colored photographs of the site, which shall show all altered areas under the jurisdiction of the Conservation Commission. The photographs shall be labeled, dated and keyed to the as-built plan for ready identification.

26. Prior to commencement of work on site, the limit of work line shall be staked in the field, using 4' to 5' stakes, spaced 25' apart; stakes shall be flagged with surveyor's tape and shall in remain in place during construction.

27. Following the proposed contouring and grading, all exposed areas shall be loamed and seeded in accordance with USDA Soil Conservation Guidelines for permanent stabilization. In the event of unfavorable weather conditions, these exposed areas should be temporarily stabilized utilizing acceptable mulching materials and methods.

28. All cuttings, debris and other disposables from the project shall be taken off site for appropriate disposal.

29. Monthly written construction reports shall be submitted to the Woburn Conservation Commission during all earthwork and drainage construction. The first such report shall be submitted thirty days after commencement of activity on site.

30. The use of all chemicals, including salt, for snow and ice control in the parking areas of the site is prohibited. This condition shall remain in effect in perpetuity.

Issued By WOBURN Conservation Commission

Signature(s) Richard H. Cutts

[illegible] Paul D. Wise

[illegible]

Duane P. Clark

This Order must be signed by a majority of the Conservation Commission.

On this 15th day of September 1988, before me personally appeared Above Names, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he/she executed the same as his/her free act and deed.

Gail M. Kearns December 16, 1994

Notary Public My commission expires

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land upon which the proposed work is to be done or any ten residents of the city or town in which such land is located are hereby notified of their right to request the Department of Environmental Quality Engineering to issue a Superseding Order, providing the request is made by certified mail or hand delivery to the Department within ten days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and the applicant.

Detach on dotted line and submit to the _____ prior to commencement of work.

To _____ Issuing Authority

Please be advised that the Order of Conditions for the project at _____

File Number _____ has been recorded at the Registry of _____ and

has been noted in the chain of title of the affected property in accordance with General Condition 8 on _____, 19____

If recorded land, the instrument number which identifies this transaction is _____

If registered land, the document number which identifies this transaction is _____

Signature _____ Applicant

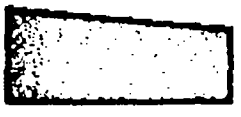
APPENDIX D

APPENDIX

ALL FLEXOSPAN Buildings are manufactured in our modern, integrated plant and comply with state, local and national codes as required.

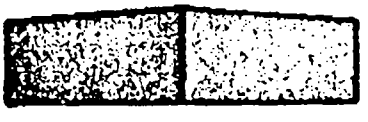
FLEXOSPAN Buildings are offered in clear-span rigid frame and multiple-span design. Our standard rigid frames have a 1:12 roof pitch, topped with a special die-formed ridge cap. However, FLEXOSPAN rigid frames are custom-built to any roof pitch desired.

Standard Clear-Span Rigid Frame



Single-Slope Rigid Frame

FLEXOSPAN multiple-span models (sized as required) are available in the following:

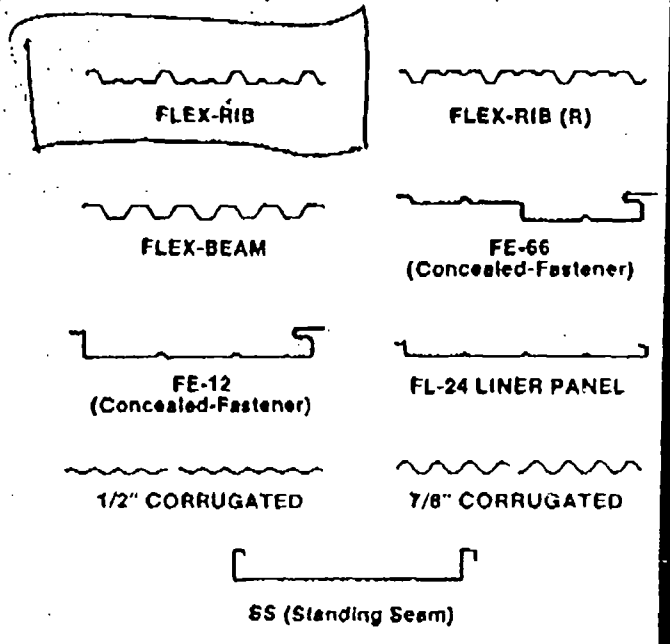


2-Span

3-Span

4-Span

FLEXOSPAN offers the industry's widest range of quality roofing and siding panels, all produced in-house. ***(The cover of a building is normally considered as 50% of the structure, which indicates how important this feature is.)***



As a major supplier of sheeting, with over 1 million square feet of in-stock inventory, FLEXOSPAN offers 8 attractive colors, plus white. Optional types of coatings are offered with 10-year standard manufacturer's warranty. Standard 20-year warranties are available on Galvalume and Type 2 Aluminized Steel.

FLEXOSPAN panels are available in 18 Ga. through 28 Ga. thicknesses. Exterior panels can be readily combined with liner panels, sub-girts and insulation to form a "sandwich" type insulated wall system.

FLEXOSPAN offers complete accessory packages including doors, windows, insulation, trim, mansards, etc.

Contact the factory for further technical data. For any additional information, call or write:

FLEXOSPAN STEEL BUILDINGS, INC.
Box 515 Railroad Street
[illegible] (419) 276-7221

0089-0273

FLEXOSPAN

APPENDIX E

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

LIST OF NOTIFIED ABUTTORS

Mr. James J. Fitzpatrick
246 Salem Street
Woburn, MA 01801

Alarm Devices Supplies Inc.
245 Salem Street
Woburn, MA 01801

Amdur Braude Riley Inc.
226 Salem Street
Woburn, MA 01801

John J. Riley Tannery
228 Salem Street
Woburn, MA

Toxicon Corporation
225 Wildwood Road
Woburn, MA 01801

Allen Glass Company
263 Salem Street
Woburn, MA 01801

John E. Whitney
4 Campground Road
Boxford, MA 01921

Wildwood Conservation
228 Salem Street
Woburn, MA 01801

Subscribed and sworn before me th
31st day of Jan
19 92.

Rita Odell - Notary Public
My commission expires 05/29/92.

CleanHarbors

ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD
BRAINTREE, MA 02184

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 974 246 160

MAIL

Allen Glass Company
263 Salem Street
Woburn, MA 01801

CleanHarbors

ENVIRONMENTAL SERVICES COMPANIES
P.O. Box 327
325 Wood Road
Braintree, MA 02184

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 974 246 158

MAIL

John E. Whitney
4 Campground Road
Boxford, MA 01921

CleanHarbors

ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD
BRAINTREE, MA 02184

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 974 246 159

MAIL

Wildwood Conservation
228 Salem Street
Woburn, MA 01801

0089-0275

CleanHarbors
NVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD
BRAINTREE, MA 02184

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 974 246 164

MAIL

Alarm Devices Supplies Inc.
245 Salem Street
Woburn, MA 01801

CleanHarbors
VIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD
BRAINTREE, MA 02184

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 974 246 157

MAIL

0089-0276

UNITED STATES POSTAL SERVICE

OFFICIAL BUSINESS

Print your name, address and ZIP Code in the space below.
- Complete items 1, 2, 3, and 4 on the reverse.
- Attach to front of article if space permits, otherwise affix to back of article.
- Endorse article "Return Receipt Requested" adjacent to number.

U.S.MAIL

PENALTY FOR PRIVATE USE, $300

RETURN TO

Print Sender's name, address, and ZIP Code in the space below.

CLEAN HARBORS COMPANIES
325 Wood Road, P.O. Box 827
Braintree, MA 02184

ATT: ENGINEERING
JILL A. McGILLIVRAY

UNITED STATES POSTAL SERVICE

OFFICIAL BUSINESS

SENDER INSTRUCTIONS
Print your name, address and ZIP Code in the space below.
- Complete items 1, 2, 3, and 4 on the reverse.
- Attach to front of article if space permits, otherwise affix to back of article.
- Endorse article "Return Receipt Requested" adjacent to number.

U.S.MAIL

PENALTY FOR PRIVATE USE, $300

RETURN TO

Print Sender's name, address, and ZIP Code in the space below.

CLEAN HARBORS COMPANIES
325 Wood Road, P.O. Box 827
Braintree, MA 02184

ATT: ENGINEERING
Jill McGillivray

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery

3. Article Addressed to:
Alarm Devices Supply Inc.
245 Salem St.
Woburn, MA 01801

4. Article Number

Type of Service:
☐ Registered ☐ Insured
☐ Certified ☐ COD
☒ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X

7. Date of Delivery
12-30-89

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
Andover Brade Riley Inc.
226 Salem St
Woburn, MA 01801

4. Article Number

Type of Service:
☐ Registered ☐ Insured
☐ Certified ☐ COD
☒ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X

7. Date of Delivery
12-29-89

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

WOBURN
CONSERVATION COMMISSION

Kennedy J.H.S., Middle Street, Woburn, Ma. 01801
(617) 938-7561

NOTICE TO ABUTTERS
WOBURN WETLANDS ORDINANCE

Certified Mail#_____
or
Date of Hand Delivery_____

E:_____

_____
(abutter) address

M: Murphy's Waste Oil Service, Inc., 252 Salem Street, Woburn, MA (617) 935-9066
(applicant) address telephone#

E: Property identified on Woburn Assessors' Map# P-16 Block B-005
Parcel 41 located at 252 Salem Street, Woburn, MA 01801

Pursuant to the requirments of the Woburn Wetlands Ordinance, I am writing to advise that I have filed with the Woburn Conservation the following:

X An ammendment to the application for Wetlands Permit

_____ A Request for the Determination of the Applicability of the Woburn Wetlands Ordinance to either the property identified and/or work I propose to do on said property

The Woburn Wetlands Regulations define abutters as those whose proper sically touches the property identified above or whose property lies acr raveled way or railroad bed from the property identified above.

The Woburn Conservation Commission will be holding a public hearing c filing within 21 days. Notice of the public hearing will be given at lea e days prior to the hearing, in the Daily Times & Chronicle, Woburn edit ns for this project and a copy of the application are on file with the burn Conservation Commission, Kennedy J.H.S., Middle Street, Woburn. If have any questions, you may contact me or the Conservation Commission.

0089-0279

City of Woburn

DEPARTMENT OF INSPECTION SERVICES
APPLICATION FOR BUILDING PERMIT
Edward A. J. Poskus, Building Commissioner

SEP 26 1988

Permit No. _____
Fee _____
Date Issued _____

PERMIT MUST BE OBTAINED BEFORE BEGINNING WORK. Location, ownership, and detail must be correct, complete and legible. A separate application is required for every structure. Duplicate plans must be filed with this application together with two plot plans showing setbacks of proposed structure, all existing structures, driveways, turnarounds, water lines and sewer lines.

1. Location 252 Salem Street Block P-16 Lot 41 Zone I-P
2. Owner Old Oil Realty Trust Address 16 Harriet Ave.Burlington Tel. No. 272-8188
3. Tenant Murphy's Waste Oil Services, Inc. Tel. No. 272-8188
4. Contractor Paul Whiting Gen.Welding/Design
   Address 609 Pleasant St., Weymouth, MA
   Tel. No. (617)331-5600 License 046106
5. Architect Lee Forrest Mount
   Address 609 Pleasant St., Weymouth, MA
   Tel. No. (617)331-5600 License 21193
6. Proposed use Waste Oil Storage Facility No. of Families n/a
7. Was Special Permit Received n/a Date _____
8. Was Variance Granted (Case No.) n/a Date _____
9. Is Lot in Flood Plain? no DEQE No. _____
10. Size of Lot 3.4 acres Frontage 172' Rear 92.60 Left 778.96 Right 642.35
11. Setback: Front 55' Rear 330' Left 34' Right 165'
12. Structure Size 134'7" x80'3" Sq. Ft. 8273 Height 30" No. of Stories 2
    Front 80'3" Rear 67'3" Left 134'7" Right 134'7"
    No. of Rooms n/a Bedrooms _____ Baths _____ Fireplaces _____
13. % of Lot Covered 7.25% [redacted]
14. [redacted]
15. Foundation Erected On: Earth yes Rock no Piles no
16. Footing: Material concrete Thickness 12" Width 24"
17. Foundation: Material concrete Thickness 12" Width _____
18. [redacted] Pitch _____ Hip _____ Mansard _____
19. Garage: n/a Attached _____ Detached _____ Under _____
20. Insulation Type n/a R-Value: Walls _____ Attic _____ Foundation _____
21. Type of Heat n/a Fuel or Power Type _____
22. Will there be new plumbing no Elec. _____ Gas _____

Description of Work to be Done Upgrade an existing waste oil storage facility with concrete containment for tanks and concrete utility pad and truck pad.

Estimated Value $150,000.00 Value Approved by Bldg. Comm. _____ Fee _____

Applicant must obtain the following approvals prior to issuance of Building or Occupancy Permit.

Public Works Dept.	Date	Sewer Dept.	Date
Fire Dept.	Date 9/25/88	Water Dept.	Date
Board of Health	Date	Wire Dept.	Date
Planning Board	Date	Plumbing Dept.	Date
Conservation Commission	Date 9/26/88	Approved by Order of Conditions #348-189/W98-10	

CALL 24 HOURS IN ADVANCE OF ANY REQUIRED INSPECTION — 14 days notice required by Department of Inspection Services and Board of Health for occupancy sign-off.

One set of plans bearing the approval of the Building Inspector shall be kept on the job site at all times and exhibited on demand of the Inspector. Permits shall become void six months after date of issue unless construction has commenced. False statements will mean revocation of permit. The undersigned assumes all responsibility for compliance with the State Building Code and other applicable codes, ordinances, by-laws, rules and regulations of the City of Woburn. The above is subscribed to and executed by me under the penalties of perjury in accordance with Section 1A of Chapter 286, G.L.

Signature of Owner _____ Address 16 Harriet Ave, Burlington, MA.

Permit No. _____

0089-0280

DATE Oct. 26, 1988

NO. 1212-88

CITY OF WOBURN
BUILDING PERMIT

932 - 4440

BLOCK .....

Lot .....

POST ON SITE

Department of Inspection Services
City Hall

This May Certify That Old Oil Realty Trust has permission to upgrade existing waste oil storage facility Bldg. sit on: No 252 Street Salem St

provided that the person a[illegible] this permit shall in every [illegible] conform to the terms of the [illegible]plication on file in this office and to the provisions of the [illegible]nd Ordinance relating [illegible]nstruction, Alteration [illegible]enance of Buildings in the City of Woburn and shall be[illegible]n said building withi[illegible]hs from the date her[illegible]osecute the work thereon to a speedy completion. At the co[illegible]f work, a final insp[illegible]e made by each ins[illegible]o will sign this card certifying approval of work under his ju[illegible] This card will be[illegible]e Building Depar[illegible]btain an Occupancy Permit.

NO BUILDING SHALL BE [illegible]ED WITHOU[illegible] Building Com[illegible]
OCCUPANCY PERMIT.

	Approved By		Approved By
Underground Wiring		[illegible]round [illegible]g & Gas	Excav[illegible]
Wiring Before Insulation		[illegible] or Ga[illegible] [illegible]sulatio	Footi[illegible] Drai[illegible]
Wiring Completed		[illegible] & Ga[illegible]	Ro[illegible] St[illegible] and Fire for Insulation
OCCUPANCY SIGN OFF			
ELECTRICAL INSPECTOR			
HEALTH AGENT			
PLUMBING INSPECTOR			
GAS INSPECTOR			
FIRE DEPARTMENT			
BUILDING INSPECTOR			

0089-0281

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

February 13, 1989

Woburn Conservation Commission
33 Plympton Street
Woburn, Massachusetts 01801

Applicant's Name: Murphy's Waste Oil Service, Inc.
Applicant's Address: 252 Salem Street
Woburn, Massachusetts 01801

Re: Amendment to Notice of Intent Submitted August 12, 1988
File #: 348-189/W88-10
Locus: 252 and 252 Rear Salem Street (the site)

Enclosed please find an amendment to the Notice of Intent (NOI) submitted August 12, 1988, eight copies of the revised Site Plan (Appendix A) and eight copies of the revised Grading and Erosion Control Plan (Appendix B). Said amendment is for an additional scope of work subsequent to that which is permitted in the Wetlands Permit and Order of Conditions, issued by the City of Woburn Conservation Commission (WCC) (dated September 15, 1988).

The site, gently sloping in an easterly direction, is situated in the western portion of the Aberjona River Basin. The site consists of one parcel of land zoned "industrial park" which has a total area of 3.4 acres. The City of Woburn Assessor's Office designates the site as Map 16, Block 005, Parcel 41. The site is recorded at the Middlesex Registry of Deeds, Book 13231, Page 240. Site boundaries and other details are shown on the Site Plan.

On May 3, 1988, pursuant to Massachusetts Department of Environmental Quality Engineering (DEQE) Hazardous Waste Regulation 310 CMR 30.099(8), Murphy's Waste Oil Services, Inc. submitted to the DEQE a Modification Request to Interim Hazardous Waste License No. 14. All proposed modifications to Murphy's are to bring the facility into compliance with the requirements of DEQE 310 CMR 30.000 Hazardous Waste Regulations.

The work proposed for the original NOI and subsequently approved by WCC on September 15, 1988 (see attached Wetlands Permit #W88-10 and Order of Conditions in Appendix C), encompassed an upgrade of security measures and waste oil storage and handling secondary containment areas.

Proposed for security measures was an eight foot high fence (six feet-chain link fence and two feet-barbed wire), which completely surrounds the active portion of the facility and provides a means of control for entry into the

active portion of the facility (i.e., gates). This barrier is in conformance with DEQE Hazardous Waste Regulation 310 CMR 30.514(2)(b)(3). This fence will not be affected by the proposed amendment.

The permitted foundation and slab for the containment dike and truck loading containment pad will remain in specification with submitted detailed engineering drawings, attached in the original NOI - Appendix F(5) and will not be affected by the proposed amendment. The proposed dike walls and impervious concrete base underlying the storage tanks will have a secondary containment system which exceeds the secondary containment requirements of DEQE Hazardous Waste Regulation 310 CMR 30.694. Any and all liquids that may be collected within the containment dike will be properly handled and treated within the proposed facility.

The proposed amendment to the NOI includes the addition of a one-story (12-foot high) concrete masonry unit building (43' x 29') with bar joist roof deck and rubber roofing to the utility area of the previously permitted concrete containment dike and truck loading pad. In addition, Murphy's plans to install a steel frame "Flexrib" roof (peak height 24'-4 1/2") over the entire oil tank storage containment dike and truck loading/offloading containment pad. The roof will prevent precipitation from being collected inside the containment systems. The proposed building and roof are permitted under City of Woburn Building Permit 1212-88, dated October 26, 1988. Attached in Appendix D are detailed engineering drawings on the proposed building and roof structure.

Murphy's Waste Oil Services, Inc. plans to upgrade the fire control equipment in order to comply with 310 CMR 30.524(2)(c) standards. Proposed is the installation of a new foam-water automatic fire suppression system which consists of a ceiling sprinkler system under the roof of the tank truck loading/unloading dock and the waste oil tank farm. The sprinkler design is based on the requirements of the National Fire Protection Association Standards.

Plans for a lavatory within the proposed building area necessitates the installation of a six- to eight- inch diameter polyvinyl chloride (PVC) sanitary sewer pipe. Plans have been submitted for comment to Mr. Robert Simonds, Superintendent, Woburn Public Works Department.

All sewer work and design are to conform to the City of Woburn, Massachusetts Department of Public Works "Rules and Regulations for the Installation of Sewer Trunks, Manholes, Laterals and Service Connections" and to Commonwealth of Massachusetts Regulation 310 CMR 15.00: The State Environmental Code Title 5: Minimum Requirements for the Subsurface Disposal of Sanitary Sewage. Existing and proposed sewer structures are shown on the Site Plan.

As in the original NOI, the condition remains, there is no work proposed within the Bordering Land Subject to Flooding nor within the Bordering Vegetated Wetland. Approximately 2000 square feet of the permitted containment dike/truck loading pad and the proposed office building and roof are within Woburn's 150 foot Buffer Zone.

To control erosion and avoid sedimentation of the resource area additional staked haybales will be placed along the edge of work in the area of the proposed sewer construction. In conformance with the original NOI statements and the Order of Conditions issued by the WCC, staked haybales will be maintained for the duration of said work and until permanent erosion control measures are established. The Grading and Erosion Control Plan and the Site Plan designate the above described work.

In accordance with the Rules and Regulation for the Administration of the Woburn Wetlands Ordinance of 1985 (As Amended in 1987) and the request set forth by the Woburn Conservation Commission at a preliminary hearing held February 1, 1989, abutters to Murphy's Waste Oil were notified. Enclosed is a certified list of notified abutters, a copy of an amended notification Form B and the certified mail return receipts (Appendix E).

If you have any questions or concerns on this matter, please contact Clean Harbors Environmental Engineering Corporation (617) 849-1200.

"I hereby certify under the pains and penalties of perjury that the foregoing amendment to the Notice of Intent (submitted August 12, 1988 for 252 and 252 Rear Salem Street) and accompanying plan and document are true and complete to the best of my knowledge."

Sincerely,

Joan E. Murphy
Applicant, Murphy's Waste Oil

William J. St. Hilaire, P.E.
Vice President
Clean Harbors Environmental Engineering Corporation

Enclosure

jam/

cc: DEQE, Northeast Region-Wetlands Division
Robert Simonds, City of Woburn Department of Public Works
Paul Whiting, Vice President, General Welding and Design

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

February 17, 1989
E1656

Department of Environmental Quality Engineering (DEQE)
Division of Hazardous Waste
Five Commonwealth Avenue
Woburn, Massachusetts 01801

Attention: John Fitzgerald

RE: Request for DEQE for Short-Term Measures Approval
Murphy's Waste Oils Services, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts (the site)

This letter is a request for a DEQE Short - Term Measure approval which would allow Clean Harbors and Clean Harbors Environmental Engineering Corporation (CHEE) to proceed with proposed building construction plans, scheduled to commence in early March 1989. In order to comply with applicable geotechnical/structural requirements, Short - Term Measures must be implemented. These measures were developed based on contamination encountered at the site.

Soil borings/groundwater monitoring wells were completed by CHEE (as part of a Phase I - Site Investigation study) on the central portion of the site between January 26 and February 3, 1989. The purpose of this subsurface investigation was to confirm petroleum contamination and delineate its extent in this area so that a remediation and construction plan could be developed for a proposed facility building. Attached, please find the tabulated laboratory results from the CHEE subsurface investigation and a site plan showing the exploration locations. These results generally indicate a two- to four-foot layer of petroleum (waste oil) contaminated soil which exists below a six- to eight-foot layer of uncontaminated fill material, in the area of the proposed building footprint. The contamination encounterd is limited to the immediate vicinity of the proposed building area. The contamination does not appear to be migrating off the site.

A thorough evaluation of the soils and contaminants encountered, in the proposed building area only, was performed by CHEE (including geotechnical and chemical engineers). Based on the data evaluation, the Short - Term Measures outlined, (in accordance with our conversations) were developed for the proposed building area.

With DEQE approval, CHEE proposes to excavate and stockpile the uncontaminated, upper six to eight feet of fill material in the central portion of the site (in the area of the proposed building. soil excavation will continue a distance 10 feet beyond the building footprint). The underlying petroleum contaminated soils (conservatively estimated to be between 1,000 and 1,500 cubic yards) would then be excavated and isolated on the site for proper disposal. Isolation of the soils. will include temporary stockpiling on and covering with polyethylene sheets. The pile will be

placed as far away from any wetland areas as feasibly possible; the stockpile location was chosen based on accessibility needs to the proposed building area and topographic limitations. The proposed location of the stockpile is presented on the attached figure. Additional mitigative measures will include use of hay bails surrounding the stockpile to prevent migration of any eroded materials from the stockpile area. Upon complete excavation of the contaminated soils in the proposed building location, the usable uncontaminated fill material and additional off-site fill material meeting project specifications will be used as structural fill. The structural fill will be placed in compacted lifts for adequate support of the proposed building loads. Any structurally unsuitable fill material from the uncontaminated soil will be separated from the usable fill materials.

CHEE is currently in the process of completing a Phase I - Site Investigation study for the Murphy's Waste Oil Services, Inc. property. The completed Phase I report will be submitted to the DEQE and will include documentation of the Short - Term Measure activities. Soil samples will be collected and laboratory analyzed for disposal parameters. The report will include a detailed description and evaluation of the Short - Term Measures, soil disposal activities and all Uniform Hazardous Waste Manifests or appropriate documentation of disposal. If this request is approved by the DEQE by February 27, 1989, CHEE will proceed with the Short - Term Measures and building construction. Please contact the undersigned at (617) 849-1200 if there are have any questions regarding this request.

Sincerely,

William St. Hilaire

William St. Hilaire, P.E.
Vice President

chk/slw:mac
attachments

cc: The City of Woburn Conservation Commission
DEQE - Wetlands
Al Nardone - DEQE
Abutting property occupant

Table No. I
GROUNDWATER SAMPLE RESULTS (EPA Method 624)
Volatile Organic Compounds

Murphy's Waste Oil, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts
(All data reported in parts per billion, ppb)

Monitoring Well Identification	W-89-S1	W-89-S3	W-89-S4	W-89-S14	W-89-S15	W-89-S16	W-89-S17	W-89-S18
Sample Date	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89
BTEX (MDL)								
Benzene (5)	ND	ND	ND	ND	ND	ND	TR	ND
Toluene (5)	TR	ND	ND	ND	ND	ND	9	ND
Ethylbenzene (5)	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (5)	ND	ND	ND	ND	ND	ND	19	ND
TOTAL BTEX	TR	ND	ND	ND	ND	ND	28+	ND
Additional Hydrocarbons								
trans 1,2-Dichloroethane (5)	20	ND	ND	6	ND	TR	93	8
Tetrachloroethene (5)	ND	ND	ND	ND	ND	6	ND	ND
Trichloroethene (5)	ND	ND	ND	ND	ND	ND	TR	TR
Acetone (20)	ND	ND	ND	ND	ND	99	ND	ND

MDL = Laboratory Method Detection Levels
ND = below MDL
TR = trace
Base Neutral and Acid results for groundwater sample W-89-S1 and W-89-S17 will be available February 21, 1989.

Table No. II
Groundwater Sample Results
Total & Petroleum Hydrocarbon Oil and Grease by IR

Murphy's Waste Oil, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts
(All data reported in parts per million, ppm)

Monitoring Well Identification	W-89-S1	W-89-S3	W-89-S4	W-89-S14	W-89-S15	W-89-S16	W-89-S17	W-89-S18
Sample Date	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89	2/3/89
Oil and Grease (MDL)								
Total (0.1)	67	ND	2.3	2.3	ND	3.0		48
Petroleum (0.1)	56	ND	1.3	1.7	ND	2.9		40

MDL = Laboratory Method Detection Levels
ND = below MDL
- = not tested

Table No. III
SOIL BORING SAMPLE RESULTS, Environmental Borings - Central
Volatile Organic Compounds (EPA METHOD 8240), Base Neutral and Acids

Murphy's Waste Oil, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts
(All data reported in parts per billion, ppb)

Soil Boring Identification	W-89-S1			W-89-S3		W-89-S4				W-89-S14	W-89-S15		W-89-S16		W-89-S17		W-89-S18			
Sample I.D.	SS - 1	SS - 4	SS - 6	SS - 1	SS - 3	SS - 1	SS - 3	SS - 4	SS - 5	SS - 1	SS - 1	SS - 4	SS - 1	SS - 3	SS - 1	SS - 3	SS - 1	SS - 2	SS - 3	SS - 4
Sample Date	31-Jan	31-Jan	31-Jan	1-Feb	1-Feb	26-Jan	26-Jan	26-Jan	26-Jan	27-Jan	3-Feb	3-Feb	1-Feb	1-Feb	1-Feb	1-Feb	30-Jan	30-Jan	30-Jan	30-Jan
Depths	0 - 2	6 - 8	10 - 12	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	15 - 17	0 - 2	0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8	0 - 2	4 - 6	6 - 8	8 - 10
BTEX (MDL)																				
Benzene (5)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene (5)	ND	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22	TR
Ethylbenzene (5)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (5)	ND	ND	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND	ND	TR	TR	ND	ND	ND	ND
TOTAL BTEX	ND	ND	10	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND	ND	TR	TR	ND	ND	22	TR
Additional Hydrocarbons:																				
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TR	71
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TR	ND
trans 1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	27
Methylene Chloride	ND	ND	ND	16	ND	ND	ND	ND	ND	TR	ND	ND	TR	ND	12	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TR
BNA	-	-	-	-	-	-	ND	ND	-	-	-	-	-	-	-	-	-	-	ND	-

MDL = Laboratory Method Detection Levels
ND = below MDL
TR = trace
* BNA results for soil sample W-89-S17 SS - 3 will be available February 21, 1989.

Table No. 4
Soil Boring Sample Results, Environmental Borings - Central
Polychlorinated Biphenal Compounds (PCB)
Phenol and Sulfides

Murphy's Waste Oil, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts
(All data reported in parts per million, ppm)

Monitoring Well Identification	W-89-S1					W-89-S3					W-89-S4				W-89-S14			
Sample I.D.	SS - 1	SS - 2	SS - 4	SS - 5	SS - 6	SS - 1	SS - 2	SS - 3	SS - 4	SS - 5	1	2	3	4	SS - 1	SS - 2	SS - 3	SS - 4
Sample Date*	1/31	1/31	1/31	1/31	1/31	2/1	2/1	2/1	2/1	2/1	1/26	1/26	1/26	1/26	1/27	1/27	1/27	1/27
Depths	0-2	2-4	6-8	8-10	10-12	0-2	4-6	6-8	8-10	10-12	0-2	4-6	6-8	8-10	0-2	4-6	6-8	8-10
Oil and Grease																		
Total (10)	330	470	720	21000	97	590	110	19	13	13	27	3700	400	89	100	5400	8800	92
Petroleum Hydrocarbon (10)	250	360	370	18000	85	380	62	ND	ND	ND	19	1500	280	63	67	4300	6500	87
PCB's																		
Aroclor 1254 (1.0)	-	-	ND	ND	-	-	-	-	-	-	-	-	-	0.2	-	ND	-	-
Phenols (.45)	-	-	ND	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-
Sulfide Total	-	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

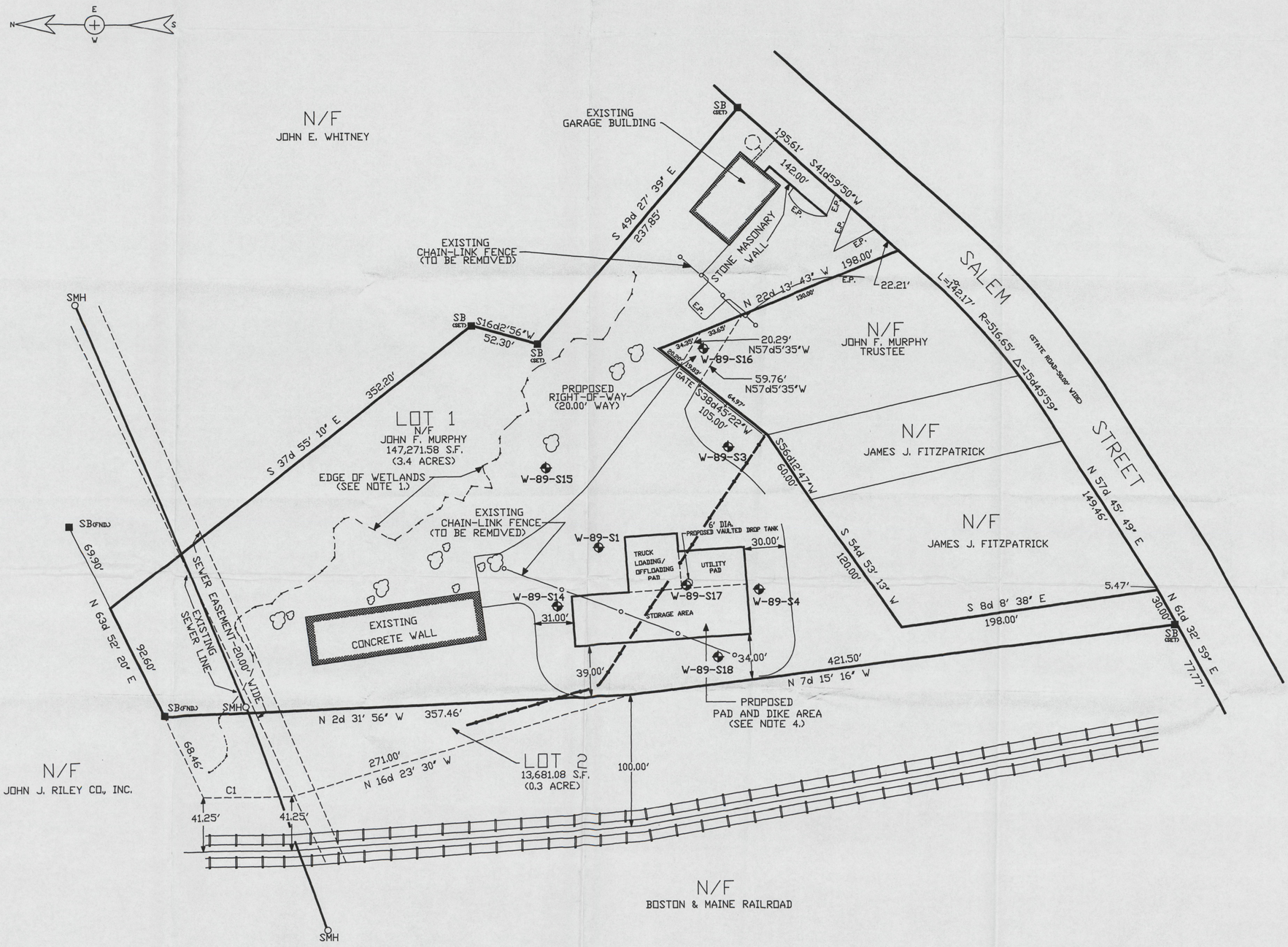
MDL = Laboratory Method Detection Levels
ND = Below MDL
- = not tested
* = All samples collected in 1989

Table No. 4 (continued)
Soil Boring Sample Results, Environmental Borings - Central
Polychlorinated Biphenal Compounds (PCB)
Phenol and Sulfides

Murphy's Waste Oil, Inc.
252 and 252 Rear Salem Street
Woburn, Massachusetts
(All data reported in parts per million, ppm)

Monitoring Well Identification	W-89-S15	W-89-S15				W-89-S16					W-89-S17				W-89-S18			
Sample I.D.	1	1	2	3	4	1	2	3	4	4	1	2	3	4	1	2	3	4
Sample Date	2/3	2/3	2/3	2/3	2/3	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	1/30	1/30	1/30	1/30	1/30
Depths	0-2	4-6	6-8	8-10	15-17	0-2	4-6	6-8	8-10	10-12	0-2	4-6	6-8	8-10	0-2	4-6	6-8	8-10
Oil and Grease																		
Total (10)	210	75	13	ND	13	13	ND	ND	28	ND	550	820	3900	16000	110	390	26000	6600
Petroleum Hydrocarbon (10)	200	37	13	ND	13	13	ND	ND	14	ND	350	510	3600	14000	31	140	20000	5100
PCB's																		
Aroclor 1254 (1.0)	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	-	ND	-
Phenols (.45)	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-	-
Sullide Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MDL = Laboratory Method Detection Levels
ND = below MDL
- = not tested



LEGEND

- SMH ○ SEWER MANHOLE (EXISTING)
- SB (FND.) ■ STONE BOUND WITH DRILL HOLE (FOUND & HELD)
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE.
- LIMIT OF BUFFER ZONE (SEE NOTE 2)
- E.P. EDGE OF PAVEMENT (EXISTING)
- EXISTING TREES/SHRUBS
- W-89-S15 ⊕ ENVIRONMENTAL BORING

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
2. BUFFER ZONE WAS DETERMINED AS THAT AREA OF LAND EXTENDING 150 FEET HORIZONTALLY OUTWARD FROM THE BOUNDARY OF LAND SUBJECT TO FLOODING, ELEVATION 46.00 NATIONAL GEODETIC VERTICAL DATUM (N.G.V.D.) THE SITE IS LOCATED OUTSIDE THE 100 YEAR & 500 YEAR FLOODPLAIN ZONES. (REF.) FIRM MAP NO. 250229 0003B, JUNE 2, 1980) LAND SUBJECT TO FLOODING, ELEVATION 46.00 N.G.V.D. WAS TAKEN FROM THE 100 YEAR FLOOD ELEVATION IN PROXIMITY TO THE SITE.
3. ENVIRONMENTAL BORINGS LOCATED BY CHEE FIELD TAPE SURVEY ON 2-3-89 AND 2-10-89 (REF. FIELD BOOK NO. 88-160, PG. 39 & FIELD BOOK NO. 88-123, PG. 32).

NO.	DELTA	RADIUS	ARC LENGTH
C1	0d17'16"	2980.09	66.98

3-8-89

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	PRELIMINARY				

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

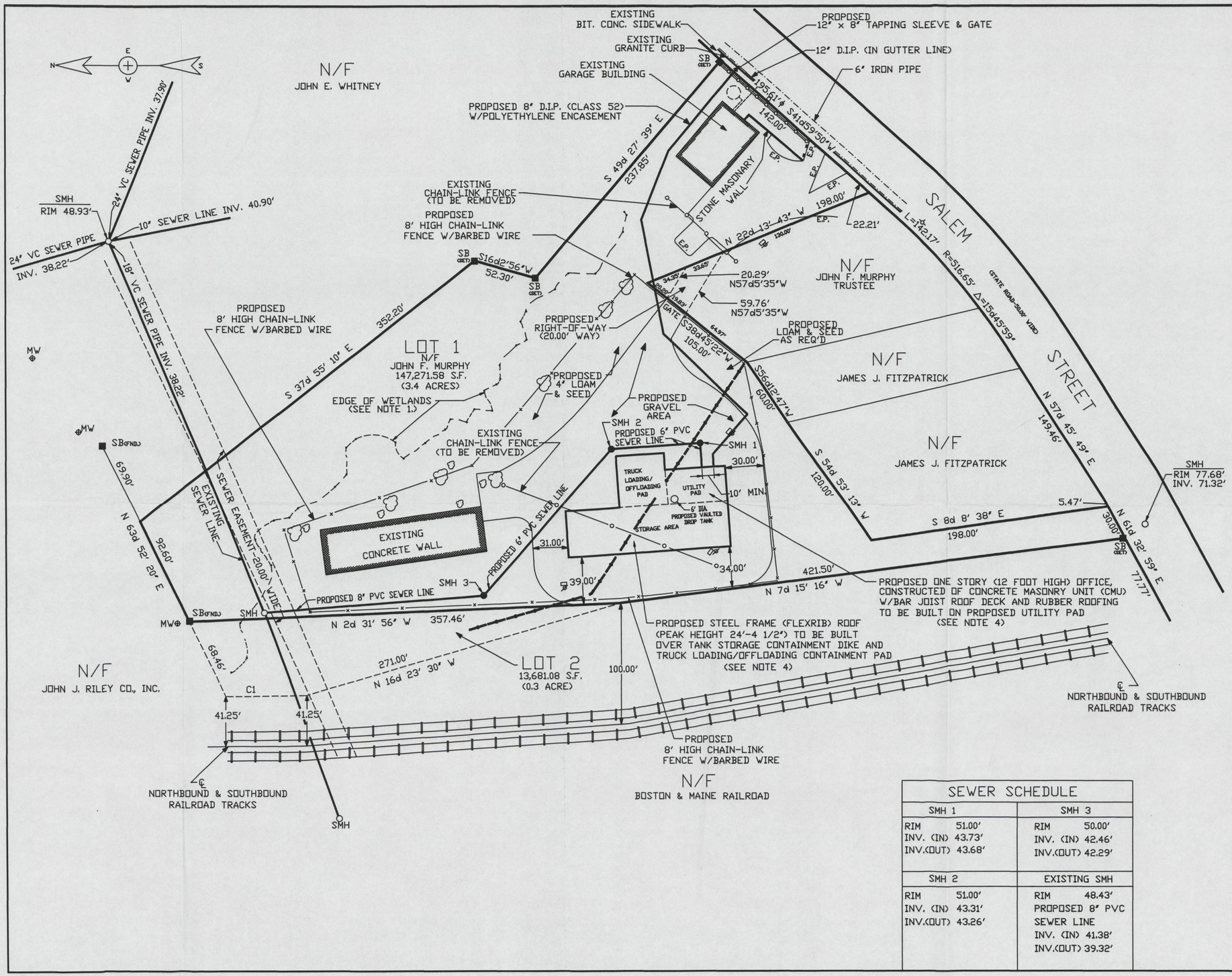
TITLE

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

ENVIRONMENTAL BORING LOCATION PLAN

PROJECT NO.	DRAWING NO.
E-1656	1656-C-011
SCALE 1"=40'	

0089-0292



LEGEND

- MW ◆ MONITOR WELL (EXISTING)
- SMH ○ SEWER MANHOLE (EXISTING)
- SMH 1 ● SEWER MANHOLE (PROPOSED)
- SB(FND.) ■ STONE BOUND WITH DRILL HOLE (FOUND & HELD)
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE.
- GUARD RAIL (EXISTING)
- WOOD RAIL FENCE (EXISTING)
- LIMIT OF BUFFER ZONE (SEE NOTE 2)
- GAS GATE (EXISTING)
- UTILITY POLE (EXISTING)
- UTILITY BOX (EXISTING)
- TAPPING SLEEVE & GATE
- E.P. EDGE OF PAVEMENT (EXISTING)
- HYDRANT (EXISTING)
- EXISTING TREES/SHRUBS
- D.I.P. DUCTILE IRON PIPE
- PVC POLYVINYL CHLORIDE
- VC VITRIFIED CLAY

NO.	DELTA	RADIUS	ARC LENGTH
C1	0d17'16"	2980.09	66.98

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
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3. AREA WITHIN LIMITS OF WORK SHALL BE CLEARED & GRUBBED AS REQUIRED. TREES WITHIN PROPOSED GRAVEL ACCESS AREA SHALL BE REMOVED. TREES CAUSING OBSTRUCTION TO THE PROPOSED CHAIN-LINK FENCE SHALL BE REMOVED AS REQUIRED.
4. WATER COLLECTED ON ROOF WILL BE DIRECTED TOWARDS ROOF DRAINS AND ALLOWED TO DISPERSE AND PERCOLATE OVER EXISTING CRUSHED STONE SURFACE.

SEWER SCHEDULE

SMH 1	SMH 3
RIM 51.00' INV. (IN) 43.73' INV.(OUT) 43.68'	RIM 50.00' INV. (IN) 42.46' INV.(OUT) 42.29'
SMH 2	**EXISTING SMH**
RIM 51.00' INV. (IN) 43.31' INV.(OUT) 43.26'	RIM 48.43' PROPOSED 8" PVC SEWER LINE INV. (IN) 41.38' INV.(OUT) 39.32'

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
D	ADDED TAPPING SLEEVE & GATE, REV'D SEWER LINE SIZES & SCHEDULE, REMOVED 12" SEWER LINE	MC	JAM	WSH	2/10/89
C	ADDED PROPOSED SEWER LINE	MC	JAM	WSH	1/24/89
B	GENERAL REVISION	MW	JEH	KAT	8/4/88
A	PRELIMINARY	MW	JEH	WSH	7/8/88

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

TITLE

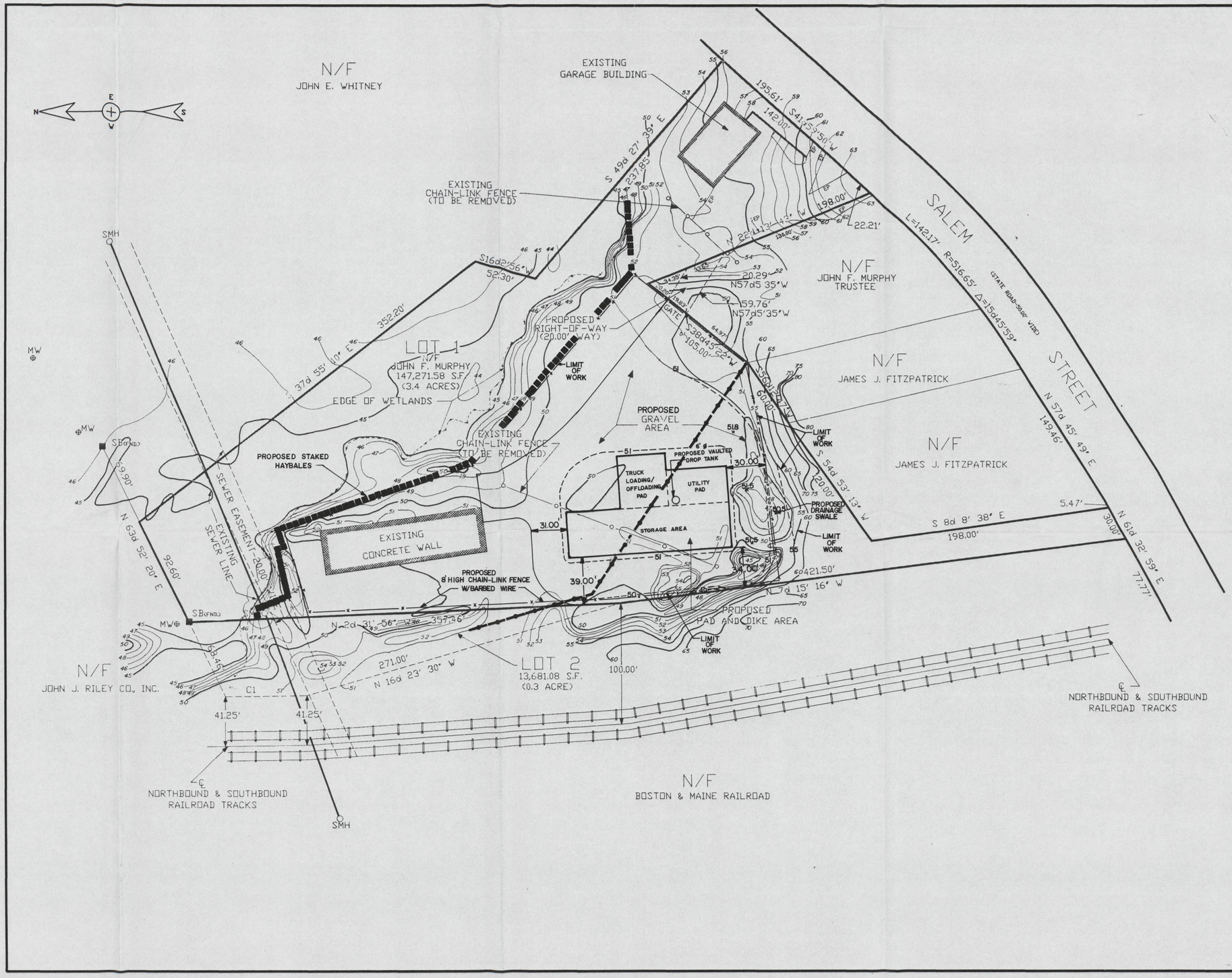
MURPHY'S WASTE OIL SERVICE, INC.

252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

SITE PLAN

PROJECT NO.	DRAWING NO.
E-1656	1656-C-002
SCALE 1"=40'	

0089-0293



LEGEND

- LIMIT OF BUFFER ZONE (SEE NOTE 2)
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM 'PLAN OF LAND IN WOBURN, MASSACHUSETTS' BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
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3. TOPOGRAPHIC SURVEY TAKEN FROM BASE REFERENCE MARK RM8 ELEVATION 47.95 N.G.V.D. ON FIRM MAP NO. 250229 0003B, DATED JUNE 2, 1980, BY CHIEE, 325 WOOD ROAD, BRAINTREE, MASSACHUSETTS 02184, DATED JUNE 1988.

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
C	ADDED ADDITIONAL STAKED HAYBALES	MW	[illegible]	JAM	2/1/89
B	RELOCATION OF PROPOSED STAKED HAYBALES	MW	[illegible]	S.D.	9/24/88
A	PRELIMINARY	MW	JEH	KAT.	8/11/88

CHI ENVIRONMENTAL ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY
325 WOOD ROAD
BRAINTREE, MA 02184
TEL. (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

GRADING & EROSION CONTROL PLAN

PROJECT NO. E-1656
SCALE 1"=40'
DRAWING NO. 1656-C-003

0089-0294

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

March 6, 1989

Woburn Conservation Commission
33 Plympton Street
Woburn, Massachusetts 01801

Applicant's Name: Murphy's Waste Oil Service, Inc.
Applicant's Address: 252 Salem Street
Woburn, Massachusetts 01801

Re: Temporary Stockpile Locations
File #: 348-189/W88-10
Locus: 252 and 252 Rear Salem Street (the site)

Pursuant to March 1, 1989 conversations between William St. Hilaire, Vice President of Clean Harbors Environmental Engineering (CHEE) and William Murphy, Administrator for Woburn Conservation Commission (WCC) enclosed please find a copy of the Temporary Soil Stockpile Location Plan delineating the proposed areas for temporary stockpiling of soils excavated during short term measures. A request for a Short Term-Measure approval was outlined in a letter dated February 17,1989.

The WCC requested additional information relative to the proposed stockpile location(s) and estimated stockpile height(s).

Prior to any excavation of soils within the building footprint area, existing debris (consisting mainly of stumps and large boulders) which occurs in the low lying area north and west of the proposed building will be removed off-site for disposal. This area will then be proof-rolled using a sufficiently large vibratory drum compactor. Any unstable areas (soft areas) observed during proof-rolling will be excavated to firm stable ground. This area will then be used to accommodate the upper portion of the uncontaminated soil that is excavated from the proposed building area. Any unsuitable fill material encountered during excavation will be separated from the suitable fill material for proper disposal. The usable fill material will then be placed in compacted lifts for proper support of the pavement area.

The remaining uncontaminated fill material excavated from the building area will be stockpiled in the areas shown on the plan after any unsuitable fill material (estimated at 20 percent of the total volume) has been segregated from it and disposed of properly. This stockpiled soil will be placed in compacted lifts in the building area immediately following the removal of the contaminated fill from this portion of the site.

The contaminated soils will be stockpiled on the northern portion of the site west and south of the concrete dike area (see plan for location). This area was chosen because it is as far away from the wetland area as possible due to topographic and space limitations. The location of the contaminated fill is closer to the wetland area than the uncontaminated fill to reduce the risk of further disruption because of its proximity to the work area.

The maximum proposed area (8100 square feet) for stockpiling the contaminated soils accommodates 1500 cubic yards (estimated maximum), resulting in an average stockpile height of five feet. (Reference enclosed earthwork calculation sheets). Efforts will be made during earthwork construction to increase the average height of the stockpile in order to reduce the surface area covered. This in effect would produce an increased distance between the stockpiled contaminated soil and the wetland areas.

The total volume of suitable soil for structural fill is approximately 2600 cubic yards, moreover, it is estimated that 700 cubic yards will be used in designated fill areas and areas of debris removal, leaving approximately 1900 cubic yards to be temporarily stored on the site. The proposed stockpile area (approximately 6100 square feet) for uncontaminated soil suitable for the building structural fill (1900 cubic yards) results in an average stockpile height of eight and one half feet.

The above earthwork description is a worst case analysis. Currently, CHEE is investigating the feasibility of loading contaminated soils directly onto trucks (of licensed hazardous waste haulers) for subsequent proper off-site treatment and/or disposal. If this is not feasible, stockpiled contaminated soil will be disposed of as soon as possible.

If you have any further questions of concerns on this matter, please call Clean Harbors Environmental Engineering at (617) 849-1200.

Sincerely,

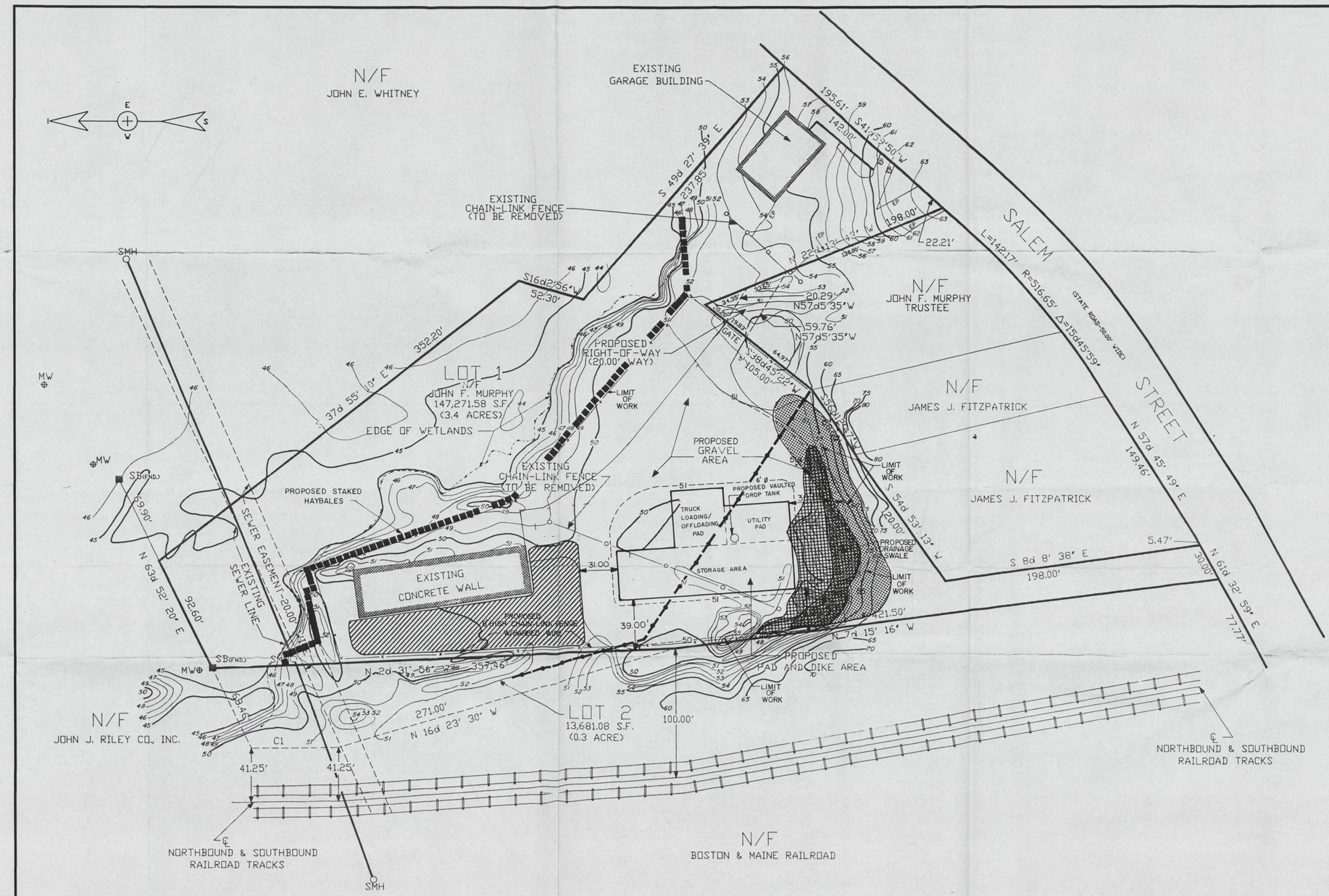
William J. St. Hilaire

William J. St. Hilaire, P. E.,
Vice President
Clean Harbors Environmental Engineering

enclosure

jam/chk:mac

cc: Paul Whiting, Vice President, General Welding and Design
DEQE Wetlands
DEQE John Fitzgerald



LEGEND

- LIMIT OF BUFFER ZONE (SEE NOTE 2)
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS
- APPROXIMATE AREA PROPOSED FOR TEMPORARY STOCKPILE OF CONTAMINATED SOILS.
- APPROXIMATE AREA OF DEBRIS REMOVAL AND PROPOSED AREA FOR PLACEMENT OF COMPACTED, UNCONTAMINATED STRUCTURAL FILL.
- APPROXIMATE AREA PROPOSED FOR TEMPORARY STOCKPILE OF UNCONTAMINATED SOILS TO BE USED AS STRUCTURAL FILL.

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
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ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	PRELIMINARY	AMO			

COMMONWEALTH OF MASSACHUSETTS
WILLIAM J. ST. HILAIRE
NO. 29744
REGISTERED PROFESSIONAL ENGINEER

William J. St. Hilaire
3-6-89

CLI ENVIRONMENTAL ENGINEERING CORPORATION
A CLEAN HARBORS COMPANY
325 WOOD ROAD
BRAINTREE, MA 02184
TEL. (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.

252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

TEMPORARY SOIL STOCKPILE LOCATION PLAN

PROJECT NO. E-1656
SCALE 1"=40'
DRAWING NO. 1656-C-009

0089-0297

WOBURN CONSERVATION COMMISSION

33 PLYMPTON STREET, WOBURN, MASSACHUSETTS 01801

(617) 938-7561

4-11

ORDER OF CONDITIONS/WOBURN WETLANDS PERMIT AMENDMENT

TO BE MARGINALLY NOTED AT THE BOOK AND PAGE WHERE THE ORIGINAL ORDER OF CONDITIONS/PERMIT IS RECORDED/FILED

DATE OF ISSUANCE: MARCH 9, 1989

FILE NUMBER: 348-189/W88-10

FROM: WOBURN CONSERVATION COMMISSION

MARGINAL REFERENCE REQUESTED
BOOK 13231 PAGE 240

TO: Murphy's Waste Oil Service, Inc.
252 Salem Street
Woburn, MA 01801

PROJECT LOCATION: 252 Salem Street, Woburn, MA

CONDITIONS AMENDED

Finding: The Woburn Conservation Commission finds that this Amendment is hereby granted subject to: 1) the original Order of Conditions/Permit, 2) the Plans referenced herein, and 3) the Following additional Conditions:

31. No work covered by this Amended Order/Permit shall be undertaken until all administrative appeal periods (ten days from date of issuance) for this Amended Order/Permit have elapsed or, if such an appeal has been filed, until all proceedings before the Department of Environmental Quality Engineering and the Superior Court have been completed.

32. All work shall conform to the following plans: 1) Site Plan, dated 7/8/88, revised to 2/10/89, signed and stamped by William J. St. Hilaire, RPE, Drawing number 1656-C-002 2) Grading and Erosion Control Plan, dated 8/11/88, revised to 2/1/89, signed and stamped by William J. St. Hilaire, RPE, Drawing number 1656-C-003. 3) Proposed Facility Arrangement, dated 1/12/88, signed and stamped by Harold R. Cutler, RPE, Drawing number GW-01188-FP-1. 4) Temporary Soil Stockpile Location Plan, dated 3/6/89, signed and stamped by William J. St. Hilaire, RPE, Drawing number 1656-C-009.

33. No work covered by this Amended Order/Permit shall be undertaken until all inappropriate fill materials, such as slabs of concrete, which were at one time deposited adjacent to the wetland boundary at the easterly side of the site, are completely removed. The removal of this fill shall be accomplished in such a way that there will be no impact to the adjoining wetland

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0089-0298

resource area. This will require, for example, placement of temporary erosion controls at the toe of slope to prevent siltation to the wetland area. Additionally, the slope which results after the fill is removed shall be graded to a stable condition and revegetated to provide permanent stabilization of soils. The petitioner, the petitioner's agent, and the contractor doing this work shall fashion this work to the satisfaction of the Conservation Administrator.

34. Any changes to the Plans mentioned herein must be submitted to the Woburn Conservation Commission for approval prior to implementation. One of the following responses will be made:

a. If the Commission finds, by majority vote, said changes to be insignificant to the interests of the Massachusetts Wetlands Protection Act or the interests protected by the Woburn Wetlands Ordinance, the Commission will so notify the Applicant in writing.

b. If the Commission finds, by majority vote, said changes to be significant and/or deviate from the Plan, Notice of Intent/Application for Permit, or the original Order of Conditions/Permit or this Amendment, and that the interests of the Act and the interests protected by the Ordinance would best be served by the issuance of additional Conditions, the Commission will conduct another Public Hearing within 21 days, advertised at the Applicant's expense, in order to take testimony from all interested parties. Within 21 days of the close of the Public Hearing, the Commission will issue an Amended Order of Conditions/Woburn Wetlands Permit. No work shall be undertaken until the Amended Order of Condition/Woburn Wetlands Permit has been recorded at the Middlesex, South District, Registry of Deeds or Land Court in the manner described in Condition #8, and until all administrative appeal periods from the Amended Order of Conditions/Woburn Wetlands Permit have elapsed.

c. If the Commission finds, by majority vote, said changes to be significant and would substantially change the nature, scope, purpose, or impact of the project, then the Commission will direct the Applicant to file a new Notice of Intent/Application for Permit.

35. No work covered by this Amended Order/Permit shall be undertaken until the Commission has received an attested copy of this Amendment to the Order of Conditions/Woburn Wetlands Permit showing the instrument number or the Book and Page number evidencing recordation at the Middlesex, South District, Registry of Deeds. If work covered by this Amended Order/Permit is not commenced, this condition shall be met within 30 days of the date of issuance of this Amended Order/Permit.

36. Within ten calendar days inclusive of the transfer of ownership of the subject property, the Commission shall be furnished with an attested copy of the Deed or the instrument of ownership, and shall be notified in writing of the name and address of the new owner/owners and the effective date of transfer.

37. In conjunction with any sale of subject property, the petitioner shall submit to the Commission a signed statement by the buyer that the buyer is aware of the outstanding Order of Conditions/Permit and this Amendment to the Order/Permit on the property.

38. All contaminated soils excavated on the site shall be stockpiled on two thicknesses and covered with one thickness of 6 mil polyethylene sheets. These sheets shall be configured so as to prevent the entrance of precipitation into or the escape of leachate from the contaminated soil.

39. Any contaminated soil which is excavated and stored in the manner described above shall be properly and permanently disposed of off-site within two months after its excavation. In order that the Conservation Office may monitor progress in this respect, the petitioner shall provide notice of the dates of excavation of all contaminated soils, as well as the dates of permanent removal and disposal of said soil.

40. The petitioner shall furnish the Commission with copies of all correspondence between the petitioner and the DEQE Division of Hazardous Waste regarding the property covered by this Amended Order/Permit.

41. A copy of this Amendment to the Order of Conditions/Woburn Wetlands Permit and the Plans approved in this Amended Order/Permit shall be maintained and readily available on the job site.

ISSUED BY WOBURN CONSERVATION COMMISSION

Chairman Richard H. Cutts

Paul D. Dewire

On this 9th day of March 1989, before me personally appeared Above Named Commissioners, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he/she executed the same as his/her free act and deed

Gail M. Kearns
Notary Public

December 16, 1994
My Commission Expires

MAR 20 1989

COMMONWEALTH OF MASSACHUSETTS

MIDDLESEX S.S.

SOUTH DIST. REGISTRY OF DEEDS

CAMBRIDGE, MA.

I HEREBY CERTIFY THE FOREGOING

IS A TRUE COPY OF A PAPER

RECORDED IN BOOK 30 Page 44

PAGE

ATTEST:

REGISTER

REGISTER

DANIEL S. GREENBAUM
Commissioner

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
5A Commonwealth Avenue
Woburn, Massachusetts 01801

March 16, 1989

William St. Hilaire, P.E.
Vice President
Clean Harbors Environmental
Engineering Corporation
325 Wood Road
Braintree, MA 02184

RE: WOBURN - Murphy's
Waste Oil Services
252 Salem Street
DEQE Case No. 3-2198

Dear Mr. St. Hilaire:

This Office is in receipt of two recent submittals from Clean Harbors Environmental Engineering Corporation (CHEE) relative to a proposal to perform a Short Term Measure at the above referenced site. Both submittals, dated February 17, 1989 and March 6, 1989, concern the stockpiling of contaminated soil that will result from the construction of a new building at the site.

At the present time, CHEE is in the process of completing a Phase I/Site Investigation at this property, the location of Murphy's Waste Oil Services, Inc. Preliminary data indicate the presence of low to high concentrations of petroleum hydrocarbons in the vicinity of the proposed new construction. Volatile Organic Compounds, Phenols and PCB's do not appear to be present in significant concentrations.

Based upon the information provided, under the provisions of 310 CMR 40.542, the Department approves of the proposal to temporarily stockpile contaminated soil, subject to the following conditions:

(1) Wetlands interests are addressed to the satisfaction of the Woburn Conservation Commission;
(2) Stockpiled soils are lined and covered with at least a 6-mil layer of polyethylene sheets;
(2) Stockpiled soils are disposed of or treated in accordance with applicable state and federals laws, regulations, and policies; and
(3) The notification provisions of 310 CMR 40.542(6)(a) are implemented.

0089-0303

The requirement for further site investigatory and remedial measures will need to be addressed following the completion of the Short Term Measure and submittal of the Phase I report.

If you have any questions regarding this matter, please contact John Fitzgerald at 935-2160. All Further communications regarding this site must reference the DEQE Case No. designated in the subject heading.

Very Truly Yours,

John J. Fitzgerald, P.E.
Chief, Site Assessment and
Cleanup Section

Richard J. Chalpin
Deputy Regional
Environmental Engineer

JJF/jjf

cc. Woburn Board of Health
Woburn Conservation Commission
DEQE, Boston Office, Site Assmt Sect
DEQE, Woburn Office, Attn: Ed Pawlowski

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 1
FILE NO: E1656
DATE: 3/16/89
PAGE: 1 OF 1

Weather Conditions: 40 to 50 degrees F, clear and sunny

1. **Arrived on site at** 0730 **hours**

2. **Earthwork equipment working:**

   A) One, Caterpillar 955 bulldozer
   B) One 24 yard dumpster

3. **Work accomplished:**

1) Construction Preparation - The eight monitoring wells on the site were located using tape measurement so that they could be saved for use after construction. The metal standpipes which had protected the well prior to construction were replaced with cemented roadway boxes. The six, 55-gallon drums which were used to collect soil and water during drilling and sampling were labeled. In addition, the 150 foot buffer zone from the edge of the wetlands was measured and marked.

2) Debris Excavation - The debris south and west of the proposed (outside the buffer zone) building which consisted mainly of stumps, concrete and old tires was removed from the construction area. The debris collected during this excavation process was stockpiled east of the building area near the dumpster which will be used for off-site disposal.

4. **Visitors to the site:**

   - Mark Sullivan (CHES)

5. **Left the site at** 1130 **hours**

6. **Distribution:**

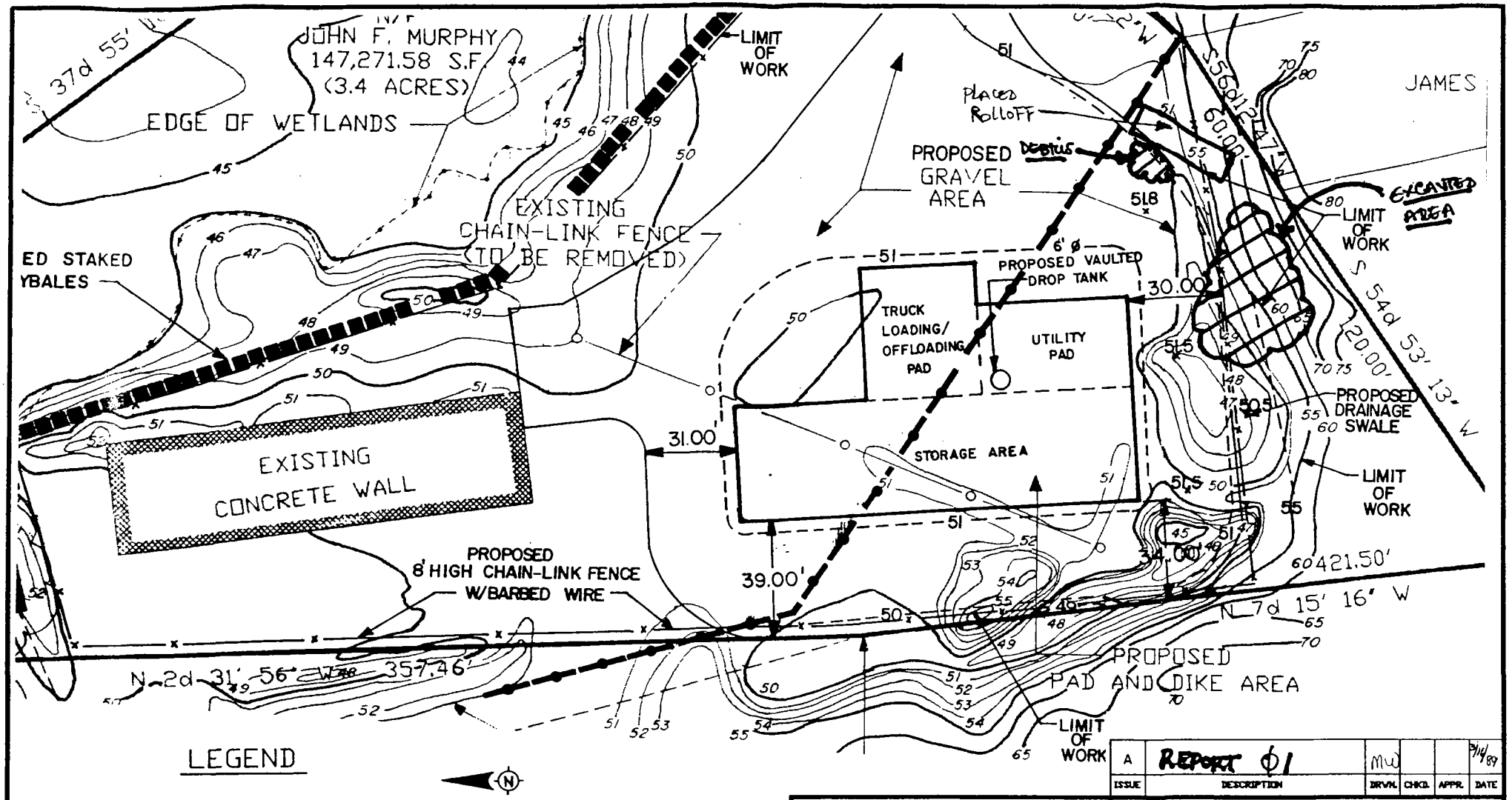
Mr. Mark Sullivan
Mr. Paul Whiting

Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kohno
REVIEWED BY

On site	4.0
Travel	1.0
Office	2.0
Total	7.0

CHK: DISK#4



ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	REPORT #1	MW			9/14/89

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO.	E-1656	DWG. NO.	1656-SK-01
SCALE	1" = 30'		

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 2
FILE NO: E1656
DATE: 3/17/89
PAGE: 1 OF 1

Weather Conditions: 60 to 70 degrees F, clear and slightly breezy

1. **Arrived on site at** 0730 **hours**

2. **Earthwork equipment working:**

   A) One, Caterpillar 955 bulldozer
   B) One 24 yard dumpster

3. **Work accomplished:**

1) Construction Preparation - Started the day by bringing three,55-gallon drums from near the garage to the dumpster are where the excavation area was. The bulldozer was used to break up the stockpiled soil located beyond the second gate and west of the proposed building footprint. Any unsuitable fill and debris was separated form this pile and temporarily stockpiled for off site disposal. Any suitable fill material excavated from this area was then placed south of the building to fill these low area to approximate finish grade.

2) Approval Letter - William St. Hilaire(CHEE)visited the site today and dropped of the DEQE Short Term Measure approval letter which approved excavation to begin Monday,March 20, 1989.

4. **Visitors to the site:**

   - William J. St Hilaire (CHEE)

5. **Left the site at** 1430 **hours**

6. **Distribution:**

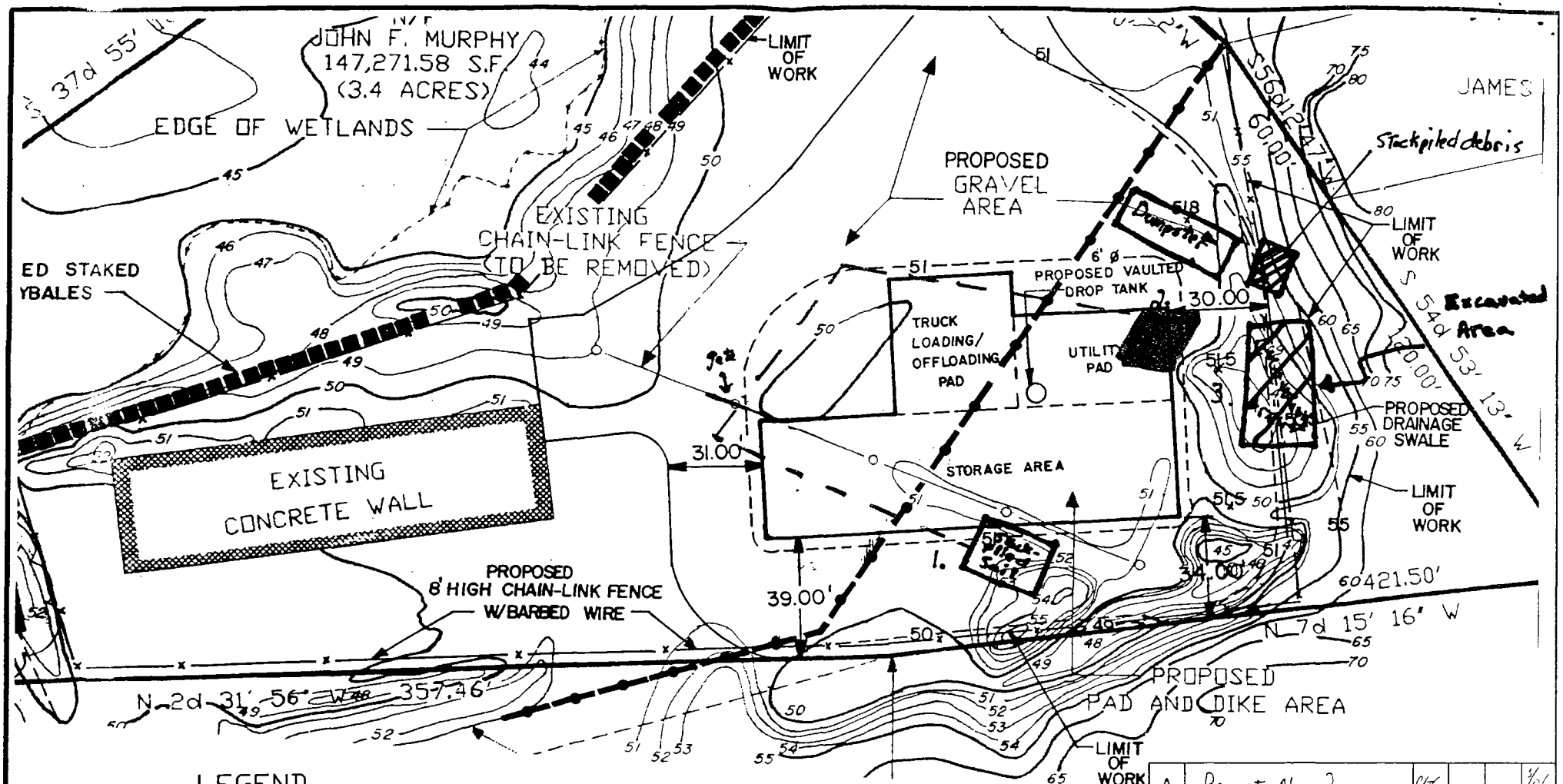
Mr. Mark Sullivan
Mr. Paul Whiting

Craig Malloy
FIELD REPRESENTATIVE

Carolyn H. Kohrs
REVIEWED BY

On site	7.0
Travel	1.5
Office	1.0
Total	9.5

CHK: DISK#4



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

Soils taken from location 1., brought to location 2., debris separated and placed in Dumpster or stockpiled, Clean fill used in location 3.

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	Report No. 2	CJM			3/7/[illegible]

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325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656
SCALE 1" = 30'
DWG. NO. 1656-SK-0

0089-0310

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 3
FILE NO: E1656
DATE: 3/20/89
PAGE: 1 OF 1

Weather Conditions: 30 to 35 degrees F, clear

1. **Arrived on site at** 0745 **hours**

2. ***Earthwork equipment working:***

   A) One, Caterpillar 955 Front End Loader
   B) One, Caterpillar 225 LC Backhoe
   C) One, Bobcat 1123 Loader

3. **Work accomplished:**

1) Wetland Protection - Haybails were stacked along three quarters of the bottom slope of the wetland area. More haybails are scheduled for delivery tomorrow 3-21-89. In addition, work was begun hand picking construction debris from the wetland slope.

2) Earthwork - The building corners were surveyed and staked. Approximately 5 feet of clean (uncontaminated) fill was excavated from southeastern corner of the proposed building and temporarily stockpiled directly east of the building area. Any large debris was segregated from the main stockpile for disposal off-site.

3) Test Pit - A test pit was dug in the southeastern corner of the building. This test pit extended approximately 9.5 feet below the ground surface. Oil contaminated soil was encountered approximately 8 feet below ground surface and groundwater 9.5 feet below the ground surface. See field sketch for test pit location.

4. Visitors to the site:

   - Paul Whiting (General Welding)
   - Joan Murphy

5. **Left the site at** 1545 **hours**

6. **Distribution:**

Mr. Mark Sullivan
Mr. Paul Whiting

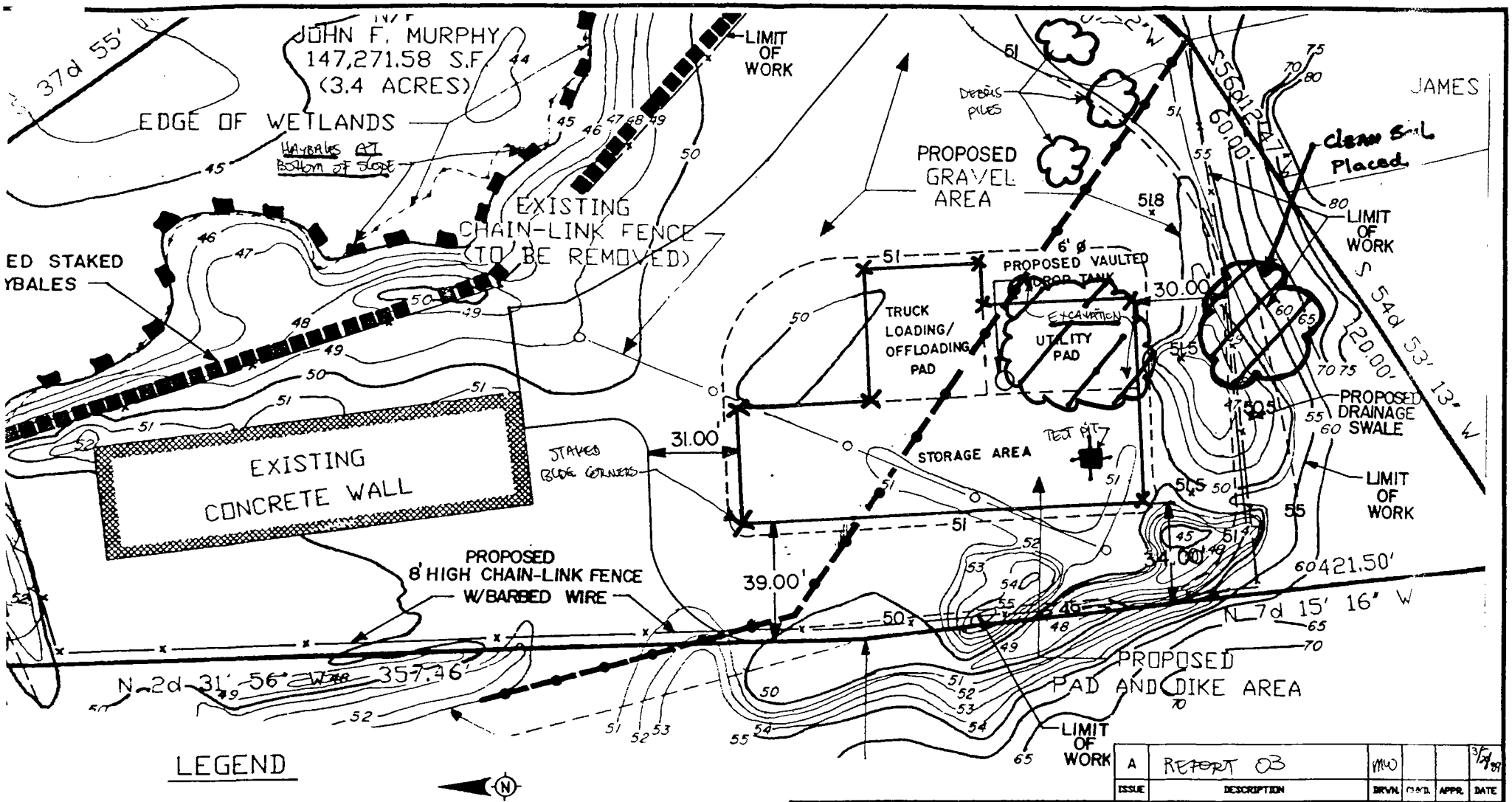
Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Konn
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.0
Total	9.0

CHK: DISK#4

0089-0313



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	REPORT 03	MW			3/24/89

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325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-03
SCALE 1" = 30'

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 4
FILE NO: E1656
DATE: 3/21/89
PAGE: 1 OF 1

Weather Conditions: 40 to 45 degrees F,rain

1. Arrived on site at 0745 hours

2. Earthwork equipment working:

A) One, Caterpillar 955 Front End Loader
B) One, Caterpillar 225 LC Backhoe
C) One, Bobcat 1123 Loader

3. Work accomplished:

1) Wetland Protection - Haybails were stacked along the remaining portion of the bottom slope of the wetland area. In addition, work was continued hand picking construction debris from the wetland slope.

2) Earthwork - Approximately five to six feet of clean (uncontaminated) fill was excavated from southwestern portion of the proposed building and temporarily stockpiled directly east of the building area. Any large debris was segregated from the main stockpile for disposal off-site.

3) Construction Information - Mark Sullivan is checking with Mr. Paul Whiting to determine if the uncontaminated soil can be screened in order to remove any deleterious material prior to using it for structural fill. Also, the Front End Loader was not operational between 1000 and 1300 hours due to maintenance problems.

4. Visitors to the site:

- Joan Murphy

5. Left the site at 1545 hours

6. Distribution:

Mr. Mark Sullivan
Mr. Paul Whiting

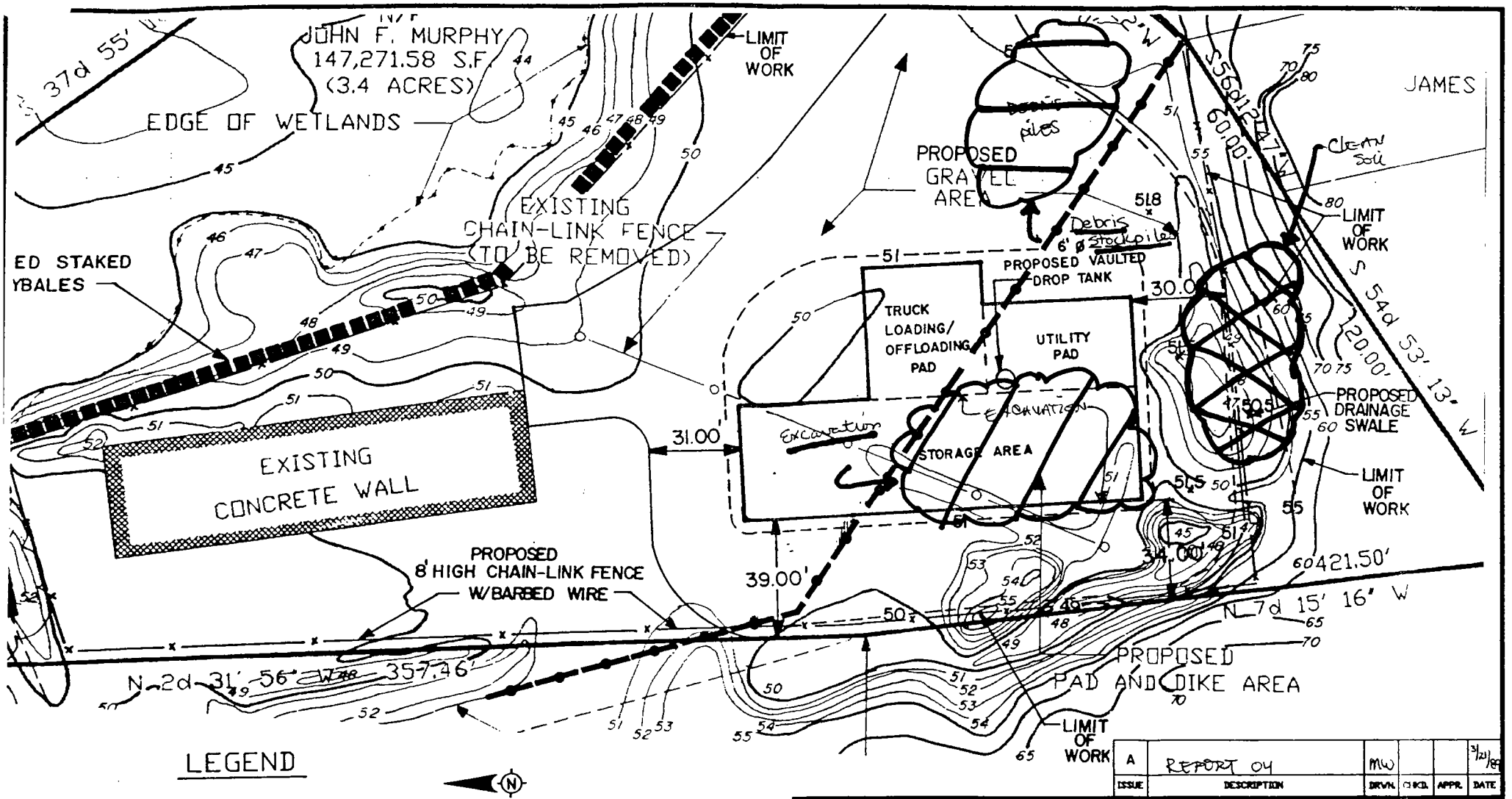
Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kahn
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.0
Total	9.0

CHK: DISK#4

0089-0316



ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	REPORT 04	MW			3/21/89

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MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-04
SCALE 1" = 30'

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn, MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 04
FILE NO: E1656
DATE: 3-21-89 TUES
PAGE: 1 OF 1

WEATHER CONDITIONS: RAIN 40'S

1. Arrived on site at 0800 hours
2. Earthwork equipment working:
   A) 955 BULLDOZER
   B) 225 EXCAVATOR
   C) BOBCAT
3. Work accomplished: CONTINUED EXCAVATION OF 5'-6' OF CLEAN SOIL, UNCOVERING LARGE AMOUNTS OF DEMO DEBRIS 3'-6' BELOW SURFACE. MARK SULLIVAN IS IN TOUCH WITH PAUL WHITING FIGURING OUT ABOUT THE USE OF A SIFTER TO SEPARATE THE SOIL FROM DEBRIS. FINISHED LAYING IN HAYBALES. BULLDOZER BROKEDOWN FROM 0900 TO 1300.
4. Visitors to the site: MR. MURPHY
5. Left the site at 1540 hours
6. Distribution:

ON SITE 7
TRAVEL 2
OFFICE 0
TOTAL 9

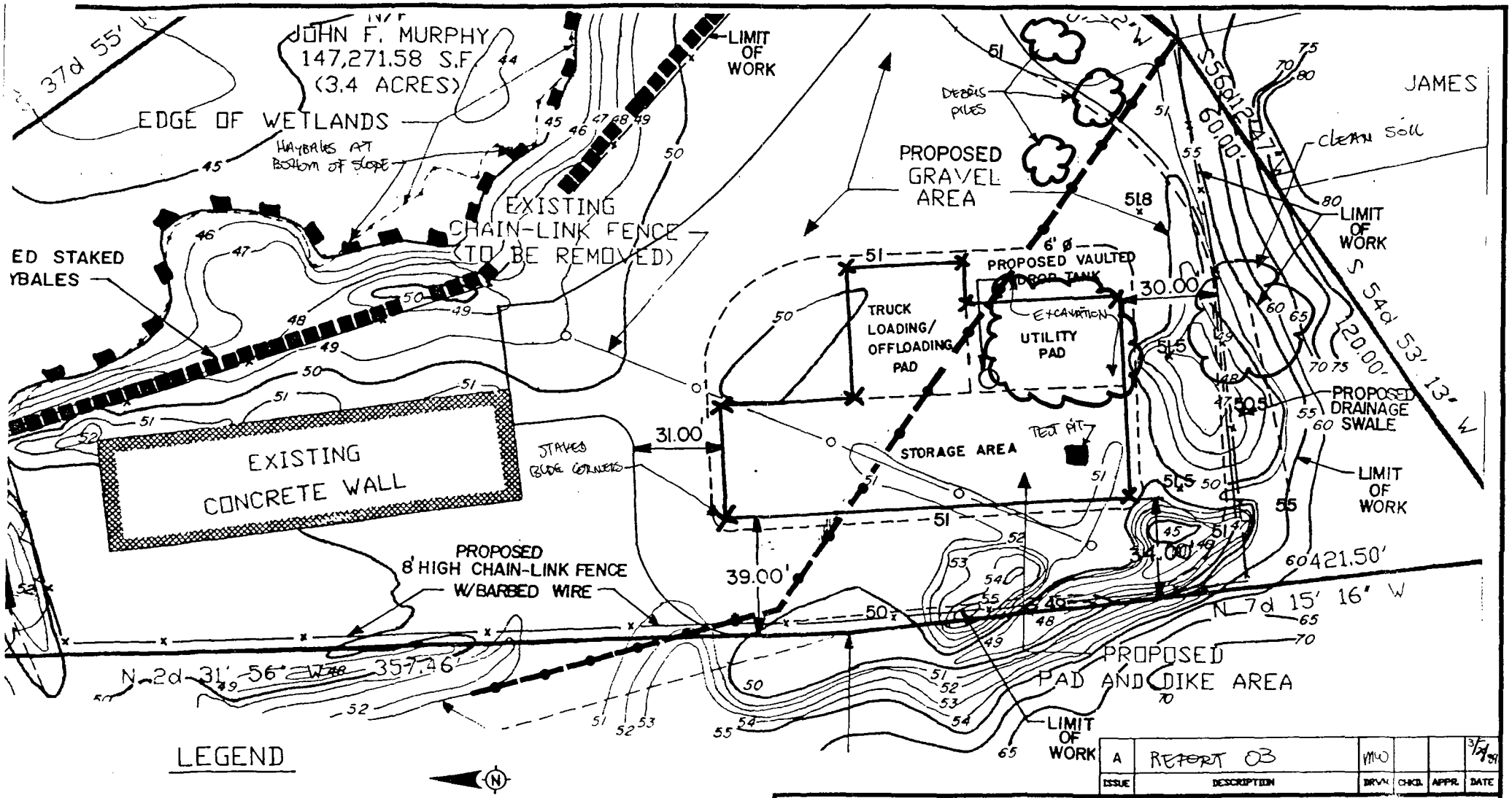
FIELD REPRESENTATIVE

REVIEWED BY

0089-0317

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORP. TELEPHONE: 849-1200

0089-0318



ISSUE	DESCRIPTION	DRWN	CHKD.	APPR.	DATE
A	REPORT 03	MMO			3/24/97

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ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-03
SCALE 1" = 30'

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 5
FILE NO: E1656
DATE: 3/22/89
PAGE: 1 OF 1

Weather Conditions: 40 to 45 degrees F, clear

1. Arrived on site at 0800 hours

2. Earthwork equipment working:

A) One, Caterpillar 955 Front End Loader
B) One, Caterpillar 225 LC Backhoe
C) One, Bobcat 1123 Loader

3. Work accomplished:

1) Wetland Protection - Work was continued hand picking construction debris from the wetland slope. In addition, the Bobcat was utilized to extract large concrete blocks from the wetland banks. Special care was taken to not disturb natural vegetation.

2) Earthwork - Approximately five to six feet of clean (uncontaminated) fill was excavated from central portion of the proposed building and temporarily stockpiled directly east of the building area. Any large debris was segregated from the main stockpile for disposal off-site.

3) General Observation - A slight sheen was noted on the groundwater surface in the southeastern corner of the building where seepage was observed approximately 7.5 feet below the ground surface.

4. Visitors to the site:

- Mr. William St. Hilaire (CHEE)

5. Left the site at 1530 hours

6. Distribution:

Mr. Mark Sullivan
Mr. Paul Whiting

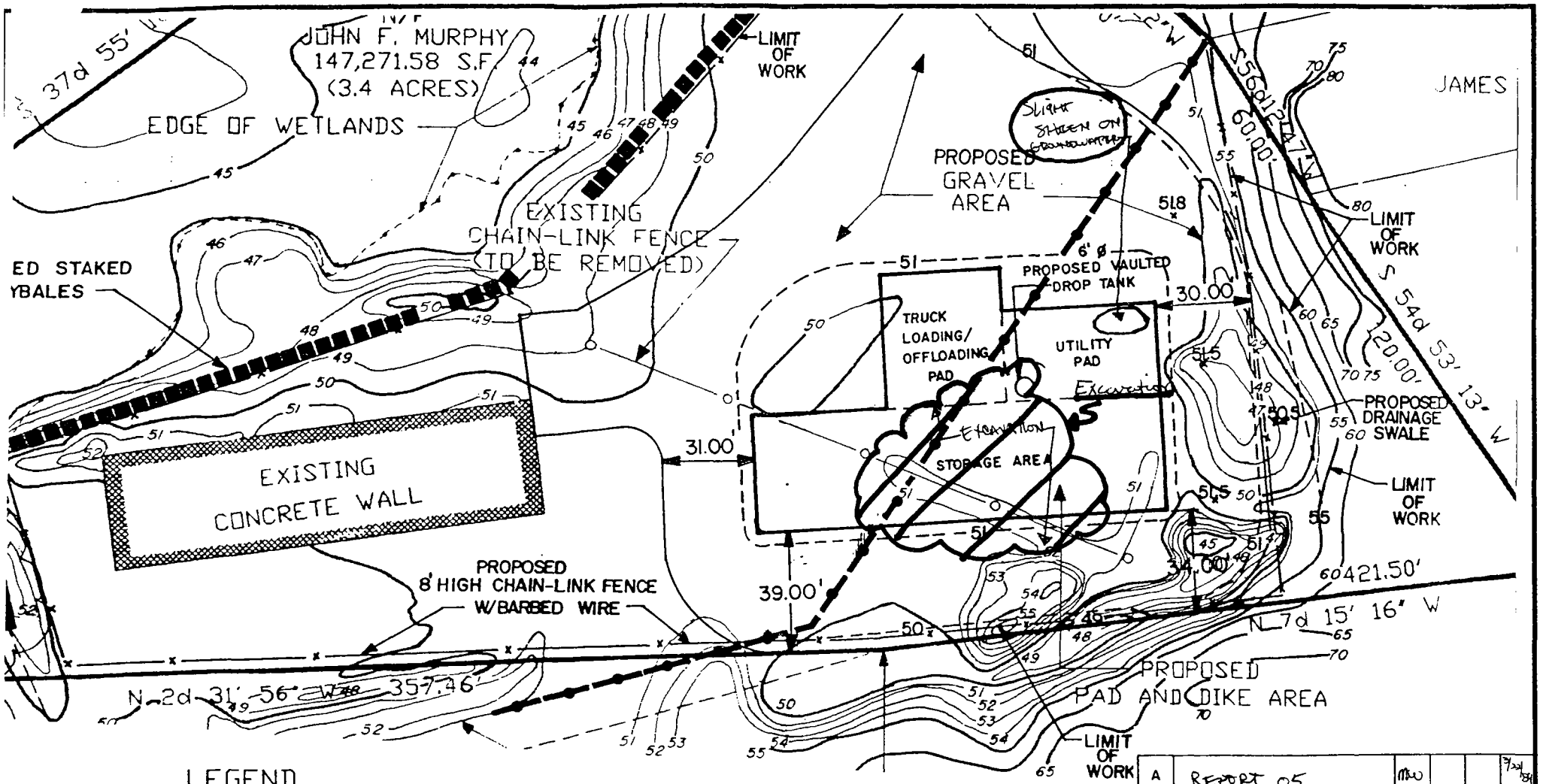
Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Johns
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.0
Total	9.0

CHK: DISK#4

0089-0321



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	REPORT 05	MW			7/24/91

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ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-05
SCALE 1" = 30'

CleanHarbors

MEMORANDUM

TO: William St.Hilaire P.E.
Norman Nelhuebel

FROM: Thomas Kelley TJK

DATE: April 6, 1989

RE: Horizontal Diked Tank location for the Murphy's Waste Oil Facility.

As per your request I have discussed the proposed tank location for the Murphy's Waste Oil Facility with Kevin Conklin, Mike Whiteside and Carolyn Kohrs. As a group they agree that locating the tank directly west of the storage area would allow for the most accessible location outside the buffer zone within the site.

The site is located within district I-P (Industrial Park) and as such requires a minimum setback of twenty five (25) feet for the front, side and rear (see attached regulation). We may be able to vary from this requirement or it may be a non-issue due to the temporary nature of the activity. Through further discussion of this problem it was decided that the ideal location would be due south of the storage area (see attached sketch). This location would allow adequate access and meet the setback requirement. Please note that the location of the contaminated soil pile is presently limited to due west of the concrete wall. This allows sufficient room for tank truck access.

If this location is acceptable, regrading and compaction in the proposed area will be required. Based on our best estimate this activity would take approximately two days.

It is proposed that the tank location be identified on the Grading and Erosion Control Plan (Dwg. # 1656-C-003).

c.c Carolyn Kohrs
Mike Whiteside
Kevin Conklin
Mark Sullivan

0089-0323

District	Use	Min. Lot Size sq. ft.	(In ft.) Min. St. Frontage	Minimum Yard Setback Front	Side	Rear	Minumum % Usable Open Space	Height (ft.)	Height (Stories)	% Bldg. Ground Coverage	Floor Area Ratio
B-H	Any permitted use	12,000	125	25	25	15	5	35	2 1/2	33	-
B-D	Any permitted use	None	50	-	-	0	-	80 [3]	7	100	-
B-I	Any permitted use	12,000	125	25	25	30	10	80	7	30	.75 [4]
I-P	Any permitted use	40,000	125	25	25	25	20	80	7	-	.75 [4]
I-G	Any permitted use	10,000	100	20	20	20	10	35	3	50	-
OP	Any permitted use	40,000	125	25	25	25	20	80	7	-	.75 [4]

Footnotes

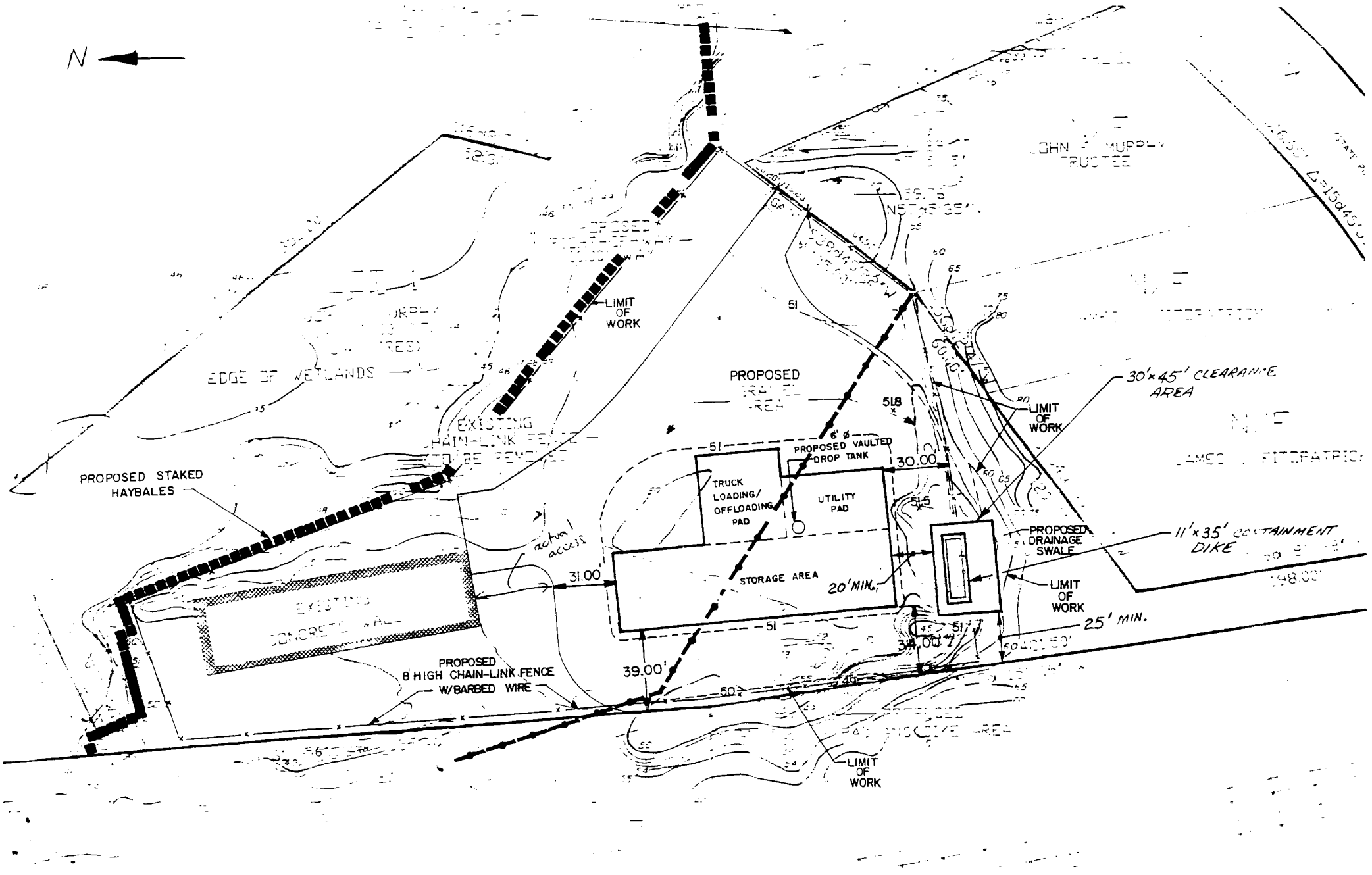
1. Excluding structured parking

2. For each foot in height of a structure over two and one half stories or thirty-five (35) feet in height, a foot of side and rear setback is required in addition to the minimum requirements shown on the table.

3. Fifty (50) feet along Main Street from High Street south, in the S-I zone.

4. If required parking is provided within a building or in an accessory parking structure or on grade within such a building or structure, the FAR shall be increased in the same proportion that the number of parking spaces within such a building or structure bears to the aggregate number of parking spaces required by this Ordinance on the lot. For example, if 50 parking spaces are provided within a building and 100 spaces are required by this Ordinance, the FAR shall be increased by 50 percent, or to a level of 1.125.

5. Maximum height shall be 80 ft. on lots abutting Rehabilitation Way in the S-I zone. Maximum floors - 7


N
LIMIT OF WORK
EDGE OF WETLANDS
PROPOSED
PROPOSED STAKED HAYBALES
EXISTING CHAIN-LINK FENCE TO BE REMOVED
PROPOSED VAULTED DROP TANK
TRUCK LOADING/ OFFLOADING PAD
UTILITY PAD
STORAGE AREA
actual access
31.00
39.00'
30.00
20' MIN.
34.00
25' MIN.
30'x45' CLEARANCE AREA
11'x35' CONTAINMENT DIKE
PROPOSED DRAINAGE SWALE
PROPOSED 8' HIGH CHAIN-LINK FENCE W/BARBED WIRE
EXISTING CONCRETE WALL
LIMIT OF WORK

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 6
FILE NO: E1656
DATE: 3/23/89
PAGE: 1 OF 1

Weather Conditions: 30 to 35 degrees F, clear

1. Arrived on site at 0730 **hours**

2. Earthwork equipment working:

A) One, Caterpillar 955 Front End Loader
B) One, Caterpillar 225 LC Backhoe
C) One, Bobcat 1123 Loader

3. Work accomplished:

1) Wetland Protection - Work was continued hand picking construction debris from the wetland slope. In addition, the Bobcat was utilized to extract large concrete blocks from the wetland banks. Special care was taken to not disturb natural vegetation.

2) Earthwork - The five to six foot excavation of clean (uncontaminated) fill from central portion of the proposed building was continued and temporarily stockpiled directly east of the building area. Any large debris was segregated from the main stockpile for disposal off-site. At approximately three feet below the ground surface, a small pocket (approximately 2 yards) of soil which had a slight solvent odor was excavated from the north central portion of the proposed building. This soil was segregated from the clean fill and stockpiled on and covered with polyethylene sheeting directly west of the concrete dike area.

3) Off Site Disposal - Stumps and rubber debris were loaded into on-site dumpsters for eventual off-site disposal.

4. Visitors to the site:

- Mr. Paul Whiting (General Welding)
- Mr. Joseph Higgings (CHEE)
- Ms. Carolyn Kohrs (CHEE)

5. Left the site at 1530 **hours**

6. Distribution:

Mr. Mark Sullivan
Mr. Paul Whiting

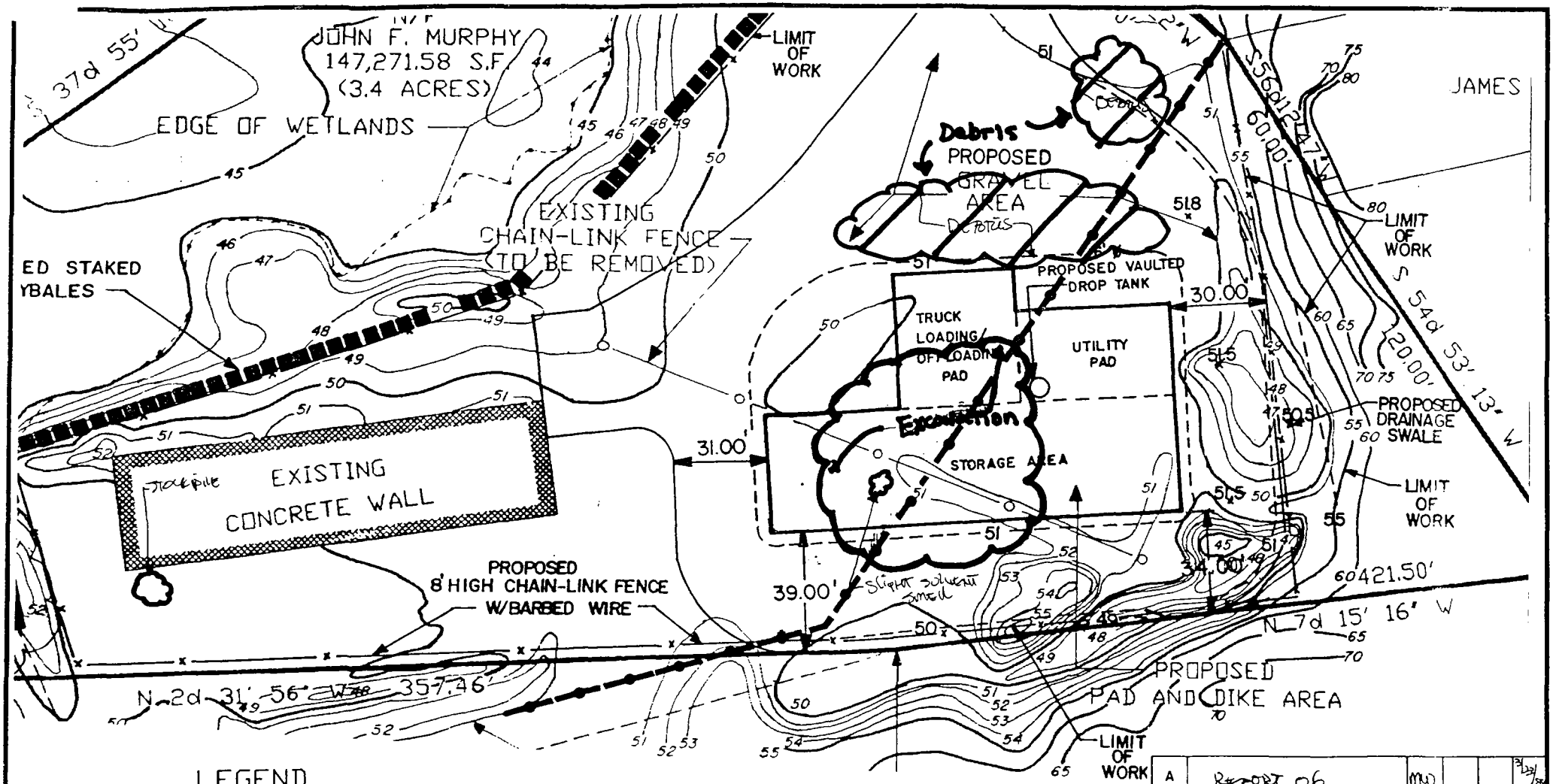
Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kohrs
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.0
Total	9.0

CHK: DISK#4

0089-0327



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN	CHKD	APPR.	DATE
A	REPORT 06	MW			3/23/88

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-06
SCALE 1" = 30'	

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 7
FILE NO: E1656
DATE: 3/24/89
PAGE: 1 OF 1

Weather Conditions: 30 to 35 degrees F, clear

1. **Arrived on site at** 0730 **hours**

2. **Earthwork equipment working:**

   A) One, Caterpillar 955 Front End Loader
   B) One, Caterpillar 225 LC Backhoe
   C) One, Bobcat 1123 Loader

3. **Work accomplished:**

1) Wetland Protection - Work was continued hand picking construction debris from the wetland slope. In addition, the Bobcat was utilized to extract large concrete blocks from the wetland banks. Special care was taken to not disturb natural vegetation.

2) Earthwork - The five to six foot excavation of clean (uncontaminated) fill from central portion of the proposed building was continued in a northerly direction (approximately 10 feet beyond the proposed building footprint). Excavated soil was temporarily stockpiled directly east of the building area. Any large debris was segregated from the main stockpile for disposal off-site. The large stockpile of uncontaminated fill was covered with polyethylene sheeting at the end of the day to protect it from being saturated with rain which is forecast for the weekend.

3) Off Site Disposal - The metal trailer which was present on the site prior to any construction was dismantled today. The trailer debris was placed into an on-site dumpster which will be used solely for metal debris and eventually be removed off-site for proper disposal.

4. **Visitors to the site:**
   -none

5. **Left the site at** 1430 **hours**

6. **Distribution:**

Mr. Mark Sullivan
Mr. Paul Whiting

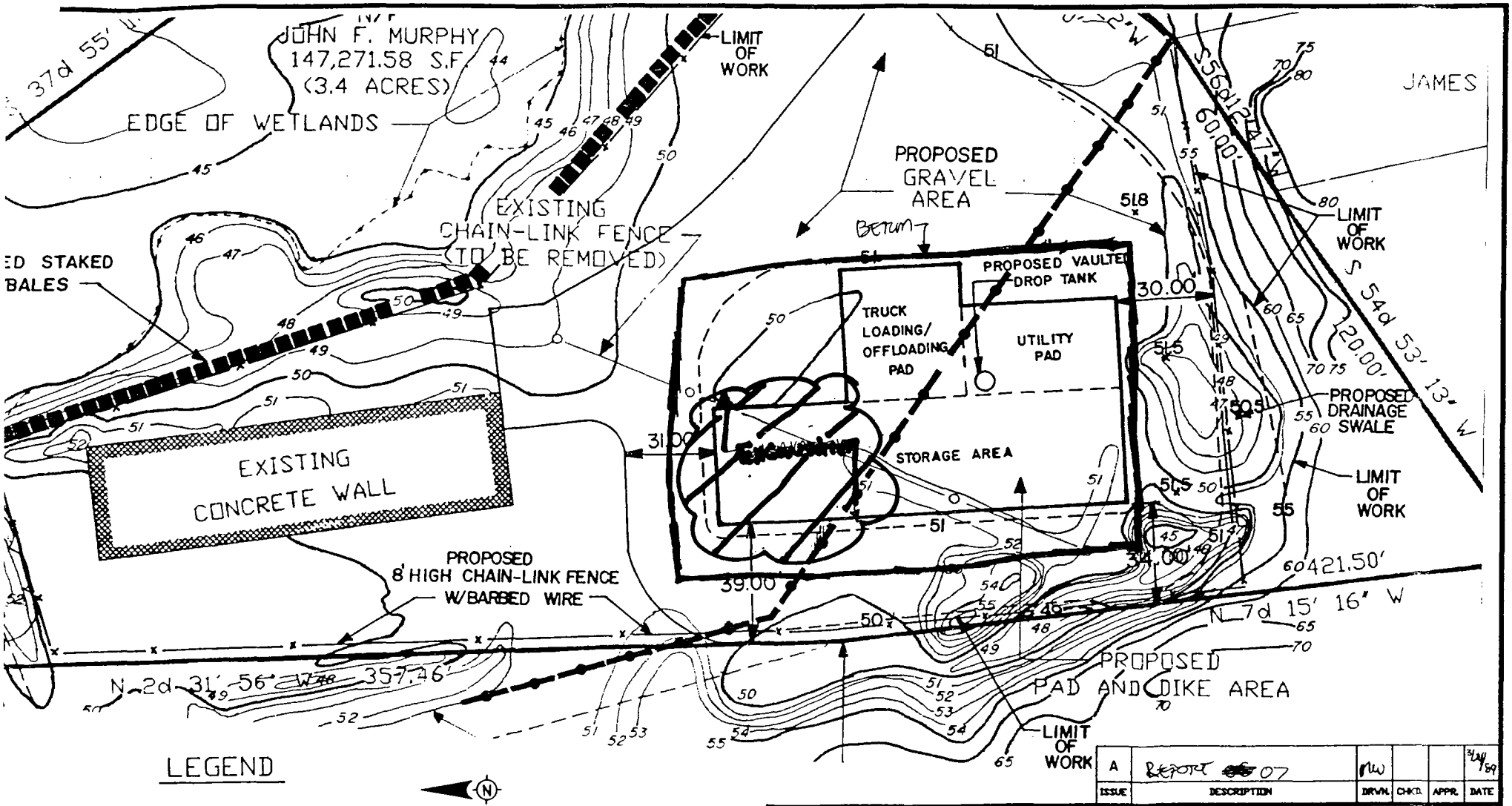
Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kolva
REVIEWED BY

On site	6.0
Travel	2.0
Office	1.0
Total	9.0

CHK: DISK#4

0089-0330



ISSUE	DESCRIPTION	DRWN.	CHK'D.	APPR.	DATE
A	REPORT 07	MW			3/24/89

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325 Wood Road
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Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-07
SCALE 1" = 30'	

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 8
FILE NO: E1656
DATE: 3/27/89
PAGE: 1 OF 1

Weather Conditions: 50 degrees F, clear and sunny

1. Arrived on site at 0730 hours

2. Earthwork equipment working:

A) One, Caterpillar 955 Front End Loader
B) One, Caterpillar 225 LC Backhoe
C) One, Bobcat 1123 Loader

3. Work accomplished:

1) Wetland Protection - Work was continued hand picking construction debris from the wetland slope. Mr. William Murphy (Woburn Conservation Commission) visited the site to view the wetland bank clean up. Mr. Murphy approved the work that had been done to date, and recommended that the steeper slopes be cut down in the interest of bank stabilization. In addition, Mr. Murphy stated that the loamy uncontaminated soil that was excavated from the building area could be spread along the wetland bank and seeded in accordance with the Order of Conditions dated, September 15, 1988.

2) Earthwork - Excavated and Stockpiled approximately 30 yards of waste oil contaminated soil from the southwest corner of the building area. The stockpiled soil was placed on two layers of polyethylene sheeting and covered with one sheet of polyethylene. The excavation of contaminated soil extended approximately 1.5 to 2 feet below the groundwater table (generally 8 feet below finish grade). A heavy sheen was observed on the groundwater surface and 3M pads were applied in this area over night in order to absorb the oil from the water.

3) Off Site Disposal - To date, approximately 90 yards of debris has been hauled off-site for proper disposal.

4. Visitors to the site:

-Mr. William St. Hilaire (CHEE)
-Mr. Paul Whiting (General Welding)
-Mr. William Murphy (Woburn Conservation Commission)
- Ms. Carolyn Kohrs (CHEE)

5. Left the site at 1530 hours

6. Distribution:

Mr. Mark Sullivan
Mr. Paul Whiting

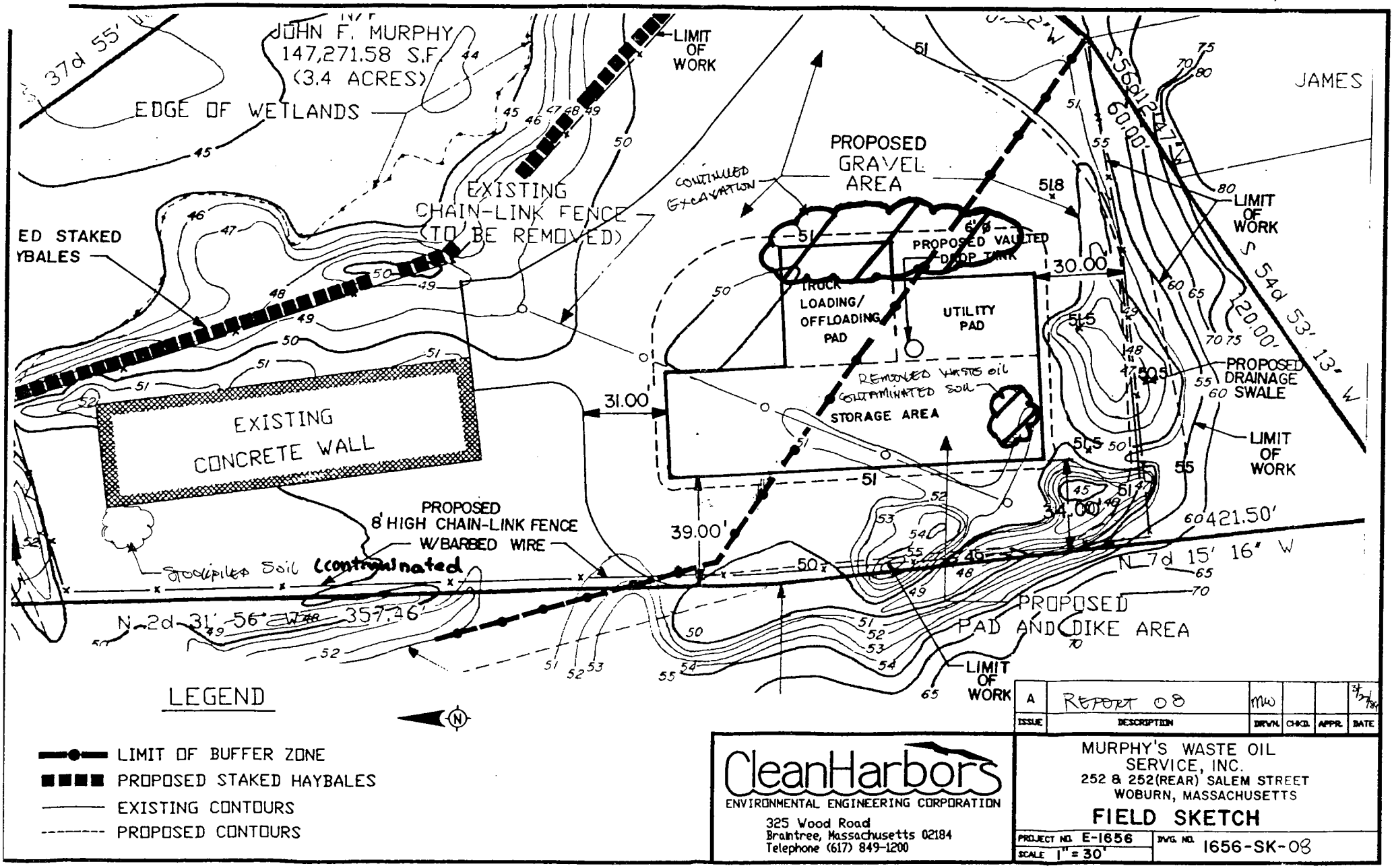
Mike Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kohrs
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.0
Total	9.0

CHK: DISK#4

0089-0333



ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	REPORT 08	MW			3/27/89

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-08
SCALE 1" = 30'	

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 9
FILE NO: E1656
DATE: 3/28/89
PAGE: 1 OF 2

Weather Conditions: Overcast - partly sunny 50-70° F

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 955 Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 10 wheel dump truck
   D) One, Bobcat Loader

3. **Work accomplished:**

A) Contamination Control - The 3M absorption pads which were placed in the southwestern corner of the building excavation to absorb waste oil out of the water were removed and placed in containers. These pads effectively removed a large portion of the floating product.

B) Earthwork - Approximately 75 yards of contaminated fill (waste oil) were excavated from 20' by 40' area in the southwest corner of the building. This excavation typically extend 1 to 4 feet below the groundwater table. The contaminated soil was stockpiled on and covered with double sheets of polyethylene. During the excavation process any uncontaminated fill was stockpiled east of the building where it will be screened on Monday April 3.

Crushed stone was placed in the bottom of the excavation to just slightly above the groundwater table in order to stabilize the subgrade.

C) Wetland Protection - The Bobcat loader worked to remove the construction debris from the bank of the wet land area one Grant Trailer filled with metal debris was hauled off-site.

4. **Visitors to the site:**
   -Jill McGillivray (CHEE)
   -Chris McIntyre (CHTD)
   -Craig Malloy (CHEE)

5. **Left the site at 1500 hours**

6. **Distribution:**

   Mr. Paul Whiting
   Mr. Mark Sullivan

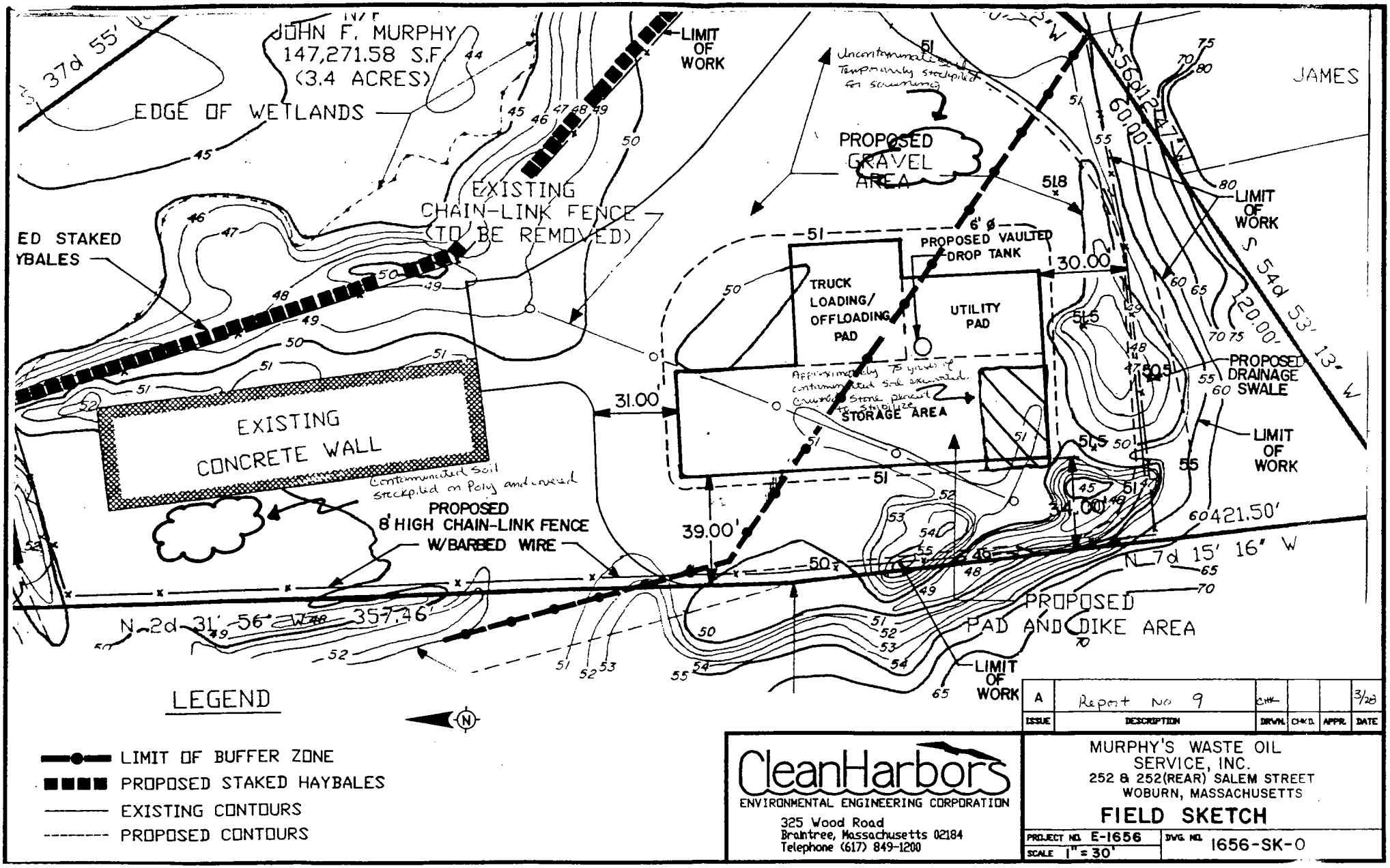
On site	7.0
Travel	2.0
Office	0.0
Total	9.0

CHK: DISK#4

Carolyn H. Kohrs
FIELD REPRESENTATI

Stephen Applebaum
REVIEWED BY

0089-0336



ISSUE	DESCRIPTION	DRWN.	CHK'D.	APPR.	DATE
A	Report No 9	CHK			3/28

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-0
SCALE 1" = 30'

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 10
FILE NO: E1656
DATE: 3/29/89
PAGE: 1 OF 2

Weather Conditions: Overcast - 50-40° F

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 955 Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 10 wheel dump truck
   D) One, 1123 Bobcat Loader

3. **Work accomplished:**

A) Approximately 50 cubic yards of contaminated soil were excavated from the southwestern portion of the building. This soil was placed on and covered with poly at the end of the day. Crushed 1 1/2-inch stone was placed in the bottom of the excavation in order to stabilize subgrade.

B) A pocket of heavy petroleum contamination was encountered in the central portion of the building approximately 2 feet below the groundwater table. A pocket of 3-inch stone which appeared to be associated with an oil leaching area was excavated from this location. Because pure petroleum product (approximately 1/2-inch thick) was observed in this area, a vacuum truck was ordered for tomorrow, 3/30/89. The extent of this "leach area" will be chased laterally.

C) The remaining construction debris pulled from the banks of the wetland area was stockpiled on the southern portion of the site.

4. **Visitors to the site:**
   -Bill St. Hilaire (CHEE)
   -Joan Murphy

5. **Left the site at 1500 hours**

6. **Distribution:**

   Paul Whitting
   Mark Sullivan

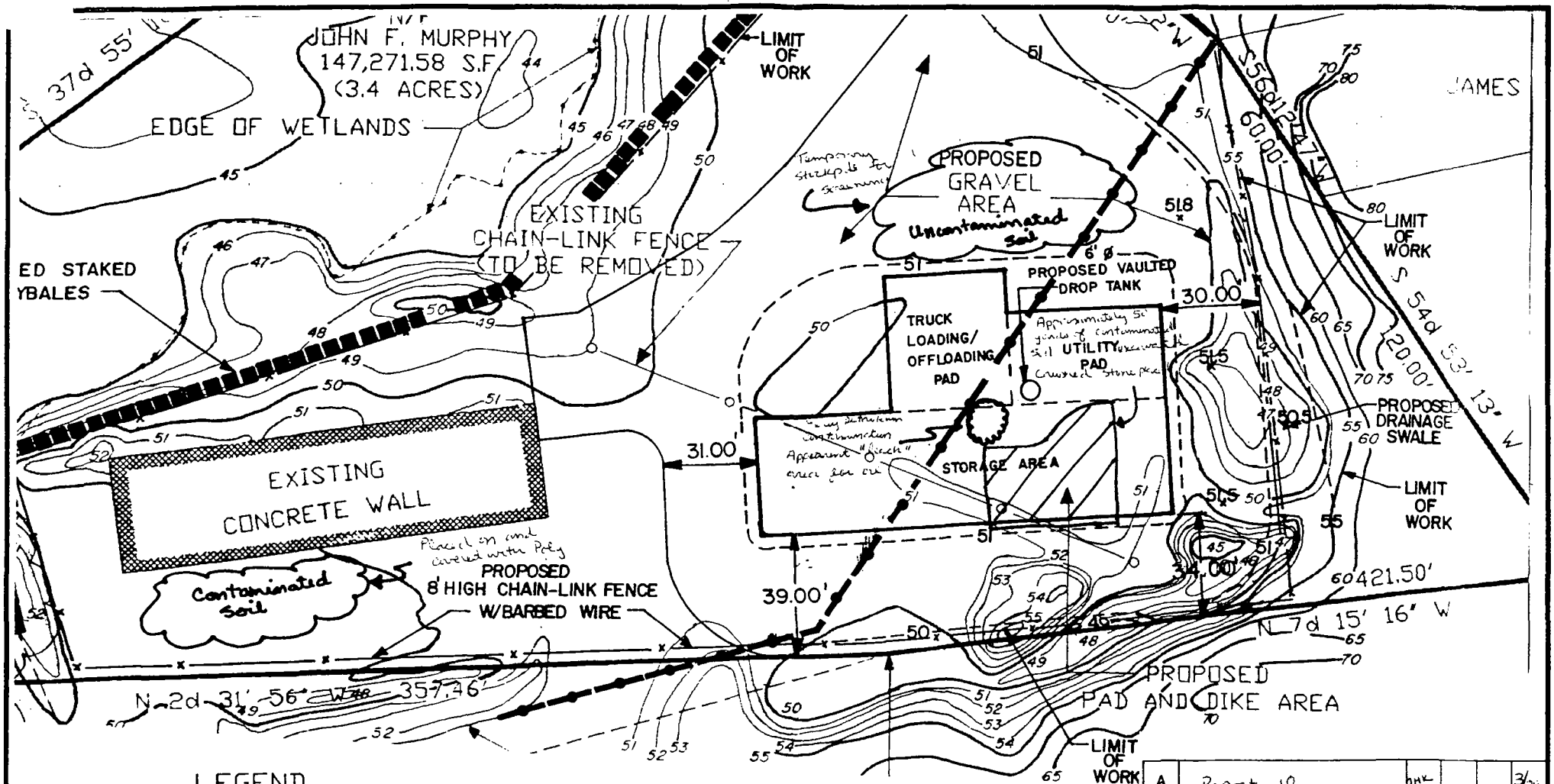
Carolyn H. Kohrs
FIELD REPRESENTATIVE

Stephen Applebaum
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.5
Total	9.5

CHK: DISK#4

0089-0339



ISSUE	DESCRIPTION	DRWN.	CHK'D.	APPR.	DATE
A	Report 10	DHK			3/21

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-0
SCALE 1" = 30'	

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 11
FILE NO: E1656
DATE: 3/30/89
PAGE: 1 OF 2

Weather Conditions: Rainy - 35-40° F

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 225LC Caterpillar Backhoe
   B) One, 10 wheel dump truck
   C) One, 5,000-gallon vacuum truck

3. **Work accomplished:**

A) Approximately 70 cubic yards of contaminated soil were excavated from the southwestern portion of the building area. This excavation typically extended 2 to 4 feet below the groundwater table. Heavy petroleum contamination was encountered in the groundwater in this area. The floating product which accumulated in the excavation was pooled in the northwest corner of the excavation using sausage booms and then removed by the vacuum truck. Crushed stone was placed above 2/3 of the uncontaminated excavation surface. The remaining portion of this excavation was secured with floating sausage booms and the open excavation was corded off for the night.

B) The contaminated soil was properly placed on and covered with double sheets of polyethylene.

C) Ms. Peg Carson of the DEQE visited the site today at 2:10 pm. I explained the construction procedures to her and she seemed to agree with the methods. She indicated that she wanted to make sure that no backfilling above contamination was occurring. She also asked me to call her when the excavation for the building footings was to start. I informed her that I would let her know this date.

Ms. Carson returned to the site at 3:30 pm. At this time she requested that a copy of the site assessment and construction methods be sent to the 21C department. This request will be met.

4. **Visitors to the site:**
   -Peg Carson (DEQE)

5. **Left the site at 1545 hours**

6. **Distribution:**

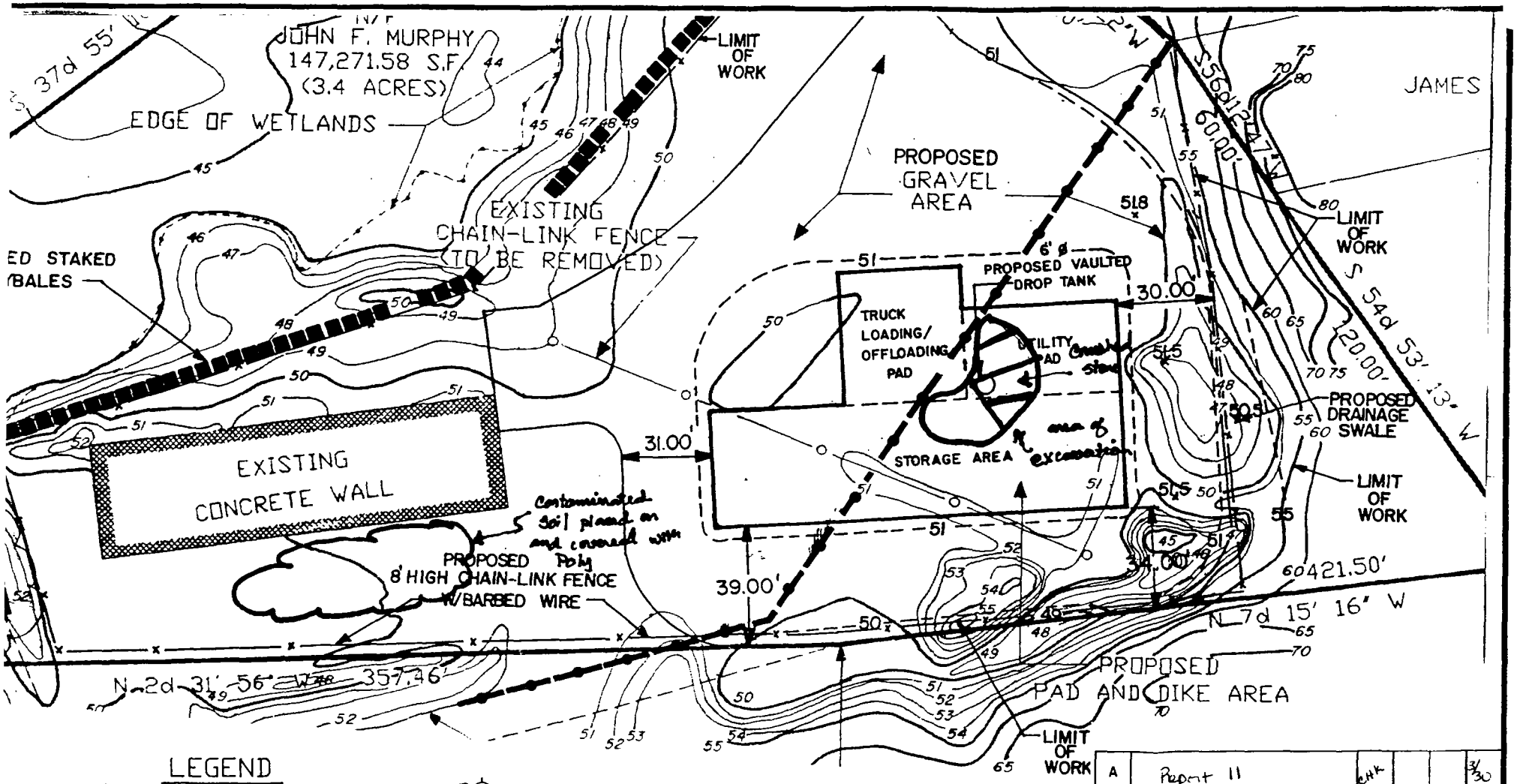
   Paul Whitting
   Mark Sullivan

Carolyn H. Kohrs
FIELD REPRESENTATIVE

Stephen Applebaum
REVIEWED BY

On site 7.0
Travel 2.0
Office 1.0
Total 10.0

CHK: DISK#4



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	Report 11	CHK			3/30

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-0
SCALE 1" = 30'

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 12
FILE NO: E1656
DATE: 3/31/89
PAGE: 1 OF 1

Weather Conditions: Overcast - 50-40° F

1. Arrived on site at 0800 hours

2. Earthwork equipment working:

A) One, 955 Bulldozer
B) One, 225 Excavator
C) One, 10 wheel dump truck
D) One, Bobcat
E) One, 6,000-gallon vacuum truck

3. Work accomplished:

A) Approximately 50 cubic yards of waste oil contaminated soil were excavated from the central portion of the building, see sketch No. 12. The excavation was approximately 4 feet below the groundwater table. The heavy petroleum encountered was removed by the vacuum truck after it was corralled using sausage booms. Crushed stone was placed on top of the uncontaminated soil in the excavation. The visible groundwater with floating product was corralled to the northwest corner of the excavation and secured for the weekend

B) The contaminated soil wa stockpiled on and covered with polyethylene.

C) Removed 2,600 gallons of waste oil and water to Quincy Ave via the vacuum truck.

4. Visitors to the site:
none

5. Left the site at 1445 hours

6. Distribution:

Paul Whitting
Mark Sullivan

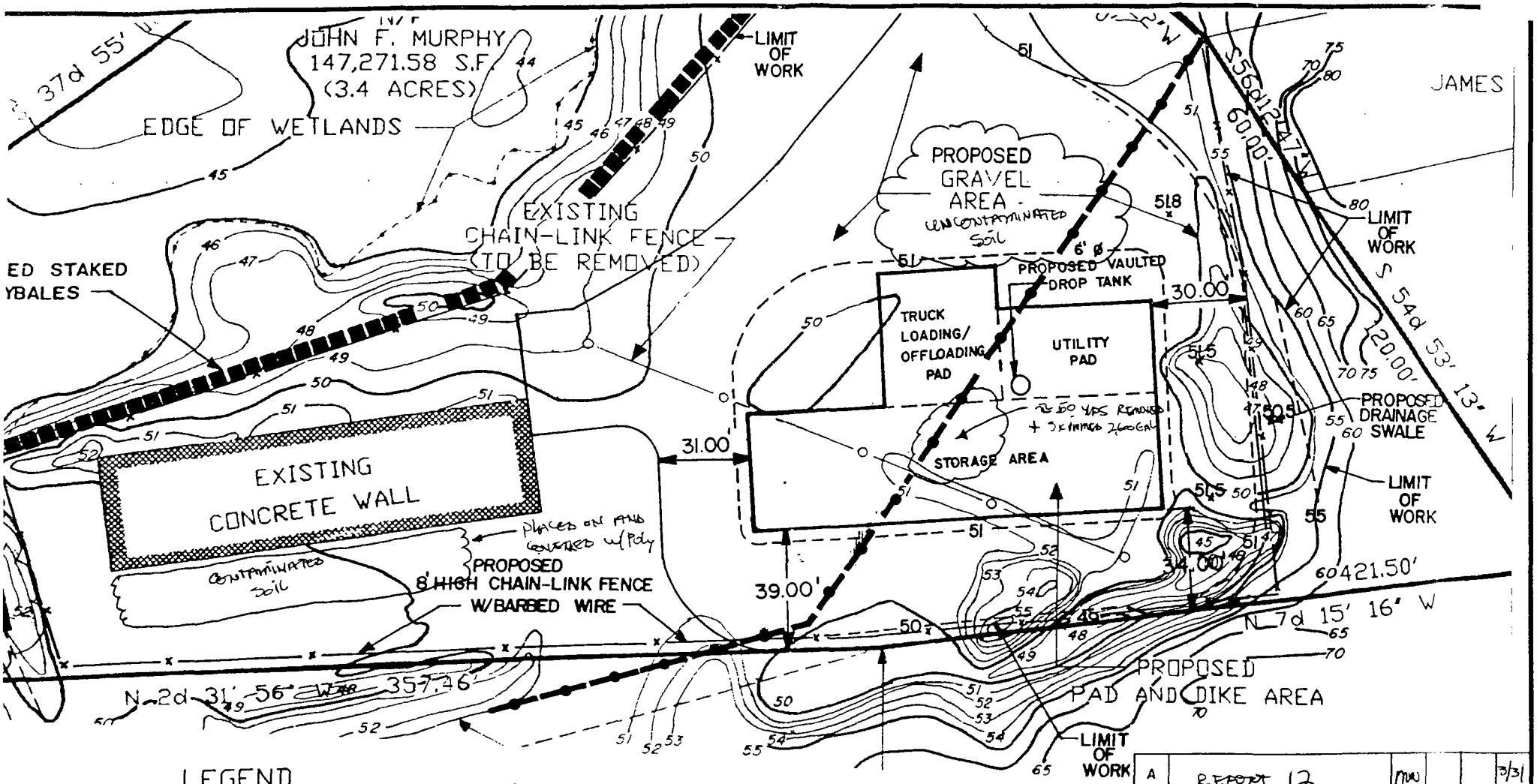
Michael Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kolvig
REVIEWED BY

On site 6.0
Travel 2.0
Office 1.0
Total 9.0

CHK: DISK#4

0089-0344



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN	CHKD	APPR	DATE
A	REPORT 12	MW			3/31

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656 | DWG. NO. 1656-SK-012
SCALE 1" = 30'

WOBURN BUILDING DEPARTMENT
INSPECTION REPORT/FOLLOW-UP COMPLAINT FORM

INSPECTION DATE Oct. 5, 1989 / FOR: Water Dept
OWNER: Murphy's Waste Oil
BUSINESS NAME OR USE
ADDRESS: 252 Salem St.

VIOLATIONS:

P-6
8" Water Dept OK

11:10 - 11:28 AM 11:00
1:10 - 1:16 PM M.W. Clark Excavating Inc
3:10 3:15 PM

NAME OF PERSON TO WHOM RECOMMENDATIONS WERE GIVEN:
AMOUNT OF TIME ALLOTED FOR REMEDIAL ACTION, WITH PUBLIC SAFETY IN MIND:

Time 3:15 INSPECTOR:

= = = =

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 13
FILE NO: E1656
DATE: 4/3/89
PAGE: 1 OF 1

Weather Conditions: Rain - mid 40° F

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 955 Bulldozer
   B) One, 225 Excavator
   C) One, 10 wheel dump truck
   D) One, Bobcat
   E) One, 3,500-gallon vacuum truck

3. **Work accomplished:**

A) Continued excavation of contaminated soil. Stockpiled approxiamtely 70 yards of contaminated soil. The excavation extended approximately 4 feet below the groundwater table. Heavy petroleum was skimmed off the water by the vacuum truck. Approximately 1,300 gallons of oil and water were removed.

Dug one test pit (sketch 13) to determine extent of contamination. Test pit is located in northeast corner of building. Soil and groundwater appeared to be clean.

B) The contaminated soil was stockpiled on and covered with polyethylene.

C) Collected samples from the contaminated soil stockpile for disposal parameters.

4. **Visitors to the site:**
   Peg Carson (DEQE)
   Chris McIntyre (CHI-TE)

5. **Left the site at 1430 hours**

6. **Distribution:**

   Paul Whitting
   Mark Sullivan

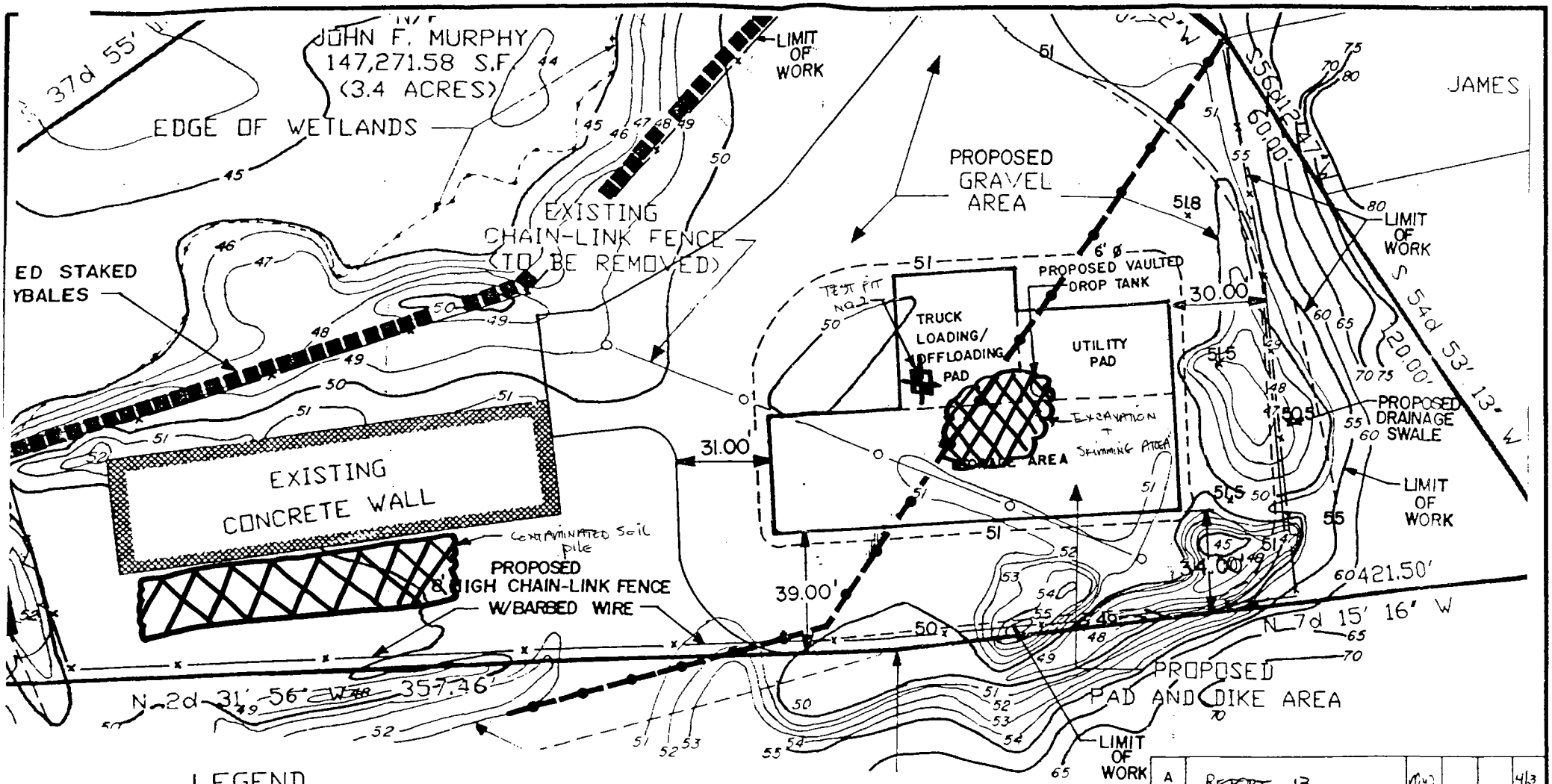
Michael Whiteside
FIELD REPRESENTATIVE

Carolyn H. Kolus
REVIEWED BY

On site 6.0
Travel 2.0
Office 1.0
Total 9.0

CHK: DISK#4

0089-0347



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN	CHKD	APPR	DATE
A	REPORT 13	MWO			4/13

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-013
SCALE 1" = 30'	

EXPLORATION TEST PIT LOG	Page: Report 13
* CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATIO	Test Pit No. : 4
325 Wood Road, Braintree, MA 02184 (617)849-1200	CHEE Job No.: E-1656
Project Name: MURPHY'S [illegible]	CH Job No.:
Client Name: [illegible]	Date & Time Start: [illegible]
Location: [illegible] MA	Date & Time Finish: 4-7-89
Contractor: CHEE	Equipment Used: 325 EXCAVATOR
Logged by: M. [illegible]	Checked by:

Scale in (ft)	Strata Change Depth	SAMPLE Type & No.	SAMPLE Depth Range	Soil and Rock Description	Comments (include excavation effort)
					TEST PIT BEGUN 2.5' BELOW FINISHED GRADE
5.0'	FILL		0-2'	SAND AND SILT MIX [illegible] DEBRIS.	
6.0'	SAND + [illegible]		2-6'	YELLOW + GREY FINE TO COARSE SAND, SOME FINE TO COARSE GRAVEL; TRACE SILT	▽ GROUNDWATER
				[illegible]	
				NOTE: NO WATER OBSERVED [illegible] SOIL OR GROUNDWATER.	

Site Sketch	Groundwater			Summary
North Arrow	Date	Time	Depth (ft)	Depth:
				Jar Samples No.:
				Bag Samples No.:
				Groundwater @
	Not encountered			Test Pit No.:
	Hours after completion			

Document disk location: "Boring & Test Pit Logs

CHEE form "TP-P1" Rev. 2 - 3/8/89

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 14
FILE NO: E1656
DATE: 4/4/89
PAGE: 1 OF 2

Weather Conditions: 50° F, Drizzle (light rain)

1. Arrived on site at 0800 hours

2. Earthwork equipment working:

A) One, 955 Bulldozer
B) One, 225LC Caterpillar backhoe
C) One, 10 wheel dump truck
D) One, 1123 Bobcat loader
E) One, 3,200-gallon vacuum truck

3. Work accomplished:

A) Approximately 110 cubic yards of waste oil contaminated soil was excavated from the central portion of the building. Generally, this excavation extended 2 to 5 feet below the groundwater table. The excavated contaminated soil was properly stockpiled on and covered with polyethylene sheeting directly west of the concrete dike wall. During excavation, pure petroleum product was released from the contaminated soil. This floating product was forced to the west end of the excavation using sausage booms and removed from the groundwater by a vacuum truck. Crushes stone was placed across 2/3 of the excavation above uncontaminated soil to slightly above the groundwater elevation in order to stabilize the excavation bottom.

B) Approximately 1,700 gallons of oil and water were removed from the excavation today.

4. Visitors to the site:
- Joe Resca (CHI-TE)
- William St. Hilaire (CHEE)

5. Left the site at 1530 hours

6. Distribution:

Paul Whitting
Mark Sullivan

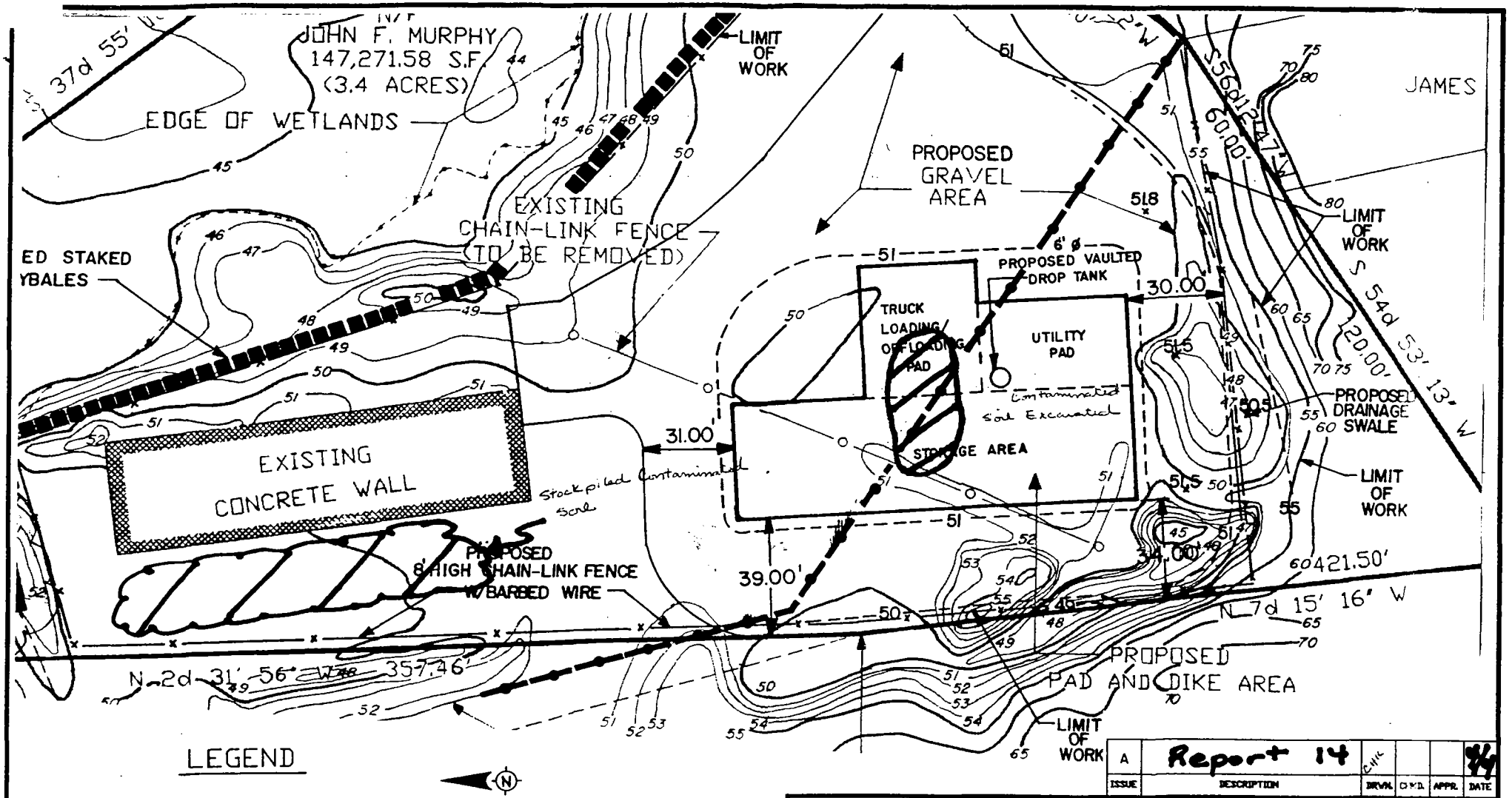
Carolyn H. Kohrs
FIELD REPRESENTATIVE

Stephen Applebaum
REVIEWED BY

On site	7.0
Travel	2.0
Office	0.5
Total	9.5

CHK: DISK#4

0089-0351



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	Report 14	ENK			4/4

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO.	DWG. NO.
E-1656	1656-SK-014
SCALE 1" = 30'	

CleanHarbors

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 15
FILE NO: E1656
DATE: 4/5/89
PAGE: 1 OF 1

Weather Conditions: Cloudy, overcast, 50 -60° F; cleard up in afternoon

1. Arrived on site at 0800 hours

2. Earthwork equipment working:

A) One, 955 Bulldozer
B) One, 225LC Caterpillar excavator
C) One, 10 wheel dump truck
D) One, 1123 Bobcat loader
E) One, 3,200-gallon vacuum truck

3. Work accomplished:

A) Approximately 90 cubic yards of waste oil contaminated soil were excavated from the northeastern portion of the building. This soil was properly stockpiled on and covered with polyethylene sheeting at the end of the day. No crushed stone was added to the excavation area because no stone was delivered to the site today.

B) Booms, 3M Pads and a vacuum truck were used to collect oil floating on the water in the excavation area and other portions of the proposed building area.

C) The ramp used to drive onto and dump the contaminated soil was built up. Its foundation was beginning to erode due to rain.

D) At the end of the day, caution tape was put around the excavation area.

4. Visitors to the site:
- George Wilson, Vice President of Operations (CHI)

5. Left the site at 1545 hours

6. Distribution:

Paul Whitting
Mark Sullivan

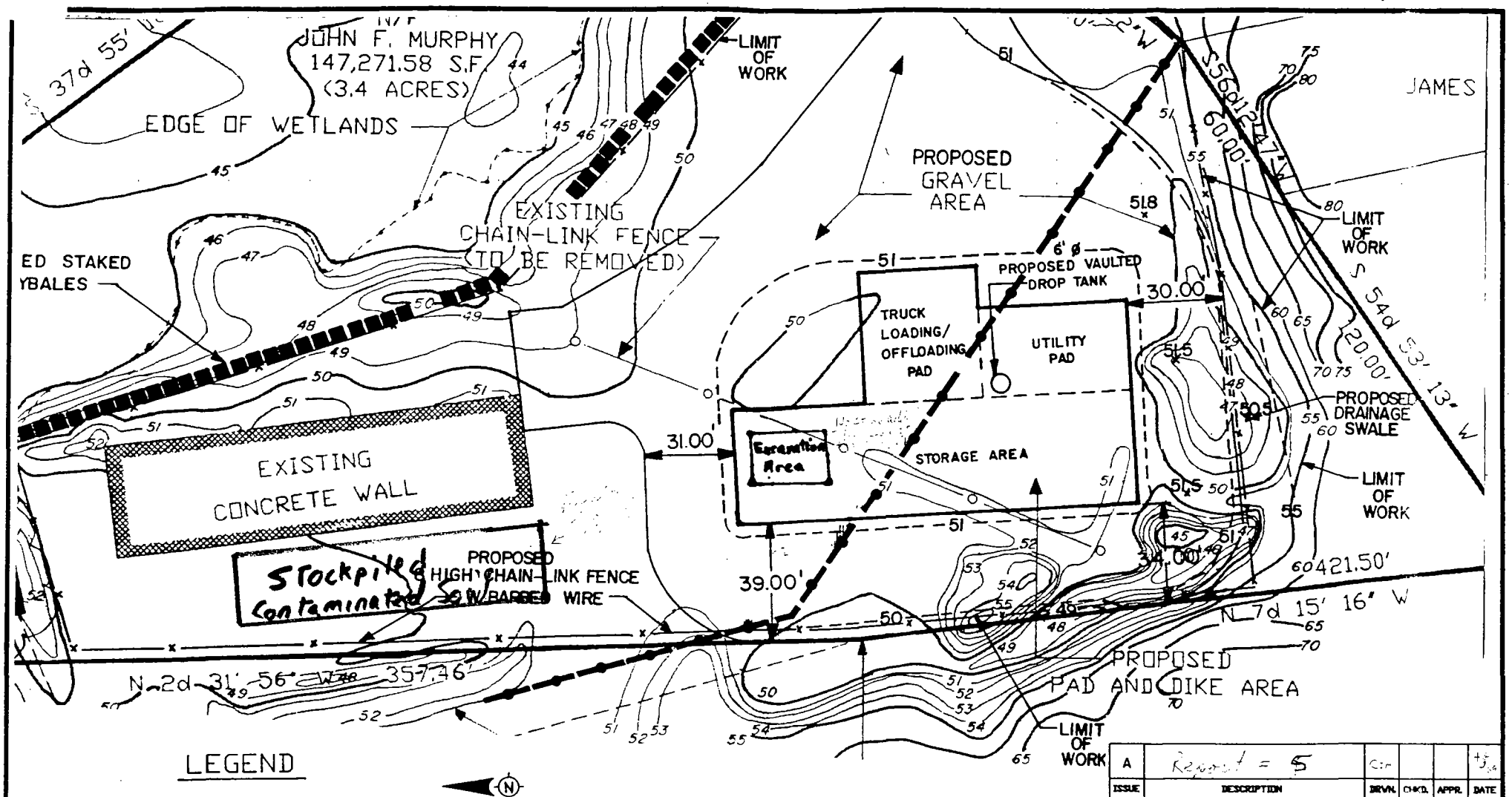
Craig Malloy
FIELD REPRESENTATIVE

On site 7.75
Travel 1.5
Office 0.0
Total 9.25

Carolyn H. Kohno
REVIEWED BY

CHK: DISK#4

0089-0353



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	Report = 5				

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656
SCALE 1" = 30'
DWG. NO. 1656-SK-0

CleanHarbors

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 16
FILE NO: E1656
DATE: 4/6/89
PAGE: 1 OF 1

Weather Conditions: Heavy rain 40-50° F

1. **Arrived on site at 0815 hours**

2. **Earthwork equipment working:**

   A) One, 955 Bulldozer
   B) One, 225LC Caterpillar excavator
   C) One, 10 wheel dump truck
   D) One, 1123 Bobcat loader

3. **Work accomplished:**

A) The 225 excavator placed 1 1/2-inch stone in the proposed building area. After being dumped by the dump truck, the stone was spread around by the excavator. Due to the heavy rains, work was terminated at 12:00 noon.

B) Four truck loads of concrete were removed from the site. Two additional truckloads were expected to be removed later in the day.

C) Five truckloads of stone were delivered.

4. **Visitors to the site:**
   - none

5. **Left the site at 1230 hours**

6. **Distribution:**

   Paul Whitting
   Mark Sullivan

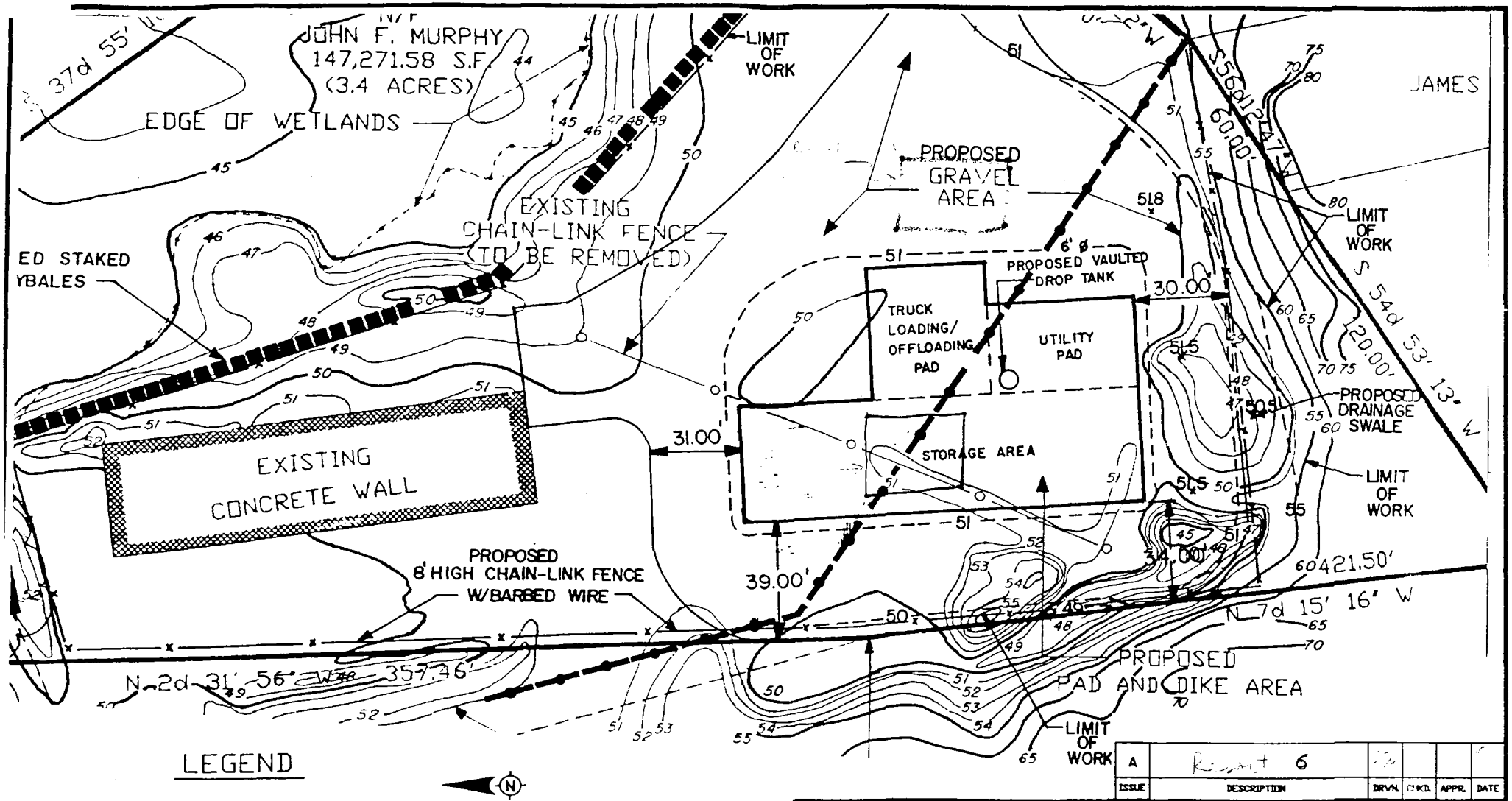
Craig Malloy
FIELD REPRESENTATIVE

On site 7.75
Travel 1.5
Office 0.0
Total 9.25

Carolyn H. Kohno
REVIEWED BY

CHK: DISK#4

0089-0355



ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	Revised 6				

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-0
SCALE 1" = 30'	

CleanHarbors

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 17
FILE NO: E1656
DATE: 4/7/89
PAGE: 1 OF 2

Weather Conditions: 40-50° F, Clear and breezy

1. **Arrived on site at** 0815 **hours**

2. **Earthwork equipment working:**

   A) One, 955K Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 10 wheel dump truck
   D) One, 3,000-gallon vacuum truck

3. **Work accomplished:**

A) The vacuum truck worked to in the morning to skim the waste oil from the ground water surface in the portion of the excavation that had not been backfilled the previous day. By 1100 hours, the vacuum truck had been filled to capacity from combined pumping activities today and Thursday.

B) No reportable work was accomplished today because difficulty was encountered locating an appropriate place to position the self contained waste oil storage tank which must be in service by April 15. Due to zoning and wetland requirements, the location for the on-site tank was proposed directly south of the building footprint (approximately 20 feet offset from the building foundation). However, topographic features and difficult site soil conditions made this proposed location impossible. A great portion of the day was spent determining a different location for the tank. Because placing the tank within the concrete dike area was not approved by Mr. William Murphy (Woburn Conservation Commission), a decision was made to move the southern third of the uncontaminated fill stockpile in order to accommodate the aboveground tank behind the 150 foot buffer zone on stable ground.

C) Four truck loads of concrete were removed from the site.

4. **Visitors to the site:**
   -Mr. Edward Fixari
   -Mr. Paul Whiting

5. **Left the site at** 1530 **hours**

6. **Distribution:**

   Mr. Paul Whitting
   Mr. Mark Sullivan

Clean Harbors

Carolyn Kohrs
FIELD REPRESENTATIVE

On site 7.0
Travel 2.0
Office 0.0
Total 9.0

Stephen J. Applebaum
REVIEWED BY

CHK: DISK#4

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 18
FILE NO: E1656
DATE: 4/10/89
PAGE: 1 OF 1

Weather Conditions: 40-50° F, Sunny

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 955K Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 1124 Bobcat Loader

3. **Work accomplished:**

A) Relocated approximately one half of the uncontaminated stockpiled soil to make room for placement of the temporary waste oil tank. The location for the temporary tank laid out in the field and the location was staked. See field sketch for tank location. ↑ was

4. **Visitors to the site:**
   -Mr.Chris MacIntyre

5. **Left the site at 1730 hours**

6. **Distribution:**

   Mr. Paul Whiting
   Mr. Mark Sullivan

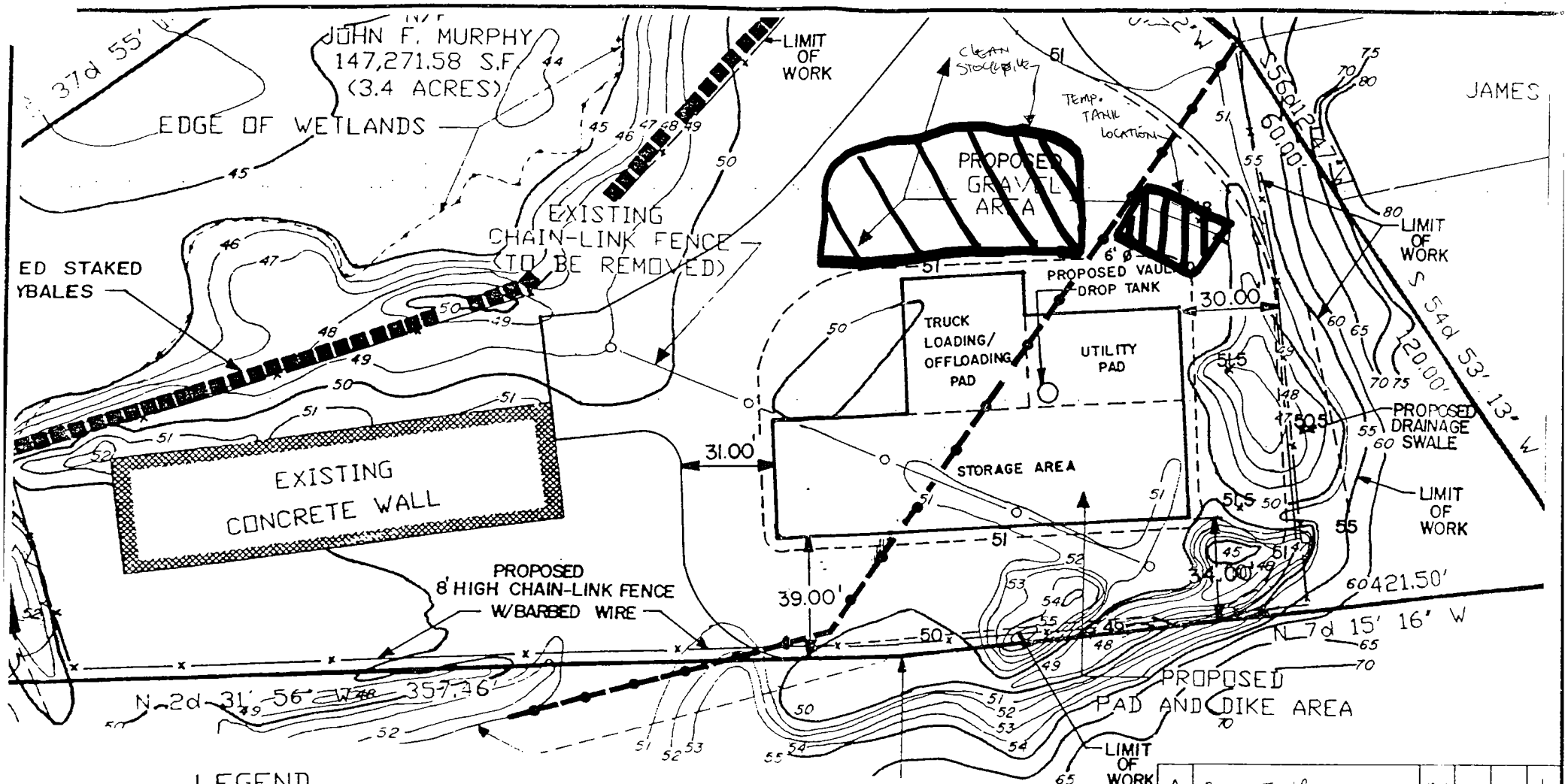
Mike Whiteside
FIELD REPRESENTATIVE

On site 9.0
Travel 2.0
Office 0.0
Total 11.0

Carolyn H. Kohno
REVIEWED BY

CHK: DISK#4

0089-0359



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN	CHKD.	APPR.	DATE
A	REPORT 18	MW			4/10

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-0
SCALE 1" = 30'	

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 19
FILE NO: E1656
DATE: 4/11/89
PAGE: 1 OF 1

Weather Conditions: 40-50° F, Sunny

1. **Arrived on site at 0730 hours**

2. **Earthwork equipment working:**

   A) One, 955K Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 1124 Bobcat Loader

3. **Work accomplished:**

A) Continued excavating contaminated soil from the proposed building area. Stockpiled approximately 30 yards of waste oil contaminated soil on and covered it with polyethylene sheeting.

B) Graded and leveled temporary tank location.

C) Approximately 16 trailer loads of clean fill were brought to the site from Quincy by CHTD.

D) A representative from the Woburn Health Department was on site for approximately 10 minutes. His visit was in response to a call about fill being brought on site. He indicated that he was pleased with our scope of work and with the progress to date.

4. **Visitors to the site:**
   -Woburn Health Dept. Representative.

5. **Left the site at 1530 hours**

6. **Distribution:**

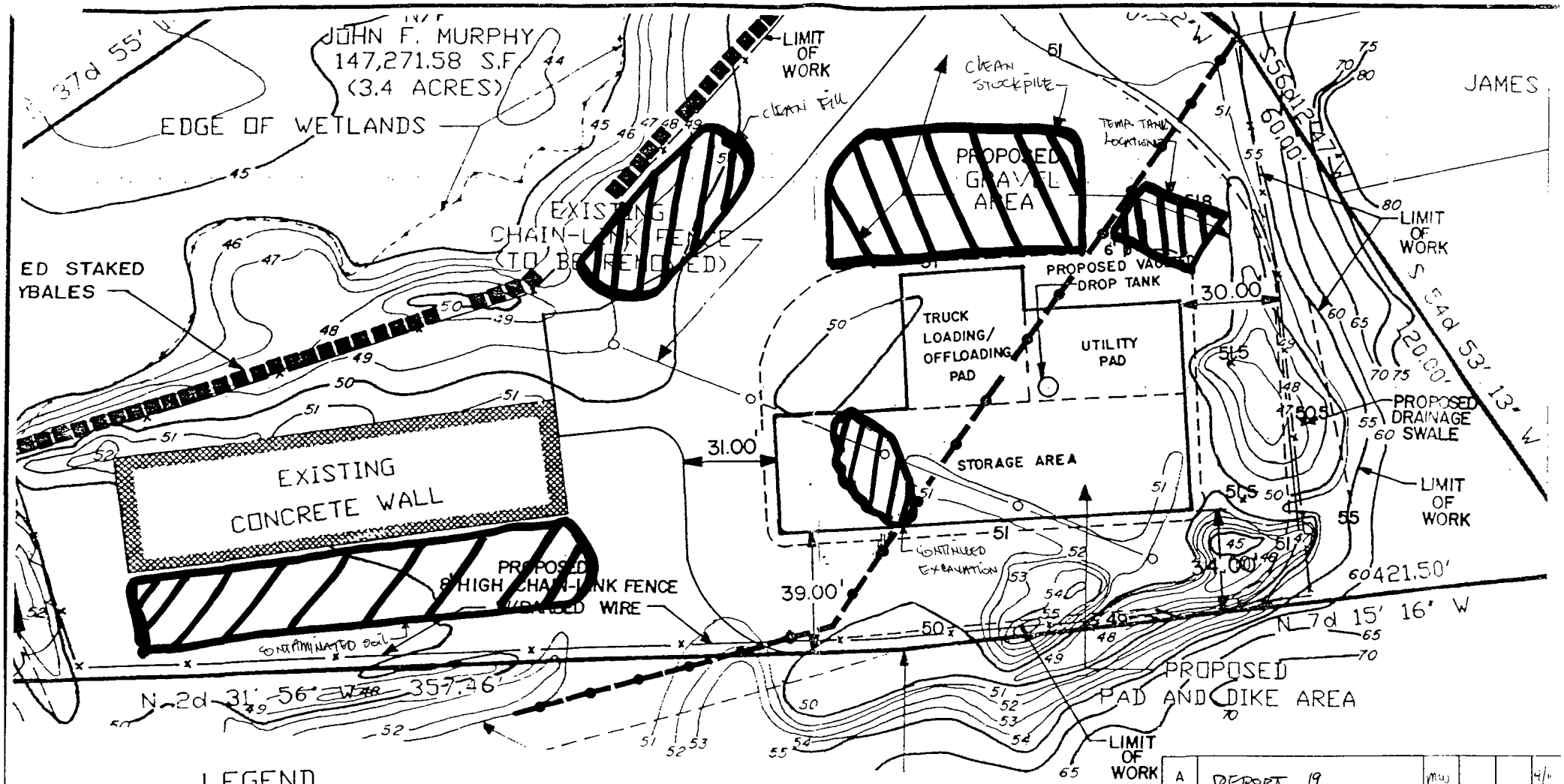
   Mr. Paul Whiting
   Mr. Mark Sullivan

Mike Whiteside
FIELD REPRESENTATIVE

On site 7.0
Travel 2.0
Office 0.0
Total 9.0

Carolyn H. Kohrs
REVIEWED BY

0089-0361



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	REPORT 19	MW			4/11

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656
SCALE 1" = 30'
DWG. NO. 1656-SK-0

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 20
FILE NO: E1656
DATE: 4/12/89
PAGE: 1 OF 1

Weather Conditions: 50° F. Sunny

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 955K Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 1124 Bobcat Loader
   D) One, 10 wheel dump truck
   E) One, 1,000-gallon skid vac
   F) One, Crane

3. **Work accomplished:**

A) Compacted the tank pad area and placed approximately 4 inches of crushed stone as base for the temporary tank. The ground in this area appeared quite spongy and soft. Mark Sullivan was informed that the tank may settle under the static load of the waste oil tank. He indicated that differential settlement issues would be handled as they came up. The tank was place on the temporary pad at 1130 hours.

B) Continued excavating contaminated soil from the proposed building area. Stockpiled approximately 30 yards of waste oil contaminated soil on and covered it with polyethylene sheeting.

C) The location for the eight foot high chain link fence which will surround the temporary tank was staked out today.

D) More clean fill was brought to the site from Quincy by CHTD.

4. **Visitors to the site:**
   -Ms. Carolyn Kohrs
   -Mr. George Wilson

5. **Left the site at 1830 hours**

6. **Distribution:**

   Mr. Paul Whiting
   Mr. Mark Sullivan

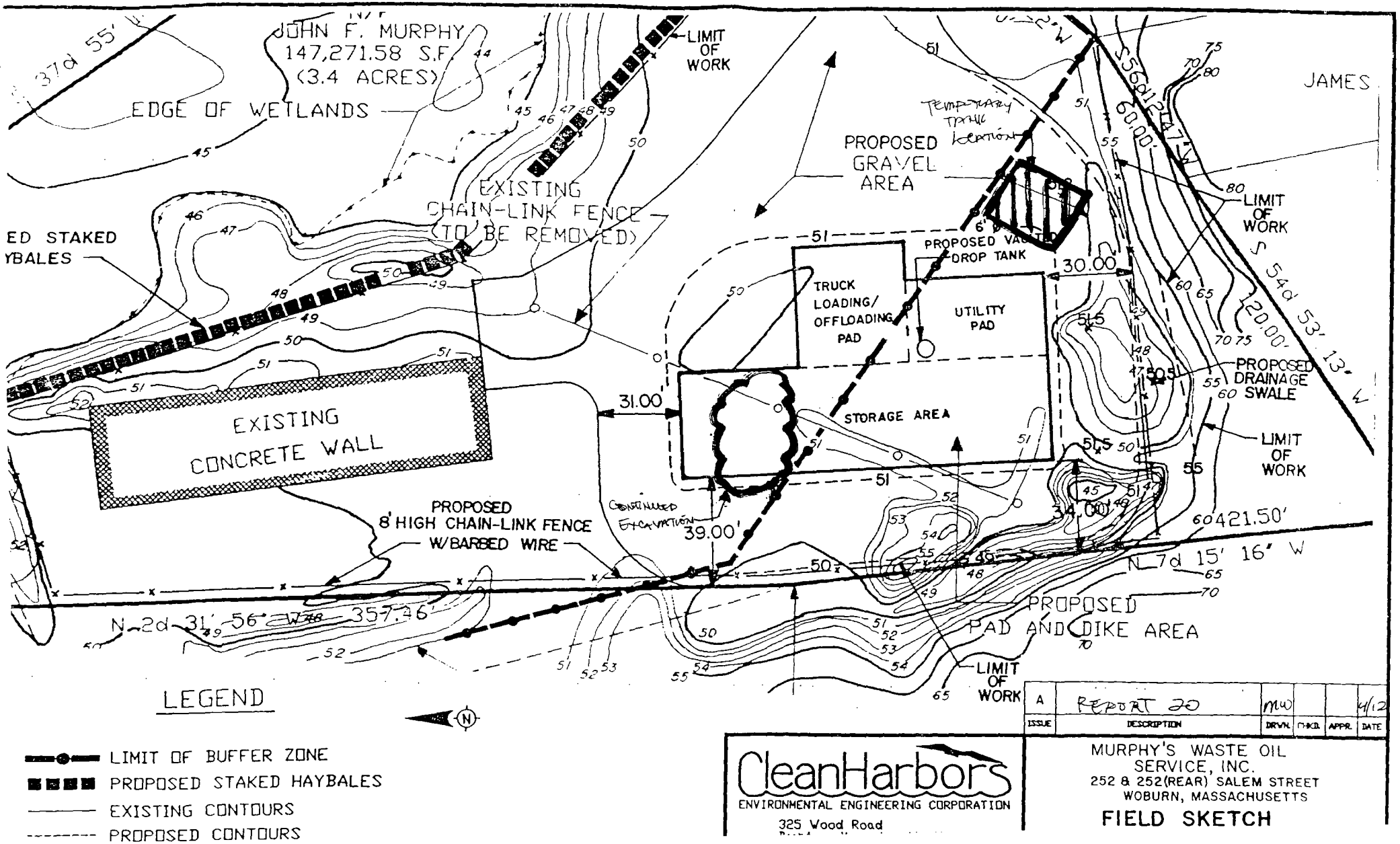
Mike Whiteside
FIELD REPRESENTATIVE

On site 10.0
Travel 2.0
Office 0.0
Total 12.0

Carolyn H. Johns
REVIEWED BY

CHK: DISK#4

0089-0364


JOHN F. MURPHY
147,271.58 S.F.
(3.4 ACRES)
EDGE OF WETLANDS
LIMIT OF WORK
EXISTING CHAIN-LINK FENCE (TO BE REMOVED)
PROPOSED GRAVEL AREA
TEMPORARY TANK LOCATION
PROPOSED VACUUM DROP TANK
TRUCK LOADING/ OFFLOADING PAD
UTILITY PAD
STORAGE AREA
EXISTING CONCRETE WALL
PROPOSED 8' HIGH CHAIN-LINK FENCE W/BARBED WIRE
PROPOSED DRAINAGE SWALE
CONTINUED EXCAVATION
PROPOSED PAD AND DIKE AREA
JAMES
30.00'
31.00'
39.00'
34.00'
60.00'
120.00'
421.50'
S 54d 53' 13" W
N 7d 15' 16" W
N 2d 31' 56" W 357.46'
LEGEND
LIMIT OF BUFFER ZONE
PROPOSED STAKED HAYBALES
EXISTING CONTOURS
PROPOSED CONTOURS
A REPORT 20 MW 4/12
ISSUE DESCRIPTION DRWN. CHKD. APPR. DATE
CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS
FIELD SKETCH

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 21
FILE NO: E1656
DATE: 4/13/89
PAGE: 1 OF 1

Weather Conditions: 50° F, Sunny

1. **Arrived on site at 0800 hours**

2. **Earthwork equipment working:**

   A) One, 955K Caterpillar Front End Loader
   B) One, 225LC Caterpillar Backhoe
   C) One, 1124 Bobcat Loader
   D) One, 10 wheel dump truck
   E) One, 1,000-gallon skid vac

3. **Work accomplished:**

A) Continued excavating contaminated soil from the proposed building area. Stockpiled the waste oil contaminated soil on and covered it with polyethylene sheeting.

B) Placed and cemented fence posts to temporary waste oil tank.

C) A representative from the Woburn Police department visited the site in response to a call which indicated that CHTD was dumping contaminated soil on the site. I informed the police officer that CHTD is in the process of digging out contaminated fill from within the building area and that only clean fill was being brought in. He indicated that he agreed that we were not dumping contaminated soil on the site and left without incident.

4. **Visitors to the site:**
   - Mr.Steve Pozner
   - Mr.Paul Ahearn
   - Woburn Police

5. **Left the site at 1430 hours**

6. **Distribution:**

   Mr. Paul Whiting
   Mr. Mark Sullivan

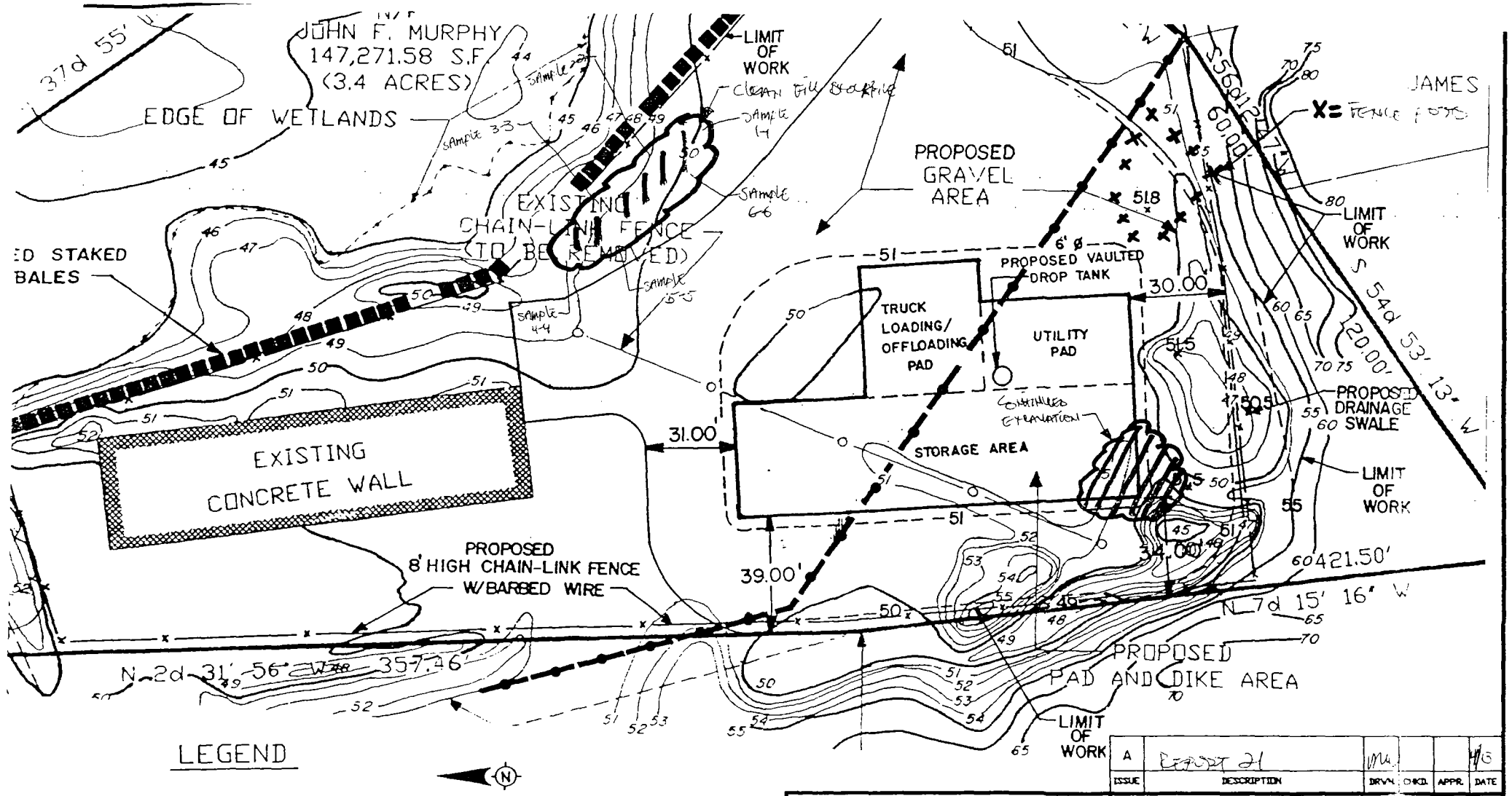
Mike Whiteside
FIELD REPRESENTATIVE

On site 6.0
Travel 2.0
Office 1.5
Total 9.5

Carolyn H. Kohno
REVIEWED BY

CHK: DISK#4

0089-0367



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRWN	CHKD.	APPR.	DATE
A	REPORT 21	MM			4/6

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO. E-1656	DWG. NO. 1656-SK-02
SCALE 1" = 30'	

FIELD SUMMARY REPORT

PROJECT: Murphy's Waste Oil Services
LOCATION: Woburn,MA
OWNER: Clean Harbors, Inc.
CONTRACTOR: Clean Harbors Tank Division

REPORT NO: 22
FILE NO: E1656
DATE: 4/14/89
PAGE: 1 OF 1

Weather Conditions: 50° F, Sunny

1. Arrived on site at 0800 hours

2. Earthwork equipment working:

A) One, 955K Caterpillar Front End Loader
B) One, 225LC Caterpillar Backhoe
C) One, 1124 Bobcat Loader
D) One, 10 wheel dump truck
E) One, 1,000-gallon skid vac

3. Work accomplished:

A) Continued excavating contaminated soil from the proposed building area. Stockpiled the waste oil contaminated soil on and covered it with polyethylene sheeting. Approximately 700 gallons of waste and groundwater were skimmed from excavation bottom.With today's work completed, no more contaminated soil within the building area remained.

B) Temporary Tank: The cross beams for the chain link fence which will surround the temporary waste oil storage were constructed today.

C) The haybales that were placed along the wetland slope were moved today because the water level in the wetland area had risen sharply over the last two weeks. Haybales were moved to above the water level and properly staked in place.

D) Representatives from the Massachusetts DEQE visited the site today. They indicated that they were pleased with the work that had been done to date.

4. Visitors to the site:

- Ms. Peg Carson (DEQE)
- Mr. Al Nardone (DEQE)
- Mr. Mark Brennan (CHI)

5. Left the site at 1430 hours

6. Distribution:

Mr. Paul Whiting
Mr. Mark Sullivan

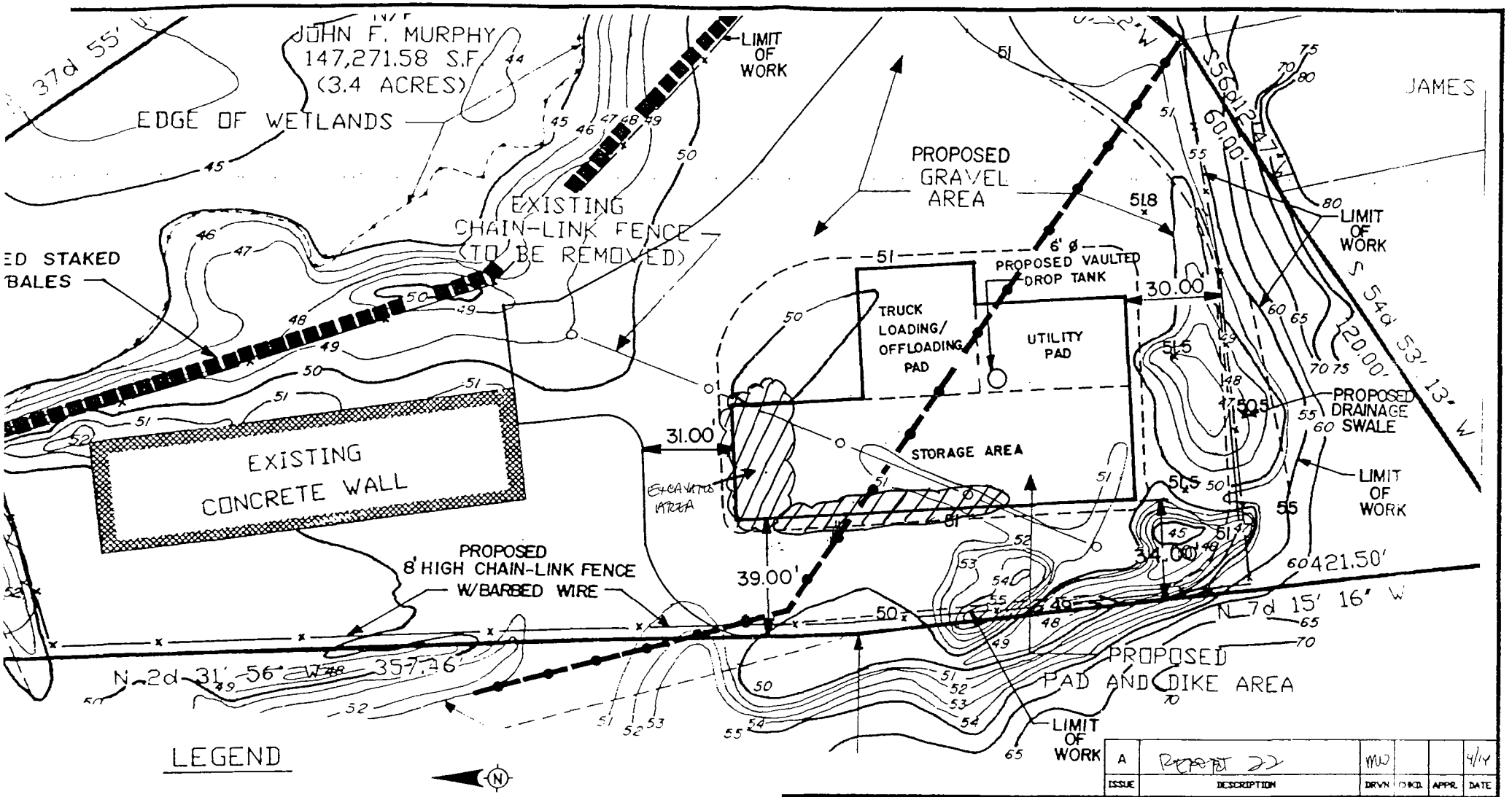
Mike Whiteside
FIELD REPRESENTATIVE

On site 6.0
Travel 2.0
Office 1.5
Total 9.5

Carolyn H. Kohrs
REVIEWED BY

CHK: DISK#4

0089-0370



LEGEND

- LIMIT OF BUFFER ZONE
- PROPOSED STAKED HAYBALES
- EXISTING CONTOURS
- PROPOSED CONTOURS

ISSUE	DESCRIPTION	DRVN	CHKD	APPR.	DATE
A	Report 22	MW			4/14

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

MURPHY'S WASTE OIL SERVICE, INC.
252 & 252(REAR) SALEM STREET
WOBURN, MASSACHUSETTS

FIELD SKETCH

PROJECT NO.	E-1656	DWG. NO.	1656-SK-022
SCALE	1" = 30'		

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Hazardous Waste
One Winter Street, Boston, Mass. 02108

Daniel S. Greenbaum
Commissioner

July 13, 1989

Mark Sullivan
Murphy's Waste Oil Service, Inc.
252 R Salem Street
Woburn, MA 01801

Re: Facility Upgrade Storage Tanks

Dear Mr. Sullivan:

The Department is in receipt of the June 14, 1989 submittal provided by Clean Harbors in response to a Department request for further information dated May 1, 1989. The project discusses the proposed installation of eight above-ground tanks and one in-ground tank. The submittal includes a discussion by your Registered Professional Engineer of structural, testing, age and installation information on the tanks. The submittal also addressed some issues and concerns raised in the above earlier letter.

Work to be performed on the tanks included the addition of end structural support on the older tanks to meet the requirements of the Underwriters Laboratories Inc. Standards for Steel Above Ground Tanks for Flammable and Combustible Liquids, (UL 142, sixth edition), removal of tank deformations, the installation of high level alarms and associated valves and manifolds on the piping. This is best illustrated on Drawing No. 107-05-001, titled "MURPHY"S WASTE OIL SERVICES CO., WOBURN, MA, WASTE OIL SYSTEM FLOW DIAGRAM", ISSUE date 11/22/88, prepared by Progencon Inc., Boston, MA. This plan was submitted with the earlier submittal.

In addition to the tank review, there will be included, provisions for inspection and detection of any leaks with a leak detection system. The tanks will be constructed within a dike system and the floor of the dike is slightly sloped to sumps which are equipped with the above mentioned detection system. The detection system is shown in the June 14th submittal in Attachment 3, titled "Information on a Proposed Leak Detection System".

The next stage of this project review will involve the Department's review of the facility management and operating plans prior to operation of the modified facility.

The Department approves the construction and installation of the above ground tanks based on the review of the submitted materials subject to the following provisions:

1. All required local approvals where appropriate, Fire Department, Building Department, etc., are obtained;

2. All recommendations made by the Registered Professional Engineer, Mr. Lee F. Mount, P.E., regarding existing tanks and structural improvements as mentioned in the June 14, 1989 submittal are implemented and the date of such implementation is forwarded to this Department and local officials.

3. The additional certifications and inspections required by 310 CMR 30.693(1) and 30.693(10) shall be forwarded to this Department and local officials.

4. The data on the last round of tank testing of the existing tanks mentioned on page 24, Baker test results of May 31, 1989 be submitted to this Department.

5. Upon completion of all installation, Murphy's shall notify the Local Board of Health and the Licensing and Engineering Branch of the Division of Hazardous Waste so that an inspection may be performed to verify that final construction was performed in accordance with approved plans. This notification shall contain a statement by your professional engineer that final construction was completed in accordance with Department approvals.

The Department is providing the Local Board of Health a copy of the June 14, 1989 submittal. This review is subject to the comments as may be made in the Part B Facility permit review process. Additionally, this facility may be required to comply with additional standards which may be promulgated subsequent to this approval.

Should you have questions on this review, please contact Al Nardone of my staff at (617) 292-5580.

Very truly yours,

Steven K. Dreeszen, Chief
Licensing and Engineering Branch

SKD/jp

cc: Edward MacDonald, NERO, DREE, Woburn Office
Robert Doherty, Chief, Woburn Fire Dept., Main St., Woburn, MA
Francis O. Ryan, Chrmn., Woburn Board of health, Kennedy Jr. High School, Woburn, MA
Stephen Pozner, Clean Harbors, Inc.-1200 Crown Colony Drive, P.O. Box 19137, Quincy, Ma. 02269

CleanHarbors®
Environmental Services, Inc.

HYDROGEOLOGIC CHARACTERIZATION REPORT

Murphy's Waste Oil Service, Inc.
252 Salem Street
Woburn, MA 01801

(Volume 1 of 2)

Prepared For:

Murphy's Waste Oil Service, Inc.
252 Salem Street
Woburn, MA 01801

Prepared by:

Clean Harbors Environmental Services, Inc.
325 Wood Road
Braintree, MA 02184

February 1, 1994

CHES Job No. EN-170

HYDROGEOLOGIC CHARACTERIZATION REPORT

Murphy's Waste Oil Service, Inc.
252 Salem Street
Woburn, MA 01801

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ENVIRONMENTAL SERVICES, INC.
325 WOOD ROAD • BRAINTREE, MA 02184
(617) 849-1800

Clean Harbors Environmental Services, Inc. (CHES) has prepared this Hydrogeologic Characterization Report of the property located at 252 Salem Street and 252 Rear Salem Street in Woburn, Massachusetts (the site). The site is owned by Old Oil Realty Trust and is leased by Murphy's Waste Oil Service, Inc. (Murphy's), a transfer, storage and disposal facility (TSDF) for waste oil and solvent-contaminated oil.

This Report was prepared to satisfy requirements stipulated in a RCRA Part B Permit issued by the Massachusetts Department of Environmental Protection (DEP) to Murphy's effective October 19, 1993. Section 10 of the Part B Permit requires a hydrogeologic characterization of the site and site area. Background information is presented below which briefly describes the site, site area use and history, followed by a hydrogeologic characterization based on existing information. Recommendations are made at the close of this Report to collect additional information necessary to satisfy the requirements detailed in the Part B Permit.

BACKGROUND

Site Description

The site is located at 252 Salem Street and 252 Rear Salem Street in the eastern portion of the City of Woburn, Massachusetts. The general location of the site is shown on Figure 1. The site is located approximately 2,000 feet west of and upgradient from the Aberjona River. The site consists of one parcel of land zoned as industrial and has a total area of approximately 3.4 acres. The City of Woburn Assessor's Office designates the site as Parcel 41, Block 005 on Map 16. The operating portion of the site is surrounded by a chain-link fence which restricts access to the site. Vehicular access to the site is via Salem Street. Figure 2 is a Plot Plan illustrating site details.

Throughout most of its history, the site has been used primarily as a waste oil and/or virgin oil temporary storage facility. In the 1920s, the Woburn Oil Company reportedly began operations

by storing virgin oils on the northern portion of the site. Waste oils were additionally accepted onto the site in the mid-1950s. Murphy's Waste Oil Service, Inc. acquired the site facility on July 7, 1977. As many as 20 aboveground storage tanks installed by Murphy's Waste Oil Service, Inc. were located on the site in 1986. The current owner of the site land is Old Oil Realty Trust, to whom the land was deeded in 1980. In February 1989, Clean Harbors of Kingston, Inc. purchased the stock (i.e., the facility and assets) of Murphy's Waste Oil Service, Inc. and has continued to operate the facility under the latter name and leases the site from Old Oil Realty Trust.

The site is described in three sections, the Northern, Central and Southern Sections. The Northern Section is not paved and is referred to by previous site occupants and on site plans (dated in the 1920s) as the "Oil Yard". A gravel parking area is currently located in the Northern Section of the site. A two-foot high concrete dike, which was constructed in September 1986, is also located in the Northern Section of the site. The dike surrounded seven aboveground oil storage tanks, which were subsequently relocated to another area of the site in 1990.

A City of Woburn sanitary sewer easement traverses the Northern Section of the site in an east-west orientation. The sewer which occupies the easement originates at the westerly abutting property, the former John J. Riley Tannery, and discharges into a main line of the City of Woburn sanitary sewer system. Site representatives indicated that wastewater in the sewer historically overflowed when the tannery was still in operation, however, the volume of wastewater that overflowed on the site could not be determined.

The Central Section of the site is occupied by a waste oil facility which contains eleven aboveground storage tanks, offices, a laboratory and rest rooms. The facility was constructed between March 1989 and January 1990. The tanks in the facility are placed within a concrete containment area which is surrounded by a concrete dike and covered with a canopy. The area surrounding the facility is surfaced with crushed gravel, as is most of the Central Section of the site. Underground utilities which service the oil storage facility include City water and sewer.

A garage is located in the Southern Section of the site. The garage is constructed of steel siding over a four-foot concrete foundation. The floor is also constructed of concrete and reportedly does not contain any floor drains. From 1979 to the Summer of 1987, Murphy's Waste Oil Service, Inc. used the garage as an office and for company truck maintenance. This building is

served by an on-site septic system. According to Mr. Francis Ryan of the Woburn Board of Health, no problems associated with the septic system associated with this building were reported.

The garage is heated by oil which is stored in a 1,000-gallon underground storage tank located off the southeast corner of the building. No information was available in Fire Department and City Clerk records reviewed indicating the installation date. The property owner has a copy of the permit for this tank which was issued in 1979. The areas west and south of the garage are well-maintained and vegetated with grass.

Topographically, the ground surface in the Southern Section of the site slopes down gently to the north from Salem Street. The ground surface is relatively level within the fenced area of the Central and Northern Sections of the site (50 feet National Geodetic Vertical Datum). Properties on Salem Street adjacent to the site are located on high ground, and a steep embankment approximately 30 feet high slopes down to the north outside of the fence. A low wetlands area is located outside of the fenced area in the eastern portions of the Central and Northern Sections of the site. Figure 3 is a Surface Contour Plan of the site which was developed based on a stadia survey of the site tied into a benchmark along the Aberjona River.

HISTORY OF PETROLEUM USE AND SPILLS AT THE SITE

Petroleum Use on the Site

The site has a history of oil storage dating back to the 1920s. Figure 4 shows the current and former locations of storage tanks and tank farms on the site dating back to the 1960s. The waste oil facility on the Central Section of the site currently contains eight aboveground waste oil storage tanks with a total capacity of 120,000 gallons and a 1,500-gallon aboveground receiving tank. A 3,000-gallon aboveground diesel tank and a 2,000-gallon aboveground heating oil tank are also located on the site for facility operations. A 1,000-gallon underground heating oil tank is also located off the southeast corner of the garage (as discussed previously).

A partially-buried 275-gallon waste oil tank was formerly located approximately 50 feet north of the garage. This tank was used by the former Murphy's Waste Oil Service, Inc. for community residents to dispose waste automotive oils. This tank was removed from the site in March 1988.

Twenty storage tanks were formerly located in the Northern Section of the site in the 1980s. Seven of the tanks were located within the diked area and 13 tanks were located around and south of the diked area. The 13 tanks outside the dike were removed from the site in March of 1988. Six of the seven tanks in the diked area were relocated to the new facility in the Central Section of the site and one tank was decommissioned and removed from the site in 1990.

The site has a history of oil use on the ground surface dating back at least to the 1920s. A portion of the site, presumably in the Central Section, was used as a waste oil pit in the 1950s. The time of use, dimensions and location of the oil pit are not known. Additionally, up until the late 1970s, oil was used on the dirt roadways on the site as a dust control measure, as allowed by state regulations.

Petroleum Releases on the Site

There are several reported accidental releases of petroleum that occurred on the site in the 1980s. The spill information has been compiled from review of the City of Woburn Fire Department records and interviews with Chief Robert Doherty of the Fire Prevention Office; Ms. Rodene DeRice; Mr. Kingsley Ndi and Mr. Robert Cleary of the DEP; Ms. Barbara Newman of the US-EPA; and Ms. Joan Murphy, Trustee of Old Oil Realty Trust.

Diesel Fuel Spill - Central Section. On December 17, 1987, an estimated 100 to 150 gallons of diesel fuel was released to the surface soils from a North Suburban Transportation Company diesel fuel delivery truck. The spill was located on the north-central portion of the site, between the Central and Northern Sections. Apparently, the diesel fuel release occurred during fueling of the school buses operated by the North Suburban Transportation Company, which were parked on the central portion of the site during this time period. Several puddles of separate-phase product were observed in the area of the spill. Cleanup measures undertaken by representatives of the North Suburban Transportation Company consisted of applying Speedi-Dri to the spill area and utilizing a "shop-vac" to retrieve the spilled product. On December 18, 1987, 15 to 20 cubic yards of stone were applied to the site in the area of the spill, covering an area of approximately 50 feet by 75 feet.

Waste Oil Use as Dust Control Measures. As evidenced in a 1966 aerial photograph, waste oils were applied to site soils in an effort to control dust on the site. Oil covered the area near the former tank farm on the Northern Section and also the right-of-way through the site from the Northern Section to Salem Street. The oil also extended to the land east of the former tank farm on the site.

This practice of using oil to control dust was common prior to the 1980s for most waste oil facilities. In fact, in 1978, the DEP - Division of Water Pollution Control implemented a policy limiting land spreading of waste oils to the period from May 15 to October 15. In the early 1980s, the DEP - Division of Solid and Hazardous Waste was formed and, under it's jurisdiction, this practice of oil deposition on land was prohibited. Ms. Joan Murphy reported that this use of oil by Murphy's Waste Oil Service, Inc. did not occur since 1979.

Fuel Oil Release, December 7, 1993. On December 7, 1993, approximately 75 gallons of reclaimed oil were released to an unpaved gravel area off the northeast portion of the facility. Because the ground surface was frozen, the oil pooled on the ground and had minimal penetration to the soils. The oil was encircled with Speedi-Dri, and 50 gallons of product were recovered immediately with a vacuum truck. Speedi-Dri and 3M oil absorbent pads were then used to clean the residual oil on the ground surface. Four 55-gallon drums of 3M pads and Speedi-Dri were generated and properly disposed during this activity.

On December 10, 1993, two cubic yards of soil impacted by the release were excavated from the release point using a front-end loader and placed in flex bins. Four samples were collected from the excavated area and a fifth sample was also collected away from the area as a background sample. The samples were analyzed for petroleum hydrocarbons, and the results indicated that an elevated level of petroleum hydrocarbons was present in the vicinity of one of the samples. An additional cubic yard of soil was subsequently removed from this area and the area resampled. The results were similar to the background sample collected previously.

A Response Action Outcome (RAO) statement was prepared relative to this spill and was submitted to the DEP in January of 1994. The RAO concluded that no further action was required relative to this incident.

SITE AREA GEOLOGY AND HYDROGEOLOGY

A Massachusetts Geographic Information System (GIS) map centered around the Murphy's site is presented in Appendix A. The map indicates the environmental and water use setting in the site area, and illustrates the site position relative to sensitive environmental receptors. Based on the information presented on the map, the site is located in a potentially productive high yield aquifer, an interim wellhead protection area and within the zone of contribution of a public water supply located near Walnut Hill (located less than 0.5 miles northeast of the site).

The site is located in the southwest corner of the study area known as the Wells G & H site, and the site is located approximately 2,000 feet southwest of the Municipal Wells G&H. The Wells G&H study area was listed as a Superfund site in 1982 and is currently under investigation by the PRPs. Chlorinated organic compounds were detected in Wells G&H in 1979. The wells were shut down and the USEPA tasked a variety of contractors to conduct hydrogeologic investigations and groundwater quality evaluations in a 10 square-mile portion of East and North Woburn. Figure 5 is a Facility Surrounding Area map which illustrates the site location relative to Wells G&H and two other nearby private production wells (no longer in use) which are discussed below.

During the 1980s, the geologic setting of the Wells G&H area was determined by various consultants and government agencies. The description of the regional geology and hydrogeology presented below is based on information presented in the Wells G&H studies and is supplemented, where applicable, by actual site information. Much of the regional information presented below was obtained from a 1986 report prepared by NUS Corporation entitled *Wells G&H Site Remedial Investigation Report, Part I, Woburn, Massachusetts*, and a 1987 report prepared by the Unites States Geological Survey (USGS) entitled *Area of Influence and Zone of Contribution to Superfund-Site Wells G and H, Woburn, Massachusetts.*

Surficial Geology

The Wells G&H study area is located in a north-south trending buried glacial valley, through which the Aberjona River flows. The unconsolidated deposits within most of the valley are comprised of glacial deposits consisting of a complex mixture of gravel, sand, silt and clay. These deposits were laid down during deglaciation of the area 14,000 years ago. More recent alluvial deposits associated with the Aberjona River overlie the glacial deposits at the lower elevations in the valley. The total thickness of the central valley sediments is estimated to be approximately 135 feet.

The glacial deposits in the study area are of two major origins based on their methods of deposition. The two deposits are a stratified drift unit and an ice contact unit. The stratified drift unit is located in the central portion of the buried valley, and the ice contact units are located on the eastern and western sides of the valley.

The stratified drift deposit is comprised of stratified gravel, sand, silt and clay ranging from five feet to 50 feet in thickness. In general, the sediment grain size decreases with depth to medium to fine sand and silt at the bottom of the unit. A sand and gravel unit underlies the fine material at a depth of approximately 70 feet to 80 feet. An interbedded blue to gray very fine sand, silt and clay was present in the lower unit along the western portion of the study area and was thickest in the deepest portion of the valley.

The deposits at the higher elevations on the eastern and western sides of the valley are poorly sorted and represent ablation till/ice contact sediments deposited as the underlying glacial ice melted. Within the till are lenses of sorted sand and gravel which represent localized areas of meltwater deposits.

At several locations within the study area is a basal till between the bedrock and the stratified drift and the ablation units. The basal till is a dense layer of sediments deposited at the bedrock/glacier interface.

Based on the approximate mapping of the surficial deposits in the Wells G&H study area, the northern portion of the Murphy's site appears to be underlain by stratified drift deposits and the southern portion of the site appears to be underlain by ice contact sediments. The soils

encountered during the soil boring program on the site in the late 1980s (discussed below) consisted of an average of 6.5 feet of fill material underlain by stratified sand and gravel with lesser amounts of silt and clay to a maximum penetration depth of 30 feet. These observations appear to be consistent with stratified drift deposits mapped in the study area. The depth to groundwater in the vicinity of the site was observed to be approximately eight feet below the ground surface during the late 1980s on-site investigations.

Bedrock Geology

The Wells G&H study area is situated within the Appalachian Mountain orogenic belt and consists of a diorite and gabbro complex with secondary metavolcanic rocks and intrusive granite and granodiorite. The units have been severely distorted by faults and fracturing. Weathering associated with the faulted materials appears to have produced bedrock troughs in the study area. These weathered troughs provided a preferential pathway for glacial masses along with preferential plucking of the less resistant rock, which resulted in the widening and deepening of the valley immediately surrounding the fault. These mechanisms are believed to have produced the bedrock valley through in which the Aberjona River is located.

There are two major rock types in the Wells G&H area; the Dedham Granodiorite and the Salem Gabbrodiorite. The Dedham Granodiorite is believed to be the older of the two rock types and dates to the Precambrian. It is a grayish-pink, coarse grained, moderately foliated, biotite-hornblende quartz feldspar granodiorite. Based on rock quality designation values published for the rock, it is slightly to moderately fractured.

The Salem Gabbrodiorite is Precambrian to Ordovician in age, and is a medium to coarse-grained, blueish gray rock composed of hornblende, quartz and feldspar. The rock is highly fractured and contains quartz veins throughout.

The axis of the bedrock valley slopes from north to south and corresponds to the current course of the Aberjona River. From the axis point, the bedrock rises to the east and west with steepening gradients toward the trough edges. These bedrock contours generate the characteristic U-shape associated with glacially-scoured bedrock valleys.

The shape of the valley also corresponds to the type of rock in the study area and the effects of glacial erosion on rocks of different resistance. The rock in the deeper portions of the valley is the Salem Gabbrodiorite. Because this rock is more heavily fractured, it was apparently less resistant and more easily excavated and plucked by glacial erosion. The more resistant Dedham Granodiorite underlies the higher elevations on the sides of the valley. The preferential glacial erosion is common in glacially-carved valleys.

During soil boring activities on the Murphy's site in the late 1980s, the deepest penetration of the overburden deposits was 30 feet. Therefore, bedrock was not encountered. However, based on the mapping of the bedrock in the Wells G&H study area, the western portion of the site appears to be underlain by Dedham Granodiorite, while the eastern portion may be underlain by the Salem Gabbrodiorite. The exact location of the boundary between the two rock types cannot be determined with the available geologic data published to date. The depth to bedrock beneath the site is estimated to be 135 feet below grade.

Hydrogeology

The site area is situated within the Aberjona River Valley which generally traverses the eastern portion of Woburn, Massachusetts in a north-south orientation. The Aberjona River, located approximately 800 feet northeast of the site, flows in a southerly direction through the site area. The river discharges into the Upper Mystic Lake, located three miles south of the Murphy's site, in Winchester, Massachusetts. Surface configurations of the Aberjona River Valley generally include the Aberjona River (along the general center of the valley), associated flood plain, and the valley walls. The valley walls of the Aberjona River Valley are located on either side of the river (approximately 2,000 feet and 1,000 feet east and west of the river, respectively). The Murphy's site is situated along the western portion of the river basin, near the western valley wall.

Two primary sources of recharge to the stratified drift aquifer underlying the site area are infiltration of precipitation and surface/groundwater recharge from the bedrock highlands flanking the valley. A third source is the Aberjona River. The site area has an average annual precipitation of 44 inches. Of this total, approximately 20 inches is removed by surface runoff

and the remaining 24 inches either infiltrates to become groundwater or is subject to evapotranspiration.

The estimated transmissivity of the stratified drift deposits which include the Wells G&H aquifer is in excess of 4,000 ft^2/day. The USGS estimated transmissivities near wells G and H at 29,700 ft^2/day and 20,700 ft^2/day, respectively. The average horizontal hydraulic conductivities at wells G&H are 350 ft/day and 235 ft/day, respectively. The other glacial till and fluvial deposits underlying the study area have a more moderate permeability. The bedrock in the site area is sufficiently fractured to support modest to moderate groundwater yields.

Historical water table measurements in the study area indicate annual water level variations of up to five feet, with the higher levels occurring between November and April and the lower levels occurring in August and September. The groundwater table has been determined to be 10 feet to 15 feet below the ground surface in hilly areas on the eastern and western flanks of the valley and at or near the surface in most of the low-lying areas. While the depth to groundwater on the site has been estimated to be approximately eight feet below the ground, no detailed groundwater mapping has yet been performed on the site.

Under natural gradients and without the pumping of nearby production wells, groundwater flow in the study area is toward the Aberjona River. Areas west of the river, including the Murphy's site, have a southeasterly groundwater flow direction with an average horizontal gradient of 0.5 percent. Areas east of the river have a southwesterly groundwater flow direction with an average horizontal gradient of 2 percent.

Upward and downward vertical gradients were measured on the west side of the river. Vertical gradients on the eastern side of the river were greater than those on the western side and were consistently downward in direction. The wetlands immediately east of the river, however, showed upward gradients at greater values than those measured in the wetlands on the western side.

Two private production wells are located north and west of the site which belonged to the John J. Riley Tannery. These wells are referred to as John J. Riley Tannery Production Wells No. 1 (located approximately 50 feet west of the site) and No. 2 (located approximately 550 feet north of the site), and their locations are shown on Figure 5. Neither well is still in use. John J. Riley

Tannery Production Well No. 1 reportedly produced an estimated 300,000 gallons of water per day. At this rate, groundwater flow patterns on the site were most likely affected while this well was productive. When both production Wells No. 1 and 2 were simultaneously operating, it is likely that groundwater flow beneath the Murphy's site may have been altered to flow in a north to northwesterly direction. In the mid 1980s, USEPA data indicated that groundwater south of these production wells (including the Murphy's site) was flowing in a north-northeasterly direction toward the production Well No. 2. This situation would have made the easterly abutting property (formerly occupied by the Whitney Barrel Company) hydrologically upgradient. The John J. Riley Tannery closed down in 1991. Because the two production wells are no longer in use, the natural groundwater flow direction to the southeast is expected to prevail at the site.

As previously discussed, the bedrock underlying the site area consists of crystalline igneous rock. The only ability a rock of this type has to transmit water is through fractures, and the transmission is dependent upon the extent of fractures, including size, orientation and degree of interconnection of the fractures. There are many bedrock wells set in fractures in the Aberjona River Valley. One such well, located 750 feet east of Well G, has a reported yield of 45 gpm. A second bedrock well, located approximately 2,000 feet east of Well H, has a reported yield of 110 gpm. The bedrock beneath the site area appears to be adequately fractured to support modest to moderate groundwater yields. The fracturing detected in the upper bedrock (during NUS and USGS investigations) suggests that recharge to the bedrock aquifer is derived in part from the overlying glacial deposits.

SITE INVESTIGATIONS

During the mid to late 1980s, Murphy's was preparing to construct the new tank facility currently in the Central Section of the site. Two separate structural soil boring programs were completed. The first boring program was completed in the Northern Section of the site (the original location of the proposed facility) in December 1987 and February 1988 and included 17 soil borings, one of which was completed as a groundwater monitoring well. When it was determined that the proposed facility footprint extended off the western site boundary, the proposed location was changed to the Central Section of the site, and a second program of twelve additional structural soil borings was performed in July of 1988.

Petroleum contamination was encountered in the Central Section of the site during the second soil boring program. The DEP (then the DEQE) was informed of the contamination encountered at that time. Based on the identification of contamination in the site soils, a preliminary environmental subsurface exploration program on the Central Section of the site was initiated. The main objective of this phase of study was to delineate the extent of petroleum contamination in this area so that a remediation and construction plan could be developed. This investigation was performed in January and February of 1989 and consisted of eight additional soil borings, which were completed as groundwater monitoring wells. Figure 6 shows the locations of all soil borings and monitoring wells installed during the structural and environmental investigations performed at the site. Logs for all soil borings are included in Appendix B.

A sequential description is presented below of the structural and environmental investigations performed at the site. Soil types and quality will be discussed in each investigation to develop the initial characterization of the contamination detected on the site.

Structural Boring Program - Northern Section

The first structural soil boring program on the Northern Section of the site consisted of performing test borings in the vicinity of the former tank farm dike. The test borings were completed in December 1987 (inside the concrete dike) and February 1988 (around the tank farm dike). The borings are identified by the prefix CHI- followed by a boring identification number and the year in which it was performed (1987 or 1988).

General Subsurface Conditions. The general subsurface profile in the vicinity of the dike area consisted of a five-foot layer of brown, coarse-grained sand above a one-foot layer of rusty/brown to black (petroleum stained) silt. The silt was underlain by a tan, medium-to coarse-grained sand deposit. The sand deposit was encountered approximately seven feet below the ground surface to the maximum boring depth (eight to ten feet below the ground surface).

December, 1987 Drilling Activities. On December 17 and 21, 1987, a total of nine soil borings were performed within the concrete diked area in the Northern Section of the site. These soil borings were performed utilizing a portable tripod drilling rig equipped with three-inch casing which was driven into the ground by a 140-pound hammer. During the boring process, split-spoon samples were collected at two-foot intervals from the ground surface to approximately 8 to 10 feet below the ground surface. The soil borings completed in the first structural boring program are identified by CHI - "#"/87.

The soil samples were screened for the presence of volatile organic compounds (VOCs) using a portable photoionization detector (an HNU meter) and headspace methodology. Generally, the HNU meter measures total VOCs present in the headspace of a sample. The total VOC concentrations detected are reported in parts per million (ppm); individual organic compounds are not discriminated by the HNU meter. The HNU screening data are presented on the respective soil boring logs in Appendix B.

The total VOC content detected in the soil samples collected from boring CHI-5/87 was the highest of all the samples screened using the HNU meter. Test boring CHI-5/87 was located near the southwestern portion of the concrete dike. The VOC concentrations for CHI-5/87 soil samples generally increased with depth and ranged from 5 ppm in the surface sample to 750 ppm at a depth of 6 to 8 feet (near the groundwater table).

Elevated total VOC levels were detected in the soil samples collected from borings CHI-4/87 and CHI-8/87. The elevated levels in the soil samples collected from borings CHI-4/87 and CHI-8/87 were respectively: 30 ppm and 160 ppm (surface sample); 5.2 ppm and 66 ppm (4 to 6 feet); and 50 ppm and 4.4 ppm (6 to 8 feet). The concentrations in the soil samples from the remaining borings were at or below 10 ppm total VOCs. As illustrated on Figure 6, borings CHI-4/87, CHI-5/87 and CHI-8/87 were situated along the southwestern portion of the concrete dike. The elevated HNU readings detected in these borings may be indicative of residual contamination associated with a surficial oil release. However, because the deeper samples were collected at the water table, some the the headspace results may also be indicative of VOCs in the groundwater.

Significant petroleum odors and slight petroleum staining accompanied the elevated HNU readings in the borings identified as CHI-4/87, CHI-5/87 and CHI-8/87. The odor detected in

CHI-4/87 soils was encountered near the ground surface. A stronger petroleum odor was encountered in CHI-5/87 at depths between 3 feet and 6 feet below the ground surface.

February, 1988 Drilling Activities. On February 17, 1988, eight additional structural test borings were performed west of the dike area. Soil boring CHI-6/88 was completed as a groundwater monitoring well. Approximate locations of the eight borings (which includes the one monitoring well) are illustrated on Figure 6. These soil borings were performed using a truck-mounted drilling rig equipped with hollow-stem augers. During the boring process, split-spoon samples were obtained at two-foot intervals from the ground surface to the depth at which groundwater was encountered. No VOC screening was performed on the soil samples which were collected for laboratory analysis. Each boring of this section is identified by CHI-"#"/88.

Petroleum odors were noted in four of the eight borings. The petroleum odors were primarily noted in surface soils collected from borings CHI-2/88, CHI-3/88, CHI-4/88 and CHI-6/88. Significant oil staining was noted on the sampling equipment during drilling of CHI-6/88 and the boring was, therefore, completed as a monitoring well. The four test borings with notable petroleum odors were generally located directly northwest of the diked area. Additional information regarding soil and groundwater analytical data for this well is addressed below.

Laboratory Results of Soil Boring Samples. All soil samples obtained from the structural borings in the Northern Section of the site were collected at two-foot intervals. The soil samples were properly stored and submitted to Clean Harbors Analytical Services, Inc. (now known as CHES) the same day they were collected. All samples were then laboratory-composited and analyzed for pH, VOCs (by EPA Method 8240), polychlorinated biphenyl (PCB) compounds, petroleum hydrocarbon oil and grease (by infrared spectroscopy), 13 priority pollutant total metals (plus barium and hexavalent chromium), sulfide and total cyanide. The analytical parameters sulfide, cyanide and pH were selected based on the proximity of the site to a working tannery (hydrogen sulfide odors were noted during the drilling activities). Semi-volatile base/neutral and acid (BNA) extractable organic compounds and Extraction Procedure (E.P.) Toxicity tests for eight priority pollutant metals were additionally performed on some of these samples. The laboratory reports of analysis and the Chain-of-Custody records are included in Appendix C, and the analytical results are summarized in Tables 1 through 4.

The concentrations of sulfide in soils were relatively low and ranged from 2.9 milligrams per kilogram (mg/kg) to 32 mg/kg. Cyanide was not detected in any of the soil boring samples and the pH values measured (from 5.2 to 7.2) were within the normal range.

Volatile organic compounds associated with petroleum were detected in only one of the 17 test borings completed in the Northern Section of the site (boring CHI-6/88). A concentration of 580 micrograms per kilogram (ug/kg) of total xylenes was detected in the sample collected from CHI-6/88 (0-2 feet). No other VOCs were detected in the sample. The presence of xylenes without benzene, toluene and ethylbenzene may be indicative of a weathered or aged petroleum product. Visual oil saturation was noted during drilling of this boring and the laboratory analysis also detected an elevated level of oil and grease in the composite soil sample (16,000 ppm petroleum hydrocarbon oil and grease).

Chlorinated VOCs, including 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene, were detected in low concentrations in soil samples collected from boring CHI-9/87 (completed within the diked area) and in all but three of the soil borings completed around the dike area. Chlorinated compounds are typically found in the dry cleaning, textile processing and metal degreasing industries.

BNA analyses were performed on the soil composite samples collected from the eight borings outside the diked area and boring CHI-5/87 inside the dike (which was selected based on elevated HNU data). The laboratory results for sample CHI-5/87 and samples CHI-2/88 through CHI-8/88 indicated that no BNA compounds were detected. A concentration of 2,500 mg/kg bis (2-ethylhexyl) phthalate was detected in the soil sample collected from boring CHI-1/88 (depth of 2-4 feet, located in the northeast corner of the concrete dike). This compound is commonly found in plastic materials, and was detected in a number of groundwater samples from locations throughout the Wells G&H study area. Bis (2-ethylhexyl) phthalate is utilized as a plasticizer in the chemical industry and is fairly ubiquitous in urban environments. It is also a common contaminant of environmental samples introduced during sample collection or laboratory analysis through the use of plastic disposable gloves.

The levels of petroleum hydrocarbon oil and grease found in the soil samples were considered high. The highest concentration of petroleum hydrocarbon oil and grease was found in the

composite sample from boring CHI-6/88 (16,000 mg/kg). This data coincides with the evidence of oil saturation in soils encountered during drilling. In soil borings CHI-4/87, CHI-5/87, CHI-2/88 and CHI-3/88 (the western portion of the Northern Section), petroleum hydrocarbon oil and grease concentrations ranged from 3,500 mg/kg to 7,900 mg/kg. Concentrations ranging between 1,100 mg/kg and 2,600 mg/kg were detected in soil samples collected from CHI-2/87, CHI-8/87, CHI-6/87 and CHI-4/88. The concentrations of petroleum hydrocarbon oil and grease in the remaining soil borings ranged between 930 mg/kg and 120 mg/kg. Analysis of the soil sample collected from boring CHI-7/88 (depth of 0-2 feet, located outside of the fence) indicated a concentration of only 22 mg/kg.

PCBs were detected in soil samples from borings CHI-6/87 and CHI-7/87 at concentrations of 0.21 mg/kg and 0.11 mg/kg, respectively. PCBs detected outside the diked area in borings CHI-1/88, CHI-3/88 and CHI-6/88 ranged in concentration from 0.5 mg/kg to 0.6 mg/kg. The EPA policy for PCBs allow up to 25 mg/kg PCBs in soils on sites with restricted access. In all instances, the detected levels of PCBs were below the EPA allowable levels.

Analyses of the 13 priority pollutant total metals (plus barium and hexavalent chromium) were performed on the composite soil samples collected from each boring. The results are presented in Tables 3 and 4. The measured concentrations of some of the metals (cadmium, lead, mercury, and selenium) were considered to be elevated compared to published values for natural soils (*A Compendium of Superfund Field Operations Methods, USEPA/540/P-87/001*). The maximum observed cadmium concentration (2.9 mg/kg in CHI-5/87) significantly exceeded the published average value for cadmium (0.06 mg/kg). Similarly, lead (maximum 400 mg/kg), mercury (maximum 0.44 mg/kg), and selenium (maximum 1.9 mg/kg) exceeded the published average values of 10 mg/kg, 0.03 mg/kg, 0.3 mg/kg, respectively. Hexavalent chromium was also detected in composite soil samples from three of the borings (CHI-1/88, CHI-7/88 and CHI-8/88 at concentrations up to 1.5 mg/kg, which is considered to be elevated.

Soil samples from borings CHI-1/87 through CHI-5/87 and CHI-6/87 through CHI-9/87 were composited into two respective samples for laboratory analysis of E.P. Toxicity 8 priority pollutant metals. An E.P. Toxicity analysis determines whether the metals present in the soils would leach under acidic conditions (conditions similar to acid rain). The laboratory data indicate that no E.P. Toxicity metals were detected above the laboratory method detection levels during this analysis.

Soil samples from borings CHI-1/88 through CHI-4/88 and CHI-5/88 through CHI-8/88 were also composited into two respective samples for laboratory analysis of E.P. Toxicity 8 priority pollutant metals. The laboratory data for these samples indicate that a low concentration of 0.01 mg/kg silver was detected in both composite samples; none of the other tested metals were detected during this analysis.

Summary of Soil Analytical Results. Soil samples collected from test borings CHI-4/87, CHI-5/87, CHI-2/88, CHI-3/88, CHI-4/88 and CHI-6/88 were identified as having the most elevated levels of the parameters tested. The area defined by these borings was located on the western portion of the Northern Section of the site, extending east from the western site boundary to slightly east of the western concrete dike wall. Of these borings, concentrations detected in soil boring CHI-6/88 were the highest, with elevated levels of xylenes (580 ug/kg) and petroleum hydrocarbon oil and grease (16,000 mg/kg). A low concentration of 0.6 mg/kg PCB compounds was also detected in the CHI-6/88 soil sample.

Analyses of oil samples collected from the other borings in this same group (CHI-4/87, CHI-5/87, CHI-2/88, CHI-3/88 and CHI-4/88) detected elevated levels of petroleum hydrocarbon oil and grease at concentrations ranging from 2,600 mg/kg to 7,900 mg/kg. Chlorinated compounds were also detected in the soil samples collected from borings CHI-2/88 and CHI-3/88. The sample from CHI-3/88 also contained an elevated concentration of PCBs (0.5 mg/kg).

Soil samples collected from borings CHI-2/87, CHI-6/87 and CHI-8/87 are considered to have moderately elevated levels of the parameters tested. Petroleum hydrocarbon oil and grease concentrations in these soil samples ranged from 1,100 mg/kg to 1,600 mg/kg. Because the soil from these borings demonstrated lower concentrations of contaminants than the samples from the western portion of this area of the site, these test borings are considered to loosely define the eastern edge of an area of contaminated soils.

The contaminant levels present in the soil samples collected from the remaining eight borings (CHI-1/87, CHI-3/87, CHI-7/87, CHI-9/87, CHI-1/88, CHI-5/88, CHI-7/88 and CHI-8/88) are considered to be low. Low concentrations of 0.11 mg/kg and 0.6 mg/kg PCBs were present in the soil samples from borings CHI-7/87 and CHI-1/88, respectively. Low concentrations of

chlorinated VOCs were present in the soil samples collected from borings CHI-9/87, CHI-1/88, CHI-5/88 and CHI-8/88. These chlorinated compounds included 12 ug/kg to 30 ug/kg 1,1,1-trichloroethane and 13 ug/kg to 14 ug/kg of trichloroethene. Petroleum hydrocarbon oil and grease was detected in seven of these borings and ranged from 120 mg/kg to 930 mg/kg. The data collected from these soil borings supports the indications that an area of oil-contaminated soils exists west of the dike area in the Northern Section of the site. It is anticipated that this area was heavily used during loading and off-loading of trucks.

Groundwater Monitoring Well Installation and Sampling. A groundwater monitoring well was installed in the boring identified as CHI-6/88 on February 17, 1988. The purpose of installing this well was to assess any impact to the groundwater from the oil contamination observed in the soils. Petroleum product was observed on the split spoon sampler at a depth of 2 and 8 feet in this boring, which was located next to and topographically downgradient from 13 former aboveground waste oil storage tanks.

The monitoring well was constructed of two-inch diameter polyvinyl chloride (PVC) pipe and was completed to a depth of 13 feet below the ground surface. The lower 10 feet were constructed of slotted PVC pipe (well screen) and the annular space between the screen and the bore hole was packed with Ottawa sand. Approximately one foot of bentonite clay was placed above the sand. The remaining annular space between the riser and the walls of the bore hole was backfilled with clean fill material. The Well Completion Report is included in Appendix D.

On February 18, 1988, a groundwater sample was collected from monitoring well CHI-6/88. At the time of sampling, the groundwater level was determined to be eight feet below the ground surface. The groundwater sample was collected using a pre-cleaned bailer after three volumes of water were bailed from the well. A petroleum odor was noted and a slight sheen was observed on the surface of the groundwater bailed from this well. The sample was chilled and delivered on the same day to Clean Harbors Analytical Services, Inc. for laboratory analysis.

The groundwater sample was analyzed for pH, PCBs, VOCs (by EPA Method 624), petroleum hydrocarbon oil and grease, 13 priority pollutant dissolved metals (plus barium), hexavalent chromium, sulfide and total cyanide. No PCBs or cyanide were detected in the groundwater

sample. A low sulfide concentration of 0.79 milligrams per liter (mg/l) was detected, and the pH was within normal levels at 6.2. The laboratory reports of analysis are included in Appendix E.

Petroleum hydrocarbon compounds were detected in the groundwater sample at a concentration of 82 mg/l. This petroleum hydrocarbon level was considered high and indicates an impact to the groundwater from the high petroleum hydrocarbons detected in the respective soil samples collected from this boring (16,000 mg/kg).

The VOCs detected in the groundwater sample included 1,1,1-trichloroethane (1,300 ug/l), 1,1-dichloroethane (2,200 ug/l) and trace levels of chloroethane. These compounds and relative proportions detected indicate possible degradation of 1,1,1-trichloroethane to 1,1-dichloroethane and, ultimately, to chloroethane.

The dissolved metals analytical results did not identify any metals present above the drinking water standards available in 1988. Hexavalent chromium was not detected in this groundwater sample.

Evaluation of Findings. A total of 17 borings were performed on the Northern Section of the site; nine borings were performed within the concrete dike and eight borings were performed west of the diked area. One monitoring well was installed in a boring west of the diked area where soils exhibited the most significant signs of contamination.

These borings were performed to assess the subsurface soil conditions on the Northern Section of the site for potential development purposes. The borings performed have been identified as structural borings. Since contamination was encountered, soil samples were collected for laboratory analysis to characterize the contamination.

Based on the laboratory analytical results, the most significantly contaminated areas appeared to be located west of diked area near the aboveground storage tanks which were removed from the site in April, 1988. The contamination appeared to be the result of residual oil releases associated with the former storage tanks in this area. Both the groundwater and soil samples collected from location CHI-6/88 indicated the presence of high levels of petroleum hydrocarbon oil and grease. Although a petroleum constituent (xylene) was detected in a soil sample collected

from CHI-6/88 but no chlorinated solvents, high levels of chlorinated solvents were detected in the groundwater sample from the same location. The existence of elevated levels of chlorinated solvents in the groundwater but not in surficial soil samples suggests that chlorinated solvents may have been migrating in the groundwater.

Structural Boring Program - Central Section

Sixteen structural soil borings were completed on the Central Section of the site in July 1988. These borings were performed in the new area of the proposed facility footprint in order to assess the subsurface conditions for geotechnical purposes. The borings were designated as B-1 through B-12 and their locations are shown on Figure 6.

General Subsurface Conditions. The general subsurface conditions that were observed in the Central Section of the site in the area of the facility are stated here based on the test boring data collected in the second structural boring program. The soils encountered in the Central Section of the site generally consisted of six feet to eight feet of variable density (very loose to very dense) fill material which overlies a medium-dense to dense sand or sand and gravel layer to the maximum boring depths of 15 to 20 feet. The fill material consisted of a matrix of sand, gravel and cobbles containing pockets of clayey silt, brick, concrete, asphalt, wood and cinders. Groundwater was encountered at a depth of approximately eight feet below the ground surface.

Six to 8 inches of petroleum-contaminated soil were encountered over the majority of proposed building footprint, during these structural borings. This contamination generally occurred approximately eight feet below the ground surface, near the groundwater table.

Structural Soil Borings - Drilling Activities. The soil borings were advanced using hollow-stem augers driven by a truck-mounted rotary drill rig to an average depth of 15 to 20 feet below the ground surface. Soil samples were collected using a split-spoon sampler which was driven into undisturbed soil. Soil samples were collected continuously from the ground surface to generally 12 feet below the ground surface. Usually, one or two additional split-spoon samples were collected directly above the termination depth of the bore hole. All soil samples were

delivered to Clean Harbors Analytical Services, Inc. the same day they were collected. No field screening for VOCs was performed during the second structural boring program. The Boring Logs are included in Appendix B.

Laboratory Results - Central Section. The soil samples collected for the structural borings in the Central Section of the site were composited in the laboratory for each boring based on visual identification of petroleum product and/or petroleum odor. The various composite samples were analyzed for VOCs (by EPA Method 8240), total and petroleum hydrocarbon oil and grease, PCBs, sulfides, organochlorine pesticides, 13 priority pollutant metals, E.P. Toxicity and BNAs.

This testing program was similar to the program performed for the Northern Section, however, it was modified to include pesticides due to the proximity of the Boston and Maine Railroad tracks to the site. In addition, no testing was performed for cyanide or pH based on the results of these parameters on the soils collected in the Northern Section. The analytical results are summarized in Tables 5 through 7 and are discussed below. The Laboratory Reports of Analysis are included in Appendix F.

Volatile organic compounds were detected in samples collected in nine of the 16 structural borings. The results are summarized in Table 5. The highest VOC concentrations observed were generally detected in composite samples of soils collected from approximately 7 to 12 feet below the ground surface; the depth where petroleum contamination was encountered. Petroleum constituents detected in these samples included benzene, toluene, ethylbenzene and xylenes (BTEX compounds). In every case, xylenes were present in the highest concentration relative to the petroleum-based compounds.

The highest BTEX concentration levels were observed in soil boring B-8 (8 to 12 feet). The sample analyzed from this interval indicated an elevated total BTEX measurement of 1,150 ug/kg; 790 ug/kg of this concentration was xylene. Elevated petroleum constituents were also detected in borings B-1 (0 to 4 feet and 14 - 16 feet), B-6 (7 to 11 feet) and B-11 (6 to 14 feet) with total BTEX concentrations ranging from 279 ug/kg to 369 ug/kg. The other soil boring samples with elevated BTEX levels had concentrations equal to or less than 90 ug/kg.

Additional hydrocarbon and chlorinated solvent compounds were detected in samples collected from nine of the 16 soil borings. These compounds included trichloroethene, trans-1,2-dichloroethane, methyl-t-butylether (MTBE) and acetone. The highest chlorinated compound concentrations occurred in boring B-6 (7 to 11 feet) and B-8 (7 to 8 feet), with concentrations of trans-1,2-dichloroethene of 290 ug/kg and 210 ug/kg, respectively. Acetone concentrations of 93 ug/kg and 160 ug/kg were also detected in B-6 and B-8, respectively. MTBE was only detected in the composite soil samples collected from boring B-1 (0 to 4 feet and 14 to 16 feet) at a concentration of 24 ug/kg. MTBE is an octane enhancer which typically is added to gasoline.

The laboratory results for total and petroleum hydrocarbon oil and grease are presented in Table 5. The highest concentration of petroleum hydrocarbons was found in samples collected from borings B-6 (in the composite samples from 7 to 11 feet) at 72,000 mg/kg, B-8 (7 to 8 feet) at 21,000 mg/kg, and B-11 (6 to 14 feet) at 10,000 mg/kg. Elevated levels of petroleum hydrocarbon oil and grease ranging from 1,600 mg/kg to 6,100 mg/kg were observed in borings B-1, B-3, B-7, B-9 and B-10. The petroleum hydrocarbon concentrations detected in the remaining four borings were below 870 mg/kg. Composite samples from borings B-6 (14 to 20 feet), B-9 (10 to 16 feet) and B-12 (8 to 12 feet and 18 to 20 feet) indicated petroleum hydrocarbons ranging from 17 mg/kg to 56 mg/kg. The highest petroleum hydrocarbon concentrations were detected in composite soil samples collected from a depth of approximately seven to 12 feet below the ground surface (consistent with the petroleum hydrocarbon VOC laboratory results).

BNA analyses were performed on some of the composite soil samples collected from each of the borings. The results are summarized in Table 6. As many as 19 different BNA compounds were detected in 20 of the 26 composite samples tested. The sample with the highest BNA concentration was collected from test boring B-7, composited from 4 to 10 feet. The total BNA concentration in this sample was 383,700 ug/kg, with pyrene being the compound with the single highest concentration of 87,000 ug/kg. The overall compounds detected were indicative of a waste oil, and the highest levels of contamination in each boring seemed to occur at the depth where heavy petroleum contamination was encountered during drilling (5 to 12 feet).

The 13 priority pollutant total metals (plus barium) analyses were performed on some composite soil samples collected from each boring. The laboratory results for these analyses are presented in Table 7. Similar to the Northern Section, soil analyses of samples from structural borings in

the Central Section detected some metals (cadmium, lead, and mercury) at concentrations which are considered to be elevated compared to published values for natural soils. Cadmium was detected at a maximum concentration of 4.8 mg/kg (boring B-6 at 7-11 feet), which significantly exceeds the published average value of 0.06 mg/kg. Lead (maximum of 6,500 mg/kg in boring B-6 at 7-11 feet) and mercury (0.44 mg/kg) were also considered to be elevated compared to the published average values for natural soils (10 mg/kg and 0.03 mg/kg, respectively). Antimony (maximum of 190 mg/kg) and thallium (maximum of 30 mg/kg) were also detected at levels which are considered high, however no published values for natural soils are available. Hexavalent chromium was not analyzed in the Central Section structural boring program.

In addition, 26 composite samples were also analyzed for E.P. Toxicity priority pollutant 8 metals. Only five of the eight metals evaluated were detected by the analysis. The metals which were observed only at low concentrations included cadmium, chromium, barium, mercury and lead. Lead was detected during the total metals analysis and also as a leachable metal.

No PCB compounds or pesticides were detected in any of the soil boring samples. The concentrations of sulfide in the soil tested were relatively low and ranged between 2.0 mg/kg and 49 mg/kg.

Evaluation of Findings. Sixteen structural borings were performed on the Central Section of the site in the area of the facility building to assess the subsurface soil conditions. Historically, this portion of the site was used as an "oil pit" during the 1950s. Based on the laboratory analytical results, the soils heavily contaminated with petroleum existed across the northeastern half of the facility footprint (in the vicinity of borings B-6, B-7, B-8 and B-11), at a depth generally between 5 and 12 feet. The degree of soil contamination appeared to decrease radially away from this area. Some of these contaminated soils were subsequently removed during construction of the new facility, as will be discussed later.

Chlorinated VOCs were detected in soil borings B-1, B-3, B-5, B-6, B-7, B-8, B-10 and B-11, generally in the composite soil samples collected within the upper 12 feet. The source of the chlorinated VOCs detected on the Central Section of the site is unknown. A possible source of these compounds may have been the groundwater, since the soil samples were collected in part below the water table.

The analytical results, which were based on soil data only, indicated that the contamination by oil residuals appeared to be primarily in the area of the proposed facility in the Central Section of the site (particularly including the area encompassed by borings B-6, B-7, B-8 and B-11). Based on the information collected during this and the first (northern) structural boring program, the heaviest soil contamination was observed within the Central Section of the site. Because the extent of petroleum contamination in the Central Section of the site was not be delineated by the structural boring program, a third program of environmental soil borings/groundwater monitoring wells was performed to assess the extent of contamination in the Central Section of the site. This investigation is discussed below.

Environmental Investigation - Central Section

Eight soil borings were performed on the Central Section of the site on January 30 and February 3, 1989. The borings for this phase of work were located around the proposed facility footprint to evaluate the extent of petroleum contamination in this portion of the site. The borings were identified as W-89-S1, W-89-S3, W-89-S4, and W-89-S14 through W-89-S18 and their locations are shown on Figure 6.

General Subsurface Conditions. The general subsurface soil conditions that were present across the Central Section of the site included a four- to twelve-foot thick layer of variable density granular fill above a relatively clean medium-dense to very-dense cobbley sand and gravel. The fill material ranged in density from very loose (four to six feet below grade in the southern portion of the proposed building footprint) to very dense, and consisted of a matrix of sand, gravel and cobbles containing pockets of clayey silt, wood, bricks, concrete, asphalt and cinders. The lower portion of this fill layer contained fibrous organic debris. The natural sand and gravel deposit which occurred four to 12 feet below the ground surface, extended to the maximum boring depth of 30 feet below grade. Groundwater was encountered at a depth of approximately eight feet below the ground surface.

Environmental Soil Borings - Drilling Activities. The soil borings were advanced using hollow-stem augers driven by a truck-mounted rotary drill rig from 10 to 12 feet below the ground surface (a minimum of 2 feet into the groundwater table). In two of the test borings, two additional samples were collected at 15 to 17 feet and 28 to 30 feet. Each soil sample was classified in the field and screened for headspace VOCs using an organic vapor analyzer (OVA) and headspace methodologies. The OVA meter was utilized during this exploration program because it is able to detect a greater variety of organic compounds than the HNU meter, including many of the chlorinated compounds detected previously at the site. Soil samples with elevated readings were submitted to Clean Harbors Analytical Services, Inc. for laboratory analysis. Some soil samples were submitted for analysis based solely on visual and olfactory observations made in the field.

Heavy petroleum contamination (12 to 18 inches of oil-saturated soil generally occurring eight feet below the ground surface) was encountered in the soil borings identified as W-89-S1 and W-89-S17. The headspace readings for the soils in these borings were the highest detected during this investigation and registered levels greater than 1,000 ppm. OVA readings between 10 ppm and 90 ppm were detected in all the remaining soil borings except for W-89-S15 and W-89-S16 where levels less than 10 ppm were recorded.

Laboratory Results of Soil Samples. All soil samples collected from the environmental borings in the Central Section of the site were chilled and submitted to Clean Harbors Analytical Services, Inc. the same day that they were collected. Soil samples were analyzed in the laboratory for VOCs (by EPA Method 8240) and total and petroleum hydrocarbon oil and grease. Selected samples were additionally analyzed for PCBs, sulfides, phenols and BNAs. The laboratory results from these tests are included in Appendix G and the results are summarized in Tables 8 and 9. This analytical program was changed from the previous analytical testing program to include phenol analysis based on the site proximity to the western abutting property, the John J. Riley Tannery. No analyses were run for pesticides, total cyanide or pH because the previous sample results were well within normal ranges.

The results from the samples tested for volatile organic compounds, PCBs, sulfides and phenols were generally very low concentrations or below laboratory method detection limits. The highest BTEX concentration was detected in the boring for W-89-S18 (six to eight feet) at 22 ug/kg.

Methylene chloride was the only chlorinated compound detected in soil samples from borings W-89-S3, W-89-S14, W-89-S16 and W-89-S17. This compound was detected in soil samples collected from the ground surface to a depth of two feet, with concentrations ranging from trace to 18 ug/kg, and may be indicative of a surficial release, possibly an oil which was spread as a dust control measure. A PCB compound (Aroclor 1254) was detected in only one soil sample (W-89-S4 at a depth of eight to ten feet below the ground surface) at a low concentration of 0.2 mg/kg.

BNA analyses were performed at various depths on three of eight soil borings completed in the environmental investigation. The three samples submitted for BNA analysis were selected based on the degree of visual petroleum contamination and elevated OVA readings. All but one of these tests indicated concentrations below the laboratory method detection limits. The BNA results for the soil sample collected at a depth of six to eight feet from W-89-S17 indicated a total BNA concentration of 3,470 ug/kg. The compounds detected are indicative of waste oils, and the analytical results are summarized in Table 9.

The levels of petroleum hydrocarbon oil and grease found in the soil samples analyzed were considered high. The highest concentration of petroleum contamination was detected in samples collected near the groundwater table. The highest concentrations of petroleum hydrocarbons were found in soil borings W-89-1 (8 to 10 feet), W-89-S17 (8 to 10 feet) and W-89-S18 (6 to 8 feet) with respective concentrations of 18,000 mg/kg, 14,000 mg/kg and 20,000 mg/kg. Lesser concentrations of petroleum hydrocarbons (from 280 mg/kg to 6,500 mg/kg) were encountered in borings W-89-S4 and W-89-S14. The least significant oil and grease contamination were observed in test borings W-89-S3, W-89-S15 and W-89-S16, where concentrations ranged from non detectable to 380 mg/kg.

Groundwater Monitoring Well Installation and Sampling. The eight borings performed on the Central Section of the site were completed as groundwater monitoring wells. The monitoring wells were constructed of two-inch diameter polyvinyl chloride (PVC) pipe. The monitoring wells were generally completed to an average depth of 20 feet below the ground surface, with screen lengths ranging from 10 to 25 feet. The wells were constructed as described above. Well Completion Reports are presented in Appendix D.

On February 3, 1989, groundwater samples were collected from all eight monitoring wells installed in the environmental investigation and well CHI-6/88 in the Northern Section. At least three volumes of groundwater were removed from each well prior to sampling. The groundwater samples were collected using precleaned Teflon bailers after recharge of the groundwater level in each monitoring well. All of the groundwater samples were chilled and delivered the same day to Clean Harbors Analytical Services, Inc. for laboratory analysis.

The groundwater samples were analyzed for VOCs (by EPA Method 624) and total and petroleum hydrocarbon oil and grease. The Laboratory Reports of Analyses are presented in Appendix E and the results are shown in Table 10.

The levels of petroleum hydrocarbon oil and grease found in these groundwater samples are considered moderate to high. The results for petroleum hydrocarbon oil and grease concentrations ranged from below laboratory method detection levels to 56 ppm. The highest concentration of oil and grease occurred in monitoring well W-89-S1, which is located northeast of the facility.

The results from the VOC analyses indicated generally low concentrations of BTEX compounds ranging from below laboratory method detection levels to 28 ug/l in W-89-17. Other VOCs detected in groundwater in the Central Section of the site included trans-1,2-dichloroethene, tetrachloroethene and acetone with respective maximum concentrations of 93 ug/l, 6 ug/l and 99 ug/l.

The highest concentration of chlorinated VOCs in groundwater were observed in well CHI-6/88, located in the Northern Section of the site. In that well, a total VOC concentration of 4,110 ug/l was detected, including the individual constituents of 1,1-dichloroethane (1,700 ug/l), 1,1,1-trichloroethane (1,400 ug/l), 2-butanone (850 ug/l), and chloroethane (160 ug/l). These results are consistent with those obtained during a previous sampling of well CHI-6/88 on February 18, 1988, when a total VOC concentration of 3,500 ug/l was detected, including the primary constituents of 1,1-dichloroethane and 1,1,1-trichloroethane. These data indicate that a persistent plume of chlorinated VOCs in groundwater existed in the Northern Section of the site, which was not evident in the Central Section.

All of the groundwater monitoring wells installed on the site were subsequently lost during the construction of the facility in 1989 and 1990.

Evaluation of Findings. Based on the laboratory analytical results, the highest petroleum concentrations were observed across the northeastern half of the proposed facility footprint at a depth generally between 5 and 12 feet. This information is consistent with the findings from the structural boring program conducted previously. The highest contamination was detected in samples from borings W-89-S1 and W-89-S17. The degree of soil contamination appeared to decrease radially away from these boring locations. The contamination appeared to consist primarily of oil residuals from waste oil, with elevated levels of petroleum hydrocarbon oil and grease and BNAs.

Chlorinated compounds were detected in soil borings W-89-S3, W-89-S14, W-89-S16, W-89-S17 and W-89-S18. Methylene chloride was the only chlorinated compound detected in soil borings W-89-S3, W-89-S14, W-89-S16 and W-89-S17. This compound was detected in soil samples collected at depths up to two feet below grade with concentrations ranging from trace to 18 ug/kg. Trace concentrations of tetrachloroethene and 2-butanone were detected in soil samples collected from boring W-89-S18 (6 to 10 feet), and concentrations of 71 ug/kg and 27 ug/kg of trichloroethene and trans-1,2-dichloroethene, respectively, were detected in the soil sample collected 8 to 10 feet below the ground surface.

Groundwater analyses of samples obtained from well CHI-6/88 in the Northern Section of the site detected elevated levels of chlorinated VOCs (specifically 1,1-dichloroethane and 1,1,1-trichloroethane) at a total concentration of 4,110 ug/l, which is consistent with the results of an earlier analysis. The groundwater analyses indicated relatively low levels of chlorinated compounds in groundwater in the Central Section of the site, including trans-1,2-dichloroethene, tetrachloroethene and trichloroethene. The source of the chlorinated VOCs in groundwater on the site is not known.

The soil analytical results indicated that contamination by oil residuals appeared to be located primarily in the area of the proposed facility building in the Central Section of the site (particularly including the area encompassed by W-89-S1 and W-89-S17). This information may

be indicative of the reported historical use of this portion of the site in the 1950s as an oil pit for disposal of waste oils.

SHORT TERM MEASURE

Based on the results of the two structural boring programs and environmental investigation discussed above, petroleum-contaminated soils were detected in the Central Section of the site, in the general area of the proposed building footprint. In order to proceed with the construction of the facility, Murphy's applied for a Short-Term Remedial Measure (STM) in February of 1989. The STM involved the removal of contaminated soil as excavation for construction of the facility proceeded. The STM was approved by the DEP on March 16, 1989, and site activities began on March 20, 1989.

Between March 20 and April 14, 1989, approximately 1,100 cubic yards of oil-contaminated soils were excavated from the footprint area of the proposed facility. The soils were temporarily stockpiled west of the former tank farm in the Northern Section of the site, and were placed on and covered with polyethylene sheeting during their residence time at the site. Eighteen soil samples were collected from the stockpiled soil and laboratory analyzed for disposal parameters. From June 19 to 26, 1989, the soils were transported to the CWS landfill in Norridgewock, Maine. Documentation concerning these events, including Uniform Hazardous Waste Manifests, were submitted to the DEP in February, 1990.

CONCLUSIONS

Based upon the data collected during the two structural boring programs and environmental investigation completed on the site between December 1987 and February 1989, the following conclusions can be made:

- Groundwater data collected on the site in 1988 - 1989 indicates that a persistent plume of chlorinated VOCs existed in groundwater in the Northern Section of the site. The presence of this plume was not evident in the Central Section. The source of the

chlorinated VOCs in groundwater on the site is not known, however, the plume could have originated from an upgradient off-site location.

- Chlorinated VOCs were also detected in some soil samples analyzed during the structural boring programs and environmental investigation. Since elevated levels of chlorinated VOC contamination were more evident in soil at greater depths, the soil contamination may have resulted from contaminated groundwater migrating onto the site.

- The most significant petroleum contamination on the site was identified within the Central Section of the site in the area of the new facility.

- A less significant level of petroleum contamination was detected in the Northern Section of the site, west of the diked area.

- The petroleum contamination identified in the site soils appears to be residual waste oil contamination associated with previous site activities. These activities included incidental releases and more importantly, historical use of petroleum as dust control and historical dumping of petroleum in a waste pit.

RECOMMENDATIONS

Based on the previous investigations performed at the site, petroleum and chlorinated organic contamination has been detected in the site soils and groundwater. The previous site work did not determine the extent or the source(s) of this contamination. Further, additional site-specific information regarding site geology and hydrogeology needs to be gathered in order to satisfy the requirements of the Part B Permit. These data gaps include, but are not limited to, soil types and depths, depth to bedrock, site-specific and regional geologic cross-sections, and current soil and groundwater quality at the site. A detailed re-evaluation of the Wells G&H study area, inclusive of recent on-site data, is currently being completed by Remediation Technologies Inc (Retec), and will be summarized in a report that is currently scheduled to be available in the Spring of 1994. The Retec report will update, and perhaps significantly revise, information presented in this Report. In addition, it may also include information required to complete portions of the Part B Permit requirements referenced above.

CHES recommends that, following receipt and review of the Retec report, a Scope of Work be prepared to complete the hydrogeologic characterization of the Murphy's site. The Scope of Work will detail the placement and installation of new soil borings/groundwater monitoring wells, soil and groundwater sampling parameters and additional file review and research necessary to satisfy the requirements stipulated in Paragraphs 10(b) and (c) of the Part B Permit. Based on the currently scheduled Spring 1994 availability of the Retec report, the Scope of Work will be submitted to the DEP by June 30, 1994. Should any delays in the issuance of the Retec report result in a delay in the submittal of the Scope of Work, the DEP will be contacted regarding an extension of this submittal date.

0089-0411

Table 1
Soil Analytical Results - Organic Analyses
Northern Section (December 1987)

Sample ID	CHI-1/87	CHI-2/87	CHI-3/87	CHI-4/87	CHI-5/87	CHI-6/87	CHI-7/87	CHI-8/87	CHI-9/87
Sample Depth (ft)	0-8	0-10	0-10	0-10	0-8	0-10	0-8	0-8	0-8
VOCs, ug/kg									
Acetone	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Benzene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Toluene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Ethylbenzene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Xylenes	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
1,1-Dichloroethane	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Tetrachloroethene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
1,1,1-Trichloroethane	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	12
Trichloroethene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	13
BNAs, ug/kg	---	---	---	---	ND(330)	---	---	---	---
Petroleum Hydrocarbons, mg/kg	700	1,600	750	3,500	3,800	1,100	380	1,600	490
PCBs, mg/kg									
Aroclor 1260	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	0.21	0.11	ND (0.1)	ND(0.1)
Sulfides, mg/kg	2.9	7.2	6.1	3.6	6	19	9.4	4.6	17
pH	5.6	7.2	6.5	5.9	6.8	6.2	5.2	5.6	5.6

Notes:
VOCs = Volatile Organic Compounds
BNAs = Base/Neutral and Acid Extractible Semi-Volatile Organic Compounds
PCBs = Polychlorinated biphenyl compounds
ug/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
( ) = Number in parentheses is laboratory method detection limit (MDL)
ND = None detected above MDL
--- = Not analyzed

Table 2
Soil Analytical Results - Organic Analyses
Northern Section (February 1988)

Sample ID	CHI-1/88	CHI-2/88	CHI-3/88	CHI-4/88	CHI-5/88	CHI-6/88	CHI-7/88	CHI-8/88
Sample Depth (ft)	2-4	4-6	6-8	2-4	2-4	2-4	0-2	5-7
VOCs, ug/kg								
Acetone	ND(40)	ND(40)	150	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)
Benzene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Toluene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Ethylbenzene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Xylenes	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	580	ND(10)	ND(10)
1,1-Dichloroethane	ND(10)	ND(10)	200	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Tetrachloroethene	TR(10)	TR(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
1,1,1-Trichloroethane	30	20	13	ND(10)	ND(10)	ND(10)	ND(10)	20
Trichloroethene	ND(10)	ND(10)	ND(10)	ND(10)	14	ND(10)	ND(10)	ND(10)
BNAs*, ug/kg								
bis(2-ethylhexyl)phthalate	2,500	ND(330)	ND(330)	ND(330)	ND(330)	ND(330)	ND(330)	ND(330)
Petroleum Hydrocarbons*, mg/kg	930	4,600	7,900	2,600	460	16,000	22	120
PCBs*, mg/kg								
Aroclor 1260	0.61	ND(1.0)	0.47	ND(0.1)	ND(0.1)	0.6	ND(0.1)	ND(1.0)
Sulfides*, mg/kg	12	15	22	23	32	26	22	21
pH	5.7	5.6	6.4	6.3	5.7	6.0	5.2	5.1

Notes:
VOCs = Volatile Organic Compounds
BNAs = Base/Neutral and Acid Extractible Semi-Volatile Organic Compounds
PCBs = Ploychlorinated biphenyl compounds
ug/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
( ) = Number in parentheses is laboratory method detection limit (MDL)
ND = None detected above MDL
--- = Not analyzed
TR = Compound detected but below MDL
* = Sample composited from approximately 0-10 feet

Table 3
Soil Analytical Results - Inorganic Analyses
Northern Section (December 1987)

Sample ID	CHI-1/87	CHI-2/87	CHI-3/87	CHI-4/87	CHI-5/87	CHI-6/87	CHI-7/87	CHI-8/87	CHI-9/87
Sample Depth (ft)	0-8	0-10	0-10	0-8	0-8	0-10	0-8	0-8	0-8
13 Metals, mg/kg									
Antimony	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (9)	ND (10)	ND (9)	ND (10)
Arsenic	2.83	1.85	2.69	2.26	2.35	1.96	3.32	1.13	2.9
Barium	30	30	30	20	50	---	---	---	---
Beryllium	0.149	0.196	0.207	0.319	0.29	0.09	0.11	0.11	0.14
Cadmium	0.75	ND (.9)	ND (1.0)	2.1	2.9	ND (.9)	ND (1.1)	ND (1.1)	ND (1.4)
Chromium	10	11	16	12	15	10	12	12	13
Copper	13	15	29	27	27	16	16	16	19
Total Cyanide	ND (.49)	ND (.48)	ND (.47)	ND (.44)	ND (.45)	ND (.42)	ND (.49)	ND (.53)	ND (.65)
Lead	10	70	40	400	200	60	70	70	40
Mercury	*0.084*	*ND (0.08)*	*ND (.07)*	*0.073*	*0.44*	*0.17*	*0.09*	*ND (.09)*	*0.14*
Nickel	6.0	7.8	10	7.4	9.7	7.4	7.9	9	12
Selenium	ND (.1)	ND (.06)	1.24	ND (.1)	ND (.1)	1.4	1.8	1.4	1.9
Silver	ND (.4)	ND (.5)	ND (.5)	ND (.6)	ND (.6)	ND (.4)	ND (.5)	ND (.5)	ND (.5)
Thallium	ND (10)	ND (20)	20	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (30)
Zinc	29	120	88	30	69	43	49	39	42

Notes:
( ) Number in parentheses is laboratory method detection limit (MDL)
mg/kg = Milligrams per kilogram
ND = below MDL
--- = Not Tested

0089-0414

Table 4
Soil Analytical Results - Inorganic Analyses
Northern Section (February 1988)

Sample ID	CHI-1/88	CHI-2/88	CHI-3/88	CHI-4/88	CHI-5/88	CHI-6/88	CHI-7/88	CHI-8/88
Sample Depth (ft)	0-8	0-10	0-10	0-8	0-8	0-10	0-8	0-8
VOCs ug/kg								
Antimony (10)	ND (7)	ND (10)	ND (10)	ND (9)	ND (7)	ND (9)	ND (9)	ND (9)
Arsenic	2.14	2.12	2.12	2.26	2.13	2.37	3.22	2.09
Barium	ND (20)	30	20	ND (20)	30	50	20	30
Beryllium	0.09	0.19	0.19	0.24	0.25	0.36	0.36	0.21
Cadmium	1.9	0.98	0.94	1.2	1.9	11	1.8	1.1
Chromium	10	13	12	66	22	74	37	9.5
Copper	19	14	16	15	20	63	18	14
Total Cyanide	ND (.78)	ND (.78)	ND (.76)	ND (.86)	ND (.72)	ND (.84)	ND (.77)	ND (.89)
Lead	30	50	70	60	60	100	20	40
Mercury	ND (.06)	ND (.06)	ND (.06)	ND (.06)	ND (.07)	ND (.07)	ND (.07)	ND (.07)
Nickel	5.6	6.9	4.7	11	10	11	10	3.2
Selenium	ND (.1)	ND (.08)	ND (.09)	ND (.11)	ND (.09)	16	ND (.08)	0.16
Silver	0.41	0.52	0.46	ND(0.47)	ND (.5)	ND (.41)	ND (.33)	ND (.52)
Thallium	ND (20)	ND (20)	ND (20)	ND (20)	10	20	ND (20)	20
Zinc	23	51	39	23	40	60	25	23
Hexavalent Chromium	0.7	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.5	0.5

Notes:
( ) Number in parentheses is laboratory method detection limit (MDL)
mg/kg = Milligrams per kilogram
ND = below MDL
--- = Not Tested

0089-0415

Table 5
Soil Analytical Results - Organic Analyses
Central Section (July 1988)

Sample ID	B-1	B-2		B-3	B-4	B-5			B-6		B-7	
Sample Depth (ft)	0-4 & 14-16	0-8	8-16	0-13	0-10	0-7	7-10	13-15	7-11	14-20	4-10	12-17
VOCs, ug/kg												
Benzene	TR (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	TR (10)	ND (10)	13	ND (10)	31	ND (10)
Toluene	95	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	32	ND (10)	90	ND (10)	35	ND (10)
Ethylbenzene	29	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	TR (10)	ND (10)	36	ND (10)	ND (10)	ND (10)
Xylene	210	ND (10)	ND (10)	13	ND (10)	ND (10)	58	TR (10)	230	ND (10)	16	ND (10)
Trichloroethene	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	TR (10)	ND (10)
Acetone	55	ND (10)	ND (10)	ND (40)	ND (40)	ND (40)	ND (40)	ND (40)	93	ND (40)	110	ND (40)
MTBE	24	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
trans-1,2-Dichloroethene	ND (10)	ND (10)	ND (10)	40	ND (10)	ND (10)	120	ND (10)	290	ND (10)	TR (10)	ND (10)
Petroleum Hydrocarbons, mg/kg	3,700	230	870	5,700	150	570	160	400	72,000	56	6,100	450
PCBs, mg/kg												
Aroclor 1242	ND (0.1)	ND (0.1)	ND (0.1)	0.2	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Sulfides, ug/kg	---	---	---	---	---	---	---	---	49	15	20	6.9

Table 5
Soil Analytical Results - Organic Analyses
Central Section (July 1988)
(Continued)

Sample ID	B-8				B-9		B-10			B-11		B-12		
Depth (ft)	0-6	7-8	8-12	12-18	6-10	10-16	4-6	6-10	10-14	6-14	15-22	4-8	8-12	14-16&18-20
VOCs, ug/kg														
Benzene	ND (10)	TR (10)	TR (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	TR (10)	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	ND (10)	54	210	TR (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	43	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (10)	150	TR (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	56	ND (10)	ND (10)	ND (10)	ND (10)
Xylene	ND (10)	73	790	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	180	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	ND (10)	TR (10)	ND (10)	ND (10)	TR (10)	ND (10)	ND (10)	ND (10)	ND (10)	20	ND (10)	ND (10)	ND (10)	ND (10)
Acetone	ND (40)	160	ND (40)	ND (40)	ND (40)	ND (40)	ND (40)	70	ND (40)	85	ND (40)	ND (40)	ND (40)	ND (40)
MTBE	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
trans-1,2-Dichloroethene	ND (10)	210	120	ND (10)	13	ND (10)	ND (10)	ND (10)	ND (10)	43	ND (10)	ND (10)	ND (10)	ND (10)
Petroleum Hydrocarbons, mg/kg	110	21,000	7,700	1,600	6,000	44	1,600	5,900	770	10,000	160	250	55	17
PCBs, mg/kg														
Aroclor 1242	ND (0.1)	ND (1)	ND (0.1)	ND (0.1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Sulfides, mg/kg	13	31	14	11	13	12	11	20	30	15	17	7	3	3

Notes:
VOCs = Volatile Organic Compounds
PCBs = Polychlorinated biphenyl compounds
ug/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
ND = Below MDL
( ) = Number in parentheses is laboratory method detection limit (MDL)

0089-0417

Table 6
Soil Analytical Results - Semi-Volatile Organic Analyses
Central Section (July 1988)

Sample ID	B-1	B-2		B-3	B-4	B-5			B-6		B-7	
Depth (ft)	0-10-14-16	0-8	8-16	0-13	0-10	0-7	7-10	13-15	7-11	14-20	4-10	12-17
BNA, ug/kg												
Naphthalene	1,400	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	800	ND (330)	ND (3,300)	ND (330)	6,900	390
2-Methylnaphthalene	2,300	ND (330)	ND (330)	ND (330)	ND (330	ND (330)	760	ND (330)	ND (3,300)	ND (330)	3,500	ND (330)
Fluorene	410	ND (330)	ND (330)	ND (330)	ND (330)	600	ND (330)	ND (330)	ND (3,300)	ND (330)	12,000	ND (330)
Phenanthrene	2,000	2,500	ND (330)	700	360	5,700	ND (330)	ND (330)	ND (3,300)	ND (330)	50,000	720
Anthracene	470	ND (330)	ND (330)	ND (330)	ND (330)	1,600	ND (330)	ND (330)	ND (3,300)	ND (330)	18,000	TR (330)
Fluoranthene	2,200	3,300	ND (330)	1,700	590	10,000	2,000	ND (330)	ND (3,300)	ND (330)	50,000	790
Pyrene	3,700	3,500	ND (330)	2,000	940	7,100	1,700	ND (330)	ND (3,300)	ND (330)	87,000	460
Chrysene	1,300	1,600	ND (330)	770	520	4,900	660	ND (330)	ND (3,300)	ND (330)	24,000	ND (330)
Benzo(b) Fluoranthene	1,900	2,400	ND (330)	1,000	920	5,900	ND (330)	ND (330)	ND (3,300)	ND (330)	27,000	TR (330)
Benzo(a) Pyrene	1,100	1,200	ND (330)	640	480	3,700	ND (330)	ND (330)	ND (3,300)	ND (330)	31,000	ND (330)
Indeno(1,2,3-cd) Pyrene	ND (330)	520	ND (330)	ND (330)	ND (330)	3,000	ND (330)	ND (330)	ND (3,300)	ND (330)	12,000	ND (330)
Benzo (g,h,i) Perylene	ND (330)	520	ND (330)	ND (330)	380	3,100	ND (330)	ND (330)	ND (3,300)	ND (330)	13,000	ND (330)
Acenaphthene	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (3,300)	ND (330)	3,500	ND (330)
Dibenz(a,h)Anthracene	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	1,800	ND (330)	ND (330)	ND (3,300)	ND (330)	TR (3,300)	ND (330)
Acenaphthylene	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	380	ND (330)	ND (330)	ND (3,300)	ND (330)	9,800	ND (330)
Dibenzofuran	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (3,300)	ND (330)	9,000	ND (330)
Benzo(a) Anthracene	1,200	1,500	ND (330)	670	940	5,200	600	ND (330)	ND (3,300)	ND (330)	27,000	ND (330)
bis(2-Ethylhexyl)Phthalate	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (3,300)	ND (330)	ND (3,300)	ND (330)
Dimethylphthalate	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (3,300)	ND (330)	ND (3,300)	ND (330)

0089-0418

Table 6
Soil Analytical Results - Semi-Volatile Organic Analyses
Central Section (July 1988)
(Continued)

Sample ID	B-8				B-9		B-10			B-11		B-12		
Depth (ft)	0-6	7-8	8-12	12-18	6-10	10-16	4-6	6-10	10-14	6-14	15-22	4-8	8-12	14-16&18-20
BNA, ug/kg														
Naphthalene	ND (330)	ND (3,300)	390	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	2,600	ND (330)	TR (330)	TR (330)	ND (330)
2-Methylnaphthalene	ND (330)	ND (3,300)	2,200	TR (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	4,600	ND (330)	ND (330)	ND (330)	ND (330)
Fluorene	TR (330)	ND (3,300)	380	TR (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	3,500	ND (330)	TR (330)	TR (330)	ND (330)
Phenanthrene	2,800	ND (3,300)	700	ND (330)	ND (330)	ND (330)	1,200	ND (330)	ND (330)	7,300	ND (330)	5,900	1,100	TR (330)
Anthracene	785	ND (3,300)	ND (330)	TR (330)	ND (330)	ND (330)	340	ND (330)	ND (330)	910	ND (330)	1,900	TR (330)	TR (330)
Fluoranthene	5,200	ND (3,300)	2,100	ND (330)	ND (330)	ND (330)	1,600	ND (330)	480	5,900	490	9,600	1,600	300
Pyrene	3,000	ND (3,300)	880	464	TR (330)	ND (330)	2,200	TR (330)	500	5,300	TR (330)	5,200	920	TR (330)
Chrysene	2,200	ND (3,300)	360	168	ND (330)	ND (330)	1,200	ND (330)	ND (330)	1,700	ND (330)	4,900	640	TR (330)
Benzo(b) Fluoranthene	5,400	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	2,500	ND (330)	ND (330)	340	ND (330)	5,200	490	TR (330)
Benzo(a) Pyrene	2,000	ND (3,300)	ND (330)	TR (330)	ND (330)	ND (330)	980	ND (330)	ND (330)	480	ND (330)	5,500	650	TR (330)
Indeno(1,2,3-cd) Pyrene	1,300	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	ND (330)	2,300	TR (330)	ND (330)
Benzo (g,h,i) Perylene	1,500	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	ND (330)	2,100	TR (330)	ND (330)
Acenaphthene	ND (330)	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	1,400	ND (330)	TR (330)	TR (330)	ND (330)
Dibenz(a,h)Anthracene	340	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	ND (330)	TR (330)	TR (330)	ND (330)
Acenaphthylene	TR (330)	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	480	ND (330)	1,000	TR (330)	ND (330)
Dibenzofuran	ND (330)	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	ND (330)	TR (330)	TR (330)	ND (330)
Benzo(a) Anthracene	2,200	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	1,000	ND (330)	430	960	ND (330)	4,900	660	TR (330)
bis(2-Ethylhexyl)Phthalate	ND (330)	ND (3,300)	ND (330)	401	TR (330)	ND (330)	380	TR (330)	ND (330)	ND	ND (330)	33,000	720	320
Dimethylphthalate	ND (330)	ND (3,300)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	1,200	ND (330)	ND (330)	ND (330)

Notes:

BNAs = Base/Neutral and Acid Extractible Semi-Volatile Organic Compounds

( ) = Number in parentheses is laboratory method detection limit (MDL)

MDL = Laboratory method detection level

ND = Below MDL

TR = Trace

0089-0419

Table 7
Soil Analytical Results - Inorganic Analyses
Central Section (July 1988)

Sample ID	B-1	B-2		B-3	B-4	B-5			B-6		B-7	
Depth (ft)	0-4 & 14-16	0-8	8-16	0-13	0-10	0-7	7-10	13-15	7-11	14-20	4-10	12-17
Total Metals, mg/kg												
Antimony	190	ND (6)	ND (4)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	4	ND (4)	ND (6)	5
Arsenic	2.85	4.91	2.11	3.61	4.65	7.28	2.76	1.39	2.28	1.25	5.44	2.69
Barium	100	60	40	100	50	80	110	70	980	30	100	50
Beryllium	ND (.04)	ND (.06)	ND (.04)	ND (.05)	ND (.05)	0.17	ND (.05)	ND (.04)	0.08	0.043	0.17	0.08
Cadmium	3.6	3.6	2.6	3	2.5	3.5	2.7	3.3	4.8	1.7	4.6	2.9
Chromium	20	23	15	17	18	21	29	21	18	8.1	36	19
Copper	38	26	27	33	32	27	19	43	37	14	51	36
Lead	1,500	120	10	340	130	60	260	40	6,500	7	320	30
Mercury	0.104	0.09	ND (.06)	0.25	0.44	0.09	ND (.07)	ND (0.06)	0.103	ND (.06)	0.08	ND (.07)
Nickel	17	19	12	15	15	18	14	17	12	8.1	30	15
Selenium	ND (.132)	ND (.16)	ND (.14)	ND (.15)	ND (.15)	ND (.14)	ND (.14)	ND (.14)	ND (.124)	ND (.12)	ND (.13)	ND (.11)
Silver	ND (.89)	ND (1.1)	ND (.9)	ND (.9)	ND (1.1)	ND (.8)	ND (.8)	ND (.7)	ND (.95)	ND (.95)	ND (1.1)	1.5
Thallium	20	20	ND (10)	10	ND (10)	20	ND (20)	20	ND (10)	ND (10)	ND (10)	ND (10)
Zinc	89	58	36	66	80	71	53	52	210	22	99	36
EP Toxicity, mg/kg												
Cadmium	0.2	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Chromium	0.47	0.43	0.2	ND (0.2)	ND (0.2)	0.19	0.24	0.02	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Barium	0.2	0.2	0.1	0.8	0.3	0.2	0.3	ND (0.1)	1.0	ND (0.1)	0.3	ND (0.1)
Lead	ND (0.1)	ND (0.1)	ND (0.1)	0.1	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	1.0	ND (0.1)	ND (0.1)	ND (0.1)
Mercury	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	0.0002

Table 7
Soil Analyisis Results - Inorganic Results
Central Section (July 1988)
(Continued)

Sample ID	B-8				B-9		B-10			B-11		B-12		
Depth (ft)	0-6	7-8	8-12	12-18	6-10	10-16	4-6	6-10	10-14	6-14	15-22	4-8	8-12	14-16&18-20
Total Metals, mg/kg														
Antimony	5	ND (4)	5	ND (4)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (4)	ND (4)	ND (5)	ND (4)	ND (4)
Arsenic	5.1	4.77	1.43	1.81	1.83	0.77	7.73	2.95	1.4	1.8	1.6	6.2	1.25	1.42
Barium	60	170	50	40	70	40	50	360	60	50	50	70	30	50
Beryllium	0.04	0.04	0.05	0.05	ND (.05)	ND (.05)	0.05	ND (.05)	ND (.05)	ND (.05)	ND	ND (.04)	ND (.05)	ND (.041)
Cadmium	3.3	3	2.9	2.8	3.3	2.9	2.2	3.4	3.2	1.9	3	2.9	2.4	2.9
Chromium	24	18	21	17	15	17	16	29	19	17	16	18	11	23
Copper	24	20	37	29	32	32	32	39	36	26	41	27	24	37
Lead	50	970	20	9	100	9	280	2,500	20	199	10	30	20	10
Mercury	0.1284	ND (.07)	ND (.07)	ND (.07)	ND (.07)	ND (.07)	0.33	ND (.07)	ND (.07)	ND (.06)	ND (.07)	ND (.06)	ND (.07)	ND (.07)
Nickel	17	12	16	14	18	14	12	14	16	12	14	14	9.6	16
Selenium	ND (.13)	ND (.14)	ND (.12)	ND (.14)	ND (.16)	ND (.15)	ND (.14)	ND (.16)	ND (.17)	ND (.11)	ND (.14)	ND (.14)	ND (.15)	ND (.14)
Silver	ND (.92)	ND (.9)	ND (.86)	ND (.9)	ND (1.1)	ND (.99)	ND (1.1)	ND (1.1)	ND (.9)	ND (1.0)	0.9	ND (.9)	ND (.76	ND (.97)
Thallium	10	10	10	20	20	20	ND (20)	30	30	20	20	ND (10)	ND (10)	ND (10)
Zinc	68	96	46	33	46	36	120	120	41	35	40	70	33	37
EP Toxicity, mg/kg														
Cadmium	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)	ND (.01)
Chromium	ND (.02)	ND (.02)	ND (.02)	0.25	ND (.02)	0.46	0.05	0.09	0.06	ND (.02)	0.13	ND (.02)	ND (.02)	ND (.02)
Barium	0.3	0.6	ND (0.1)	ND (0.1)	0.4	ND (0.1)	0.2	0.7	ND (0.1)	ND (0.1)	ND (0.1)	0.2	ND (0.1)	ND (0.1)
Lead	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	1	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Mercury	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	0.0004	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)	ND (.0002)

Notes:

( ) Number in parentheses is laboratory method detection limit (MDL)

mg/kg = Milligrams per kilogram

ND = below MDL

Table 8
Soil Analytical Results - Organic Analyses
Central Section (February 1989)

Sample ID	Sample Depth (ft)	Methylene Chloride (ug/kg)	Toluene (ug/kg)	Xylenes (ug/kg)	Petroleum Hydrocarbons (mg/kg)	PCBs (mg/kg)
W-89-S1	0-2	ND (5)	ND (5)	ND (5)	250	---
	2-4	---	---	---	360	---
	6-8	ND (10)	ND (10)	ND (10)	370	ND (.1)
	8-10	---	---	---	18,000	ND (.1)
	10-12	ND (5)	10	ND (5)	85	---
W-89-S3	0-2	18	ND (10)	ND (10)	380	---
	4-6	---	---	---	62	---
	6-8	ND (10)	ND (10)	ND (10)	ND (10)	---
	8-10	---	---	---	ND (10)	---
	10-12	---	---	---	ND (10)	---
W-89-S4	0-2	ND (5)	ND (5)	ND (5)	19	---
	4-6	---	---	---	1,500	---
	6-8	ND (10)	ND (10)	TR (10)	280	---
	8-10	ND (10)	ND (10)	ND (10)	63	0.2*
	15-17	ND (5)	ND (5)	ND (5)	---	---
W-89-S14	0-2	TR (10)	ND (10)	ND (10)	67	---
	4-6	---	---	---	4,300	ND (1)
	6-8	---	---	---	6,500	---
	8-10	---	---	---	87	---

Table 8
Soil Analytical Results - Organic Analyses
Central Section (February 1989)
(continued)

Sample ID	Sample Depth (ft)	Methylene Chloride (ug/kg)	Toluene (ug/kg)	Xylenes (ug/kg)	Petroleum Hydrocarbons (mg/kg)	PCBs (mg/kg)
W-89-S15	0-2	ND (10)	ND (10)	ND (10)	200	---
	4-6	---	---	---	37	---
	6-8	---	---	---	13	---
	8-10	ND (10)	ND (10)	ND (10)	ND (10)	---
	15-17	---	---	---	13	---
W-89-S16	0-2	TR (10)	ND (10)	ND (10)	13	---
	4-6	---	---	---	ND (10)	---
	6-8	ND (10)	ND (10)	ND (10)	ND (10)	---
	8-10	---	---	---	14	---
	10-12	---	---	---	ND (10)	---
W-89-S17	0-2	12	ND (10)	ND (10)	350	---
	4-6	---	---	---	510	---
	6-8	---	---	TR (10)	3,600	ND (1.0)
	8-10	---	---	---	14,000	---
W-89-S18	0-2	ND (10)	ND (10)	ND (10)	31	---
	4-6	---	ND (2)	ND (2)	140	---
	6-8	---	---	---	20,000	ND (1.0)
	8-10	---	---	---	5,100	---

Notes:
ug/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
ND = None detected above MDL
( ) = Number in parentheses is laboratory method detection limit (MDL)
PCBs = Polychlorinated biphenyl compounds (*Aroclor 1254)
--- = Not analyzed

0089-0423

Table 9
Soil Analytical Results - Semi-Volatile Organic Analyses
Central Section (February 1989)

Compound	W-89-S17 6 - 8 feet	W-809-S4 6 - 8 feet	W-89-S4 8 - 10 feet	W-89-S18 6 - 8 feet
BNAs, ug/kg				
Phenanthrene	TR (330)	ND (330)	ND (330)	ND (1,600)
Fluoranthene	480	ND (330)	ND (330)	ND (1,600)
Pyrene	910	ND (330)	ND (330)	ND (1,600)
Benzo(a)Anthracene	TR (330)	ND (330)	ND (330)	ND (1,600)
Chrysene	TR (330)	ND (330)	ND (330)	ND (1,600)
Benzo(b)Fluoranthene	430	ND (330)	ND (330)	ND (1,600)
Benzo(a)Pyrene	TR (330)	ND (330)	ND (330)	ND (1,600)
Indeno(1,2,3-cd)Pyrene	1,300	ND (330)	ND (330)	ND (1,600)
Benzo(g,h,i)Perylene	350	ND (330)	ND (330)	ND (1,600)

Notes:
ug/kg = Micrograms per kilogram
BNAs = Base/Neutral and Acid Extractible Semi-Volatile Organic Compounds

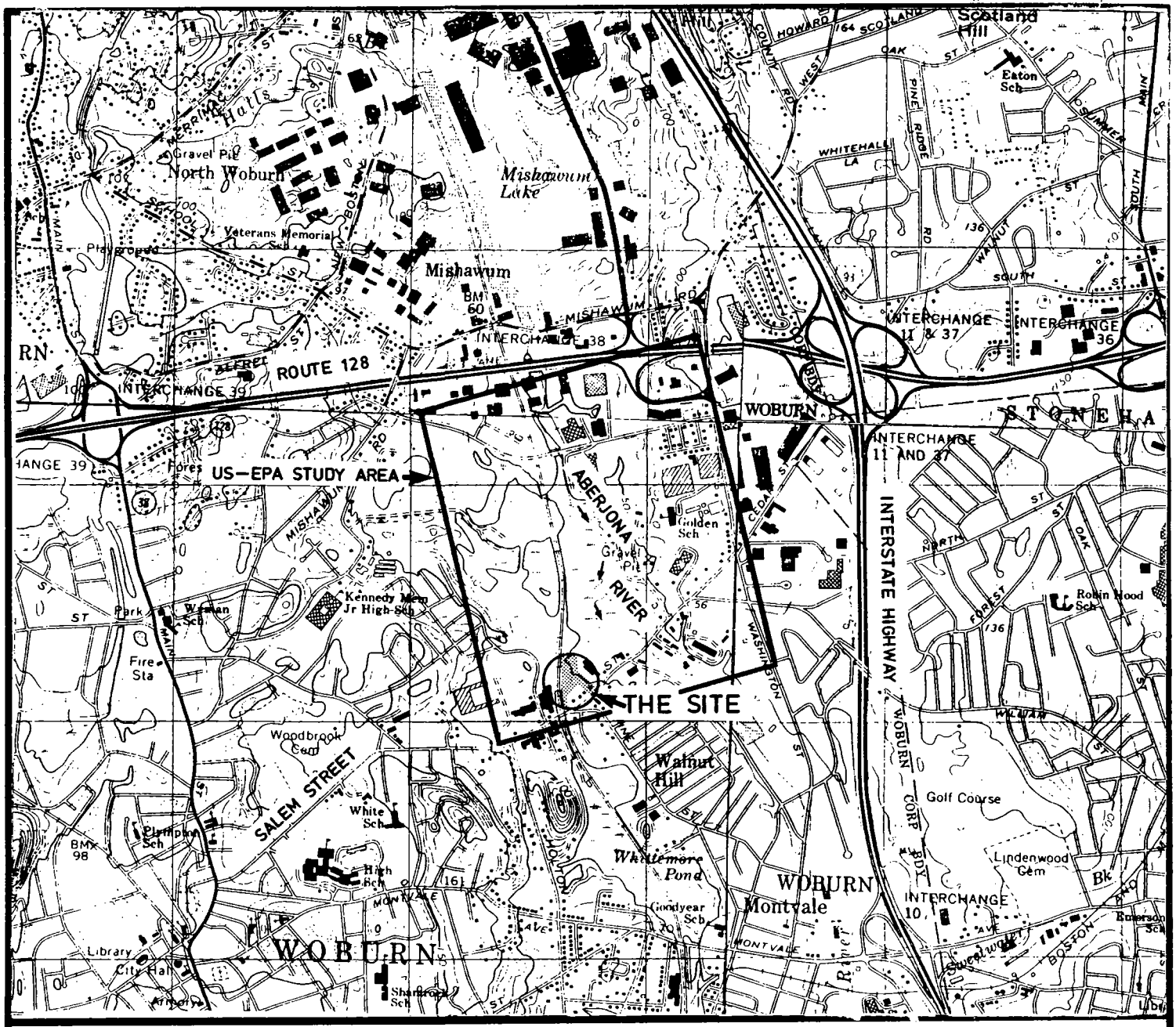
Table 10
Groundwater Analytical Results

	W-89-S1	W-89-S3	W-89-S4	W-89-S14	W-89-S15	W-89-S16	W-89-S17	W-89-S18	CHI 6/88
VOCs, ug/l									
Benzene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	TR (5)	ND (5)	TR (50)
Toluene	TR (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	9	ND (5)	ND (50)
Ethylbenzene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (50)
Xylenes	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	19	ND (5)	ND (50)
Acetone	ND (20)	ND (20	ND (20)	ND (20)	ND (20)	99	ND (20)	ND (20)	ND (200)
Chloroethane	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10	ND (10)	160
1,1-Dichloroethane	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	1,700
1,1,1-Trichloroethane	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	1,400
2-Butanone	ND (20	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (5)	850
Trans 1,2-Dichloroethene	20	ND (5)	ND (5)	6	ND (5)	TR (5)	93	8	ND (50)
Tetrachloroethene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	6	ND (5)	ND (5)	ND (50)
Trichloroethene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	TR (5)	TR (5)	ND (50)
BNAs, ug/l	ND	---	---	---	---	---	ND	---	---
Petroleum Hydrocarbons, mg/l	56	ND (0.1)	1.3	1.7	ND (0.1)	2.9	---	40	30

Notes:
Samples collected on February 3, 1989
VOCs - Volatile Organic Compounds
BNAs - Base/Neutral and Acid Extractible Semi-Volaitle Organic Compounds
PCBs Polychlorinated biphenyl compounds
ug/l = Micrograms per liter
mg/l = Milligrams per liter
( ) = Number in parentheses is laboratory method detection limit (MDL)
ND = None detected above MDL
--- = Not analyzed
TR = Compound detected but below MDL

FIGURES

FIGURE 1



SCALE 1:25,000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

N

COORDINATES
UTM: 324682mE, 4706254mN
LONGITUDE: [redacted]
LATITUDE: [redacted]

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
		KMG	[illegible]	[illegible]	1/31/94

CleanHarbors
ENVIRONMENTAL ENGINEERING CORPORATION

325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200

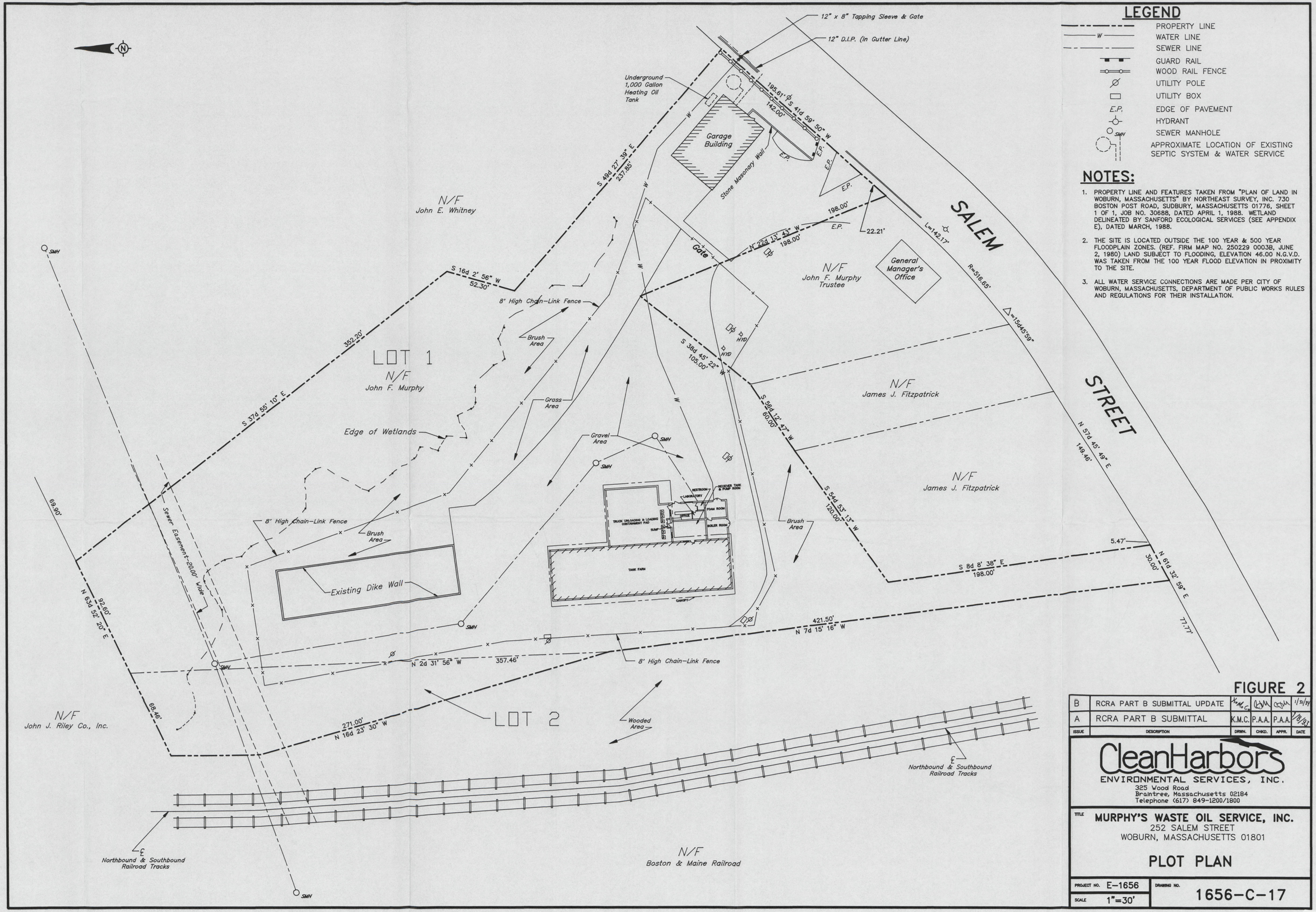
MURPHY'S WASTE OIL SERVICE, INC.
252 AND 252 REAR SALEM STREET
WOBURN, MASSACHUSETTS

LOCUS MAP

PROJECT NO.	E-1656	DWG. NO.	1656-L-001
SCALE	AS NOTED		

BASE MAP: UNITED STATES GEOLOGICAL SURVEY (USGS) LEXINGTON, MASSACHUSETTS QUADRANGLE

0089-0426



LEGEND

- PROPERTY LINE
- W — WATER LINE
- SEWER LINE
- GUARD RAIL
- WOOD RAIL FENCE
- UTILITY POLE
- UTILITY BOX
- E.P. — EDGE OF PAVEMENT
- HYDRANT
- SMH — SEWER MANHOLE
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
2. THE SITE IS LOCATED OUTSIDE THE 100 YEAR & 500 YEAR FLOODPLAIN ZONES. (REF. FIRM MAP NO. 250229 0003B, JUNE 2, 1980) LAND SUBJECT TO FLOODING, ELEVATION 46.00 N.G.V.D. WAS TAKEN FROM THE 100 YEAR FLOOD ELEVATION IN PROXIMITY TO THE SITE.
3. ALL WATER SERVICE CONNECTIONS ARE MADE PER CITY OF WOBURN, MASSACHUSETTS, DEPARTMENT OF PUBLIC WORKS RULES AND REGULATIONS FOR THEIR INSTALLATION.

FIGURE 2

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
B	RCRA PART B SUBMITTAL UPDATE	K.M.C.	P.A.A.	P.A.A.	1/31/97
A	RCRA PART B SUBMITTAL	K.M.C.	P.A.A.	P.A.A.	1/8/97

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200/1800

TITLE

MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET
WOBURN, MASSACHUSETTS 01801

PLOT PLAN

PROJECT NO.	DRAWING NO.
E-1656	1656-C-17
SCALE 1"=30'	

0089-0427

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
2. THE SITE IS LOCATED OUTSIDE THE 100 YEAR & 500 YEAR FLOODPLAIN ZONES. (REF. FIRM MAP NO. 250229 0003B, JUNE 2, 1980) LAND SUBJECT TO FLOODING, ELEVATION 46.00 N.G.V.D. WAS TAKEN FROM THE 100 YEAR FLOOD ELEVATION IN PROXIMITY TO THE SITE.
3. ALL WATER SERVICE CONNECTIONS ARE MADE PER CITY OF WOBURN, MASSACHUSETTS, DEPARTMENT OF PUBLIC WORKS RULES AND REGULATIONS FOR THEIR INSTALLATION.
4. 3,000 GALLON SELF CONTAINED ABOVEGROUND TANK USED FOR STORING VIRGIN DIESEL FUEL OIL.
5. TOPOGRAPHY TAKEN FROM PLAN BY CHIEE ENTITLED "GRADING AND EROSION CONTROL PLAN", REVISION "C", DATED 2/1/89 AND VERIFIED BY CHES ON 3/29/93. REFER TO FIELD BOOK 93-004, PGS 2-6.
6. BENCHMARK: CHISELED SQUARE, AT THE SOUTHWEST END OF BRIDGE OVER THE ABERJONA RIVER AT THE INNER BASE OF THE FENCE ALONG SALEM STREET.
   REFERENCE FIRM MAP NO. 250229 0003B, JUNE 2, 1980
   ELEV. 47.95.

LEGEND

- PROPERTY LINE
- W — WATER LINE
- GUARD RAIL
- WOOD RAIL FENCE
- UTILITY POLE
- UTILITY BOX
- E.P. — EDGE OF PAVEMENT
- HYDRANT
- SMH — SEWER MANHOLE
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE

FIGURE 3

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
B	RCRA PART B SUBMITTAL UPDATE	K.M.G.	K.M.G.	P.S.L.	11/21/94
A	RCRA PART B SUBMITTAL	K.M.G.	K.M.G.	P.S.L.	9/2/93

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200/1800

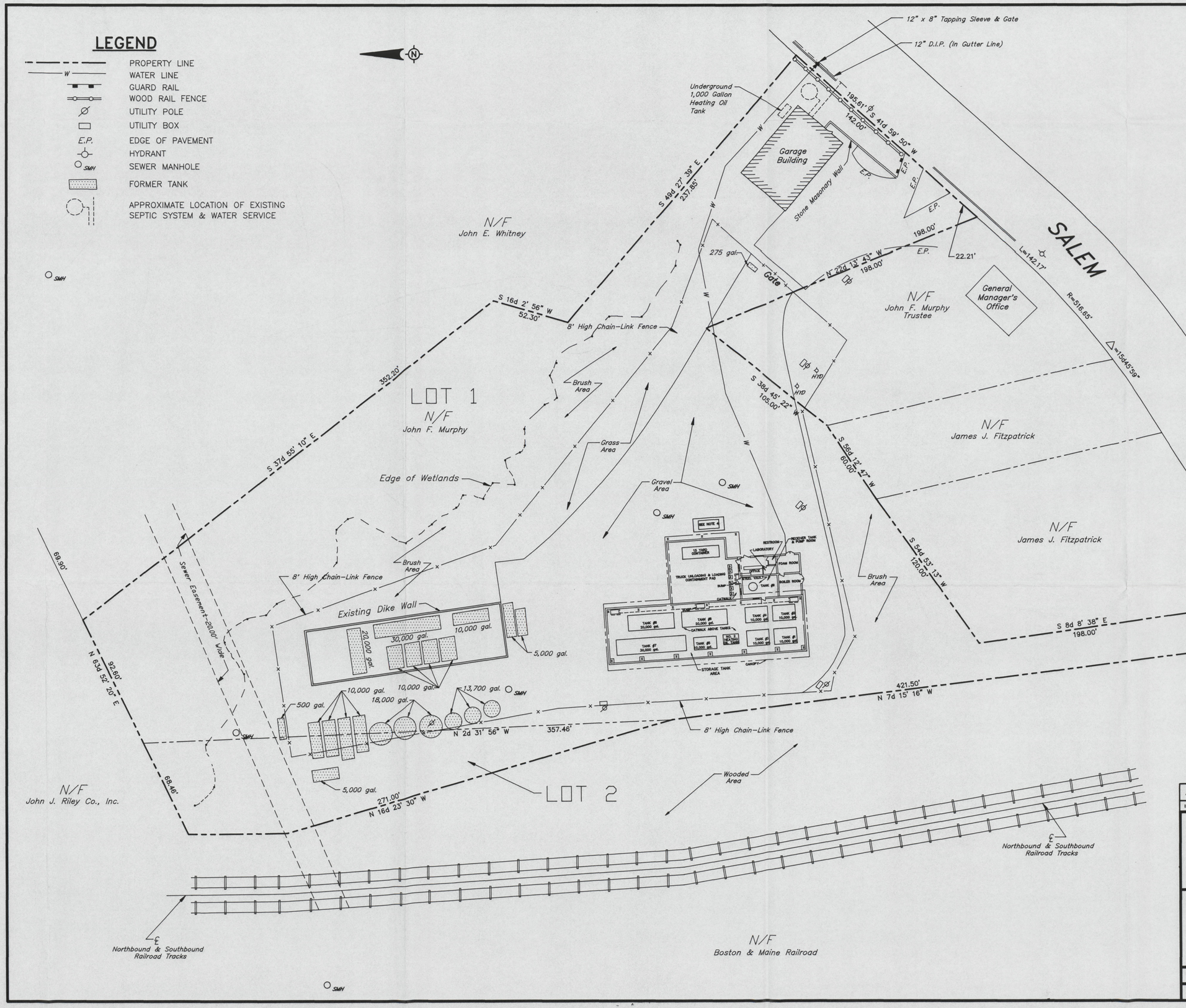
TITLE

MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET
WOBURN, MASSACHUSETTS 01801

SURFACE CONTOUR PLAN

PROJECT NO.	DRAWING NO.
E-1656	1656-C-18
SCALE 1"=30'	

0089-0428



NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
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3. ALL WATER SERVICE CONNECTIONS ARE MADE PER CITY OF WOBURN, MASSACHUSETTS, DEPARTMENT OF PUBLIC WORKS RULES AND REGULATIONS FOR THEIR INSTALLATION.
4. 3,000 GALLON SELF CONTAINED ABOVEGROUND TANK USED FOR STORING VIRGIN DIESEL FUEL OIL.

FIGURE 4

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	RCRA PART B SUBMITTAL	[illegible]	[illegible]	[illegible]	1/31/94

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
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Braintree, Massachusetts 02184
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TITLE
MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET
WOBURN, MASSACHUSETTS 01801

FORMER AND EXISTING STORAGE TANK LOCATIONS

PROJECT NO. EN-170
SCALE 1"=30'
DRAWING NO. 170-C-02

0089-0429

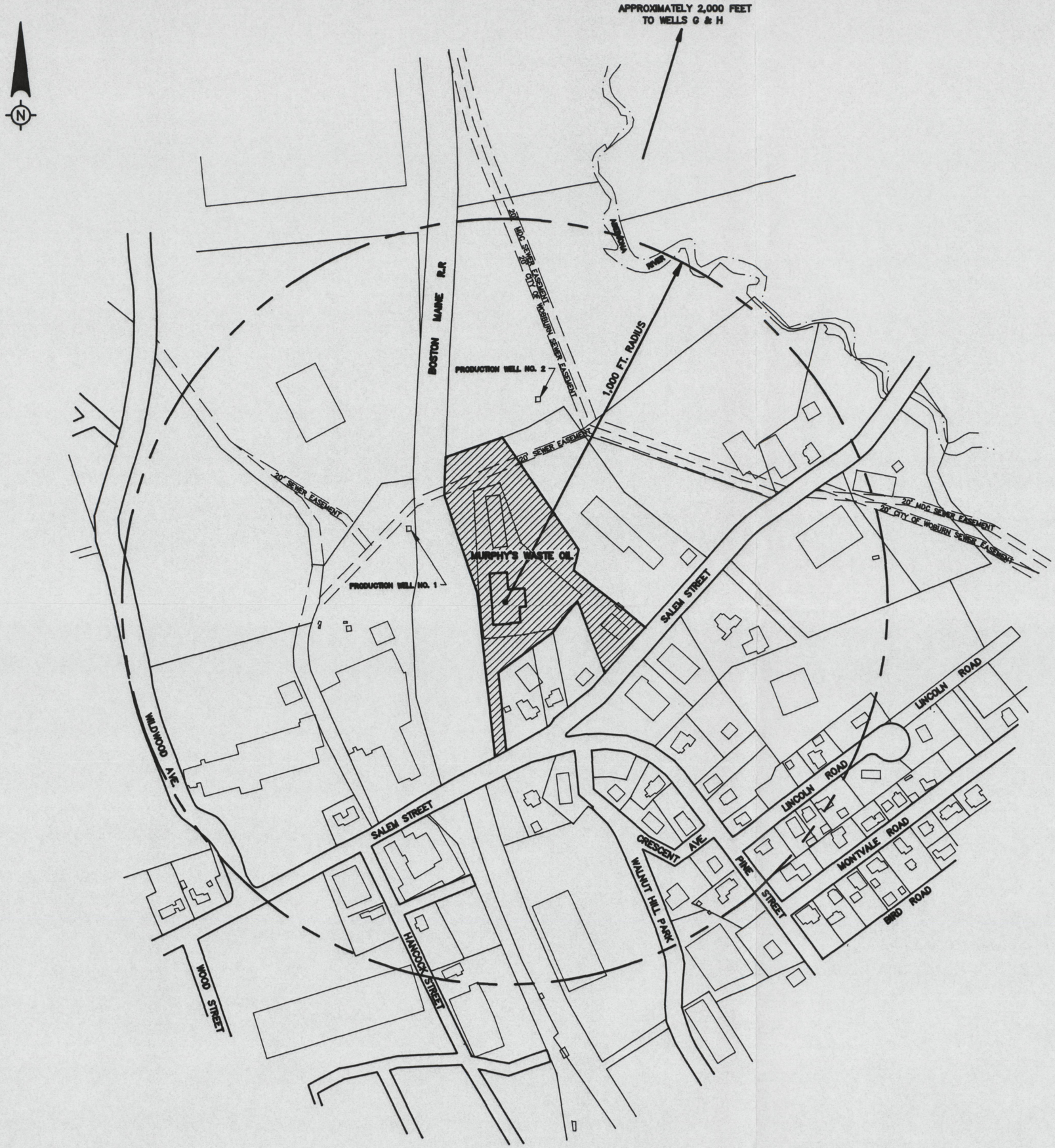

FIGURE 5

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
B	RCRA PART B SUBMITTAL UPDATE	K.M.C.			1/31/94
A	RCRA PART B SUBMITTAL	K.M.C.	P.A.A.	P.A.A.	1/8/93

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TITLE

MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET
WOBURN, MASSACHUSETTS 01801

SURROUNDING AREA MAP

PROJECT NO. E-1656	DRAWING NO. 1656-C-15
SCALE 1"=200'	

LEGEND

- PROPERTY LINE
- W — WATER LINE
- GUARD RAIL
- WOOD RAIL FENCE
- UTILITY POLE
- UTILITY BOX
- E.P. — EDGE OF PAVEMENT
- HYDRANT
- SMH — SEWER MANHOLE
- CHI-5/88 — STRUCTURAL BORING NORTHERN SECTION DECEMBER 1987 AND FEBRUARY 1988
- WBG-S3 — ENVIRONMENTAL BORING (COMPLETED AS MONITORING WELL)
- B-6 — STRUCTURAL BORING CENTRAL SECTION JULY 1988
- CHI-6/88 — MONITORING WELL
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
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3. ALL WATER SERVICE CONNECTIONS ARE MADE PER CITY OF WOBURN, MASSACHUSETTS, DEPARTMENT OF PUBLIC WORKS RULES AND REGULATIONS FOR THEIR INSTALLATION.

12" x 8" Tapping Sleeve & Gate
12" D.I.P. (In Gutter Line)
Underground 1,000 Gallon Heating Oil Tank
195.61'
S 41d 59' 50" W
142.00'
Garage Building
Stone Masonary Wall
E.P.
S 49d 27' 39" E
237.85'
N/F John E. Whitney
198.00'
22.21'
L=142.17'
SALEM STREET
R=516.65'
Δ=15d45'59"
N 22d 13' 43" W
198.00'
Gate
WBG-S16
N/F John F. Murphy Trustee
General Manager's Office
S 16d 2' 56" W
52.30'
8' High Chain-Link Fence
352.20'
S 37d 55' 10" E
LOT 1
N/F John F. Murphy
Brush Area
Grass Area
WBG-S15
Edge of Wetlands
S 39d 45' 22" W
105.00'
WBG-S3
S 56d 12' 47" W
60.00'
N/F James J. Fitzpatrick
Gravel Area
SMH
B-12
B-9
B-1A
B-1B
WBG-S1
B-8
B-11
B-2A
B-2B
B-7
B-3
B-4B
B-4A
WBG-S17
WBG-S4
WBG-S14
B-10
B-5A
B-5B
B-6
WBG-S18
S 54d 53' 13" W
125.00'
N 57d 45' 49" E
149.46'
5.47'
S 8d 8' 38" E
198.00'
N 61d 32' 59" E
30.00'
77.77'
69.90'
Sewer Easement-20.00' Wide
8' High Chain-Link Fence
Brush Area
Existing Dike Wall
CHI-1/87
CHI-2/87
CHI-3/87
CHI-4/87
CHI-5/87
CHI-6/87
CHI-7/87
CHI-8/87
CHI-9/87
CHI-1/88
CHI-2/88
CHI-3/88
CHI-4/88
CHI-5/88
CHI-6/88
CHI-7/88
CHI-8/88
N 63d 52' 20" E
92.50'
N 2d 31' 56" W
357.46'
421.50'
N 7d 15' 16" W
8' High Chain-Link Fence
N/F John J. Riley Co., Inc.
68.46'
271.00'
N 16d 23' 30" W
LOT 2
Wooded Area
Northbound & Southbound Railroad Tracks
N/F Boston & Maine Railroad

FIGURE 6

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	RCRA PART B SUBMITTAL	KMM,CG	CBM	KCM	12/1/94

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200/1800

TITLE
MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET
WOBURN, MASSACHUSETTS 01801
FORMER MONITORING WELLS & BORINGS

PROJECT NO.	EN-170	DRAWING NO.	170-C-01
SCALE	1"=30'		

0089-0431

LEGEND

- PROPERTY LINE
- W — WATER LINE
- GUARD RAIL
- WOOD RAIL FENCE
- UTILITY POLE
- UTILITY BOX
- E.P. — EDGE OF PAVEMENT
- HYDRANT
- SMH — SEWER MANHOLE
- CHI-5/88 — STRUCTURAL BORING NORTHERN SECTION DECEMBER 1987 AND FEBRUARY 1988
- WBG-S3 — ENVIRONMENTAL BORING (COMPLETED AS MONITORING WELL)
- B-6 — STRUCTURAL BORING CENTRAL SECTION JULY 1988
- CHI-6/88 — MONITORING WELL
- APPROXIMATE LOCATION OF EXISTING SEPTIC SYSTEM & WATER SERVICE

NOTES:

1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30688, DATED APRIL 1, 1988. WETLAND DELINEATED BY SANFORD ECOLOGICAL SERVICES (SEE APPENDIX E), DATED MARCH, 1988.
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12" x 8" Tapping Sleeve & Gate
12" D.I.P. (In Gutter Line)
Underground 1,000 Gallon Heating Oil Tank
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198.00'
N 22d 13' 43" W
198.00'
22.21'
Gate
SALEM STREET
L=142.17'
R=516.65'
Δ=15d45'59"
N/F John F. Murphy Trustee
General Manager's Office
S 16d 2' 56" W
52.30'
8' High Chain-Link Fence
WBG-S16
352.20'
S 37d 55' 10" E
LOT 1
N/F John F. Murphy
Brush Area
Grass Area
WBG-S15
Edge of Wetlands
Gravel Area
S 38d 45' 22" W
105.00'
WBG-S3
S 56d 12' 47" W
60.00'
N/F James J. Fitzpatrick
N 57d 45' 49" E
149.46'
S 54d 53' 13" W
120.00'
Brush Area
B-9
B-12
B-1A
B-1B
B-8
B-11
WBG-S1
B-2A
B-2B
B-7
B-3
WBG-S17
WBG-S4
B-4B
B-4A
WBG-S14
B-10
B-5A
B-5B
B-6
WBG-S18
5.47'
S 8d 8' 38" E
198.00'
N 61d 32' 59" E
30.00'
77.77'
69.90'
Sewer Easement-20.00' Wide
8' High Chain-Link Fence
Brush Area
CHI-1/87
CHI-2/87
CHI-3/87
CHI-7/87
CHI-6/87
CHI-8/87
CHI-9/87
CHI-4/87
CHI-5/87
Existing Dike Wall
CHI-5/88
CHI-4/88
CHI-3/88
92.60'
N 63d 52' 20" E
421.50'
N 7d 15' 16" W
CHI-2/88
CHI-6/88
CHI-1/88
N 2d 31' 56" W
357.46'
CHI-8/88
CHI-7/88
8' High Chain-Link Fence
68.46'
N/F John J. Riley Co., Inc.
271.00'
N 16d 23' 30" W
LOT 2
Wooded Area
℄ Northbound & Southbound Railroad Tracks
℄ Northbound & Southbound Railroad Tracks
N/F Boston & Maine Railroad
SMH

FIGURE 6

ISSUE	DESCRIPTION	DRWN.	CHKD.	APPR.	DATE
A	RCRA PART B SUBMITTAL	[illegible]	[illegible]	[illegible]	1/31/94

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200/1800

TITLE

MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET
WOBURN, MASSACHUSETTS 01801

FORMER MONITORING WELLS & BORINGS

PROJECT NO.	DRAWING NO.
EN-170	170-C-01
SCALE 1"=30'	

0089-0432

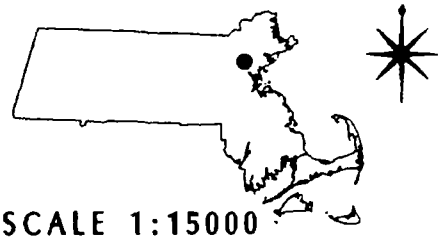
APPENDIX A

MA DEP - Bureau of Waste Site Cleanup

Site Scoring Map: 500 feet & 0.5 Mile Radii

SITE NAME:

Murphy's Waste Oil Service
252 and 252 Rear Salem St
Woburn, Ma
324682 4706254



SCALE 1:15000

January 20, 1994

- Potentially Productive Medium Yield Aquifer
- Potentially Productive High Yield Aquifer
- Medium Yield Aquifers NOT Classified as Potentially Productive
- High Yield Aquifers NOT Classified as Potentially Productive
- Potentially Productive Sole Source Aquifer
- DEP Approved Wellhead Protection Area - ZONE 2
- Interim Wellhead Protection Area
- Lakes, Ponds, Surface Water Features
- Fresh Water Non-Forested Wetlands
- Salt Water Wetlands
- Tidal Flats
- State, Federal, Municipal, Nonprofit and Private Open Space and Recreational Facilities
- Areas of Critical Environmental Concern
- DEP Approved Landfills - Post 1971
- NHESP Estimated Habitats of Rare Wetlands Wildlife 1993 - *for use with Wetlands Protection Act ONLY*
- Surface Community Water Supplies (Overlay)

- Interstate Highway
- U.S. Highway
- State Highway
- Municipal Boundary
- County Boundary
- Train
- Powerline
- Pipeline
- Aqueduct
- Major Drainage Basin
- Sub Drainage Basin
- Zone of Contribution

- Public Water Supply - Groundwater
- Public Water Supply - Surface Water
- Non Community Public Water Supply
- Certified Vernal Pools

0 2000 feet
0 500 meters

0089-0434

APPENDIX B

CleanHarbors

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	CHI-1/87
CHEE Job#:	E-1656
Well Elevation:	
Drill Forman:	B. Crowley
CHEE Geologist:	D. Walsh
Start Date:	December 18, 1987
Date End:	December 18, 1987

Project Name:	Murphy's Waste Oil
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	HSA
Casing/Auger Size:	

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	9	8	8	6	24	16	3.0 ppm		Brown/tan, coarse SAND. pockets of fine to medium Sand.		
	SS - 2	2' - 4'	6	4	3	3	24	14	1.5 ppm				
	SS - 3	4' - 6'	5	8	5	3	24	6	2.3 ppm				
5'													
	SS - 4	6' - 8'	7	14	12	15	24	8	1.2 ppm	6.5'			
										8'	Rusty Brown, fine SAND.		
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-1/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-2/87		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	B. Crowley
Boring Location:	See Plan	**CHEE Geologist:**	D. Walsh
Drilling Contractor:	CHEE	**Start Date:**	December 18, 1987
Drilling Method:	HSA	**Casing/Auger Size:**	**Date End:** December 18, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	1	21	14	9	24	7	1.0 ppm		Black, medium to coarse SAND. (Rock lodged in spoon)		
	SS - 2	2' - 4'	7	8	8	7	24	5	3.5 ppm	2.0'	Tan/brown, coarse SAND.		
	SS - 3	4' - 6'	11	11	6	4	24	11					
5'													
	SS - 4	6' - 8'	4	6	8	8	24	20	1.2 ppm	6.0'	Black, fine SILT.		
									1.9 ppm	7.0'	Tan/brown, fine SAND.		
										8.0'			
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-2/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200										Page: 1 of 1 Boring No. CHI-3/87 CHEE Job#: E-1656
Project Name:	Murphy's Waste Oil									Well Elevation:
Client Name:	CHI - Corporate									Drill Forman: B. Crowley
Boring Location:	See Plan									CHEE Geologist: D. Walsh
Drilling Contractor:	CHEE									Start Date: December 18, 1987
Drilling Method:	HSA					Casing/Auger Size:				Date End: December 18, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	3	7	7	6	24	18	10 ppm	2.0'	Dark brown, medium coarse SAND. Light brown, medium dense, coarse SAND.		
	SS - 2	2' - 4'	6	7	4	3	24	10			Same as SS - 1 (loose)		
5'	SS - 3	4' - 6'	3	4	5	10	24	12	1.5 ppm		Same as SS - 2		
	SS - 4	6' - 8'	5	6	3	8	24	6	1.0 ppm		Same as SS - 2		
	SS - 5	8' - 10'	4	11	11	10	24	8	1.6 ppm	10.0'			
10'											Bottom of boring		
15'													
20'													

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4 ,	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-3/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 1
		Boring No.	CHI-4/87
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	B. Crowley
Boring Location:	See Plan	CHEE Geologist:	D. Walsh
Drilling Contractor:	CHEE	Start Date:	December 18, 1987
Drilling Method:	HSA Casing/Auger Size:	Date End:	December 18, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	20	30	25	23	24	12	30 ppm		Black, coarse SAND, petroleum odor noted.		
	SS - 2	2' - 4'	10	7	6	6	24	7					
									3.5 ppm	3.0'	Tan/brown, medium dense, coarse SAND.		
	SS - 3	4' - 6'	8	8	9	3	24	9	5.2 ppm		Same as SS - 2		
5'													
	SS - 4	6' - 8'	2	2	3	5	24	8	50.0 ppm				
										8.0'			
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

QA/QC CHECKED BY:

GROUNDWATER READINGS DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-4/87

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0439

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	CHI-5/87
CHEE Job#:	E-1656
Well Elevation:	
Drill Forman:	B. Crowley
CHEE Geologist:	D. Walsh
Start Date:	December 18, 1987
Date End:	December 18, 1987

Project Name:	Murphy's Waste Oil
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	HSA
Casing/Auger Size:	

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	6	6	3	3	24	12	5.0 ppm		Black/brown, coarse SAND.		
	SS - 2	2' - 4'	2	4	9	14	24	5			Same as SS - 1.		
									250 ppm	3	Strong petroleum odor and petroleum contamination observed.		
	SS - 3	4' - 6'	12	8	30	19	24	5	60 ppm	4.0'	Black, fine SILT. Strong petroleum odor.		
5'													
	SS - 4	6' - 8'	8	9	12	14	24	7	750 ppm	6.0'	Brown, fine SAND.		
										8.0'			
											End of boring		
10'													
15'													
20'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-5/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION *325 Wood Road, Braintree, MA 02184* *(617)849-1200*		Page:	1 of 1
		Boring No.	CHI-6/87
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	B. Crowley
Boring Location:	See Plan	CHEE Geologist:	D. Walsh
Drilling Contractor:	CHEE	Start Date:	December 18, 1987
Drilling Method:	HSA Casing/Auger Size:	Date End:	December 18, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	2	1	1	2	24	8	4.6 ppm		Tan/brown, very loose, coarse SAND, FILL.		
	SS - 2	2' - 4'	8	6	10	11	24	6	10 ppm		Medim dense, Same as SS - 1		
	SS - 3	4' - 6'	12	5	4	4	24	12	8.7 ppm		Tan, medium dense, medium to coarse SAND. Pieces of wood in sample, FILL.		
5'													
	SS - 4	6' - 8'	1	2	3	3	24	8	4.0 ppm	6.0'	Brown/black, medium stiff, SILT.		
	SS - 5	8' - 10'	8	11	11	12	24	8	2.2 ppm		Tan, medium dense, fine SAND.		
									2.0 ppm	10.0'			
10'											Bottom of boring		
15'													
20'													

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-6/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0441

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-7/87		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	B. Crowley
Boring Location:	See Plan	**CHEE Geologist:**	D. Walsh
Drilling Contractor:	CHEE	**Start Date:**	December 21, 1987
Drilling Method:	HSA	**Casing/Auger Size:**	**Date End:** December 21, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	6	6	5	5	24	18	1.0 ppm		Black, medium coarse SAND		
										1.0'	Tan/brown (-) medium dense, coarse SAND.		
	SS - 2	2' - 4'	4	4	3	3	24	12	< 1 ppm		Tan/brown, loose, coarse SAND.		
	SS - 3	4' - 6'	3	3	5	2	24	10					
5'													
	SS - 4	6' - 8'	1	2	9	11	24	18	0.8 ppm	6.0'	Black, medium stiff SILT.		
										7.5'	Tan, medium coarse SAND.		
										8.0'	Bottom of boring		
10'													
15													
20													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-7/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-8/87		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	B. Crowley
Boring Location:	See Plan	**CHEE Geologist:**	D. Walsh
Drilling Contractor:	CHEE	**Start Date:**	December 21, 1987
Drilling Method:	HSA	**Casing/Auger Size:**	**Date End:** December 21, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	17	8	12	8	24	14	160 ppm		Tan/brown, medium dense, coarse SAND.		
	SS - 2	2' - 4'	5	3	2	3	24	0			No recovery		
	SS - 3	4' - 6'	3	2	2	3	24	12	66 ppm		Same as SS-1 (very loose)		
5'													
	SS - 4	6' - 8'	1	0	3	4	24	16					
									4.4 ppm	7.5'	Black and Tan, very loose, medium to coarse SAND; some Silt.		
										8.0'	Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-8/87

QA/QC CHECKED BY:

"__100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-9/87		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	B. Crowley
Boring Location:	See Plan	**CHEE Geologist:**	D. Walsh
Drilling Contractor:	CHEE	**Start Date:**	December 21, 1987
Drilling Method:	HSA	**Casing/Auger Size:**	**Date End:** December 21, 1987

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	2	3	3	3	24	4	2.5 ppm		Brown, loose, coarse SAND.		
	SS - 2	2' - 4'	2	2	10	8	24	12	2.4 ppm		Tan, loose, coarse SAND.		
	SS - 3	4' - 6'	7	6	5	4	24	12	1.5 ppm				
5'													
	SS - 4	6' - 8'	3	3	1	2	24	14					
										7.0'	Black and tan, loose, fine SAND and Silt.		
										8.0'	Bottom of boring		
10'													
15													
20													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-9/87

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200										Page: 1 of 1 Boring No. CHI-1/88 CHEE Job#: E-1656
Project Name: Murphy's Waste Oil										Well Elevation:
Client Name: CHI - Corporate										Drill Forman: B. Brennan
Boring Location: See Plan										CHEE Geologist: D. Walsh
Drilling Contractor: CHEE										Start Date: February 17, 1988
Drilling Method: HSA							Casing/Auger Size:			Date End: February 17, 1988

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	40	20	15	11	24	14		0	Snow and ice		
										Top Soil 1.0'	Black organic soil		
	SS - 2	2' - 4'	8	7	5	4	24	8		2.0'	Tan/brown, medium-dense SAND.		
	SS - 3	4' - 6'	5	2	1	3	24	1		SAND			
5'													
	SS - 4	6'-8'	10	12	10	18	24	8					
										7.0'	Gray, fine SAND.		
										8.0'			
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-1/88

QA/QC CHECKED BY:

*__100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-2/88		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	B. Brennan
Boring Location:	See Plan	**CHEE Geologist:**	D. Walsh
Drilling Contractor:	CHEE	**Start Date:**	February 17, 1988
Drilling Method:	HSA	**Casing/Auger Size:**	**Date End:** February 17, 1988

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	20	14	10	8	24	18		0	Snow and ice in upper 6".		
										1.5'	Brown/black, medium dense, medium to fine organic soil.		
	SS - 2	2' - 4'	6	7	6	7	24	0		2.0'	Brown, coarse SAND, slight petroleum odor noted.		
	SS - 3	4' - 6'	4	4	2	2	24	6		SAND			
5'													
	SS - 4	6' - 8'	7	11	11	11		8			Gray, fine SAND.		
										8.0'			
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-2/88

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-3/88		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	B. Brennan
Boring Location:	See Plan	CHEE Geologist:	D. Walsh
Drilling Contractor:	CHEE	Start Date:	February 17, 1988
Drilling Method:	HSA	Casing/Auger Size:	Date End: February 17, 1988

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	26	12	11	7	24	12		0	Snow and ice in upper 6".		
										1.5'	Black, fine organic soil, slight petroleum odor.		
	SS - 2	2' - 4'	6	8	5	6	24	12		2.0'	Orange/brown, medium-fine SAND.		
	SS - 3	4' - 6'	5	10	16	4	24	11		SAND and SILT			
5'													
	SS - 4	6' - 8'	2	2	3	4	24	18			Black, fine SILT, petroleum odor noted.		
											Gray, loose, fine SAND.		
										8.0'			
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-3/88

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Project Name:	Murphy's Waste Oil	**Page:**	1 of 1
Client Name:	CHI - Corporate	**Boring No.**	CHI-4/88
Boring Location:	See Plan	**CHEE Job#:**	E-1656
Drilling Contractor:	CHEE	**Well Elevation:**	
Drilling Method:	HSA	**Drill Forman:**	B. Brennan
Casing/Auger Size:		**CHEE Geologist:**	D. Walsh
		Start Date:	February 17, 1988
		Date End:	February 17, 1988

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	23	14	12	8	24	14		Possible Fill	Snow and Ice in upper 6". Black, organic soil, petroleum odors noted.		
	SS - 2	2' - 4'	8	11	16	16	24	8			Same as SS - 1		
	SS - 3	4' - 6'	11	12	22	12	24	8			Same as SS - 1		
5'													
	SS - 4	6' - 8'	3	9	12	16	24	20		7.0'			
	SS - 5	8' - 10'	5	10	13	18	24	16			Brown, fine SAND.		
10'										9.5' 10.0'	Gray, fine SAND.		
											Bottom of boring		
15'													
20'													

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-4/88

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-5/88		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	B. Brennan
Boring Location:	See Plan	**CHEE Geologist:**	D. Walsh
Drilling Contractor:	CHEE	**Start Date:**	February 17, 1988
Drilling Method:	HSA	**Casing/Auger Size:**	**Date End:** February 17, 1988

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	13	23	23	25	24	14			Snow and ice in upper 6". Black, medium to coarse SAND.		
	SS - 2	2' - 4'	18	12	10	10	24	14		SAND	Same as SS - 1		
	SS - 3	4' - 6'	4	4	6	3	24	14			Brown/gray, fine SAND.		
5'													
	SS - 4	6' - 8'	3	7	11	12	24	16					
										8.0'			
											Bottom of boring		
10'													
15'													
20'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-5/88

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0449

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	CHI-6/88		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	B. Brennan
Boring Location:	See Plan	CHEE Geologist:	D. Walsh
Drilling Contractor:	CHEE	Start Date:	December 17, 1988
Drilling Method:	HSA	Casing/Auger Size:	Date End: December 17, 1988

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	23 19 12 10	24	13			Snow and ice. Black, medium-fine SAND. Petroleum odor noted.		
	SS - 2	2' - 4'	12 46 13 9	24	10					
	SS - 3	4' - 6'	2 4 4 3	24	10		4.0'	**Oil observed on spoon after each sample.**		
5'	SS - 4	6' - 8'	12 2 1 2	24	18					
10'										
15'							15.0'	Bottom of boring		
20'										

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

QA/QC CHECKED BY:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-6/88

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	CHI-7/88
CHEE Job#:	E-1656
Well Elevation:	
Drill Forman:	B. Crowley
CHEE Geologist:	D. Walsh
Start Date:	February 17, 1988
Date End:	February 17, 1988

Project Name:	Murphy's Waste Oil
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	HSA
Casing/Auger Size:	

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	8	6	5	3	24	10			Snow and Ice. Upper 6"		
											Brown/black, (-) medium dense, coarse SAND.		
	SS - 2	2' - 4'	6	3	3	3	24	4			Same as SS - 1.		
										SAND Possibly FIII			
	SS - 3	4' - 6'	3	5	3	4	24	7			Light brown, loose, coarse SAND.		
5'													
	SS - 4	6' - 8'	5	2	1	1	24	2			Light brown, very loose, fine SAND.		
	SS - 5	8' - 10'	3	1	2	2	24	24					
										10.0'			
10'											Bottom of boring		
15'													
20'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-7/88

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0451

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	CHI-8/88
CHEE Job#:	E-1656
Well Elevation:	
Drill Forman:	B. Brennan
CHEE Geologist:	D. Walsh
Start Date:	February 17, 1988
Date End:	February 17, 1988

Project Name:	Murphy's Waste Oil
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	HSA
Casing/Auger Size:	

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	7 13 * -	16	5			Snow and ice.		
							1.5'	Black, coarse SAND, some 1/2" angular rock and leaves.		
								Boulder.		
5'		5' - 7'			10		5.0'	Black, fine SILT.		
							6.0'	Light brown, fine SAND.		
	SS - 2	7' - 9'	3 3 3 20	24	18					
							9.0'			
10'								Bottom of boring		
15'										
20'										

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
* 120/0"

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. CHI-8/88

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	B-1a
CHEE Job#:	E-1656
Well Elevation:	N/A
Drill Foreman:	B. Brennan or J. Adams
CHEE Geologist:	Jill McGillivray
Start Date:	7-Jul-88
Date End:	7-Jul-88

Project Name:	Murphy's Waste Oil Service, Inc.
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	Hollow Stem Auger **Casing/Auger** 3 3/4"

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1 B1	0'-2'	26 10 18 16	24	12			3/4" Crushed Stone Surface		
							FILL	Dense, gray , fine to medium SAND and Gravel, Brick, concrete, and wood present.		
2'							2.0		1	
	SS - 2	2 - 2	100/0'	0	0		REFUSAL			
4'										

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:
1. Difficult Augering - refusal 2.0 feet

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-1a

QA/QC CHECKED BY: Beverly Crocker

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	B-1b		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service, Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Foreman:**	Bobby Brennan
Boring Location:	See Plan	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	7-Jul-88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:**	3 3/4"
		Date End:	7-Jul-88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
											3/4" Crushed Stone Surface	1	
2'	SS-2 B1	2'-4'	2	1	1	2	24	3			V.Loose, brown, fine to medium SAND and Silt, some Gravel, fill material	2	
4'	SS-3 B1	4'-6'	23	17	32	14	24	13		FILL	Dense, brown, fine SAND and Silt, little Gravel, fill material		
											Dense, brown , fine to medium SAND, little Gravel, Asphalt bits		
6'	SS-4 B1	6'-8'	16	10	6	13	24	4			M. Dense, black, fine SAND and Silt and Clay, some Gravel, wood debris.		
										6.5			
8'	SS-5 B1	8'-10'	11	17	19	18	24	16			M. Dense -dense, black, fine to medium SAND and Silt. Heavy oil contamination	3	
10'										SAND and GRAVEL			
12'													
14'	SS-6 B1	14'-16'	3	6	16	22	24	18					
											Dense, tan-gray, coarse SAND and Gravel No odor		
16'										16			
											Bottom of Boring		

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Moved 2' west of B-1a
2. Auger with Ease
3. Contaminant (1'-1.5' thick) encountered at 8.0'

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/7/88	immed.	8.0'		

CHEE BORING NUMBER No. B-1b

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	B-2a
CHEE Job#:	E-1656
Well Elevation:	N/A
Drill Foreman:	Bobby Brennan
CHEE Geologist:	Jill McGillivray
Start Date:	8-Jul-88
Date End:	8-Jul-88

Project Name:	Murphy's Waste Oil Service, Inc.
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	Hollow Stem Auger
Casing/Auger Size:	3 3/4"

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1 B2	0'-2'	20	20	15	14	24	16			3/4" Crushed Stone Surface M. Dense, gray, fine to medium SAND and Silt, little Gravel		
2'	SS-2 B2	2'-4'	7	5	15	18	24	12		FILL	Stiff, gray CLAY and Silt, some fine to medium Sand Hard, gray CLAY, trace, tan, fine to medium Sand		
4'	SS - 3	4'-4'	100/0"				0	0		4.0 REFUSAL	Bottom of boring	1	
6'													

GRANULAR SOILS	
Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS	
Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:
1. Auger and spoon refusal more 6' SE and start B-2b

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-2a

QA/QC CHECKED BY: Beverly Crocker

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Project Name:	Murphy's Waste Oil Service, Inc.	**Page:**	1 of 1
Client Name:	CHI - Corporate	**Boring No.**	B-2b
Boring Location:	See Plan	**CHEE Job#:**	E-1656
Drilling Contractor:	CHEE	**Well Elevation:**	N/A
Drilling Method:	Hollow Stem Auger	**Drill Foreman:**	Bobby Brennan
Casing/Auger Size:	3 3/4"	**CHEE Geologist:**	Jill McGillivray
		Start Date:	8-Jul-88
		Date End:	8-Jul-88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
2'												1	
4'										FILL			
6'	SS-3B2	6'-8'	12	16	10	22	24	9			Medium dense, gray and brown, fine to medium to coarse SAND and Silt, some Gravel; little (-)Clay. Organic matter and Asphalt present, slight oil contamination/ odor. FILL		
8'										8.0		2	
	SS-4	8'-10'	23	29	22	21	24	24		SAND	Very dense, brown/black, coarse SAND and fine to coarse Gravel, little (+) Silt. Heavy oil contamination.		
10'													
12'													
14'													
	SS-5B2	14'-15'	12	21	24	28	24	24		14'	Dense, tan-gray , fine SAND, trace Silt Oil contamination /odor.		
	SS-6B2	15'-16'								15'	V. Dense, tan fine to coarse SAND, trace		
										16	Silt. No odor	3	
16'											Bottom of boring		
18'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Moved Boring 6' NW of B-2a and Augered to 6'
2. Groundwater encountered at 8'. Black oil product (1'-1.5' thick) encountered at 8'

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/8/88	immed.	8.0'		

CHEE BORING NUMBER No. B-2b

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Project Name:	Murphy's Waste Oil Service, Inc.	**Page:**	1 of 1
Client Name:	CHI - Corporate	**Boring No.**	B-3
Boring Location:	See Plan	**CHEE Job#:**	E-1656
Drilling Contractor:	CHEE	**Well Elevation:**	N/A
Drilling Method:	Hollow Stem Auger	**Drill Foreman:**	Bobby Brennan
Casing/Auger Size:	3 3/4"	**CHEE Geologist:**	Jill McGillivray
		Start Date:	8-Jul-88
		Date End:	8-Jul-88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1	0'-2'	14 16 28 32	24	6			3/4" Crushed Stone Surface M. Dense to dense, brown, fine to medium SAND, some Gravel, little Silt Rock fragments in SS	1	
2'										
4'	SS-2	4'-6'	8 8 4 7	24	10		Possible Fill	M. Dense, dark brown, fine SAND and Silt and Clay, trace Gravel	2	
6'	SS-3	6'-8'	52 40 28 18	24	3			Sample -no reasonable recovery	3	
8'							8.0			
10'							SAND and GRAVEL			
	SS-4	11'-13'	14 16 15 19	24	16		11.5'	Dense, tan, medium SAND Slight oil odor		
12'							12'	Dense, tan-gray, fine GRAVEL, some coarse Sand, trace Silt, No odor		
							13'			
14'								Bottom of boring		
16'										
18'										

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Split spoon refusal at 2', 0"-120 blows
2. Difficult Augering to 4'
3. Blow counts inaccurate-rock being pushed. Black oil/ petroleum product on SS at 8.0'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/8/88	pm	8.0'		

CHEE BORING NUMBER No. B-3

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	B-4a		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Foreman:**	Bobby Brennan
Boring Location:	See Plan	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	11-Jul-88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:**	3 3/4"
		Date End:	11-Jul-88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1B4	0'-2'	20	31	27	14	24	8			3/4" Crushed stone surface Dense, brown, fine SAND, some gray Clay, Gravel, misc. fill material		
2'	SS - 2B4	2'-4'	14	17	24	12	24	8		FILL	Dense, brown, fine SAND, little coarse Sand, fine Gravel. Concrete fragments		
4'	SS-3B4	4'-4.5'	16	20/0"			12	4		4.5	M. Dense, dark brown, fine SAND and Silt, little fine to medium, subangular Gravel, gray Clay,	1	
6'										REFUSAL			

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Spoon and auger refusal move boring 5 feet NE and begin B-4b.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-4a

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	B-4b		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service, Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Foreman:**	Bobby Brennan
Boring Location:	See Plan	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	11-Jul-88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:** 3 3/4"	**Date End:** 11-Jul-88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
2'										FILL		1	
4'													
										6.0			
6'	SS-4B4	6'-8'	16	11	9	19	24	7		SAND and GRAVEL	M. Dense, brown, fine to medium SAND, little Silt, little Gravel M. Dense, brown, coarse SAND, little fine subangular Gravel. No odor		
8'	SS-5B4	8'-10'	12	12	17	19	24	10			M. Dense, tan, fine to coarse SAND, little Silt, subangular Gravel. No odor		
10'										10'			
											Bottom of boring		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Moved 5' SW of Boring B-4a and Augered to 6'
   Refer to B-4a for strata 0 - 4'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-4b

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CHI ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Project Name:	Murphy's Waste Oil Service, Inc.	**Page:**	1 of 1
Client Name:	CHI - Corporate	**Boring No.**	B-5a
Boring Location:	See Plan	**CHEE Job#:**	E-1656
Drilling Contractor:	CHEE	**Well Elevation:**	N/A
Drilling Method:	Hollow Stem Auger	**Drill Foreman:**	Bobby Brennan
Casing/Auger Size:	3 3/4"	**CHEE Geologist:**	Jill McGillivray
		Start Date:	11-Jul-88
		Date End:	11-Jul-88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1B5	0'-2'	9 16 10 24	24	12			Gray CLAY and Silt, some Gravel, surface Hard, gray SILT and Clay, some brown, fine Sand, little fine Gravel		
2'							FILL			
	SS-2B5	2'-3'	23 120 100/0"	12	3			Dense, brown, fine SAND and Silt Rock fragments in nose of spoon		
							3'		1	
4'							REFUSAL			

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Spoon and auger refusal at 3 feet. Move boring. Refer to B-5b.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-5a

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	B-5b
CHEE Job#:	E-1656
Well Elevation:	N/A
Drill Foreman:	Bobby Brennan
CHEE Geologist:	Jill McGillivray
Start Date:	11-Jul-88
Date End:	11-Jul-88

Project Name:	Murphy's Waste Oil Services, Inc.
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	Hollow Stem Auger
Casing/Auger Size:	3 3/4"

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
2'											Gray CLAY and Silt, some Gravel, surface		
4'	SS-3B5	4'-6'	23	57	23	33	24	13		FILL	V. Dense, brown, fine SAND and Silt, some misc. fill material, concrete, asphalt brick, wood		
6'	SS-4B5	6'-7'	8	10	8	21	24	12		6.0	Stiff, brown, SILT, some fine Sand, trace fine Gravel. No odor		
	SS-5B5	7'-8'								SILT 8.0	Stiff, dark brown SILT, some fine to coarse Sand. Oil product odor		
8'	SS-6B5	8'-10'	47	73	59	30	24	11		SAND	V.Dense, fine SAND and Silt, trace fine Gravel. Heavy oil contamination	1	
10'													
12'													
14'	SS-7B5	13'-14.5'									V. Dense, dark tan, fine SAND, trace silt		
			48	58	72	62	24	22			V. Dense, tan, coarse SAND, some medium subangular Gravel. No odor		
	SS-8B5	14.5'-15'								15.0			
16'											Bottom of boring		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Floating Product (1' thick), Heavy contamination Groundwater encountered at 8'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/11/88	immed.	8.0'		

CHEE BORING NUMBER No. B-5b

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION *325 Wood Road, Braintree, MA 02184* *(617)849-1200*												Page: 1 of 2 Boring No. B-6 CHEE Job#: E-1656
Project Name:	Murphy's Waste Oil Service, Inc.											**Well Elevation:** N/A
Client Name:	CHI - Corporate											**Drill Foreman:** Bobby Brennan
Boring Location:	See plan											**CHEE Geologist:** Jill McGillivray
Drilling Contractor:	CHEE											**Start Date:** 7/14/88
Drilling Method:	Hollow Stem Auger							**Casing/Auger Size:** 3 3/4"				**Date End:** 7/21/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
0.5'	SS-1B6	0'-0.5'	103				6	4			Gray SILT and Clay, some m. sand, little fine to coarse Gravel, misc. brick,conc, veg, surface		
2'	SS-2B6	2'-4'	12	9	7	9	24	11			V. Dense, brown SILT, some gray Clay fine Sand, little Gravel, trace asphalt V. Stiff, gray CLAY, some black Silt, fine Sand, trace fine, subangular Gravel.	1 2	
										Possible Fill	No odor		
4'	SS-3B6	4'-6'	5	3	10	6	24	4			Stiff, gray CLAY, some dark brown Silt, fine Sand, rock fragments. No odor		
6'	SS-4B6	6'-8'	5	2	2	4	24	0			Black CLAY and Silt, little fine Gravel, rock frag. Sewage and oil odor.	3	
8'	SS-5B6	8'-9'	/	/	10	29	12	7		8.0	M. Dense, black SILT and fine Sand, some fine Gravel. Sewage and oil odor.		
	SS-6B6	9'-11'	11	14	14	13	24	9				4	
10'										GRAVEL and SAND	M. Dense, tan-gray fine to med. GRAVEL and coarse Sand, trace Silt. Little sewage/ oil odor.		
12'													
14'	SS-7B6	14'-16'	9	53	60	70	24	16			V. Dense, tan-gray fine to coarse GRAVEL, little fine to coarse Sand, Silt. No odor		
16'													
18'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. SS Refusal 0"-100 blows, Augered to 2', dark brown SILT and trace Gravel auger outcroppings, no petroleum/ oil odor.
2. Black material is oil based. 3. Augered 1' and resampled.
4. Method used: Drive and Wash (Side feed swivel) 4" casing

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/14/88	immed.	8'		

CHEE BORING NUMBER No. B-6

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	2 of 2
		Boring No.	B-6
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil Service, Inc.	Well Elevation:	N/A
Client Name:	CHI - Corporate	Drill Foreman:	Bobby Brennan
Boring Location:	See plan	CHEE Geologist:	Jill McGillivray
Drilling Contractor:	CHEE	Start Date:	7/14/88
Drilling Method:	Hollow Stem Auger Casing/Auger Size: 3 3/4"	Date End:	7/21/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAI Type & No.	Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-7B6	19'-20.5'	8	49	120/0"		18	6		SAND and GRAVEL 20.5	V. Dense, tan-gray, coarse SAND. No odor SS Refusal 0"-120 blows	5	
20'										REFUSAL	Bottom of boring		
22'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:
5. Spoon refusal - hole terminated.

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-6

QA/QC CHECKED BY:
Beverly Crocker

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

0089-0463

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	B-7		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service, Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Foreman:**	Bobby Brennan
Boring Location:	See Plan	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	7/15/88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:**	3 3/4"
		Date End:	7/15/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1B7	0'-2'	30	26	18	14	24	24			3/4" Crushed Stone Surface V. Dense, gray CLAY, some fine to coarse gray, angular Gravel		
2'	SS-2B7	2'-4'	13	16	9	15	24	10			Dense, brown fine SAND and Silt, trace coarse Sand, fine subangular Gravel M. Dense, dark brown fine SAND and Silt with layers of stiff, gray CLAY, trace coarse subangular Gravel		
4'	SS-3B7	4'-6'	40	36	19	9	24	20		FILL	Concrete , Red Brick and Stiff solid black Creosote (cinders) present.		
6'	SS-4B7	6'-8'	6	6	15	22	24	16			Dense, black fine to med. SAND and Silt, some coarse Sand, f.Gravel. Creosote odor Dense, brown fine SAND and Silt, little f. subangular Gravel, gray Clay. Slight odor	1	
8'	SS-5B7	8'-10'	54	63	107	48	24	20		8.5	V. Dense, black f. SAND and Silt, and gray Clay, little fiberous, organic material. Sewage and oil odor		
10'											V. Dense, gray-black, fine to coarse GRAVEL, some gray Clay. Brown-black oil stained. Kreosote odor.		
12'	SS-6B7	12'-14'	24	34	23	20	24	18		SAND and GRAVEL	V. Dense, gray-tan fine SAND		
14'											Dense, gray, fine to coarse GRAVEL, trace Silt trace Clay Rock fragments. Very slight oil odor		
16'	SS-7B7	15'-17'	22	32	33	50	24	15			Same		
18'										17'	Bottom of boring		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:
1. Groundwater encountered at 7.5'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/15/88	immed.	7.5'		

CHEE BORING NUMBER No. B-7

QA/QC CHECKED BY: Beverly Crocker

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page: 1 of 2

Project Name:	Murphy's Waste Oil Service, Inc.
Client Name:	CHI - Corporate
Boring Location:	See plan
Drilling Contractor:	CHEE
Drilling Method:	Hollow Stem Auger

Boring No.	B-8
CHEE Job#:	E-1656
Well Elevation:	N/A
Drill Foreman:	Bobby Brennan
CHEE Geologist:	Jill McGillivray
Start Date:	7/15/88
Date End:	7/15/88

Casing/Auger Size: 3 3/4"

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1B8	0'-2'	37	27	22	20	24	16			3/4" Crushed Stone surface V. Dense, dark brown fine SAND and Clay, some fine to coarse subangular Gravel, Brick frag.		
2'													
	SS-2B8	2'-4'	6	22	11	4	24	9		FILL	M. Dense, gray CLAY, fine Silt and red Brick, some fine to coarse subangular Gravel		
4'													
	SS-3B8	4'-6'	8	6	5	48	24	3			M. Dense, gray-brown, fine SAND and Silt little fine Gravel, some fiberous organic material, No odor.	1	
6'										6.0			
	SS-4B8	6'-8'	16	13	11	25	24	18			Dense, black-gray, fine to medium SAND, some fine Gravel. Heavy oil contamination		
8'										SAND			
	SS-5B8	8'-10'	17	27	23	24	24	17					
10'													
	SS-6B8	10'-12'	2	2	11	27	24	15			Same, slightly less contamination		
			Blow in										
12'													
	SS-7B8	12'-14'	13	31	22	26	24	12			Same		
14'													
16'													
	SS-8B8	16'-18'	15	21	21	27	24	14			Dense, tan fine to medium SAND. Slight petroleum/oil odor		
18'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Rock at bottom of Split spoon
2. Groundwater/oil product encountered at 7.5'

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/15/88	immed.	7.5'		

CHEE BORING NUMBER No. B-8

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION

(617)849-1200

Page:	2 of 2		
Boring No.	B-8		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service, Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Forman:**	Bobby Brennan
Boring Location:	Prop. Bldg. Foundation Area	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	7/15/88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:**	3 3/4"
		Date End:	7/15/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.

Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
							SAND			
20'							20'			
	No sample	20'-22'	Blow in					Bottom of boring		
22'										

GRANULAR SOILS

Blows/Ft	Density
0 - 4	v. loose
4 - 10	loose
10 - 30	m. dense
30 - 50	dense
> 50	v. dense

COHESIVE SOILS

Blows/Ft	Density
< 2	v. soft
2 - 4	soft
4 - 8	m. stiff
8 - 15	stiff
15 - 30	v. stiff
> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-8

QA/QC CHECKED BY: Beverly Crocker

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1
Boring No.	B-9
CHEE Job#:	E-1656
Well Elevation:	N/A
Drill Foreman:	Bobby Brennan
CHEE Geologist:	Jill McGillivray
Start Date:	7/18/88
Date End:	7/18/88

Project Name:	Murphy's Waste Oil Service, Inc.
Client Name:	CHI - Corporate
Boring Location:	See Plan
Drilling Contractor:	CHEE
Drilling Method:	Hollow Stem Auger
Casing/Auger Size:	3 3/4"

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1B9	0'-2'	44	32	51	43	24	22			3/4" Crushed Stone surface V. Dense, gray CLAY and fine Sand, some fill material., conc, brick, asphalt	1	
2'													
4'										FILL			
	SS-2B9	4'-6'	11	20	36	40	24	24			Dense, dark brown fine SAND and Silt, some fill material, trace oil.		
6'										6.0			
	SS-3B9	6'-8'	34	24	25	27	24	2		POSSIBLE FILL	Very dense, Rock in spoon nose.	2	
8'										8.0			
	SS-4B9	8'-10'	12	13	16	22	24	20			M. Dense, dark brown and gray brown medium to coarse SAND, and fine subrounded Gravel, slight petroleum contamination.	3	
10'											M. Dense, tan-gray medium to coarse		
	SS-5B9	10'-12'	8	16	18	20	24	16		SAND and GRAVEL	SAND and fine Gravel, some Silt. Slight petroleum odor.	4	
12'													
14'													
	SS-6B9	14'-16'	4	15	65	120	24	24			Alternating layers of Tan-gray fine SAND and Tan-gray coarse SAND and Gravel.		
16'										16'			
											Bottom of boring		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Difficult augering
2. Rock in tip of Split Spoon. Tip of SS wet, Gasoline/oil odor.
3. 1' of oil product
4. No odor apparent

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7-18-88	immed.	8.0'		

CHEE BORING NUMBER No. B-9

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	1 of 1		
Boring No.	B-10		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service, Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Forman:**	Bobby Brennan
Boring Location:	See plans	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	7/18/88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:**	3 3/4"
		Date End:	7/18/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
										0.5'	3/4" Crushed Stone Surface		
2'													
										FILL			
4'	SS-1B10	4'-6'	4	4	6	6	24	24		4.5'	Loose, tan-gray medium SAND		
											M. Stiff, gray CLAY, some subangular Gravel, misc. fill material		
										5.0'	M. Dense, dark brown SILT and fine Sand,		
6'										6.0'	gray Clay layers. Organic material and		
	SS-2B10	6'-8'	9	25	45	29	24	24			roots encountered.		
										7.5'	V. Dense, gray-black coarse subangular GRAVEL, some fine to coarse Sand, gray Silt	1	
8'	SS-3B10	8'-10'	25	34	28	21	24	20		8.0'	V. Dense, gray-black med-coarse SAND and fine to coarse subangular Gravel, trace Silt	2	
										8.5'	Less oil contamination-gray soil		
10'	SS-4B10	10'-12'	4	12	15	13	24	17		10.0'	M. Dense, tan-gray medium SAND		
										11.0'	M. Dense, tan-gray fine to coarse GRAVEL trace Silt, trace petroleum odor		
12'	SS-5B10	12'-14'	18	31	18	14	24	20		SAND and GRAVEL	Same, dense, alternating layers of fine to coarse Gravel Trace oil and petroleum odor.		
14'										14.0'			
											Bottom of boring		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Strong oil/petroleum odor
2. Groundwater and floating black, petroleum product encountered.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/18/88	immed.	8.0'		

CHEE BORING NUMBER No. B-10

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page: 1 of 2
Boring No. B-11
CHEE Job#: E-1656

Project Name:	Murphy's Waste Oil Service, Inc.
Client Name:	CHI - Corporate
Boring Location:	See plans
Drilling Contractor:	CHEE
Drilling Method:	Hollow Stem Auger
Casing/Auger Size:	3 3/4"
Well Elevation:	N/A
Drill Foreman:	Bobby Brennan
CHEE Geologist:	Jill McGillivray
Start Date:	7/19/88
Date End:	7/19/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS-1B11	0'-2'	30	15	12	10	24	18			3/4" Crushed Stone Surface Dense, brown fine SAND, some fine to coarse Gravel		
2'										FILL	Black tar-like layer-no petro. odor		
	SS-2B11	2'-4'	6	7	7	10	24	3			M. Dense, brown fine SAND, Silt and fine to coarse Gravel M. Dense, brown-tan fine SAND and Silt trace fine subangular Gravel		
4'													
	SS-3B11	4'-6'	6	13	33	34	24	19					
										5.5'	Roots, organic matter encountered		
6'											V. Dense, dark gray fine to med. SAND and Silt, some fine to coarse Gravel M. Dense, gray fine to coarse SAND, some fine to coarse subangular Gravel, Silt		
	SS-4B11	6'-8'	5	21	24	19	24	18					
8'											Same, dense, black Heavy oil contamination Significant oil staining	1	
	SS-5B11	8'-10'	10	15	16	16	24	16					
10'										SAND and GRAVEL			
	SS-6B11	10'-12'	11	16	39	17	24	10			Same		
12'													
	SS-7B11	12'-14'	6	19	18	17	24	8			Same		
14'													
16'	SS-8B11	15'-17'	16	25	20	18	24	20			Alternate layers of Dense, tan-gray fine SAND with coarse Sand with gray f-c Gravel, Slight odor		
18'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Cobbles in auger cuttings

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/19/88	immed.	7.5'		

CHEE BORING NUMBER No. B-11

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION *325 Wood Road, Braintree, MA 02184* *(617)849-1200*											Page: 2 of 2 Boring No. B-11 CHEE Job#: E-1656
Project Name:	Murphy's Waste Oil Service, Inc.										**Well Elevation:** N/A
Client Name:	CHI - Corporate										**Drill Foreman:** Bobby Brennan
Boring Location:	See plan										**CHEE Geologist:** Jill McGillivray
Drilling Contractor:	CHEE										**Start Date:** 7/19/88
Drilling Method:	Hollow Stem Auger						**Casing/Auger Size:** 3 3/4"				**Date End:** 7/19/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
20'		20'-22'	12	18	14	14	24	20		SAND and GRAVEL 22'	M. Dense, tan fine to coarse Subrounded Gravel little Silt, slight petro. odor		
22'											Bottom of Boring		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	**Density**	**Blows/Ft**	**Density**
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY: Beverly Crocker

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-11

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page: 1 of 2
Boring No. B-12
CHIEE Job#: E-1656

Project Name:	Murphy's Waste Oil	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Foreman:**	Bobby Brennan
Boring Location:	See plan	**CHIEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHIEE	**Start Date:**	7/21/88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:** 3 3/4"	**Date End:** 7/21/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
											3/4" Crushed Stone Surface	1	
2'													
										FILL			
4'													
	SS-1B12	4'-6'	3	3	4	10	24	8			M. Stiff, gray CLAY with organic matter some brown Silt, fine Sand, concrete		
										5.5'	M. Dense, brown SILT and fine Sand, little subangular Gravel		
6'													
	SS-2B12	6'-8'	16	16	15	27	24	20		6'			
											Dense, tan med. SAND, little subangular fine Gravel		
8'													
	SS-3B12	8'-10'	10	17	22	16	24	24			Same, little gray Silt	2	
										SAND and GRAVEL			
10'													
	SS-4B12	10'-12'	13	19	15	15	24	12			Dense, tan medium to coarse SAND, and fine to coarse Gravel		
12'													
	SS-5B12	12'-14'	2	11	14	16	24	10			Same, slight oil sheen		
14'													
16'													
18'													

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:
Beverly Crocker

NOTES:
1. Difficult augering, mis'c. fill material, cobbles in auger flights.
2. Groundwater encountered at 8'. No odor

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
7/21/88	immed.	8'		

CHEE BORING NUMBER No. B-12

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page:	2 of 2		
Boring No.	B-12		
CHEE Job#:	E-1656		
Project Name:	Murphy's Waste Oil Service, Inc.	**Well Elevation:**	N/A
Client Name:	CHI - Corporate	**Drill Foreman:**	Bobby Brennan
Boring Location:	See plan	**CHEE Geologist:**	Jill McGillivray
Drilling Contractor:	CHEE	**Start Date:**	7/21/88
Drilling Method:	Hollow Stem Auger	**Casing/Auger Size:**	3 3/4"
		Date End:	7/21/88

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test: Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
20'	SS-6B12	18.5'-20.5'	16	17	26	21	24	5			Dense, tan-gray fine to coarse, subangular GRAVEL, some Cobbles, medium to coarse Sand. Slight oil sheen.		
22'										22'	Bottom of borings		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY: Beverly Crocker

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. B-12

Document disk location: "Boring & Test Pit Logs #6"

CHEE form "BL/P1" Rev. 2 - 5/20/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 1
		Boring No.	W-89-S1
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	P. Thornsbury
Boring Location:	See Plan	CHEE Geologist:	C. Kohrs
Drilling Contractor:	CHEE	Start Date:	January 31, 1989
Drilling Method:	HSA Casing/Auger Size: 4"	Date End:	January 31, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (In)	Rec (In)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	7	8	6	5	24	8	30 ppm		Gray green, stiff SILT; little clay, pockets of fine to medium Sand.		
	SS - 2	2' - 4'	6	13	118	17	24	10	20 ppm		Same as SS-1.		
	SS - 3	4' - 6'	30	8	4	2	24	1	300 ppm		No soil recovery. Fractured cobble and concrete in spoon.		
5													
	SS - 4	6' - 8'	5	10	8	*	24	8	>1000 ppm	FILL	Dark brown, medium dense, fine SAND and Silt; trace coarse Sand and fine Gravel.	1	
	SS - 5	8' - 10'	41	25	31	37	24	7	>1000 ppm		Gray brown, very dense, fine to coarse SAND and fine to coarse Gravel; little Silt.	1 2	
10													
	SS - 6	10' - 12'	21	22	15	19	24	8	20 ppm		Gray tan, dense, fine to coarse GRAVEL and (-) fine to coarse Sand; little Silt.	1	
										12.0		3	
15										15.0		4	
											Bottom of boring		
20													

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:
1. Wood particals and root matter observed.
2. Petroleum product observed, petroleum odor noted.
3. No soil collected below 12 feet.
4. Monitoring well installed 15' below ground surface using 10' of well screen.

GROUNDWATER READINGS					CHEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	STABILIZATION	
2/3	3 days	7.41'	MW	1/31	No. W-89-S1

QA/QC CHECKED BY:

* 100/5"

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0473

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 1
		Boring No.	W-89-S3
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	50
Client Name:	CHI - Corporate	Drill Forman:	P. Thornsbury
Boring Location:	See Plan	CHEE Geologist:	C. Kohrs
Drilling Contractor:	CHEE	Start Date:	February 1, 1989
Drilling Method:	HSA Casing/Auger Size:	Date End:	February 1, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	15	16	64	59	24	24	20 ppm	FILL	Gray brown, very dense, (+) fine to medium SAND; some Silt; little fine Gravel, Bricks, cinders and ash present.		
5	SS - 2	4' - 6'	10	46	45	27	24	6	4 ppm	6.0	Brown, very dense, fine to medium SAND; little Silt, 2 inch broken cobble in nose.		
	SS - 3	6' - 8'	30	18	16	15	24	15	40 ppm	SAND and GRAVEL	Gray brown, medium dense, fine to medium to coarse SAND; little (+) fine to coarse Gravel, trace Silt.		
	SS - 4	8' - 10'	10	15	18	12	24	13	3 ppm		Gray brown, dense, fine to coarse (+) SAND; and fine to coarse Gravel; trace Silt.		
10	SS - 5	10' - 12'	10	10	9	6	24	10	0 ppm	12.0	Medium dense - same as SS - 4	1	
15													
20										20.0	Bottom of boring		

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:
1. No sample collected below 12 feet.
2. Monitoring wells installed 19 feet below ground surface using 15 feet of screen.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2/3	2 days	8.43'	MW	2/1

CHEE BORING NUMBER No. W-89-S3

QA/QC CHECKED BY:

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0474

| CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200 | | |

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 1
		Boring No.	B7-W-89-S14
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	P. Thornsbury
Boring Location:	See Plan	CHEE Geologist:	C. Kohrs
Drilling Contractor:	CHEE	Start Date:	January 31, 1989
Drilling Method:	HSA Casing/Auger Size: 4 inches	Date End:	January 31, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	10	20	18	21	24	14	0 ppm	FILL	Brown tan, dense, fine to medium to coarse SAND; some fine to coarse Gravel; trace Silt.	1	
5	SS - 2	4' - 6'	14	10	8	11	24	11	20 ppm		Black, medium dense, fine to medium to coarse SAND; some fine Gravel, little Silt.	1	
	SS - 3	6' - 8'	5	10	17	19	24	7	7 ppm	7.0	Same as SS - 3.		
10	SS - 4	8' - 10'	17	11	12	11	24	10	0 ppm	SAND and GRAVEL 10.0	Gray tan, medium dense, fine to coarse(+) SAND and fine to coarse Gravel; trace Silt.	3	
15										15.0'	Bottom of boring	2	
20													

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:
1. Cinders, plastic, ashes, oil stained material, bricks, wood.
2. Well installed at 15 feet below ground surface using 10 feet of slotted 8' solid.
3. No soil sample collected below 10 feet.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2/3	3 days	7.14	MW	1/31

CHEE BORING NUMBER No. B7-W-89-S14

QA/QC CHECKED BY:

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 1
		Boring No.	W-89-S15
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	J. Adams
Boring Location:	See Plan	CHEE Geologist:	C. Kohrs
Drilling Contractor:	CHEE	Start Date:	February 3, 1989
Drilling Method:	HSA Casing/Auger Size: 4"	Date End:	February 3, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	27	12	11	12	24	8		FILL	Gray brown, medium dense, fine to coarse SAND and fine to coarse Gravel; trace Silt.		
5	SS - 2	4' - 6'	4	9	41	*	19	7		6.0	Brown, medium dense, fine to medium to coarse SAND; and fine to coarse Gravel; little (-) Silt.		
	SS - 3	6' - 8'	53	50	55	55	24	8		SAND and GRAVEL	Gray brown, very dense, fine to coarse SAND; some (+) fine to coarse Gravel; trace (+) Silt.		
10	SS - 4	8' - 10'	5	20	25	23	24	15			Same as SS-3 (dense).		
15	SS - 5	15 - 17	13	19	18	26	24	20		17.0'	Same as SS - 4.	1	
20										20.0	Bottom of boring 20'	2	

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
1. No sample collected below 17 feet.
2. Monitoring well installed 20' below ground surface using 15' of slotted PVC.
3. OVA malfunction - no field screening.
* 100/1"

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-Jan	4 hours	6.96	MW	2/3

CHEE BORING NUMBER No. W-89-S15

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0477

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 1
		Boring No.	W-89-S16
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	P. Thornsbury
Boring Location:	See Plan	CHEE Geologist:	C. Kohrs
Drilling Contractor:	CHEE	Start Date:	February 1, 1989
Drilling Method:	HSA Casing/Auger Size:	Date End:	February 1, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	12	52	21	23	24	14	0 ppm	FILL 4.0'	Brown, dense, (+) fine to medium to coarse SAND; some fine to coarse Gravel; little Silt. Rust staining.		
5	SS - 2	4' - 6'	15	22	20	15	24	18	3 ppm	SAND and GRAVEL	Gray brown, dense, fine to medium to coarse SAND; some fine Gravel; trace Silt		
	SS - 3	6' - 8'	15	19	15	10	24	12	0 ppm		Tan, dense, (+) fine to medium to coarse SAND; little fine Gravel; trace (-) Silt.		
	SS - 4	8' - 10'	6	5	7	14	24	4	6 ppm		Tan, (-) medium dense, fine SAND; some fine to coarse Gravel; trace (-) Silt.		
10	SS - 5	10' - 12'	15	21	17	14	24	8	4 ppm	12.0'	Same as SS - 2	1	
15													
20										20.0	Bottom of boring	2	

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

1. No sample collected below 12 feet.
2. Well installed 20 feet below ground surface using 15 feet slotted.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2/3	2 days	9.63	MW	2/1

CHEE BORING NUMBER No. W-89-S16

QA/QC CHECKED BY:

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0478

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page: 1 of 1
Boring No. W-89-S17
CHEE Job#: E-1656

Project Name:	Murphy's Waste Oil	**Well Elevation:**	
Client Name:	CHI - Corporate	**Drill Forman:**	P. Thornsbury
Boring Location:	See Plan	**CHEE Geologist:**	C. Kohrs
Drilling Contractor:	CHEE	**Start Date:**	January 31, 1989
Drilling Method:	HSA	**Casing/Auger Size:** 4 inches	**Date End:** January 31, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	13	27	32	31	24	12	20 ppm		Dark brown, very dense, (+) fine to coarse SAND; some Silt; little fine Gravel, brick, plastic present.		
										FILL			
5	SS - 2	4' - 6'	7	4	3	3	24	12	>1000 ppm		Dark brown, loose, fine to medium SAND, some (-) Silt, wood fibers and brick present.	1	
	SS - 3	6' - 8'	3	10	27	33	24	10	>1000 ppm		Black, medium dense, (+) fine to coarse SAND and fine to coarse Gravel; some (-) Silt. Wood and brick present.	2	
										8.0			
	SS - 4	8' - 10'	13	62	44	47	24	13	>1000 ppm	SAND and GRAVEL 10.0	Dark gray, very dense, fine to coarse SAND and fine to coarse Gravel; trace Silt, pure petroleum product.	3	
10													
15													
20										20.0'			
											Bottom of boring	4	

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
1. *Silt pocket in upper 2" of sample.*
2. Petroleum stained soil, heavy petroleum and organic odor.
3. Heavy petroleum contamination. No soil collected below 10 feet.
4. Well installed 20' using 15' slotted PVC.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2/3	2 days	7.65'	MW	2/1

CHEE BORING NUMBER No. W-89-S17

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200		Page:	1 of 2
		Boring No.	W-89-S18
		CHEE Job#:	E-1656
Project Name:	Murphy's Waste Oil	Well Elevation:	
Client Name:	CHI - Corporate	Drill Forman:	P. Thornsbury
Boring Location:	See Plan	CHEE Geologist:	C. Kohrs
Drilling Contractor:	CHEE	Start Date:	January 30, 1989
Drilling Method:	HSA/Casing Casing/Auger Size: 4"	Date End:	January 31, 1989

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.
Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	SS -1	0' - 2'	18	15	10	12	24	13		FILL	Brown, medium dense, (+) fine to coarse SAND; and fine to coarse Gravel; some Silt, wood fibers.		
5	SS - 2	4' - 6'	1	2	2	2	24	6		7.0'	Dark brown, very loose, (+) fine to medium SAND and Silt; little (-) fine Gravel: Fiberous organic Soil.	1	
	SS - 3	6' - 8'	1	12	18	81	24	23		SAND and GRAVEL	Upper 12" same as SS-2, remaining sample: Tan, dense, fine to coarse SAND; some fine to coarse Gravel, trace Silt.		
10	SS - 4	8' - 10'	54	25	20	18	24	8			Gray tan, dense, fine to coarse SAND and fine to coarse Gravel, little (-) Silt.		
15	SS - 5	15 - 17	36	40	18	13	24	13			Same as the lower 11 inches of SS-3.		
20													

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
1. Fiberous organic Soil - loose soil 4-6.5 feet.
2. Well installed 28 feet below ground surface using 25 feet slotted and PVC.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2/3	3 days	7.76	MW	1/31

CHEE BORING NUMBER No. W-89-S18

Document disk location: "Boring & Test Pit Logs # "

CHEE form "BL/P1" Rev. 4 - 8/17/88

0089-0480

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION
325 Wood Road, Braintree, MA 02184
(617)849-1200

Page: 2 of 2
Boring No. B11-W-89-S18
CHEE Job#: E-1656
Project Name: Murphy's Waste Oil

DEPTH	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
								CONTINUED FROM PREVIOUS PAGE		
25						SAND and GRAVEL				
	SS - 6	28 - 30	21 48 17 16	24	14			Same as SS - 5	2	
30							30			
								Bottom of boring at 30'		

NOTES:

1. Fiberous organic soil - loose soil 4 - 6.5 feet.
2. Well installed 28 feet below ground surface using 25 feet slotted PVC.

QA/QC CHECKED BY:

CHEE BORING NO. W-89 S18

Document disk location "Boring & Test Pit Logs # "

CHEE form "BL/P2" Rev.4 - 8/17/88

APPENDIX C

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Attn: Mr. Jeff Gillis

Job Identification: Murphy's
Oil Composite Soil Samples

Date Received: 12/18/87

CHAS Lab #: 8712187-01 to 28

P.O. #: E 1656

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Jeanne M. Engel
Jeanne M. Engel
Laboratory Manager

cc: David Newton
Scott Day

0089-0483

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Attn: Mr. Jeff Gillis

Job Identification: Murphy
Oil Composite Soil Samples

Date Received: 12/21/87

CHAS Lab #: 8712203-01 to 26

P.O. #: E 1656

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Jeanne M Engel 1/6/88
Jeanne M. Engel
Laboratory Manager

cc: David Newton
Scott Day

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-1 Composite Soil Sample (CHI-1/87)

CHAS Lab #: 8712187-05
Date Received: 12/18/87

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/04/87	3005/6010 (c)
Arsenic - Total	0.103	2.83	mg/kg*	01/05/87	3050/7060 (c)
Barium - Total	10	30	mg/kg*	01/05/88	3050/6010 (c)
Beryllium - Total	0.075	0.149	mg/kg*	01/05/87	3050/6010 (c)
Cadmium - Total	0.75	0.75	mg/kg*	01/05/87	3050/6010 (c)
Chromium - Total	3.7	10	mg/kg*	01/05/87	3050/6010 (c)
Copper - Total	1.5	13	mg/kg*	01/05/87	3050/6010 (a)
Lead - Total	7	10	mg/kg*	01/05/87	3050/6010 (c)
Mercury - Total	0.0840	0.0840	mg/kg*	12/31/87	7471 (c)
Nickel - Total	1.5	6.0	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.103	ND	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.43	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	10	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	0.75	29	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	92.4	%	12/28/87	209F (b)
Sulfide	0.72	2.9	mg/kg*	12/29/87	9030 (c)
Cyanide	0.49	ND	mg/kg*	01/05/88	9010 (c)

Sample Station: B-2 Composite Soil Sample (CHI-2/87)

CHAS Lab #: 8712187-10

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/04/87	3005/6010 (c)
Arsenic - Total	0.067	1.85	mg/kg*	01/05/87	3050/7060 (c)
Barium - Total	20	30	mg/kg*	01/05/88	3050/6010 (c)
Beryllium - Total	0.098	0.196	mg/kg*	01/05/87	3050/6010 (c)
Cadmium - Total	0.98	ND	mg/kg*	01/05/87	3050/6010 (c)
Chromium - Total	4.9	11	mg/kg*	01/05/87	3050/6010 (c)
Copper - Total	2.0	15	mg/kg*	01/05/87	3050/6010 (a)
Lead - Total	10	70	mg/kg*	01/05/87	3050/6010 (c)
Mercury - Total	0.0801	ND	mg/kg*	12/31/87	7471 (c)
Nickel - Total	2.0	7.8	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.067	ND	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.55	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	0.98	120	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	84.0	%	12/28/87	209F (b)
Sulfide	0.90	7.2	mg/kg*	12/29/87	9030 (c)
Cyanide	0.48	ND	mg/kg*	01/05/88	9010 (c)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-3 Composite Soil Sample (CHI-3/87)

CHAS Lab #: 8712187-17
Date Received: 12/18/87

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/05/87	3005/6010 (c)
Arsenic - Total	0.098	2.69	mg/kg*	01/05/87	3050/7060 (c)
Barium - Total	20	30	mg/kg*	01/05/88	3050/6010 (c)
Beryllium - Total	0.104	0.207	mg/kg*	01/05/87	3050/6010 (c)
Cadmium - Total	1.0	ND	mg/kg*	01/05/87	3050/6010 (c)
Chromium - Total	5.2	16	mg/kg*	01/05/87	3050/6010 (c)
Copper - Total	2.1	29	mg/kg*	01/05/87	3050/6010 (a)
Lead - Total	10	40	mg/kg*	01/05/87	3050/6010 (c)
Mercury - Total	0.0724	ND	mg/kg*	01/07/87	7471 (c)
Nickel - Total	2.1	10	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.098	1.24	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.54	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	20	20	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	1.0	88	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	91.5	%	12/28/87	209F (b)
Sulfide	1.5	6.1	mg/kg*	12/29/87	9030 (c)
Cyanide	0.47	ND	mg/kg*	01/05/88	9010 (c)

Sample Station: B-4 Composite Soil Sample (CHI-4/87)

CHAS Lab #: 8712187-23

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/04/87	3005/6010 (c)
Arsenic - Total	0.103	2.26	mg/kg*	01/05/87	3050/7060 (c)
Barium - Total	20	20	mg/kg*	01/05/88	3050/6010 (c)
Beryllium - Total	0.106	0.319	mg/kg*	01/05/87	3050/6010 (c)
Cadmium - Total	1.1	2.1	mg/kg*	01/05/87	3050/6010 (c)
Chromium - Total	5.3	12	mg/kg*	01/05/87	3050/6010 (c)
Copper - Total	2.1	27	mg/kg*	01/05/87	3050/6010 (a)
Lead - Total	10	400	mg/kg*	01/05/87	3050/6010 (c)
Mercury - Total	0.0730	0.0730	mg/kg*	12/31/87	7471 (c)
Nickel - Total	2.1	7.4	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.103	ND	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.58	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	1.1	30	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	88.6	%	12/29/87	209F (b)
Sulfide	0.71	3.6	mg/kg*	12/29/87	9030 (c)
Cyanide	0.44	ND	mg/kg	01/05/88	9010 (c)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-5 Composite Soil Sample (CHI-5/87)

CHAS Lab #: 8712187-28
Date Received: 12/18/87

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/04/87	3005/6010 (c)
Arsenic - Total	0.108	2.35	mg/kg*	01/05/87	3050/7060 (c)
Barium - Total	20	50	mg/kg*	01/05/88	3050/6010 (c)
Beryllium - Total	0.097	0.291	mg/kg*	01/05/87	3050/6010 (c)
Cadmium - Total	0.97	2.9	mg/kg*	01/05/87	3050/6010 (c)
Chromium - Total	4.9	15	mg/kg*	01/05/87	3050/6010 (c)
Copper - Total	1.9	27	mg/kg*	01/05/87	3050/6010 (a)
Lead - Total	10	200	mg/kg*	01/05/87	3050/6010 (c)
Mercury - Total	0.0810	0.4450	mg/kg*	12/31/87	7471 (c)
Nickel - Total	1.9	9.7	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.108	ND	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.58	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	0.97	69	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	89.3	%	12/28/87	209F (b)
Sulfide	1.5	6.0	mg/kg*	12/29/87	9030 (c)
Cyanide	0.45	ND	mg/kg*	01/05/88	9010 (c)

Notes: ND - Below minimum detectable level (MDL)
* - Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-6 Composite Soil Sample (CHI-6/87)

CHAS Lab #: 8712203-19
Date Received: 12/21/87

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	9	ND	mg/kg*	01/06/88	3005/6010 (c)
Arsenic - Total	0.087	1.96	mg/kg*	01/05/88	3050/7060 (c)
Beryllium - Total	0.092	0.092	mg/kg*	01/05/88	3050/6010 (c)
Cadmium - Total	0.92	ND	mg/kg*	01/05/88	3050/6010 (c)
Chromium - Total	4.6	10	mg/kg*	01/05/88	3050/6010 (c)
Copper - Total	1.8	16	mg/kg*	01/05/88	3050/6010 (a)
Lead - Total	9	60	mg/kg*	01/05/88	3050/6010 (c)
Mercury - Total	0.0880	0.1750	mg/kg*	12/31/87	7471 (c)
Nickel - Total	1.8	7.4	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.087	1.40	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.42	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	0.92	43	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	82.5	%	12/28/87	209F (b)
Sulfide	0.39	19	mg/kg*	12/29/87	9030 (c)
Total Cyanide	0.42	ND	mg/kg*	01/05/88	9010 (c)

Sample Station: B-7 Composite Soil Sample (CHI-7/87)

CHAS Lab #: 8712203-24

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/06/88	3005/6010 (c)
Arsenic - Total	0.095	3.32	mg/kg*	01/05/88	3050/7060 (c)
Beryllium - Total	0.113	0.113	mg/kg*	01/05/88	3050/6010 (c)
Cadmium - Total	1.1	ND	mg/kg*	01/05/88	3050/6010 (c)
Chromium - Total	5.6	12	mg/kg*	01/05/88	3050/6010 (c)
Copper - Total	2.2	16	mg/kg*	01/05/88	3050/6010 (a)
Lead - Total	10	70	mg/kg*	01/05/88	3050/6010 (c)
Mercury - Total	0.0890	0.0890	mg/kg*	12/31/87	7471 (c)
Nickel - Total	2.3	7.9	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.095	1.80	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.50	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	1.1	49	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	85.6	%	12/28/87	209F (b)
Sulfide	1.6	9.4	mg/kg*	12/29/87	9030 (c)
Total Cyanide	0.49	ND	mg/kg*	01/05/88	9010 (c)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-8 Composite Soil Sample (CHI-8/87)

CHAS Lab #: 8712203-06
Date Received: 12/21/87

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	9	ND	mg/kg*	01/06/88	3005/6010 (c)
Arsenic - Total	0.112	1.13	mg/kg*	01/05/88	3050/7060 (c)
Beryllium - Total	0.112	0.112	mg/kg*	01/05/88	3050/6010 (c)
Cadmium - Total	1.1	ND	mg/kg*	01/05/88	3050/6010 (c)
Chromium - Total	5.6	12	mg/kg*	01/05/88	3050/6010 (c)
Copper - Total	2.2	16	mg/kg*	01/05/88	3050/6010 (a)
Lead - Total	10	70	mg/kg*	01/05/88	3050/6010 (c)
Mercury - Total	0.0890	ND	mg/kg*	12/31/87	7471 (c)
Nickel - Total	2.2	9.0	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.112	1.41	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.52	ND	mg/kg*	01/06/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	1.1	39	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	80.6	%	12/28/87	209F (b)
Sulfide	0.76	4.6	mg/kg*	12/29/87	9030 (c)
Total Cyanide	0.53	ND	mg/kg*	01/05/88	9010 (c)

Sample Station: B-9 Composite Soil Sample (CHI-9/87)

CHAS Lab #: 8712203-12

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	01/06/88	3005/6010 (c)
Arsenic - Total	0.145	2.90	mg/kg*	01/05/88	3050/7060 (c)
Beryllium - Total	0.144	0.144	mg/kg*	01/05/88	3050/6010 (c)
Cadmium - Total	1.4	ND	mg/kg*	01/05/88	3050/6010 (c)
Chromium - Total	7.2	13	mg/kg*	01/05/88	3050/6010 (c)
Copper - Total	2.9	19	mg/kg*	01/05/88	3050/6010 (a)
Lead - Total	10	40	mg/kg*	01/05/88	3050/6010 (c)
Mercury - Total	0.0930	0.1390	mg/kg*	12/31/87	7471 (c)
Nickel - Total	2.9	12	mg/kg*	01/05/88	3050/6010 (c)
Selenium - Total	0.145	1.88	mg/kg*	01/05/88	3050/7740 (c)
Silver - Total	0.50	ND	mg/kg*	01/05/88	3050/7760 (c)
Thallium - Total	30	ND	mg/kg*	01/05/88	3050/6010 (c)
Zinc - Total	1.4	42	mg/kg*	01/05/88	3050/6010 (a)
Total Solids	--	67.3	%	12/28/87	209F (b)
Sulfide	2.2	17	mg/kg*	12/29/87	9030 (c)
Total Cyanide	0.65	ND	mg/kg*	01/05/88	9010 (c)

Notes: ND - Below minimum detectable level (MDL)
* - Based on sample dry weight

Clean Harbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Murphy's Oil Composite Soil Sample

CHAS Lab #: 8712187-01 to 28
Date Received: 12/18/87

pH
Method Nubmer and Reference: Modified 150.1 (a)
Analysis Date: 01/05/88

Sample Identification	Result
B-1 Composite Soil Sample	5.6
B-2 Composite Soil Sample	7.2
B-3 Composite Soil Sample	6.5
B-4 Composite Soil Sample	5.9
B-5 Composite Soil Sample	6.8

Petroleum Hydrocarbon
Oil and Grease by IR
Method Number and Reference: 503D/503E,B (b)
MDL: 10 mg/kg*

Sample Identification	Results	Units	Analysis Date
B-1 Composite Soil Sample	700	mg/kg*	12/31/87
B-2 Composite Soil Sample	1,600	mg/kg*	01/06/88
B-3 Composite Soil Sample	750	mg/kg*	01/06/88
B-4 Composite Soil Sample	3,500	mg/kg*	01/06/88
B-5 Composite Soil Sample	3,800	mg/kg*	01/06/88

Note: ND - Below minimum detectable level (MDL)
* - Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Murphy Oil Composite Soil Samples

CHAS Lab #: 8712187-01 to 28
Date Received: 12/18/87

Total PCBs
Method Number and Reference: 3540/8080 (c)
Extraction Date: 12/28/87
Analysis Date: 01/05/88

Sample Identification	MDL	Result	Units
B-1 Soil Sample	1.0	ND	mg/kg*
B-2 Soil Sample	1.0	ND	mg/kg*
B-3 Soil Sample	1.0	ND	mg/kg*
B-4 Soil Sample	5.0	ND	mg/kg*
B-5 Soil Sample	1.0	ND	mg/kg*

Notes: ND - Below minimum detectable level (MDL)
* - Based on sample dry weight

Clean Harbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Murphy Oil Composite Soil Samples

CHAS Lab #: 8712203-01 to 26
Date Received: 12/21/87

Sample Identification: B-6 Composite Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
pH	--	6.2	--	01/05/88	Modified 150.1 (a)
Petroleum Hydrocarbon Oil & Grease by IR	10	1,100	mg/kg*	01/06/88	503D/503E,B (b)

Sample Identification: B-7 Composite Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
pH	--	5.2	--	01/05/88	Modified 150.1 (a)
Petroleum Hydrocarbon Oil & Grease by IR	10	380	mg/kg*	01/06/88	503D/503E,B (b)

Sample Identification: B-8 Composite Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
pH	--	5.6	--	01/05/88	Modified 150.1 (a)
Petroleum Hydrocarbon Oil & Grease by IR	10	1,600	mg/kg*	01/06/88	503D/503E,B (b)

Sample Identification: B-9 Composite Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
pH	--	5.6	--	01/05/88	Modified 150.1 (a)
Petroleum Hydrocarbon Oil & Grease by IR	10	490	mg/kg*	01/06/88	503D/503E,B (b)

* = Based on sample dry weight

Clean Harbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Murphy Oil Composite Soil Samples

CHAS Lab #: 8712203-01 to 26
Date Received: 12/21/87

Total PCBs
Method Number and Reference: 3540/8080 (c)
Extraction Date: 12/28/87
Analysis Date: 01/05/88
MDL: 0.1 mg/kg

Sample Identification	Result	Units
B-6 Soil Sample	0.21 as Aroclor 1260	mg/kg*
B-7 Soil Sample	0.11 as Aroclor 1260	mg/kg*
B-8 Soil Sample	ND	mg/kg*
B-9 Soil Sample	ND	mg/kg*

ND - Below minimum detectable level (MDL)
* - Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-1 Composite Soil Sample

CHAS Lab #: 8712187-05
Date Received: 12/18/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/26/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 97%
D-8 Toluene: 91%
p-BFB: 101%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-2 Composite Soil Sample

CHAS Lab #: 8712187-10
Date Received: 12/18/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 97%
D-8 Toluene: 96%
p-BFB: 96%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-3 Composite Soil Sample

CHAS Lab #: 8712187-17
Date Received: 12/18/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 99%
D-8 Toluene: 93%
p-BFB: 96%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-4 Composite Soil Sample

CHAS Lab #: 8712187-23
Date Received: 12/18/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 99%
D-8 Toluene: 97%
p-BFB: 92%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-5 Composite Soil Sample

CHAS Lab #: 8712187-28
Date Received: 12/18/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	40	ND	cis-1,3-Dichloropropene	20	ND
Bromomethane	40	ND	Trichloroethene	20	ND
Vinyl Chloride	40	ND	Benzene	20	ND
Chloroethane	40	ND	Dibromochloromethane	20	ND
Methylene Chloride	20	ND	1,1,2-Trichloroethane	20	ND
Trichlorofluoromethane	20	ND	trans-1,3-Dichloropropene	20	ND
1,1-Dichloroethene	20	ND	2-Chloroethylvinyl Ether	40	ND
1,1-Dichloroethane	20	ND	Bromoform	20	ND
trans-1,2-Dichloroethene	20	ND	1,1,2,2-Tetrachloroethane	20	ND
Chloroform	20	ND	Tetrachloroethene	20	ND
1,2-Dichloroethane	20	ND	Toluene	20	ND
1,1,1-Trichloroethane	20	ND	Chlorobenzene	20	ND
Carbon Tetrachloride	20	ND	Ethylbenzene	20	ND
Bromodichloromethane	20	ND	Total Xylenes	20	ND
1,2-Dichloropropane	20	ND			
			Acetone	80	ND
			Carbon Disulfide	40	ND
			2-Butanone	80	ND
			Vinyl Acetate	40	ND
			4-Methyl-2-Pentanone	20	ND
			2-Hexanone	20	ND
			Styrene	20	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 96%
D-8 Toluene: 102%
p-BFB: 112%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

Hydrocarbon background present in sample.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-6 Composite Soil Sample

CHAS Lab #: 8712203-19
Date Received: 12/21/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 92%
D-8 Toluene: 96%
p-BFB: 95%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-7 Composite Soil Sample

CHAS Lab #: 8712203-24
Date Received: 12/21/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 96%
D-8 Toluene: 96%
p-BFB: 91%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-8 Composite Soil Sample

CHAS Lab #: 8712203-06
Date Received: 12/21/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	ND
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	ND	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 94%
D-8 Toluene: 97%
p-BFB: 96%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-9 Composite Soil Sample

CHAS Lab #: 8712203-12
Date Received: 12/21/87

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 12/28/87

Compound	MDL*	Conc.*	Compound	MDL*	Conc.*
Chloromethane	20	ND	cis-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	Trichloroethene	10	13
Vinyl Chloride	20	ND	Benzene	10	ND
Chloroethane	20	ND	Dibromochloromethane	10	ND
Methylene Chloride	10	ND	1,1,2-Trichloroethane	10	ND
Trichlorofluoromethane	10	ND	trans-1,3-Dichloropropene	10	ND
1,1-Dichloroethene	10	ND	2-Chloroethylvinyl Ether	20	ND
1,1-Dichloroethane	10	ND	Bromoform	10	ND
trans-1,2-Dichloroethene	10	ND	1,1,2,2-Tetrachloroethane	10	ND
Chloroform	10	ND	Tetrachloroethene	10	ND
1,2-Dichloroethane	10	ND	Toluene	10	ND
1,1,1-Trichloroethane	10	12	Chlorobenzene	10	ND
Carbon Tetrachloride	10	ND	Ethylbenzene	10	ND
Bromodichloromethane	10	ND	Total Xylenes	10	ND
1,2-Dichloropropane	10	ND			
			Acetone	40	ND
			Carbon Disulfide	20	ND
			2-Butanone	40	ND
			Vinyl Acetate	20	ND
			4-Methyl-2-Pentanone	10	ND
			2-Hexanone	10	ND
			Styrene	10	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 96%
D-8 Toluene: 96%
p-BFB: 90%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

ADDITIONAL
REPORT OF ANALYSIS

CHI Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Attn: Mr. Jeff Gillis

Job Identification: Murphy's Oil
Composite Soil Sample

Date Received: 12/18/87

CHAS Lab #: 8712187-28

P.O. #: E 1656

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date:
Jeanne M. Engel
Laboratory Manager

cc: David Newton
Scott Day

0089-0503

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: B-5 Composite Soil Sample

CHAS Lab #: 8712187-28
Date Received: 12/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 12/23/87
Analysis Date: 01/11/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	ND
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	ND
Pyrene	330	ND
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	ND
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330	ND
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	ND
Benzo(k)Fluoranthene	330	ND
Benzo(a)Pyrene	330	ND
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	ND

Acid Compounds	MDL*	Conc.*
Phenol	330	ND
2-Chlorophenol	330	ND
2-Methylphenol	330	ND
4-Methylphenol	330	ND
2-Nitrophenol	330	ND
2,4-Dimethylphenol	330	ND
2,4-Dichlorophenol	330	ND
4-Chloro-3-methylphenol	330	ND
2,4,6-Trichlorophenol	1600	ND
2,4,5-Trichlorophenol	1600	ND
2,4-Dinitrophenol	1600	ND
4-Nitrophenol	1600	ND
4,6-Dinitro-2-methylphenol	1600	ND
Pentachlorophenol	1600	ND

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received.

Client: CHIGE

Project Name: Murphy, Ol.

Report To: J. Higgins

Address: Woburn, MA

Invoice To:

Address:

Date Samples Collected: 12/18/87

by: D. Walsh

Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: PH	BNA	VOA	PCB	TPH/HVOC	n Mans + Barium	Sulfide	CN	HNU Headspace	Comments (Special instructions, cautions, etc.)	CHAS Sample # 8712-187
B-1	12/18	9 AM	0-2'	Soil									✓		01AØ,Ø,M
			2-4										✓	Composite to one	02AØ,Ø,M
			4-6'		✓		✓	✓	✓	✓	✓	✓	✓	Sample after HNU Anal.	03AØ,Ø,M
			6-8'										✓	05B, MN	04AØ,Ø,M
B-2		10 AM	0-2										✓		06AØ,Ø,M
			2-4										✓	SAME	07AØ,Ø,M
			4-6		✓		✓	✓	✓	✓	✓	✓	✓	10B, MN	08A,M
			6-8										✓		09A,M
			8-10				✓							~~XTAL VOA~~	11A,M

Relinquished by: D. Walsh
Date: 12/18/87 Time: 5:20

Received by: Lori LaPoint
Date: 12-18-87 Time: 5:25 PM

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial									
Glass Bottle									
Plastic Bot.									
Pres.									
Volume									

Preservation Key: A - Acidified with
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Please take HNU Headspace on each discrete sample; then composite samples within each boring for additional analysis.

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by:

Location of samples: R3 4I
Date report due: 2 Weeks
Surcharge:

0089-0506

Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184 | CHAIN OF CUSTODY RECORD | Sample Custodi...

: CHEE | Project Name: MURRAY'S WASTE OIL | Project/P.O. #: E-1656

t To: J. HIGGINS | Address: | Phone #:

ce To: | Address:

Samples Collected: 12-18-87 | by: D WALSH | Date Samples Received:

ple I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: PAH	BNA	VOA	PCB	TPH by IR	13 metals plus barium	Sulfide	CN	HNU Headspace	Comments (Special instructions, cautions, etc.)	CHAS Sample # 8712187
-3	12/18		0-2'	Soil									/	PERFORM HNU ANALYSIS	12A, M
			2-4										/	+ COMPOSITE SAMPLES	13A, M
			4-6		✓		✓	✓	✓	✓	✓	✓	/	FOR REMAINING	14A, M
			6-8										/	ANALYSIS	15A, M
			8-10										/	17B, MX	16A, M
B-4			0-2'										/		18A, M
			2-4										/	SAME	19A, M
			4-6		✓		✓	✓	✓	✓	✓	✓	/		20A, M
			6-8										/		21A, M
			8-10										/	23B, MX	22A, M

Relinquished by: Dan Walsh
Date: 12/18/87 Time: 5:30 p.m.

Received by: Lori Ann Lafayette
Date: 12-18-87 Time: 5:30 p.m.

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial	
Glass Bottle	
Plastic Bot.	
Pres.	
Volume	

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - Nalthiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

SEE ABOVE

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____

Location of samples: R3 4B
Date report due: 2 WEEKS
Surcharge: _____

0089-0507

Client: [illegible] Project Name: [illegible] Project #: 16

Report To: _____ Address: _____ Phone #: _____

Invoice To: _____ Address: _____

Date Samples Collected: _____ by: _____ Date Samples Received: _____

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: PH	BNA	VOA	PCB	TPH by IR	13 Metals pus barium	Sulfide	CN	HNu Headspace	Comments (Special instructions, cautions, etc.)	CHAS Sample # 8712187
B-5			0-2'										✓	Headspace on all samples.	24A, M
			2-4										✓	and composite after Headspace.	25A, M
			4-6										✓	Then perform remaining analyses	26A, M
			6-8		✓	/	/	/	/	/	/	/	✓	28B, MX	27A, M

Relinquished by: David Vale
Date: 12/18/87 Time: 5:20 pm

Received by: Lori Ann LaPoint
Date: 12-18-87 Time: 5:20 pm

Relinquished by: _____
Date: _____ Time: _____

Received by: _____
Date: _____ Time: _____

VOA Vial									
Glass Bottle									
Plastic Bot.									
Pres.									
Volume									

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Any Question Call
Joe Higgins

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____

Location of samples: R3 4I
Date report due: 2 weeks
Surcharge: _____

0089-0508

Sample Custodian - (617) 849-6070

Client: UMass | Project Name: Murphy's Oil | Project/P.O. #: E-1656 | Date: 12/28/87

Report To: J. Higgins | Address: Woburn, Ma | Phone #:

Invoice To: | Address:

Date Samples Collected: 12/21/87 | by: D. Webb | Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: HNU Headspace	PH	VOA	PCB	TPH by IR	13 metals + Barium	Sulfide	CN	Comments (Special instructions, cautions, etc.)	12-21-87 CHAS Sample #
B-6	12/21	1014	0-2	Soil	✓	✓	✓	✓	✓	✓	✓	✓		8712203
			2-4		✓									13A 132
			4-6		✓								Take HNU Headspace	14A 142
			6-8 (2 SAMPLES)		✓								then composite for	15A 152
			8-10 (2 SAMPLES)		NO	VOA							one sample for	16A 162
													additional analyses.	17A 172
B-7	12/21		0-2 A & B 2 SAMPLES		✓	✓	✓	✓	✓	✓	✓	✓		18A 182
			2-4		✓									20A 202
			4-6		✓									20B 202
			6-8		✓									21A 212
														22A 222
													24A2 24M2	23A 232

Relinquished by: Dan Lyle
Date: 12/28/87 Time: 1700

Received by: Lori Ann Lafonte
Date: 12-28-87 Time: 4:25pm

Relinquished by:
Date: Time:

Received by:
Date: Time:

	VOA Vial	Glass Bottle	Plastic Bot.	Pres.	Volume

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - Nathiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by:

Location of samples: 46
Date report due:
Surcharge:

0089-0509

Mean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184

Client: CHITEC | Project Name: Murphy Oil | Project/P.O. #: G-1656 | Date: 12/21/97

Report To: | Address: | Phone #:

Invoice To: | Address:

Date Samples Collected: | by: P. Walsh | Date Samples Received:

12-21-97 pp

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: Hnu Headspace	PH	VOA	PCB	TPH by IR	13 metals + Boron	Solids	CN	Comments (Special instructions, cautions, etc.)	CHAS Sample # 8712203
B-8	12/4		0-2	Soil	✓	✓	✓	✓	✓	✓	✓	✓		01A 01Z
			2-4	NO SAMPLE	✓								see page 1	02A 02Z
			4-6		✓								08A2 08M2	03A 03Z
			6-8 (A B)	2 samples										04A 04Z
														05A 05Z
B-9	12/4		0-2		✓	✓	✓	✓	✓	✓	✓	✓		06A 06Z
			2-4		✓									08A 08Z
			~~4-6~~	~~NO SAMPLE~~	✓								12A2 12M2	09A 09Z
			6-8 (A B)	2 samples	✓									10A 10Z
														11A 11Z

Relinquished by: David Walsh. Date: 12/21/97 Time: 4:00

Received by: [illegible] Date: 12-22-97 Time: 9:25

Relinquished by: Date: Time:

Received by: Date: Time:

VOA Vial											
Glass Bottle											
Plastic Bot.											
Pres.											
Volume											

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - Nathiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by:

Location of samples:
Date report due:
Surcharge:

0089-0510

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Attn: Mr. Jeff Gillis

Job Identification: Murphy's Waste
Oil Soil & Water Samples

Date Received: 02/18/88

CHAS Lab #: 8802177-01 to 48 and 8802191-01

P.O. #: E-1656

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: 3/8/88
Alex Schultheis
Laboratory Director

0089-0511

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: Composite CHI-1
Sample Type: Soil

CHAS Lab #: 8802177-40
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	2,500
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND	Phenol	330	ND
3-Nitroaniline	1600	ND	2-Chlorophenol	330	ND
Acenaphthene	330	ND	2-Methylphenol	330	ND
Dibenzofuran	330	ND	4-Methylphenol	330	ND
2,4-Dinitrotoluene	330	ND	2-Nitrophenol	330	ND
2,6-Dinitrotoluene	330	ND	2,4-Dimethylphenol	330	ND
Diethylphthalate	330	ND	2,4-Dichlorophenol	330	ND
4-Chlorophenyl-phenylether	330	ND	4-Chloro-3-methylphenol	330	ND
Fluorene	330	ND	2,4,6-Trichlorophenol	1600	ND
4-Nitroaniline	1600	ND	2,4,5-Trichlorophenol	1600	ND
N-Nitrosodiphenylamine	330	ND	2,4-Dinitrophenol	1600	ND
4-Bromophenyl-phenylether	330	ND	4-Nitrophenol	1600	ND
Hexachlorobenzene	330	ND	4,6-Dinitro-2-methylphenol	1600	ND
Phenanthrene	330	ND	Pentachlorophenol	1600	ND
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: Composite CHI-2
Sample Type: Soil

CHAS Lab #: 8802177-41
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND	Phenol	330	ND
3-Nitroaniline	1600	ND	2-Chlorophenol	330	ND
Acenaphthene	330	ND	2-Methylphenol	330	ND
Dibenzofuran	330	ND	4-Methylphenol	330	ND
2,4-Dinitrotoluene	330	ND	2-Nitrophenol	330	ND
2,6-Dinitrotoluene	330	ND	2,4-Dimethylphenol	330	ND
Diethylphthalate	330	ND	2,4-Dichlorophenol	330	ND
4-Chlorophenyl-phenylether	330	ND	4-Chloro-3-methylphenol	330	ND
Fluorene	330	ND	2,4,6-Trichlorophenol	1600	ND
4-Nitroaniline	1600	ND	2,4,5-Trichlorophenol	1600	ND
N-Nitrosodiphenylamine	330	ND	2,4-Dinitrophenol	1600	ND
4-Bromophenyl-phenylether	330	ND	4-Nitrophenol	1600	ND
Hexachlorobenzene	330	ND	4,6-Dinitro-2-methylphenol	1600	ND
Phenanthrene	330	ND	Pentachlorophenol	1600	ND
Anthracene	330	ND			

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received.
Hydrocarbon background present in sample.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite Soil Samples

CHAS Lab #: 8802177-40 to 47
Date Received: 02/18/88

Total PCBs
Method Number & Reference: 3540/8080 (c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Sample Identification	MDL	Result	Units
CHI-1 Composite Soil Sample	0.1	0.61 as Aroclor 1260	mg/kg*
CHI-2 Composite Soil Sample	1.0	ND	mg/kg*
CHI-3 Composite Soil Sample	0.1	0.47 as Aroclor 1260	mg/kg*
CHI-4 Composite Soil Sample	0.1	ND	mg/kg*
CHI-5 Composite Soil Sample	0.1	ND	mg/kg*
CHI-6 Composite Soil Sample	0.1	0.60 as Aroclor 1260	mg/kg*
CHI-7 Composite Soil Sample	0.1	ND	mg/kg*
CHI-8 Composite Soil Sample	1.0	ND	mg/kg*

Note: ND = Below minimum detectable levels (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-1 Soil Sample

CHAS Lab #: 8802177-40
Date Received: 02/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	7	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.107	2.14	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.093	0.093	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	0.93	1.9	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	4.6	10	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	0.700	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	1.9	19	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	9	30	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0632	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	1.9	5.6	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.107	ND	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.41	0.41	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	0.93	23	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	90.4	%	02/22/88	209F (b)

Sample Station: Composite CHI-2 Soil Sample

CHAS Lab #: 8802177-41

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.085	2.12	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	30	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.098	0.196	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	0.98	0.98	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	4.9	13	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	ND	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	2.0	14	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	10	50	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0645	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	2.0	6.9	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.085	ND	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.52	0.52	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	0.98	51	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	86.6	%	02/22/88	209F (b)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-3 Soil Sample

CHAS Lab #: 8802177-42
Date Received: 02/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	10	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.094	2.12	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	20	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.094	0.188	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	0.94	0.94	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	4.7	12	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	ND	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	1.9	16	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	9	70	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0657	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	1.9	4.7	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.094	ND	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.46	0.46	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	0.94	39	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	85.6	%	02/22/88	209F (b)

Sample Station: Composite CHI-4 Soil Sample

CHAs Lab #: 8802177-43

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	8	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.113	2.26	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.122	0.243	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	1.2	1.2	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	6.1	66	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	ND	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	2.4	15	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	10	60	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0687	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	2.4	11	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.112	ND	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.47	ND	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	1.2	23	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	80.4	%	02/22/88	209F (b)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-5 Soil Sample

CHAS Lab #: 8802177-44
Date Received: 02/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	7	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.085	2.13	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	10	30	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.063	0.252	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	0.63	1.9	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	3.2	22	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	ND	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	1.3	20	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	6	60	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0701	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	1.3	10	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.085	ND	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.50	ND	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	10	10	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	0.63	40	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	90.9	%	02/22/88	209F (b)

Sample Station: Composite CHI-6 Soil Sample

CHAS Lab #: 8802177-45

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	9	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.079	2.37	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	50	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.091	0.366	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	0.91	11	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	4.6	74	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	ND	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	1.8	63	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	9	100	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0746	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	1.8	11	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.079	0.158	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.41	ND	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	20	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	0.91	60	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	83.7	%	02/22/88	209F (b)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-7 Soil Sample

CHAS Lab #: 8802177-46
Date Received: 02/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	9	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.072	3.22	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	20	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.091	0.365	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	0.91	1.8	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	4.6	37	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	1.50	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	1.8	18	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	9	20	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0712	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	1.8	10	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.084	ND	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.33	ND	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	ND	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	0.91	25	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	85.2	%	02/22/88	209F (b)

Sample Station: Composite CHI-8 Soil Sample

CHAs Lab #: 8802177-47

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Total	9	ND	mg/kg*	02/23/88	3050/6010 (c)
Arsenic - Total	0.104	2.09	mg/kg*	02/23/88	3050/7060 (c)
Barium - Total	20	30	mg/kg*	02/22/88	3050/6010 (c)
Beryllium - Total	0.106	0.211	mg/kg*	02/22/88	3050/6010 (c)
Cadmium - Total	1.1	1.1	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Total	5.3	9.5	mg/kg*	02/22/88	3050/6010 (c)
Chromium - Hexavalent	0.500	0.500	mg/kg*	02/22/88	Modified 218.4 (a)
Copper - Total	2.1	14	mg/kg*	02/22/88	3050/6010 (c)
Lead - Total	10	40	mg/kg*	02/22/88	3050/6010 (c)
Mercury - Total	0.0702	ND	mg/kg*	02/23/88	7471 (c)
Nickel - Total	2.1	3.2	mg/kg*	02/22/88	3050/6010 (c)
Selenium - Total	0.104	0.157	mg/kg*	02/22/88	3050/7740 (c)
Silver - Total	0.52	ND	mg/kg*	02/22/88	3050/7760 (c)
Thallium - Total	20	20	mg/kg*	02/22/88	3050/6010 (c)
Zinc - Total	1.1	23	mg/kg*	02/22/88	3050/6010 (c)
Total Solids	--	79.4	%	02/22/88	209F (b)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Murphy's Waste Oil Composite Samples

CHAS Lab #: 8802177-40 to 43
Date Received: 02/18/88

Sample Identification: Composite CHI-1 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.78	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	930	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	5.7	--	02/18/88	150.1 (a)
Sulfide	1.4	12	mg/kg*	02/23/88	9030 (c)

Sample Identification: Composite CHI-2 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.78	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	4,600	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	5.6	--	02/18/88	150.1 (a)
Sulfide	1.5	15	mg/kg*	02/23/88	9030 (c)

Sample Identification: Composite CHI-3 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.76	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	7,900	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	6.4	--	02/18/88	150.1 (a)
Sulfide	1.5	22	mg/kg*	02/23/88	9030 (c)

Sample Identification: Composite CHI-4 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.86	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	2,600	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	6.3	--	02/18/88	150.1 (a)
Sulfide	1.6	23	mg/kg*	02/23/88	9030 (c)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Murphy's Waste Oil Composite Samples

CHAS Lab #: 8802177-44 to 47
Date Received: 02/18/88

Sample Identification: Composite CHI-5 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.72	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	460	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	5.7	--	02/18/88	150.1 (a)
Sulfide	2.0	32	mg/kg*	02/23/88	9030 (c)

Sample Identification: Composite CHI-6 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.84	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	16,000	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	6.0	--	02/18/88	150.1 (a)
Sulfide	2.2	26	mg/kg*	02/23/88	9030 (c)

Sample Identification: Composite CHI-7 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.77	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	22	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	5.2	--	02/18/88	150.1 (a)
Sulfide	2.2	22	mg/kg*	02/23/88	9030 (c)

Sample Identification: Composite CHI-8 Soil Sample

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide	0.89	ND	mg/kg*	02/22/88	9010 (c)
Petroleum Hydrocarbon Oil & Grease by IR	10	120	mg/kg*	02/23/88	503D/503E,B (b)
pH	--	5.1	--	02/18/88	150.1 (a)
Sulfide	2.1	21	mg/kg*	02/23/88	9030 (c)

Notes: ND = Below minimum detectable level (MDL)
* = Based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-1, 2-4 Soil Sample

CHAS Lab #: 8802177-02
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	TR
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	30	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			

Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	10	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	20	ND	> benzene:	--	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 95%
D-8 Toluene: 97%
p-BFB: 96%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane
TR = Trace amount present but below MDL

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-2, 4-6 Soil Sample

CHAS Lab #: 8802177-07
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	ND
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane -----	10 ---	20
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	ND
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene ---------	10 ---	TR
Toluene	10	ND
Chlorobenzene	10	ND
Ethylbenzene	10	ND
Hazardous Substance List Compounds:		
Acetone	40	ND
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	ND
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	ND
Total Hydrocarbons:**		
< benzene:	--	ND
> benzene:	--	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 98%
D-8 Toluene: 98%
p-BFB: 93%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane
TR = Trace amount present but below MDL

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-3, 6-8A Soil Sample

CHAS Lab #: 8802177-14
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/22/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane --------	10	--- 200	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone -------------------	40	--- 150
1,1,1-Trichloroethane -----	10	--- 13	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	10	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	20	ND	> benzene:	--	910

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 94%
D-8 Toluene: 102%
p-BFB: 116%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane

Hydrocarbon background present in sample.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-4, 2-4 Soil Sample

CHAS Lab #: 8802177-17
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	10	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	20	ND	> benzene:	--	35

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 95%
D-8 Toluene: 100%
p-BFB: 103%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane

Hydrocarbon background present in sample.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-5, 2-4 Soil Sample

CHAS Lab #: 8802177-24
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene ----------	10	--- 14	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	10	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	20	ND	> benzene:	--	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 98%
D-8 Toluene: 99%
p-BFB: 95%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-6, 2-4 Soil Sample

CHAS Lab #: 8802177-28
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	500	ND
Chloromethane	1000	ND	trans-1,3-Dichloropropene	500	ND
Bromomethane	1000	ND	2-Chloroethylvinyl Ether	1000	ND
Vinyl Chloride	1000	ND	Bromoform	500	ND
Chloroethane	1000	ND	1,1,2,2-Tetrachloroethane	500	ND
Methylene Chloride	500	ND	Tetrachloroethene	500	ND
Trichlorofluoromethane	500	ND	Toluene	500	ND
1,1-Dichloroethene	500	ND	Chlorobenzene	500	ND
1,1-Dichloroethane	500	ND	Ethylbenzene	500	ND
trans-1,2-Dichloroethene	500	ND			
Chloroform	500	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	500	ND	Acetone	2000	ND
1,1,1-Trichloroethane	500	ND	Carbon Disulfide	1000	ND
Carbon Tetrachloride	500	ND	2-Butanone	2000	ND
Bromodichloromethane	500	ND	Vinyl Acetate	1000	ND
1,2-Dichloropropane	500	ND	4-Methyl-2-Pentanone	500	ND
cis-1,3-Dichloropropene	500	ND	2-Hexanone	500	ND
Trichloroethene	500	ND	Styrene	500	ND
Benzene	500	ND	Total Xylenes ----------	500	--- 580
Dibromochloromethane	500	ND			
Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	500	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	1000	ND	> benzene:	--	46,000

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 97%
D-8 Toluene: 100%
p-BFB: 106%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane

Hydrocarbon background present in sample.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-7, 0-2 Soil Sample

CHAS Lab #: 8802177-31
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	10	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	20	ND	> benzene:	--	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 94%
D-8 Toluene: 99%
p-BFB: 90%

Notes: ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received
** - calculated as n-hexane

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-8, 5-7A Soil Sample

CHAS Lab #: 8802177-37
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	ND
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane -----	10 ---	20
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	ND
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	ND
Chlorobenzene	10	ND
Ethylbenzene	10	ND
Hazardous Substance List Compounds:		
Acetone	40	ND
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	ND
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	ND
Total Hydrocarbons:**		
< benzene:	--	ND
> benzene:	--	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 100%
D-8 Toluene: 100%
p-BFB: 92%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-1 Soil Sample

CHAS Lab #: 8802177-40
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	ND
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	ND
Pyrene	330	ND
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	ND
bis(2-Ethylhexyl)Phthalate-	330	-- 2,500
Chrysene	330	ND
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	ND
Benzo(k)Fluoranthene	330	ND
Benzo(a)Pyrene	330	ND
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	ND

Acid Compounds	MDL*	Conc.*
Phenol	330	ND
2-Chlorophenol	330	ND
2-Methylphenol	330	ND
4-Methylphenol	330	ND
2-Nitrophenol	330	ND
2,4-Dimethylphenol	330	ND
2,4-Dichlorophenol	330	ND
4-Chloro-3-methylphenol	330	ND
2,4,6-Trichlorophenol	1600	ND
2,4,5-Trichlorophenol	1600	ND
2,4-Dinitrophenol	1600	ND
4-Nitrophenol	1600	ND
4,6-Dinitro-2-methylphenol	1600	ND
Pentachlorophenol	1600	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/kg - Based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-2 Soil Sample

CHAS Lab #: 8802177-41
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	ND
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	ND
Pyrene	330	ND
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	ND
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330	ND
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	ND
Benzo(k)Fluoranthene	330	ND
Benzo(a)Pyrene	330	ND
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	ND

Acid Compounds	MDL*	Conc.*
Phenol	330	ND
2-Chlorophenol	330	ND
2-Methylphenol	330	ND
4-Methylphenol	330	ND
2-Nitrophenol	330	ND
2,4-Dimethylphenol	330	ND
2,4-Dichlorophenol	330	ND
4-Chloro-3-methylphenol	330	ND
2,4,6-Trichlorophenol	1600	ND
2,4,5-Trichlorophenol	1600	ND
2,4-Dinitrophenol	1600	ND
4-Nitrophenol	1600	ND
4,6-Dinitro-2-methylphenol	1600	ND
Pentachlorophenol	1600	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/kg - Based on sample weight as received
Hydrocarbon background present in sample

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-3 Soil Sample

CHAS Lab #: 8802177-42
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND	Phenol	330	ND
3-Nitroaniline	1600	ND	2-Chlorophenol	330	ND
Acenaphthene	330	ND	2-Methylphenol	330	ND
Dibenzofuran	330	ND	4-Methylphenol	330	ND
2,4-Dinitrotoluene	330	ND	2-Nitrophenol	330	ND
2,6-Dinitrotoluene	330	ND	2,4-Dimethylphenol	330	ND
Diethylphthalate	330	ND	2,4-Dichlorophenol	330	ND
4-Chlorophenyl-phenylether	330	ND	4-Chloro-3-methylphenol	330	ND
Fluorene	330	ND	2,4,6-Trichlorophenol	1600	ND
4-Nitroaniline	1600	ND	2,4,5-Trichlorophenol	1600	ND
N-Nitrosodiphenylamine	330	ND	2,4-Dinitrophenol	1600	ND
4-Bromophenyl-phenylether	330	ND	4-Nitrophenol	1600	ND
Hexachlorobenzene	330	ND	4,6-Dinitro-2-methylphenol	1600	ND
Phenanthrene	330	ND	Pentachlorophenol	1600	ND
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
Hydrocarbon background present in sample

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-4 Soil Sample

CHAS Lab #: 8802177-43
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND	Phenol	330	ND
3-Nitroaniline	1600	ND	2-Chlorophenol	330	ND
Acenaphthene	330	ND	2-Methylphenol	330	ND
Dibenzofuran	330	ND	4-Methylphenol	330	ND
2,4-Dinitrotoluene	330	ND	2-Nitrophenol	330	ND
2,6-Dinitrotoluene	330	ND	2,4-Dimethylphenol	330	ND
Diethylphthalate	330	ND	2,4-Dichlorophenol	330	ND
4-Chlorophenyl-phenylether	330	ND	4-Chloro-3-methylphenol	330	ND
Fluorene	330	ND	2,4,6-Trichlorophenol	1600	ND
4-Nitroaniline	1600	ND	2,4,5-Trichlorophenol	1600	ND
N-Nitrosodiphenylamine	330	ND	2,4-Dinitrophenol	1600	ND
4-Bromophenyl-phenylether	330	ND	4-Nitrophenol	1600	ND
Hexachlorobenzene	330	ND	4,6-Dinitro-2-methylphenol	1600	ND
Phenanthrene	330	ND	Pentachlorophenol	1600	ND
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
Hydrocarbon background present in sample.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-5 Soil Sample

CHAS Lab #: 8802177-44
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	ND
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	ND
Pyrene	330	ND
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	ND
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330	ND
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	ND
Benzo(k)Fluoranthene	330	ND
Benzo(a)Pyrene	330	ND
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	ND

Acid Compounds	MDL*	Conc.*
Phenol	330	ND
2-Chlorophenol	330	ND
2-Methylphenol	330	ND
4-Methylphenol	330	ND
2-Nitrophenol	330	ND
2,4-Dimethylphenol	330	ND
2,4-Dichlorophenol	330	ND
4-Chloro-3-methylphenol	330	ND
2,4,6-Trichlorophenol	1600	ND
2,4,5-Trichlorophenol	1600	ND
2,4-Dinitrophenol	1600	ND
4-Nitrophenol	1600	ND
4,6-Dinitro-2-methylphenol	1600	ND
Pentachlorophenol	1600	ND

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-6 Soil Sample

CHAS Lab #: 8802177-45
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND	Phenol	330	ND
3-Nitroaniline	1600	ND	2-Chlorophenol	330	ND
Acenaphthene	330	ND	2-Methylphenol	330	ND
Dibenzofuran	330	ND	4-Methylphenol	330	ND
2,4-Dinitrotoluene	330	ND	2-Nitrophenol	330	ND
2,6-Dinitrotoluene	330	ND	2,4-Dimethylphenol	330	ND
Diethylphthalate	330	ND	2,4-Dichlorophenol	330	ND
4-Chlorophenyl-phenylether	330	ND	4-Chloro-3-methylphenol	330	ND
Fluorene	330	ND	2,4,6-Trichlorophenol	1600	ND
4-Nitroaniline	1600	ND	2,4,5-Trichlorophenol	1600	ND
N-Nitrosodiphenylamine	330	ND	2,4-Dinitrophenol	1600	ND
4-Bromophenyl-phenylether	330	ND	4-Nitrophenol	1600	ND
Hexachlorobenzene	330	ND	4,6-Dinitro-2-methylphenol	1600	ND
Phenanthrene	330	ND	Pentachlorophenol	1600	ND
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
Hydrocarbon background present in sample

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-7 Soil Sample

CHAS Lab #: 8802177-46
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	ND
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	ND
Pyrene	330	ND
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	ND
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330	ND
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	ND
Benzo(k)Fluoranthene	330	ND
Benzo(a)Pyrene	330	ND
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	ND

Acid Compounds	MDL*	Conc.*
Phenol	330	ND
2-Chlorophenol	330	ND
2-Methylphenol	330	ND
4-Methylphenol	330	ND
2-Nitrophenol	330	ND
2,4-Dimethylphenol	330	ND
2,4-Dichlorophenol	330	ND
4-Chloro-3-methylphenol	330	ND
2,4,6-Trichlorophenol	1600	ND
2,4,5-Trichlorophenol	1600	ND
2,4-Dinitrophenol	1600	ND
4-Nitrophenol	1600	ND
4,6-Dinitro-2-methylphenol	1600	ND
Pentachlorophenol	1600	ND

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite CHI-8 Soil Sample

CHAS Lab #: 8802177-47
Date Received: 02/18/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/19/88
Analysis Date: 02/23/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND	Phenol	330	ND
3-Nitroaniline	1600	ND	2-Chlorophenol	330	ND
Acenaphthene	330	ND	2-Methylphenol	330	ND
Dibenzofuran	330	ND	4-Methylphenol	330	ND
2,4-Dinitrotoluene	330	ND	2-Nitrophenol	330	ND
2,6-Dinitrotoluene	330	ND	2,4-Dimethylphenol	330	ND
Diethylphthalate	330	ND	2,4-Dichlorophenol	330	ND
4-Chlorophenyl-phenylether	330	ND	4-Chloro-3-methylphenol	330	ND
Fluorene	330	ND	2,4,6-Trichlorophenol	1600	ND
4-Nitroaniline	1600	ND	2,4,5-Trichlorophenol	1600	ND
N-Nitrosodiphenylamine	330	ND	2,4-Dinitrophenol	1600	ND
4-Bromophenyl-phenylether	330	ND	4-Nitrophenol	1600	ND
Hexachlorobenzene	330	ND	4,6-Dinitro-2-methylphenol	1600	ND
Phenanthrene	330	ND	Pentachlorophenol	1600	ND
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: Composite 1-4 Soil Samples

CHAS Lab #: 8802177-49
Date Received: 02/19/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - EP Toxicity(1)	0.1	ND	mg/l	02/24/88	3010/6010 (c)
Barium - EP Toxicity(1)	0.2	ND	mg/l	02/24/88	3010/6010 (c)
Cadmium - EP Toxicity(1)	0.01	ND	mg/l	02/24/88	3010/6010 (c)
Chromium - EP Toxicity(1)	0.05	ND	mg/l	02/24/88	3010/6010 (c)
Lead - EP Toxicity(1)	0.1	ND	mg/l	02/24/88	3010/6010 (c)
Mercury - EP Toxicity(1)	0.0002	ND	mg/l	02/26/88	7470 (c)
Selenium - EP Toxicity(1)	0.1	ND	mg/l	02/24/88	3010/6010 (c)
Silver - EP Toxicity(1)	0.01	0.01	mg/l	02/26/88	3010/7760 (c)

Sample Station: Composite 5-8 Soil Samples

CHAS Lab #: 8802177-50

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - EP Toxicity(1)	0.1	ND	mg/l	02/24/88	3010/6010 (c)
Barium - EP Toxicity(1)	0.2	ND	mg/l	02/24/88	3010/6010 (c)
Cadmium - EP Toxicity(1)	0.01	ND	mg/l	02/24/88	3010/6010 (c)
Chromium - EP Toxicity(1)	0.05	ND	mg/l	02/24/88	3010/6010 (c)
Lead - EP Toxicity(1)	0.1	ND	mg/l	02/24/88	3010/6010 (c)
Mercury - EP Toxicity(1)	0.0002	ND	mg/l	02/26/88	7470 (c)
Selenium - EP Toxicity(1)	0.1	ND	mg/l	02/24/88	3010/6010 (c)
Silver - EP Toxicity(1)	0.01	0.01	mg/l	02/26/88	3010/7760 (c)

Notes: ND = Below minimum detectable level (MDL)

(1) The sample was evaluated by EPA Method 1310, EP Toxicity, as described in ref. (c).

0089-0538

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 1 of 4

Client: [illegible] CE Project Name: [illegible] Well (01) Project/P.O. #: F 654 Date: 2/17/89

Report To: Sherri Winkel Address: _____ Phone #: _____

Invoice To: _____ Address: _____

Date Samples Collected: 2/17/89 by: D Walsh Date Samples Received: 2/17/89

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: [illegible]	PH	TCE	VOA	TPH 418.1 + BTEX	BTEX and Chlorinated Aromatics	Sulfide	CN	# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample # 8802177
CHH-1	2/17	[illegible]	0-2	Soil	✓				✓				1	COMPOSITE = 4 OM	01M
			2-4		✓			✓					2	* [illegible]	02M, 02A
			4-6		✓								1	[illegible]	03M
			[illegible] A		✓								1	[illegible]	04M
			[illegible] B		✓								1		05M
CHH-2			0-2		✓				✓				1		06M
			4-6		✓			✓					2		07M, 07A
			6-6.4		✓								1	COMPOSITE = 4 OM	08M
			6-6.5		✓								1		09M

Relinquished by: [illegible] Walsh
Date: 2/17/89 Time: 6:13 pm

Received by: _____
Date: _____ Time: _____

Relinquished by: _____
Date: _____ Time: _____

Received by: _____
Date: _____ Time: _____

	VOA Vial	Glass Bottle	Plastic Bot.	Pres.	Volume

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

[illegible] sample for [illegible] additional analyses should [illegible]
3/22/89 OK
Analysis taken from Original data and chain of custody

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 2 of 4

Client: [illegible] Project Name: [illegible] Project/P.O. #: [illegible] Date: [illegible]

Report To: _____ Address: _____ Phone #: _____

Invoice To: _____ Address: _____

Date Samples Collected: 2/1/[illegible] by: D. Wolek Date Samples Received: [illegible]

Sample I.D.	Sampling Information				Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
	Date	Time	Station Location	Sample Type	HNU	pH	ACB	8240	8270 Add'l Hits by TIC	Total Cr+6	Sulfide	CN				8802177
[illegible]	2/1		0-2 M	[illegible]	X									1	COMPOSITE = 42M	10M
	↓		0-2 B		X									1	[illegible]	11M
	↓		2-4		X									1		12M
			4-6	↓	X									1		13M
			4-6 A		X									2		14M 14A
			4-6 B		X			X						1		15M
[illegible]			0-2		X									1	COMPOSITE = 43M	16M
			2-4		X			X						2		17M 17A
			4 6		X									1		18M
			6-8 A		X									1		19M
			6-8 B		X									1		20M

		VOA Vial	Glass Bottle	Plastic Bot.	Pres.	Volume
Relinquished by: [illegible]	Date: 2/[illegible] Time: [illegible]					
Received by: [illegible]	Date: [illegible] Time: [illegible]					
Relinquished by: _____	Date: _____ Time: _____					
Received by: _____	Date: _____ Time: _____					

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

[illegible]

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

0089-0539

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 3 of 4

Client: _____ Project Name: _____ Project/P.O. #: _____ Date: _____

Report To: _____ Address: _____ Phone #: _____

Invoice To: _____ Address: _____

Date Samples Collected: _____ by: _____ Date Samples Received: _____

Sample I.D.	Sampling Information				Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
	Date	Time	Station Location	Sample Type	HNU	pH	PCB	8240	PET. HC by IR	13 PPH by GC/FID	Sulfide	CN				
																8802177
4			1		✓									1		21M
			2 A		✓									1	COMPOSITE = 44M	22M
			5		✓									1		23M
			4		✓			K						2		24M 24A
			6		✓									1		25M
			8		✓									1		26M
			2		✓									1	COMPOSITE = 45M	27M
			4		✓			K						2		28M 28D
			6		✓									1		29M
			8		✓									1		30M

		VOA Vial											
Relinquished by:		Glass Bottle											
Date:	Time:	Plastic Bot.											
Received by:		Pres.											
Date:	Time:	Volume											
Relinquished by:													
Date:	Time:												
Received by:													
Date:	Time:												

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

0089-0540

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 4 of 4

Client: _____ Project Name: _____ Project/P.O. #: _____ Date: _____

Report To: _____ Address: _____ Phone #: _____

Invoice To: _____ Address: _____

Date Samples Collected: _____ by: _____ Date Samples Received: _____

Sample I.D.	Sampling Information				Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
	Date	Time	Station Location	Sample Type	HNU	pH	PCB	8240	Pet. HC by IR	1bppt by 1613	Sulfide	CN				8802177
			-2		X			X						2		31M, 31A
			24		X									1		32M
			4		X									1		33M
					X									1		34M
					X									1		35M
					X									1		36M
					X			X						2		37M, 37A
					X									1		38M
					X									1		39M

Relinquished by: _____
Date: _____ Time: _____

Received by: _____
Date: _____ Time: _____

Relinquished by: _____
Date: _____ Time: _____

Received by: _____
Date: _____ Time: _____

VOA Vial											
Glass Bottle											
Plastic Bot.											
Pres.											
Volume											

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

0089-0541

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page / of /

Client: [illegible] Project Name: [illegible] Project/P.O. #: [illegible] Date: [illegible]

Report To: [illegible] Address: Phone #:

Invoice To: [illegible] Address:

Date Samples Collected: 2/17/88 by: [illegible] Date Samples Received: [illegible]

Sample I.D.	Sampling Information				Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
	Date	Time	Station Location	Sample Type												
[illegible]			[illegible]	Soil	—	✓									[illegible]	
[illegible]			[illegible]	"	—	✓									[illegible]	
[illegible]															[illegible]	
[illegible]			[illegible]	Soil	✓										[illegible]	
															[illegible]	

VOA Vial										
Glass Bottle										
Plastic Bot.										
Pres.										
Volume										

Relinquished by: [illegible]
Date: [illegible] Time: [illegible]

Received by: [illegible]
Date: 2/17/88 Time: 2:30 PM

Relinquished by:
Date: Time:

Received by:
Date: Time:

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

[illegible]

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by: Surcharge:

Location of samples: [illegible] ASAP [illegible]

Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other:

0089-0542

APPENDIX D

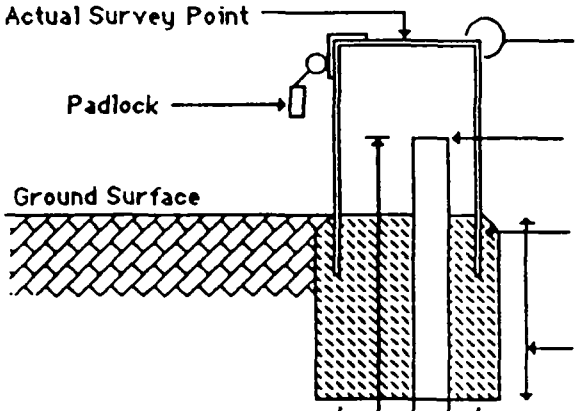
CleanHarbors

GROUNDWATER MONITORING WELL REPORT

SITE: Murphy's Waste Oil Services PROJECT NO.: E-1656

CONTRACTOR: CHEE INSTALLATION DATE: 1/31/89 WELL NO.: W-89-S1

DRILLER: P. Thornsbury INSPECTOR: C. Kohrs



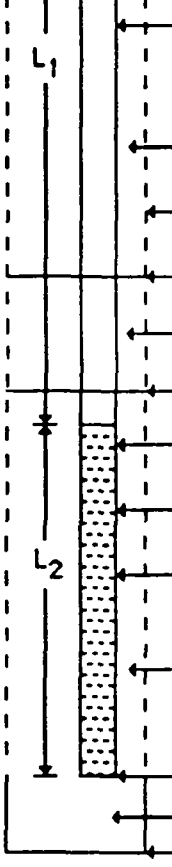
Drilling Method: HSA

Elevation or Stickup Above/Below Ground Surface of Road Box or Guard Pipe: 2.50

Elevation or Stickup Above/Below Ground Surface of Riser Pipe: 2.50

Protective Casing: 3 in. (Diameter (I.D.)) / 3 (Length)

Thickness of Surface Seal/Grout: 0



Material of Manufacture and Inside Diameter of Riser Pipe: PVC / 2 inches (Material / I.D.)

Type of Backfill Around Riser: Granular Fill

Diameter of Bore Hole: 8 inches

Depth to Top of Subsurface Seal: 8

Type of Subsurface Seal: Bentonite

Depth to Top of Backfill: 9

Type of Point or Screen: Slotted

Screen Gage or Size of Opening: 10

Material of Manufacture and Diameter of Screen: PVC / 2 inches

Type of Backfill Around Point/Screen: Ottawa Sand

Depth to Bottom of Screen: 15

Type of Backfill Under Screen: 0

Depth of Bottom of Borehole: 15

Actual Elevation (where available)

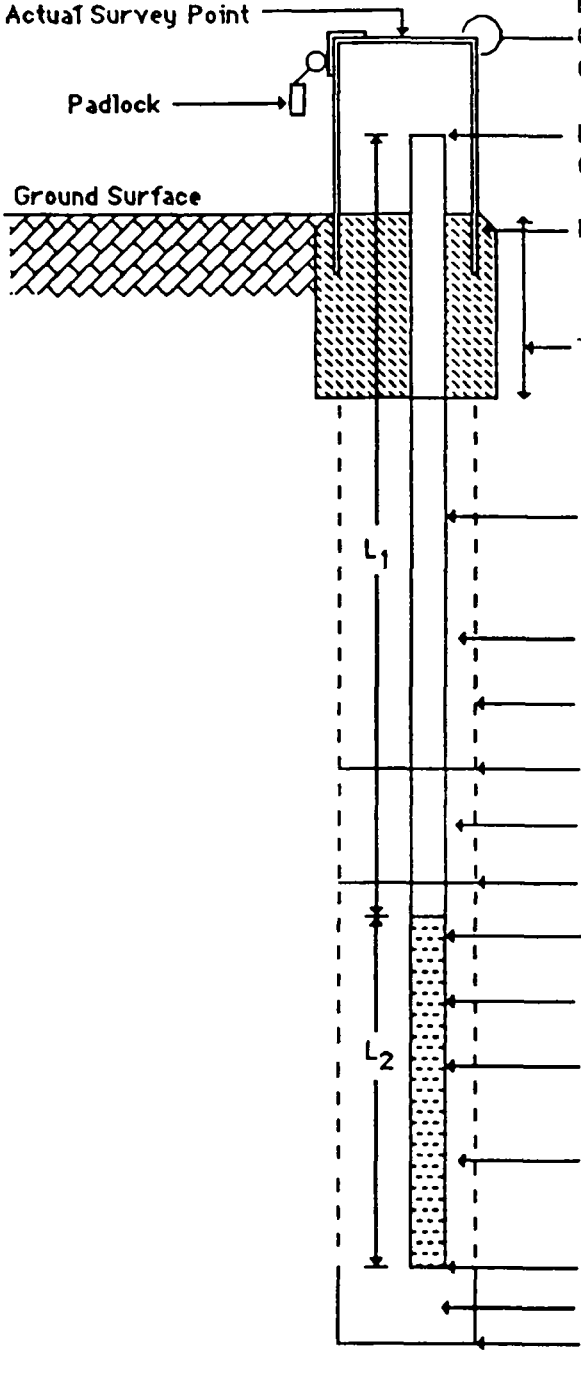
(L_1) Length of Riser (ft) 7.5 (L_2) Length of Screen (ft) 10 Reference Point _____ Ground Elev. 50.20

GROUNDWATER MONITORING WELL REPORT

SITE: Murphy's Waste Oil Services PROJECT NO.: E-1656

CONTRACTOR: CHEE INSTALLATION DATE: 2-1-89 WELL NO.: W-89-S3

DRILLER: P. Thornsbury INSPECTOR: C. Kohrs



Drilling Method	HSA
Elevation or Stickup Above/Below Ground Surface of Road Box or Guard Pipe	2.58
Elevation or Stickup Above/Below Ground Surface of Riser Pipe	2.58
Protective Casing	3 in. (Diameter (I.D.)) / 30 (Length)
Thickness of Surface Seal/Grout	0
Material of Manufacture and Inside Diameter of Riser Pipe	PVC (Material) / 2 inches (I.D.)
Type of Backfill Around Riser	Granular Fill
Diameter of Bore Hole	8 inches
Depth to Top of Subsurface Seal	2
Type of Subsurface Seal	Bentonite
Depth to Top of Backfill	3
Type of Point or Screen	Slotted
Screen Gage or Size of Opening	10
Material of Manufacture and Diameter of Screen	PVC / 2 inches
Type of Backfill Around Point/Screen	Ottawa Sand
Depth to Bottom of Screen	19
Type of Backfill Under Screen	Granular Fill
Depth of Bottom of Borehole	20

Actual Elevation (where available)

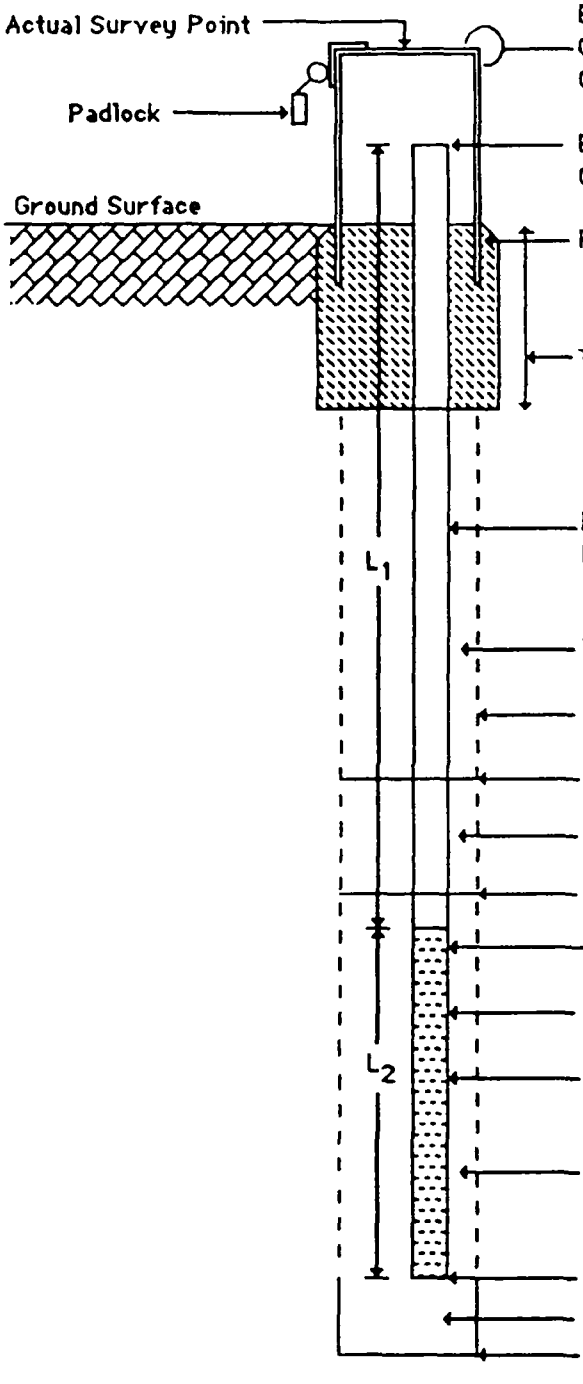
(L_1) Length of Riser (ft) 6.58 (L_2) Length of Screen (ft) 15 Reference Point _____ Ground Elev. 51.11

GROUNDWATER MONITORING WELL REPORT

SITE: Murphy's Waste Oil Services — PROJECT NO.: E-1656

CONTRACTOR: CHEE — INSTALLATION DATE: 1/31/89 — WELL NO.: W-89-S14

DRILLER: P. Thornsbury — INSPECTOR: C. Kohrs



Drilling Method	HSA
Elevation or Stickup Above/Below Ground Surface of Road Box or Guard Pipe	2.08
Elevation or Stickup Above/Below Ground Surface of Riser Pipe	2.08
Protective Casing	3 in. (Diameter (I.D.)) / 3 (Length)
Thickness of Surface Seal/Grout	0
Material of Manufacture and Inside Diameter of Riser Pipe	PVC (Material) / 2 inches (I.D.)
Type of Backfill Around Riser	Granular Fill
Diameter of Bore Hole	inches
Depth to Top of Subsurface Seal	3
Type of Subsurface Seal	Bentonite
Depth to Top of Backfill	4
Type of Point or Screen	Slotted
Screen Gage or Size of Opening	10
Material of Manufacture and Diameter of Screen	PVC / 2 inches
Type of Backfill Around Point/Screen	Ottawa Sand
Depth to Bottom of Screen	15
Type of Backfill Under Screen	0
Depth of Bottom of Borehole	15

Actual Elevation (where available)

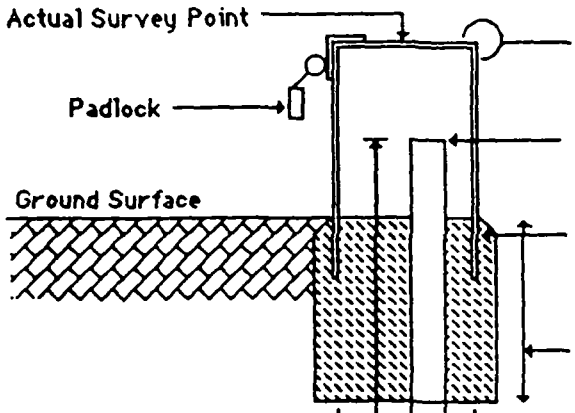
(L_1) Length of Riser (ft) 7 — (L_2) Length of Screen (ft) 10 — Reference Point ____ — Ground Elev. 49.84

GROUNDWATER MONITORING WELL REPORT

SITE: Murphy's Waste Oil Services — PROJECT NO.: E-1656

CONTRACTOR: CHEE — INSTALLATION DATE: 2-3 — WELL NO.: W-89-S-15

DRILLER: J. Adams — INSPECTOR: C. Kohrs



Drilling Method	HSA
Elevation or Stickup Above/Below Ground Surface of Road Box or Guard Pipe	2.58
Elevation or Stickup Above/Below Ground Surface of Riser Pipe	2.58
Protective Casing	3 in (Diameter (I.D.)) / 3.0 (Length)
Thickness of Surface Seal/Grout	0
Material of Manufacture and Inside Diameter of Riser Pipe	PVC (Material) / 2 inches (I.D.)
Type of Backfill Around Riser	Granular Fill
Diameter of Bore Hole	8 inches
Depth to Top of Subsurface Seal	3
Type of Subsurface Seal	Bentonite
Depth to Top of Backfill	4
Type of Point or Screen	Slotted
Screen Gage or Size of Opening	10
Material of Manufacture and Diameter of Screen	PVC / 2 inches
Type of Backfill Around Point/Screen	Ottawa Sand
Depth to Bottom of Screen	20
Type of Backfill Under Screen	0
Depth of Bottom of Borehole	20

Actual Elevation (where available)

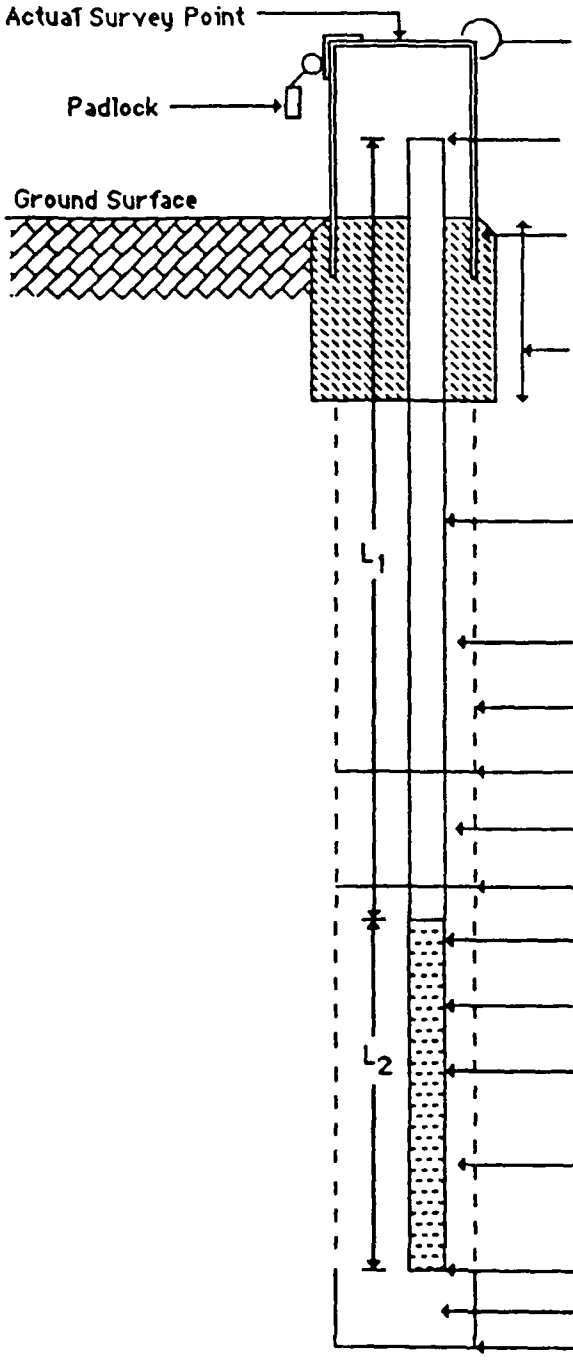
(L_1) Length of Riser (ft) 7.58 (L_2) Length of Screen (ft) 15 Reference Point _____ Ground Elev. 49.78

GROUNDWATER MONITORING WELL REPORT

SITE: Murphy's Waste Oil Services PROJECT NO.: E-1656

CONTRACTOR: CHEE INSTALLATION DATE: 2-1-89 WELL NO.: W-89-S16

DRILLER: P. Thornsbury INSPECTOR: C. Kohrs



Drilling Method: HSA

Elevation or Stickup Above/Below Ground Surface of Road Box or Guard Pipe: 2.63

Elevation or Stickup Above/Below Ground Surface of Riser Pipe: 2.63

Protective Casing: 3 in. (Diameter (I.D.)) / 3.0 (Length)

Thickness of Surface Seal/Grout: 0

Material of Manufacture and Inside Diameter of Riser Pipe: PVC (Material) / 2 inches (I.D.)

Type of Backfill Around Riser: Granular Fill

Diameter of Bore Hole: 8 inches

Depth to Top of Subsurface Seal: 3

Type of Subsurface Seal: Bentonite

Depth to Top of Backfill: 4

Type of Point or Screen: Slotted

Screen Gage or Size of Opening: 10

Material of Manufacture and Diameter of Screen: PVC / 2 inches

Type of Backfill Around Point/Screen: Ottawa Sand

Depth to Bottom of Screen: 20

Type of Backfill Under Screen: 0

Depth of Bottom of Borehole: 20

Actual Elevation (where available)

(L_1) Length of Riser (ft) 7.63 (L_2) Length of Screen (ft) 15 Reference Point _____ Ground Elev. 52.43

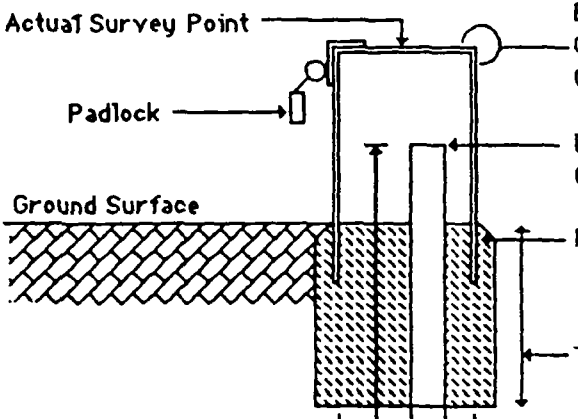
0089-0548

GROUNDWATER MONITORING WELL REPORT

SITE: Murphy's Waste Oil Services PROJECT NO.: E-1656

CONTRACTOR: CHEE INSTALLATION DATE: 1-31-89 WELL NO.: W-89-S17

DRILLER: P. Thornsbury INSPECTOR: C. Kohrs



Drilling Method	HSA
Elevation or Stickup Above/Below Ground Surface of Road Box or Guard Pipe	2.63
Elevation or Stickup Above/Below Ground Surface of Riser Pipe	2.63
Protective Casing	3 in. (Diameter (I.D.)) / 3.0 (Length)
Thickness of Surface Seal/Grout	0
Material of Manufacture and Inside Diameter of Riser Pipe	PVC (Material) / 2 inches (I.D.)
Type of Backfill Around Riser	Granular Fill
Diameter of Bore Hole	8 inches
Depth to Top of Subsurface Seal	3
Type of Subsurface Seal	Bentonite
Depth to Top of Backfill	4
Type of Point or Screen	Slotted
Screen Gage or Size of Opening	10
Material of Manufacture and Diameter of Screen	PVC / 2 inches
Type of Backfill Around Point/Screen	Ottawa Sand
Depth to Bottom of Screen	20
Type of Backfill Under Screen	0
Depth of Bottom of Borehole	20

Actual Elevation (where available)

(L_1) Length of Riser (ft) 7.63 (L_2) Length of Screen (ft) 15 Reference Point _____ Ground Elev. 50.40

0089-0549

CleanHarbors®
Environmental Services, Inc.

HYDROGEOLOGIC CHARACTERIZATION REPORT

Murphy's Waste Oil Service, Inc.
252 Salem Street
Woburn, MA 01801

(Volume 2 of 2)

Prepared For:

Murphy's Waste Oil Service, Inc.
252 Salem Street
Woburn, MA 01801

Prepared by:

Clean Harbors Environmental Services, Inc.
325 Wood Road
Braintree, MA 02184

February 1, 1994

CHES Job No. EN-170

APPENDIX E

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-GW6 Water Sample

CHAS Lab #: 8802191-01
Date Received: 02/18/88

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	120	ND
Chloromethane	250	ND	trans-1,3-Dichloropropene	120	ND
Bromomethane	250	ND	2-Chloroethylvinyl Ether	250	ND
Vinyl Chloride	250	ND	Bromoform	120	ND
Chloroethane	250	TR	1,1,2,2-Tetrachloroethane	120	ND
Methylene Chloride	120	ND	Tetrachloroethene	120	ND
Trichlorofluoromethane	120	ND	Toluene	120	ND
1,1-Dichloroethene	120	ND	Chlorobenzene	120	ND
1,1-Dichloroethane	120	2,200	Ethylbenzene	120	ND
trans-1,2-Dichloroethene	120	ND			
Chloroform	120	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	120	ND	Acetone	500	ND
1,1,1-Trichloroethane	120	1,300	Carbon Disulfide	250	ND
Carbon Tetrachloride	120	ND	2-Butanone	500	ND
Bromodichloromethane	120	ND	Vinyl Acetate	250	ND
1,2-Dichloropropane	120	ND	4-Methyl-2-Pentanone	120	ND
cis-1,3-Dichloropropene	120	ND	2-Hexanone	120	ND
Trichloroethene	120	ND	Styrene	120	ND
Benzene	120	ND	Total Xylenes	120	ND
Dibromochloromethane	120	ND			
Additional Compounds:			**Total Hydrocarbons**:**		
Dibromoethane (EDB)	120	ND	< benzene:	--	ND
Methyl-t-Butylether (MTBE)	250	ND	> benzene:	--	ND

QA/QC Surrogate Recoveries:
1,2-Dichloroethane: 93%
D-8 Toluene: 97%
p-BFB: 95%

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = calculated as n-hexane

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample Station: CHI-GW6 Water Sample

CHAS Lab #: 8802191-01
Date Received: 02/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Antimony - Dissolved	0.2	ND	mg/l	02/23/88	4.1.1/200.7 (a)
Arsenic - Dissolved	0.002	0.005	mg/l	02/23/88	4.1.1/206.2 (a)
Barium - Dissolved	0.2	ND	mg/l	02/19/88	4.1.1/200.7 (a)
Beryllium - Dissolved	0.001	0.001	mg/l	02/19/88	4.1.1/200.7 (a)
Cadmium - Dissolved	0.01	0.01	mg/l	02/19/88	4.1.1/200.7 (a)
Chromium - Dissolved	0.05	ND	mg/l	02/19/88	4.1.1/200.7 (a)
Copper - Dissolved	0.02	ND	mg/l	02/19/88	4.1.1/200.7 (a)
Lead - Dissolved	0.001	0.001	mg/l	02/23/88	4.1.1/200.7 (a)
Mercury - Dissolved	0.0002	ND	mg/l	02/23/88	4.1.1/245.1 (a)
Nickel - Dissolved	0.02	0.04	mg/l	02/19/88	4.1.1/200.7 (a)
Selenium - Dissolved	0.002	ND	mg/l	02/22/88	4.1.1/270.2 (a)
Silver - Dissolved	0.01	ND	mg/l	02/22/88	4.1.1/272.1 (a)
Thallium - Dissolved	0.2	ND	mg/l	02/19/88	4.1.1/200.7 (a)
Zinc - Dissolved	0.01	0.03	mg/l	02/19/88	4.1.1/200.7 (a)
Total Cyanide	0.02	ND	mg/l	02/22/88	335.2 (a)
pH	--	6.2	--	02/18/88	150.1 (a)
Sulfide	0.79	9.90	mg/l	02/23/88	9030 (c)
Chromium Hexavalent	0.005	ND	mg/l	02/22/88	218.4 (a)
Total Oil & Grease by IR	0.1	88	mg/l	02/23/88	503B (b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	82	mg/l	02/23/88	503E,B (b)
Total PCBs	10	ND	ug/l	02/23/88	608 (f)
Extraction Date: 02/19/88					

Notes: ND = Below minimum detectable level (MDL)

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184 | CHAIN OF CUSTODY RECORD | Sample Custodian - (617) 849-6070 | Page 1 of 1

Client: CHIEE
Project Name: [illegible]
Project/P.O. #: [illegible]
Date: [illegible]
Report To: S. Walker
Address: [illegible] St
Phone #:
Invoice To: [illegible]
Address: [illegible] MA
Date Samples Collected: 2-18-88
by: [illegible]
Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: pH	PCB	VOA (624)	TPH by TR	13 PP (Sol) **	Sulfide	CN-			# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
CHI-CW	2/18		MW-CHI 6	H_2O										6	** 13 Priority Pollutant [illegible]	[illegible]
															[illegible]	
															[illegible]	
															[illegible]	

VOA Vial			✓						
Glass Bottle									
Plastic Bot.	✓				✓	✓	✓		
Pres.									
Volume									

Relinquished by: [illegible]
Date: 2/18/88 Time: [illegible]
Received by: [illegible]
Date: [illegible] Time: [illegible]
Relinquished by:
Date: Time:
Received by:
Date: Time:

Preservation Key: A - Acidified with ____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

[illegible] report [illegible]
S Walker ASAP
[illegible]

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by: Surcharge:

Location of samples: GW - MW6 (CHI-6)
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: [illegible]

0089-0557

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL/WATER SAMP.
P.O. #: E-1656

Date Received: 02/03/89
CHAS Lab #: 8902056

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard M. Ravenelle 3/6/89
Richard M. Ravenelle
Assistant Laboratory Manager

0089-0558

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp .
Sample I.D.: W-89-S1 #6
Sample Type: Water

CHAS Lab #: 8902056-06A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.005	ND
Chloromethane	0.010	ND	trans-1,3-Dichloropropene	0.005	ND
Bromomethane	0.010	ND	2-Chloroethylvinyl Ether	0.010	ND
Vinyl Chloride	0.010	ND	Bromoform	0.005	ND
Chloroethane	0.010	ND	1,1,2,2-Tetrachloroethane	0.005	ND
Methylene Chloride	0.005	ND	Tetrachloroethene	0.005	ND
Trichlorofluoromethane	0.005	ND	Toluene ----------	0.005	-- TR
1,1-Dichloroethene	0.005	ND	Chlorobenzene	0.005	ND
1,1-Dichloroethane	0.005	ND	Ethylbenzene	0.005	ND
trans-1,2-Dichloroethene-	0.005	-- 0.020			
Chloroform	0.005	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.005	ND	Acetone	0.020	ND
1,1,1-Trichloroethane	0.005	ND	Carbon Disulfide	0.010	ND
Carbon Tetrachloride	0.005	ND	2-Butanone	0.020	ND
Bromodichloromethane	0.005	ND	Vinyl Acetate	0.010	ND
1,2-Dichloropropane	0.005	ND	4-Methyl-2-Pentanone	0.005	ND
cis-1,3-Dichloropropene	0.005	ND	2-Hexanone	0.005	ND
Trichloroethene	0.005	ND	Styrene	0.005	ND
Benzene	0.005	ND	Total Xylenes	0.005	ND
Dibromochloromethane	0.005	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.005	ND
			Methyl-t-Butylether (MTBE)	0.010	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 100%
Toluene-D8: 100%
p-BFB: 100%

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S1 #6
Sample Type: Water

CHAS Lab #: 8902056-06C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	67	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	56	mg/l	02/16/89	503E/503B(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S1 #6
Sample Type: Water

CHAS Lab #: 8902056-06G
Date Received: 02/03/89

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 625 (ref. f)
Extraction Date: 02/09/89
Analysis Date: 02/20/89

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	0.010	ND
1,3-Dichlorobenzene	0.010	ND
1,4-Dichlorobenzene	0.010	ND
1,2-Dichlorobenzene	0.010	ND
bis(2-Chloroisopropyl)Ether	0.010	ND
N-Nitroso-Di-n-Propylamine	0.010	ND
Hexachloroethane	0.010	ND
Nitrobenzene	0.010	ND
Isophorone	0.010	ND
bis(2-Chloroethoxy)Methane	0.010	ND
1,2,4-Trichlorobenzene	0.010	ND
Naphthalene	0.010	ND
4-Chloroaniline	0.010	ND
Hexachlorobutadiene	0.010	ND
2-Methylnaphthalene	0.010	ND
Hexachlorocyclopentadiene	0.010	ND
2-Chloronaphthalene	0.010	ND
2-Nitroaniline	0.050	ND
Dimethylphthalate	0.010	ND
Acenaphthylene	0.010	ND
3-Nitroaniline	0.050	ND
Acenaphthene	0.010	ND
Dibenzofuran	0.010	ND
2,4-Dinitrotoluene	0.010	ND
2,6-Dinitrotoluene	0.010	ND
Diethylphthalate	0.010	ND
4-Chlorophenyl-phenylether	0.010	ND
Fluorene	0.010	ND
4-Nitroaniline	0.050	ND
N-Nitrosodiphenylamine	0.010	ND
4-Bromophenyl-phenylether	0.010	ND
Hexachlorobenzene	0.010	ND
Phenanthrene	0.010	ND
Anthracene	0.010	ND

Base/Neutral Compounds	MDL*	Conc.*
Di-n-Butylphthalate	0.010	ND
Fluoranthene	0.010	ND
Pyrene	0.010	ND
Butylbenzylphthalate	0.010	ND
3,3'-Dichlorobenzidine	0.020	ND
Benzo(a)Anthracene	0.010	ND
bis(2-Ethylhexyl)Phthalate	0.010	ND
Chrysene	0.010	ND
Di-n-Octylphthalate	0.010	ND
Benzo(b)Fluoranthene	0.010	ND
Benzo(k)Fluoranthene	0.010	ND
Benzo(a)Pyrene	0.010	ND
Indeno(1,2,3-cd)Pyrene	0.010	ND
Dibenz(a,h)Anthracene	0.010	ND
Benzo(g,h,i)Perylene	0.010	ND

Acid Compounds	MDL*	Conc.*
Phenol	0.010	ND
2-Chlorophenol	0.010	ND
2-Methylphenol	0.010	ND
4-Methylphenol	0.010	ND
2-Nitrophenol	0.010	ND
2,4-Dimethylphenol	0.010	ND
2,4-Dichlorophenol	0.010	ND
4-Chloro-3-methylphenol	0.010	ND
2,4,6-Trichlorophenol	0.050	ND
2,4,5-Trichlorophenol	0.050	ND
2,4-Dinitrophenol	0.050	ND
4-Nitrophenol	0.050	ND
4,6-Dinitro-2-methylphenol	0.050	ND
Pentachlorophenol	0.050	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/l

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S3 #2
Sample Type: Water

CHAS Lab #: 8902056-02A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	0.010	ND
Bromomethane	0.010	ND
Vinyl Chloride	0.010	ND
Chloroethane	0.010	ND
Methylene Chloride	0.005	ND
Trichlorofluoromethane	0.005	ND
1,1-Dichloroethene	0.005	ND
1,1-Dichloroethane	0.005	ND
trans-1,2-Dichloroethene	0.005	ND
Chloroform	0.005	ND
1,2-Dichloroethane	0.005	ND
1,1,1-Trichloroethane	0.005	ND
Carbon Tetrachloride	0.005	ND
Bromodichloromethane	0.005	ND
1,2-Dichloropropane	0.005	ND
cis-1,3-Dichloropropene	0.005	ND
Trichloroethene	0.005	ND
Benzene	0.005	ND
Dibromochloromethane	0.005	ND
1,1,2-Trichloroethane	0.005	ND
trans-1,3-Dichloropropene	0.005	ND
2-Chloroethylvinyl Ether	0.010	ND
Bromoform	0.005	ND
1,1,2,2-Tetrachloroethane	0.005	ND
Tetrachloroethene	0.005	ND
Toluene	0.005	ND
Chlorobenzene	0.005	ND
Ethylbenzene	0.005	ND
Hazardous Substance List Compounds:		
Acetone	0.020	ND
Carbon Disulfide	0.010	ND
2-Butanone	0.020	ND
Vinyl Acetate	0.010	ND
4-Methyl-2-Pentanone	0.005	ND
2-Hexanone	0.005	ND
Styrene	0.005	ND
Total Xylenes	0.005	ND
Additional Compounds:		
Dibromoethane (EDB)	0.005	ND
Methyl-t-Butylether(MTBE)	0.010	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 99%
Toluene-D8: 97%
p-BFB: 101%

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S3 #2
Sample Type: Water

CHAS Lab #: 8902056-02C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	ND	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	ND	mg/l	02/16/89	503E/503B(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S4 #3
Sample Type: Water

CHAS Lab #: 8902056-03A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.005	ND
Chloromethane	0.010	ND	trans-1,3-Dichloropropene	0.005	ND
Bromomethane	0.010	ND	2-Chloroethylvinyl Ether	0.010	ND
Vinyl Chloride	0.010	ND	Bromoform	0.005	ND
Chloroethane	0.010	ND	1,1,2,2-Tetrachloroethane	0.005	ND
Methylene Chloride	0.005	ND	Tetrachloroethene	0.005	ND
Trichlorofluoromethane	0.005	ND	Toluene	0.005	ND
1,1-Dichloroethene	0.005	ND	Chlorobenzene	0.005	ND
1,1-Dichloroethane	0.005	ND	Ethylbenzene	0.005	ND
trans-1,2-Dichloroethene	0.005	ND			
Chloroform	0.005	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.005	ND	Acetone	0.020	ND
1,1,1-Trichloroethane	0.005	ND	Carbon Disulfide	0.010	ND
Carbon Tetrachloride	0.005	ND	2-Butanone	0.020	ND
Bromodichloromethane	0.005	ND	Vinyl Acetate	0.010	ND
1,2-Dichloropropane	0.005	ND	4-Methyl-2-Pentanone	0.005	ND
cis-1,3-Dichloropropene	0.005	ND	2-Hexanone	0.005	ND
Trichloroethene	0.005	ND	Styrene	0.005	ND
Benzene	0.005	ND	Total Xylenes	0.005	ND
Dibromochloromethane	0.005	ND			
			Additional Compounds:		
Dibromoethane (EDB)	0.005	ND			
			Methyl-t-Butylether (MTBE)	0.010	ND

Notes: ND - Below minimum detectable level (MDL)
* - mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 99%
Toluene-D8: 98%
p-BFB: 102%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S4 #3
Sample Type: Water

CHAS Lab #: 8902056-03C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	2.3	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	1.3	mg/l	02/16/89	503E/503B(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S14 #5
Sample Type: Water

CHAS Lab #: 8902056-05A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.005	ND
Chloromethane	0.010	ND	trans-1,3-Dichloropropene	0.005	ND
Bromomethane	0.010	ND	2-Chloroethylvinyl Ether	0.010	ND
Vinyl Chloride	0.010	ND	Bromoform	0.005	ND
Chloroethane	0.010	ND	1,1,2,2-Tetrachloroethane	0.005	ND
Methylene Chloride	0.005	ND	Tetrachloroethene	0.005	ND
Trichlorofluoromethane	0.005	ND	Toluene	0.005	ND
1,1-Dichloroethene	0.005	ND	Chlorobenzene	0.005	ND
1,1-Dichloroethane	0.005	ND	Ethylbenzene	0.005	ND
trans-1,2-Dichloroethene	0.005	-- 0.006			
Chloroform	0.005	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.005	ND	Acetone	0.020	ND
1,1,1-Trichloroethane	0.005	ND	Carbon Disulfide	0.010	ND
Carbon Tetrachloride	0.005	ND	2-Butanone	0.020	ND
Bromodichloromethane	0.005	ND	Vinyl Acetate	0.010	ND
1,2-Dichloropropane	0.005	ND	4-Methyl-2-Pentanone	0.005	ND
cis-1,3-Dichloropropene	0.005	ND	2-Hexanone	0.005	ND
Trichloroethene	0.005	ND	Styrene	0.005	ND
Benzene	0.005	ND	Total Xylenes	0.005	ND
Dibromochloromethane	0.005	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.005	ND
			Methyl-t-Butylether(MTBE)	0.010	ND

Notes

ND = Below minimum detectable level (MDL)
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 99%
Toluene-D8: 99%
p-BFB: 98%

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S14 #5
Sample Type: Water

CHAS Lab #: 8902056-05C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	2.3	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	1.7	mg/l	02/16/89	503E/503B(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S15 #8
Sample Type: Water

CHAS Lab #: 8902056-08A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.005	ND
Chloromethane	0.010	ND	trans-1,3-Dichloropropene	0.005	ND
Bromomethane	0.010	ND	2-Chloroethylvinyl Ether	0.010	ND
Vinyl Chloride	0.010	ND	Bromoform	0.005	ND
Chloroethane	0.010	ND	1,1,2,2-Tetrachloroethane	0.005	ND
Methylene Chloride	0.005	ND	Tetrachloroethene	0.005	ND
Trichlorofluoromethane	0.005	ND	Toluene	0.005	ND
1,1-Dichloroethene	0.005	ND	Chlorobenzene	0.005	ND
1,1-Dichloroethane	0.005	ND	Ethylbenzene	0.005	ND
trans-1,2-Dichloroethene	0.005	ND			
Chloroform	0.005	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.005	ND	Acetone	0.020	ND
1,1,1-Trichloroethane	0.005	ND	Carbon Disulfide	0.010	ND
Carbon Tetrachloride	0.005	ND	2-Butanone	0.020	ND
Bromodichloromethane	0.005	ND	Vinyl Acetate	0.010	ND
1,2-Dichloropropane	0.005	ND	4-Methyl-2-Pentanone	0.005	ND
cis-1,3-Dichloropropene	0.005	ND	2-Hexanone	0.005	ND
Trichloroethene	0.005	ND	Styrene	0.005	ND
Benzene	0.005	ND	Total Xylenes	0.005	ND
Dibromochloromethane	0.005	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.005	ND
			Methyl-t-Butylether(MTBE)	0.010	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 101%
Toluene-D8: 98%
p-BFB: 106%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S15 #8
Sample Type: Water

CHAS Lab #: 8902056-08C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	ND	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	ND	mg/l	02/16/89	503E/503B(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S 15 #5A
Sample Type: Water

CHAS Lab #: 8902056-09T
Date Received: 02/06/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Organic Carbon	1.0	151	mg/l	02/10/89	415.2 (a)

Notes: ND = Below minimum detectable level (MDL)

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 #1
Sample Type: Water

CHAS Lab #: 8902056-01A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	0.010	ND
Bromomethane	0.010	ND
Vinyl Chloride	0.010	ND
Chloroethane	0.010	ND
Methylene Chloride	0.005	ND
Trichlorofluoromethane	0.005	ND
1,1-Dichloroethene	0.005	ND
1,1-Dichloroethane	0.005	ND
trans-1,2-Dichloroethene	0.005	TR
Chloroform	0.005	ND
1,2-Dichloroethane	0.005	ND
1,1,1-Trichloroethane	0.005	ND
Carbon Tetrachloride	0.005	ND
Bromodichloromethane	0.005	ND
1,2-Dichloropropane	0.005	ND
cis-1,3-Dichloropropene	0.005	ND
Trichloroethene	0.005	ND
Benzene	0.005	ND
Dibromochloromethane	0.005	ND
1,1,2-Trichloroethane	0.005	ND
trans-1,3-Dichloropropene	0.005	ND
2-Chloroethylvinyl Ether	0.010	ND
Bromoform	0.005	ND
1,1,2,2-Tetrachloroethane	0.005	ND
Tetrachloroethene	0.005	0.006
Toluene	0.005	ND
Chlorobenzene	0.005	ND
Ethylbenzene	0.005	ND
Hazardous Substance List Compounds:		
Acetone	0.020	0.099
Carbon Disulfide	0.010	ND
2-Butanone	0.020	ND
Vinyl Acetate	0.010	ND
4-Methyl-2-Pentanone	0.005	ND
2-Hexanone	0.005	ND
Styrene	0.005	ND
Total Xylenes	0.005	ND
Additional Compounds:		
Dibromoethane (EDB)	0.005	ND
Methyl-t-Butylether (MTBE)	0.010	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 99%
Toluene-D8: 95%
p-BFB: 104%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 #1
Sample Type: Water

CHAS Lab #: 8902056-01C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	3.0	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	2.9	mg/l	02/16/89	503E/503B(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 #7
Sample Type: Water

CHAS Lab #: 8902056-07A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.005	ND
Chloromethane	0.010	ND	trans-1,3-Dichloropropene	0.005	ND
Bromomethane	0.010	ND	2-Chloroethylvinyl Ether	0.010	ND
Vinyl Chloride	0.010	ND	Bromoform	0.005	ND
Chloroethane	0.010	ND	1,1,2,2-Tetrachloroethane	0.005	ND
Methylene Chloride	0.005	ND	Tetrachloroethene	0.005	ND
Trichlorofluoromethane	0.005	ND	Toluene ----------	0.005	--- 0.009
1,1-Dichloroethene	0.005	ND	Chlorobenzene	0.005	ND
1,1-Dichloroethane	0.005	ND	Ethylbenzene	0.005	ND
trans-1,2-Dichloroethene-	0.005	--- 0.093			
Chloroform	0.005	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.005	ND	Acetone	0.020	ND
1,1,1-Trichloroethane	0.005	ND	Carbon Disulfide	0.010	ND
Carbon Tetrachloride	0.005	ND	2-Butanone	0.020	ND
Bromodichloromethane	0.005	ND	Vinyl Acetate	0.010	ND
1,2-Dichloropropane	0.005	ND	4-Methyl-2-Pentanone	0.005	ND
cis-1,3-Dichloropropene	0.005	ND	2-Hexanone	0.005	ND
Trichloroethene -------	0.005	--- TR	Styrene	0.005	ND
Benzene ----------	0.005	--- TR	Total Xylenes ----------	0.005	--- 0.019
Dibromochloromethane	0.005	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.005	ND
			Methyl-t-Butylether (MTBE)	0.010	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 99%
Toluene-D8: 102%
p-BFB: 103%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp. **CHAS Lab #:** 8902056-07G
Sample I.D.: W-89-S17 #7 **Date Received:** 02/03/89
Sample Type: Water

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 625 (ref. f)
Extraction Date: 02/09/89
Analysis Date: 02/20/89

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	0.010	ND	Di-n-Butylphthalate	0.010	ND
1,3-Dichlorobenzene	0.010	ND	Fluoranthene	0.010	ND
1,4-Dichlorobenzene	0.010	ND	Pyrene	0.010	ND
1,2-Dichlorobenzene	0.010	ND	Butylbenzylphthalate	0.010	ND
Nbis(2-Chloroisopropyl)Ether	0.010	ND	3,3'-Dichlorobenzidine	0.020	ND
Nitroso-Di-n-Propylamine	0.010	ND	Benzo(a)Anthracene	0.010	ND
Hexachloroethane	0.010	ND	bis(2-Ethylhexyl)Phthalate	0.010	ND
Nitrobenzene	0.010	ND	Chrysene	0.010	ND
Isophorone	0.010	ND	Di-n-Octylphthalate	0.010	ND
bis(2-Chloroethoxy)Methane	0.010	ND	Benzo(b)Fluoranthene	0.010	ND
1,2,4-Trichlorobenzene	0.010	ND	Benzo(k)Fluoranthene	0.010	ND
Naphthalene	0.010	ND	Benzo(a)Pyrene	0.010	ND
4-Chloroaniline	0.010	ND	Indeno(1,2,3-cd)Pyrene	0.010	ND
Hexachlorobutadiene	0.010	ND	Dibenz(a,h)Anthracene	0.010	ND
2-Methylnaphthalene	0.010	ND	Benzo(g,h,i)Perylene	0.010	ND
Hexachlorocyclopentadiene	0.010	ND			
2-Chloronaphthalene	0.010	ND			
2-Nitroaniline	0.050	ND	**Acid Compounds**	**MDL***	**Conc.***
Dimethylphthalate	0.010	ND			
Acenaphthylene	0.010	ND	Phenol	0.010	ND
3-Nitroaniline	0.050	ND	2-Chlorophenol	0.010	ND
Acenaphthene	0.010	ND	2-Methylphenol	0.010	ND
Dibenzofuran	0.010	ND	4-Methylphenol	0.010	ND
2,4-Dinitrotoluene	0.010	ND	2-Nitrophenol	0.010	ND
2,6-Dinitrotoluene	0.010	ND	2,4-Dimethylphenol	0.010	ND
Diethylphthalate	0.010	ND	2,4-Dichlorophenol	0.010	ND
4-Chlorophenyl-phenylether	0.010	ND	4-Chloro-3-methylphenol	0.010	ND
Fluorene	0.010	ND	2,4,6-Trichlorophenol	0.050	ND
4-Nitroaniline	0.050	ND	2,4,5-Trichlorophenol	0.050	ND
N-Nitrosodiphenylamine	0.010	ND	2,4-Dinitrophenol	0.050	ND
4-Bromophenyl-phenylether	0.010	ND	4-Nitrophenol	0.050	ND
Hexachlorobenzene	0.010	ND	4,6-Dinitro-2-methylphenol	0.050	ND
Phenanthrene	0.010	ND	Pentachlorophenol	0.050	ND
Anthracene	0.010	ND			

Notes: ND = Below minimum detectable level (MDL)
* = mg/l

CleanHarbors

Client: Clean Harbors Environmental Engineering Corp.
Sample I.D.: W-89-S18 #4
Sample Type: Water

CHAS Lab #: 8902056-04A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/08/89

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	0.010	ND
Bromomethane	0.010	ND
Vinyl Chloride	0.010	ND
Chloroethane	0.010	ND
Methylene Chloride	0.005	ND
Trichlorofluoromethane	0.005	ND
1,1-Dichloroethene	0.005	ND
1,1-Dichloroethane	0.005	ND
trans-1,2-Dichloroethene	0.005	-- 0.008
Chloroform	0.005	ND
1,2-Dichloroethane	0.005	ND
1,1,1-Trichloroethane	0.005	ND
Carbon Tetrachloride	0.005	ND
Bromodichloromethane	0.005	ND
1,2-Dichloropropane	0.005	ND
cis-1,3-Dichloropropene	0.005	ND
Trichloroethene ---------	0.005	-- TR
Benzene	0.005	ND
Dibromochloromethane	0.005	ND
1,1,2-Trichloroethane	0.005	ND
trans-1,3-Dichloropropene	0.005	ND
2-Chloroethylvinyl Ether	0.010	ND
Bromoform	0.005	ND
1,1,2,2-Tetrachloroethane	0.005	ND
Tetrachloroethene	0.005	ND
Toluene	0.005	ND
Chlorobenzene	0.005	ND
Ethylbenzene	0.005	ND
Hazardous Substance List Compounds:		
Acetone	0.020	ND
Carbon Disulfide	0.010	ND
2-Butanone	0.020	ND
Vinyl Acetate	0.010	ND
4-Methyl-2-Pentanone	0.005	ND
2-Hexanone	0.005	ND
Styrene	0.005	ND
Total Xylenes	0.005	ND
Additional Compounds:		
Dibromoethane (EDB)	0.005	ND
Methyl-t-Butylether (MTBE)	0.010	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 96%
Toluene-D8: 98%
p-BFB: 103%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18 #4
Sample Type: Water

CHAS Lab #: 8902056-04C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	48	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	40	mg/l	02/16/89	503E/503B(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: CHI6/88 #5A
Sample Type: Water

CHAS Lab #: 8902056-09A
Date Received: 02/06/89

Volatile Organic Analysis
by EPA Method 624 (ref. f)

Analysis Date: 02/09/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.05	ND
Chloromethane	0.10	ND	trans-1,3-Dichloropropene	0.05	ND
Bromomethane	0.10	ND	2-Chloroethylvinyl Ether	0.10	ND
Vinyl Chloride	0.10	ND	Bromoform	0.05	ND
Chloroethane ----------	0.10	--- 0.16	1,1,2,2-Tetrachloroethane	0.05	ND
Methylene Chloride	0.05	ND	Tetrachloroethene	0.05	ND
Trichlorofluoromethane	0.05	ND	Toluene	0.05	ND
1,1-Dichloroethene	0.05	ND	Chlorobenzene	0.05	ND
1,1-Dichloroethane -------	0.05	--- 1.7	Ethylbenzene	0.05	ND
trans-1,2-Dichloroethene	0.05	ND			
Chloroform	0.05	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.05	ND	Acetone	0.20	ND
1,1,1-Trichloroethane ----	0.05	--- 1.4	Carbon Disulfide	0.10	ND
Carbon Tetrachloride	0.05	ND	2-Butanone ----------	0.20	--- 0.85
Bromodichloromethane	0.05	ND	Vinyl Acetate	0.10	ND
1,2-Dichloropropane	0.05	ND	4-Methyl-2-Pentanone	0.05	ND
cis-1,3-Dichloropropene	0.05	ND	2-Hexanone	0.05	ND
Trichloroethene	0.05	ND	Styrene	0.05	ND
Benzene ----------	0.05	--- TR	Total Xylenes	0.05	ND
Dibromochloromethane	0.05	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.05	ND
			Methyl-t-Butylether (MTBE)	0.10	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/l

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 102%
Toluene-D8: 103%
p-BFB: 99%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: CHI 6/88 #5A
Sample Type: Water

CHAS Lab #: 8902056-09C
Date Received: 02/03/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	0.1	36	mg/l	02/16/89	503B(b)
Petroleum Hydrocarbon Oil & Grease by IR	0.1	30	mg/l	02/16/89	503E/503B(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 1 of 1

Client: [illegible] Project Name: [illegible] Project/P.O. #: [illegible] Date: [illegible]

Report To: [illegible] Address: [illegible] Phone #: [illegible]

Invoice To: [illegible] Address: [illegible]

Date Samples Collected: [illegible] by: [illegible] Date Samples Received: [illegible]

Airbill/Bill of Lading? Y N NOTE: Samples received unpreserved will be preserved upon arrival at CHAS. Samples were: Preserved Unpreserved

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: TPH	VOC	BNH	[illegible]	TOC	[illegible]				# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
[illegible]	[illegible]		[illegible]	[illegible]		X	X*								[illegible]	
[illegible]	"		[illegible]	"	X	X	X*								[illegible]	
	"		[illegible]	"	X	X*									[illegible]	
[illegible]	"		[illegible]	"		X	X*								[illegible]	
[illegible]	"		[illegible]	"	X	X	X*								[illegible]	
[illegible]	"		[illegible]	"	X	X	X	X*							[illegible]	
[illegible]			[illegible]	"	X	X	X	X*							[illegible]	
[illegible]			[illegible]	"		X	X*									
[illegible]	"		[illegible]	"	X	X			X	X						

Relinquished by: [illegible] Date: [illegible] Time: [illegible]	VOA Vial									
Received by: [illegible] Date: [illegible] Time: [illegible]	Glass Bottle									
Relinquished by: Date: Time:	Plastic Bot.									
Received by: Date: Time:	Pres.									
	Volume									

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, W - Sample Ambient, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

0089-0579

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: E1656

Date Received: 02/07/89
CHAS Lab #: 8902065

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard M. Ravenelle 2/16/89
Richard M. Ravenelle
Assistant Laboratory Manager

0089-0580

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: 5A
Sample Type: Water

CHAS Lab #: 8902065-01L
Date Received: 02/07/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Bacteria, Fecal Coliform	1	ND	org/100mls	02/07/89	909C(b)
Bacteria, Total Coliform	1	ND	org/100mls	02/07/89	909A(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184 | CHAIN OF CUSTODY RECORD | Sample Custodian - (617) 849-6070 | Page 1 of

Client: _____ Project Name: _____ Project/P.O. #: _____ Date: _____

Report To: _____ Address: _____ Phone #: _____

Invoice To: _____ Address: _____

Date Samples Collected: _____ by: _____ Date Samples Received: _____

Airbill/Bill of Lading? Y N NOTE: Samples received unpreserved will be preserved upon arrival at CHAS. Samples were: Preserved Unpreserved

Sample I.D.	Sampling Information				Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
	Date	Time	Station Location	Sample Type												
					X											

VOA Vial										
Glass Bottle										
Plastic Bot.										
Pres.										
Volume										

Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: 2/7/89 Time: _____

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, W - Sample Ambient, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

0089-0582

APPENDIX F

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: E1656

Date Received: 07/07/88
CHAS Lab #: 8807048

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: _____
Jeanne M. Engel
Laboratory Manager

0089-0584

Client: CHI Environmental Engineering
Sample I.D.: B-1 COMPOSITE
Sample Type: Soil

CHAS Lab #: 8807048-07M
Date Received: 07/07/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.088	2.85	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	4	190	mg/kg	07/14/88	3005/6010(c)
Barium - Total	4	100	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.044	ND	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.44	3.6	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	0.89	20	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.44	38	mg/kg	07/15/88	3050/6010(c)
Lead - Total	4	1,500	mg/kg	07/18/88	3050/6010(c)
Mercury - Total	0.0694	0.1042	mg/kg	07/19/88	7471(c)
Nickel - Total	0.89	17	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.132	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	0.89	ND	mg/kg	07/13/88	3050/7760(c)
Thallium - Total	10	20	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.44	89	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/18/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.2	mg/l	07/18/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/18/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.47	mg/l	07/18/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/18/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/19/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/18/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/18/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: B-1 COMPOSITE
Sample Type: Soil

CHAS Lab #: 8807048-07M
Date Received: 07/07/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	4,000	mg/kg	07/16/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	3,700	mg/kg	07/16/88	503D/503E-B(b)
Total Solids	--	83.6	%	07/11/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: B-1 COMPOSITE
Sample Type: Soil

CHAS Lab #: 8807048-07M
Date Received: 07/07/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: B-1 COMPOSITE
Sample Type: Soil

CHAS Lab #: 8807048-07M
Date Received: 07/07/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/21/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: B-1 COMPOSITE
Sample Type: Soil

CHAS Lab #: 8807048-07G
Date Received: 07/08/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/11/88
Analysis Date: 07/19/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	2,200
1,4-Dichlorobenzene	330	ND	Pyrene	330	3,700
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	1,200
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	1,300
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	1,900**
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	1,400	Benzo(a)Pyrene	330	1,100
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	2,300	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	410			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	2,000			
Anthracene	330	470			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: B-1 COMPOSITE
Sample Type: Soil

CHAS Lab #: 8807048-07AB
Date Received: 07/08/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/11/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	ND
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane	10	ND
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	TR
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	95
Chlorobenzene	10	ND
Ethylbenzene	10	29
Hazardous Substance List Compounds:		
Acetone	40	55
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	210
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	24

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

Unidentified compounds present in sample

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 105%
D-8 Toluene: 94%
p-BFB: 111%

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: E1656

Date Received: 07/08/88
CHAS Lab #: 8807058

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: _____ 7/28/88

Alex W. Schultheis
Laboratory Director

0089-0591

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite A
Sample Type: Soil

B-2 (0-3)

CHAS Lab #: 8807058-11
Date Received: 07/08/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/11/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 96%
D-8 Toluene: 100%
p-BFB: 95%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite B
Sample Type: Soil

B-2 (9-16)

CHAS Lab #: 8807058-12
Date Received: 07/08/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/11/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 91%
D-8 Toluene: 99%
p-BFB: 96%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite C B-3 (0 -13)
Sample Type: Soil

CHAS Lab #: 8807058-13
Date Received: 07/08/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/11/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	40			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	13
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 94%
D-8 Toluene: 100%
p-BFB: 96%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite A
Sample Type: Soil

B-2 (0-3)

CHAS Lab #: 8807058-11M
Date Received: 07/08/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/11/88
Analysis Date: 07/16/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330 --	2,500
Anthracene	330	ND

Base/Neutral Compounds	MDL*	Conc.*
Di-n-Butylphthalate	330	ND
Fluoranthene	330 --	3,300
Pyrene	330 --	3,500
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330 --	1,500
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330 --	1,600
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330 --	2,400**
Benzo(k)Fluoranthene	330 --	**
Benzo(a)Pyrene	330 --	1,200
Indeno(1,2,3-cd)Pyrene	330 --	520
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330 --	520

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite B
Sample Type: Soil

B-2 (8-16)

CHAS Lab #: 8807058-12M
Date Received: 07/08/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/11/88
Analysis Date: 07/16/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	ND			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite C B-3 (0-12')
Sample Type: Soil

CHAS Lab #: 8807058-13M
Date Received: 07/08/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/11/88
Analysis Date: 07/16/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	1,700
1,4-Dichlorobenzene	330	ND	Pyrene	330	2,000
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	670
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	770
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	1,000**
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	ND	Benzo(a)Pyrene	330	640
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	700			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A
Sample Type: Soil

CHAS Lab #: 8807058-11M
Date Received: 07/08/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/13/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B
Sample Type: Soil

B-2 (3-16)

CHAS Lab #: 8807058-12M
Date Received: 07/08/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/13/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C
Sample Type: Soil

B-3 (0-13)

CHAS Lab #: 8807058-13M
Date Received: 07/08/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/13/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	
PCB - Aroclor 1221	0.1	ND	
PCB - Aroclor 1232	0.1	ND	
PCB - Aroclor 1242	0.1	0.2	
PCB - Aroclor 1248	0.1	ND	
PCB - Aroclor 1254	0.1	ND	
PCB - Aroclor 1260	0.1	ND	

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A
Sample Type: Soil

B-2 (0-8)

CHAS Lab #: 8807058-11M
Date Received: 07/08/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/13/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B
Sample Type: Soil

B-2(9-16)

CHAS Lab #: 8807058-12M
Date Received: 07/08/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/13/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C
Sample Type: Soil

B-3 (0-13)

CHAS Lab #: 8807058-13M
Date Received: 07/08/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/11/88
Analysis Date: 07/13/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A B-2 (0-9)
Sample Type: Soil

CHAS Lab #: 8807058-11M
Date Received: 07/08/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.109	4.91	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	6	ND	mg/kg	07/14/88	3005/6010(c)
Barium - Total	6	60	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.060	ND	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.60	3.6	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	1.2	23	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.60	26	mg/kg	07/15/88	3050/6010(c)
Lead - Total	6	120	mg/kg	07/15/88	3050/6010(c)
Mercury - Total	0.0706	0.0949	mg/kg	07/19/88	7471(c)
Nickel - Total	1.2	19	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.164	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	1.1	ND	mg/kg	07/13/88	3050/7760(c)
Thallium - Total	20	20	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.60	58	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.2	mg/l	07/19/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/19/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.43	mg/l	07/19/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/19/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/19/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/20/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B B-2 (8-16)
Sample Type: Soil

CHAS Lab #: 8807058-12M
Date Received: 07/08/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.094	2.11	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	4	ND	mg/kg	07/14/88	3005/6010(c)
Barium - Total	4	40	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.043	ND	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.43	2.6	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	0.87	15	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.43	27	mg/kg	07/15/88	3050/6010(c)
Lead - Total	4	10	mg/kg	07/15/88	3050/6010(c)
Mercury - Total	0.0665	ND	mg/kg	07/19/88	7471(c)
Nickel - Total	0.87	12	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.141	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	0.92	ND	mg/kg	07/13/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.43	36	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.1	mg/l	07/19/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/19/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.20	mg/l	07/19/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/19/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/19/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/20/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C B-3 (0-13)
Sample Type: Soil

CHAS Lab #: 8807058-1
Date Received: 07/08/

Parameter	MDL	Result	Units	Analysis Date	Method Numb and Referen
Arsenic - Total	0.103	3.61	mg/kg	07/18/88	3050/7060(
Antimony - Total	5	ND	mg/kg	07/19/88	3005/6010(
Barium - Total	5	100	mg/kg	07/15/88	3050/6010(
Beryllium - Total	0.050	ND	mg/kg	07/15/88	3050/6010(
Cadmium - Total	0.50	3.0	mg/kg	07/15/88	3050/6010(
Chromium - Total	1.0	17	mg/kg	07/15/88	3050/6010(
Copper - Total	0.50	33	mg/kg	07/15/88	3050/6010(
Lead - Total	5	340	mg/kg	07/15/88	3050/6010(
Mercury - Total	0.0720	0.2538	mg/kg	07/19/88	7471
Nickel - Total	1.0	15	mg/kg	07/15/88	3050/6010
Selenium - Total	0.155	ND	mg/kg	07/15/88	3050/7740
Silver - Total	0.93	ND	mg/kg	07/18/88	3050/7760
Thallium - Total	10	10	mg/kg	07/15/88	3050/6010
Zinc - Total	0.50	66	mg/kg	07/15/88	3050/6010
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010
Barium - EP Toxicity (1)	0.1	0.8	mg/l	07/19/88	3010/6010
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/19/88	3010/6010
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/19/88	3010/6010
Lead - EP Toxicity (1)	0.1	0.1	mg/l	07/19/88	3010/6010
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/19/88	7470
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/20/88	3010/7760

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A
Sample Type: Soil

B-2 (0-8)

CHAS Lab #: 8807058-11M
Date Received: 07/08/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	280	mg/kg	07/20/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	230	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	86.9	%	07/11/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B B-2(3-10)
Sample Type: Soil

CHAS Lab #: 8807058-12M
Date Received: 07/08/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	900	mg/kg	07/20/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	870	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	88.7	%	07/11/88	209F(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C
Sample Type: Soil

B-7 (0-13)

CHAS Lab #: 8807058-13M
Date Received: 07/08/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	6,100	mg/kg	07/20/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	5,700	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	88.6	%	07/11/88	209F(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 1 of

Client: CLEAN HARBORS OF BRAINTREE Project Name: MURPHY'S WASTE OIL Project/P.O. #: E-11656 Date: 7-8-88

Report To: JOANNE DRISCOLL Address: 365 WOOD ROAD BRAINTREE Phone #: 617-849-1200

Invoice To: CHIEF Address: SAME

Date Samples Collected: JULY 8, 1988 by: Jill McGillivray Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis	# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
1B2	7-8	[illegible]	[illegible] 2	Soil		1	0'-2'	
2B2	[illegible]	[illegible]	↓	↓		1	2'-4'	
3B2	[illegible]	[illegible]	↓	↓		1	6'-8'	
4B2	[illegible]	[illegible]	↓	↓		1	8'-10'	
5B2	[illegible]	[illegible]	↓	↓		1	14'-15'	
6B2	[illegible]	[illegible]	↓	↓		1	15'-16'	
[illegible]	[illegible]	[illegible]	[illegible]	Soil		1	0'-2'	
[illegible]	[illegible]	↓	↓	↓		1	4'-6'	
[illegible]	[illegible]	↓	↓	↓		1	8'	
4B3	[illegible]	↓	↓	↓		1	11'-13'	

Relinquished by: [illegible]
Date: 7-8-88 Time: [illegible]

Received by: [illegible]
Date: 7-8-88 Time: [illegible]

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial									
Glass Bottle	X								
Plastic Bot.									
Pres.	C								
Volume									

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by: Surcharge:

Location of samples:
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other:

0089-0610

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: E1656

Date Received: 07/12/88
CHAS Lab #: 8807080

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: A.W. Schultheis 5/5/88

Alex W. Schultheis
Laboratory Director

0089-0611

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite A S-1, C-10'
Sample Type: Soil

CHAS Lab #: 8807080-14G
Date Received: 07/12/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/26/88
Analysis Date: 08/01/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	ND
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	ND
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	360
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	590
Pyrene	330	940
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	940
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330	520
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	920**
Benzo(k)Fluoranthene	330	**
Benzo(a)Pyrene	330	480
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	380

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite B B-5, 0-7'
Sample Type: Soil

CHAS Lab #: 8807080-15G
Date Received: 07/12/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/26/88
Analysis Date: 08/02/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	10,000
1,4-Dichlorobenzene	330	ND	Pyrene	330	7,100
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	5,200
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	4,900
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	5,900**
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	ND	Benzo(a)Pyrene	330	3,700
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	3,000
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	1,800
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	3,100
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	380			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	600			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	5,700			
Anthracene	330	1,600			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite C 8-5, 7-10'
Sample Type: Soil

CHAS Lab #: 8807080-16G
Date Received: 07/12/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/26/88
Analysis Date: 08/02/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND
1,3-Dichlorobenzene	330	ND
1,4-Dichlorobenzene	330	ND
1,2-Dichlorobenzene	330	ND
bis(2-Chloroisopropyl)Ether	330	ND
N-Nitroso-Di-n-Propylamine	330	ND
Hexachloroethane	330	ND
Nitrobenzene	330	ND
Isophorone	330	ND
bis(2-Chloroethoxy)Methane	330	ND
1,2,4-Trichlorobenzene	330	ND
Naphthalene	330	800
4-Chloroaniline	330	ND
Hexachlorobutadiene	330	ND
2-Methylnaphthalene	330	760
Hexachlorocyclopentadiene	330	ND
2-Chloronaphthalene	330	ND
2-Nitroaniline	1600	ND
Dimethylphthalate	330	ND
Acenaphthylene	330	ND
3-Nitroaniline	1600	ND
Acenaphthene	330	ND
Dibenzofuran	330	ND
2,4-Dinitrotoluene	330	ND
2,6-Dinitrotoluene	330	ND
Diethylphthalate	330	ND
4-Chlorophenyl-phenylether	330	ND
Fluorene	330	ND
4-Nitroaniline	1600	ND
N-Nitrosodiphenylamine	330	ND
4-Bromophenyl-phenylether	330	ND
Hexachlorobenzene	330	ND
Phenanthrene	330	ND
Anthracene	330	ND
Di-n-Butylphthalate	330	ND
Fluoranthene	330	2,000
Pyrene	330	1,700
Butylbenzylphthalate	330	ND
3,3'-Dichlorobenzidine	660	ND
Benzo(a)Anthracene	330	600
bis(2-Ethylhexyl)Phthalate	330	ND
Chrysene	330	660
Di-n-Octylphthalate	330	ND
Benzo(b)Fluoranthene	330	ND
Benzo(k)Fluoranthene	330	ND
Benzo(a)Pyrene	330	ND
Indeno(1,2,3-cd)Pyrene	330	ND
Dibenz(a,h)Anthracene	330	ND
Benzo(g,h,i)Perylene	330	ND

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight ass received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite D B-5, B-7
Sample Type: Soil

CHAS Lab #: 8807080-17G
Date Received: 07/12/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/26/88
Analysis Date: 08/01/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	ND			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite A B-4, 0-10'
Sample Type: Soil Sample

CHAS Lab #: 8807080-14A
Date Received: 07/12/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/13/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 96%
D-8 Toluene: 102%
p-BFB: 96%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite B B-5, 0-7'
Sample Type: Soil Sample

CHAS Lab #: 8807080-15A
Date Received: 07/12/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/13/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 98%
D-8 Toluene: 97%
p-BFB: 101%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite C B-5, 7-10'
Sample Type: Soil Sample

CHAS Lab #: 8807080-16A
Date Received: 07/12/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/13/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	120
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane	10	ND
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	TR
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	32
Chlorobenzene	10	ND
Ethylbenzene	10	TR
Hazardous Substance List Compounds:		
Acetone	40	140
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	58
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

Hydrocarbon background present (indicative of petroleum products).
Est. concentration of unidentified compounds with RT < benzene: ND *
Est. concentration of unidentified compounds with RT > benzene: 200 *

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 96%
D-8 Toluene: 98%
p-BFB: 95%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite D B-5, 13-15'
Sample Type: Soil Sample

CHAS Lab #: 8807080-17A
Date Received: 07/12/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/13/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes----------	10----	TR
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND - Below minimum detectable level (MDL)
TR - Trace amount present but below MDL
* - ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 98%
D-8 Toluene: 105%
p-BFB: 85%

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A 8-4, 0-10'
Sample Type: Soil

CHAS Lab #: 8807080-14M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	190	mg/kg	07/19/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	150	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	88.1	%	07/15/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B B-5, 0-4
Sample Type: Soil

CHAS Lab #: 8807080-15M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	710	mg/kg	07/19/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	570	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	88.4	%	07/15/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C B-5, 7-10'
Sample Type: Soil

CHAS Lab #: 8807080-16M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	180	mg/kg	07/19/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	160	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	86.1	%	07/15/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE D B-5, 13-15'
Sample Type: Soil

CHAS Lab #: 8807080-17M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	400	mg/kg	07/20/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	400	mg/kg	07/20/88	503D/503E-B(b)
Total Solids	--	87.9	%	07/15/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A B-4, 0-10'
Sample Type: Soil

CHAS Lab #: 8807080-14M
Date Received: 07/12/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B 8-5, 0-7'
Sample Type: Soil

CHAS Lab #: 8807080-15M
Date Received: 07/12/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C B-5, 7-10'
Sample Type: Soil

CHAS Lab #: 8807080-16M
Date Received: 07/12/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND - Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE D B-5, 13-15'
Sample Type: Soil

CHAS Lab #: 8807080-17M
Date Received: 07/12/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/21/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A B-4, 0-10'
Sample Type: Soil

CHAS Lab #: 8807080-14M
Date Received: 07/12/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/21/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B 6-5, 0-7'
Sample Type: Soil

CHAS Lab #: 8807080-15M
Date Received: 07/12/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/21/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C 8-S, 7-10'
Sample Type: Soil

CHAS Lab #: 8807080-16M
Date Received: 07/12/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/21/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE D B-5, 13-15'
Sample Type: Soil

CHAS Lab #: 8807080-17M
Date Received: 07/12/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/15/88
Analysis Date: 07/21/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE A 8-4, 0-10'
Sample Type: Soil

CHAS Lab #: 8807080-14M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.103	4.65	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/19/88	3005/6010(c)
Barium - Total	5	50	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.049	ND	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.49	2.5	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	0.98	18	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.49	32	mg/kg	07/15/88	3050/6010(c)
Lead - Total	5	130	mg/kg	07/15/88	3050/6010(c)
Mercury - Total	0.0701	0.4408	mg/kg	07/22/88	7471(c)
Nickel - Total	0.98	15	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.155	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	1.1	ND	mg/kg	07/18/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.49	80	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.3	mg/l	07/19/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/19/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/19/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/19/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/22/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/20/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE B 8-10->'
Sample Type: Soil

CHAS Lab #: 8807080-15M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.091	7.28	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/19/88	3005/6010(c)
Barium - Total	4	80	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.044	0.175	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.44	3.5	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	0.88	21	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.44	27	mg/kg	07/15/88	3050/6010(c)
Lead - Total	4	60	mg/kg	07/15/88	3050/6010(c)
Mercury - Total	0.0661	0.0992	mg/kg	07/22/88	7471(c)
Nickel - Total	0.88	18	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.137	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	0.87	ND	mg/kg	07/18/88	3050/7760(c)
Thallium - Total	10	20	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.44	71	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.2	mg/l	07/19/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/19/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.19	mg/l	07/19/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/19/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/22/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/20/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE C B-5, 7-10'
Sample Type: Soil

CHAS Lab #: 8807080-16M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.092	2.76	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/19/88	3005/6010(c)
Barium - Total	5	110	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.053	ND	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.53	2.7	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	1.1	29	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.53	19	mg/kg	07/15/88	3050/6010(c)
Lead - Total	5	260	mg/kg	07/15/88	3050/6010(c)
Mercury - Total	0.0702	ND	mg/kg	07/22/88	7471(c)
Nickel - Total	1.1	14	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.138	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	0.84	ND	mg/kg	07/18/88	3050/7760(c)
Thallium - Total	20	ND	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.53	53	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.3	mg/l	07/19/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/19/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.24	mg/l	07/19/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/19/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/22/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/19/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/20/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE D 8-5, 13-15'
Sample Type: Soil

CHAS Lab #: 8807080-17M
Date Received: 07/12/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.093	1.39	mg/kg	07/18/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/19/88	3005/6010(c)
Barium - Total	4	70	mg/kg	07/15/88	3050/6010(c)
Beryllium - Total	0.041	ND	mg/kg	07/15/88	3050/6010(c)
Cadmium - Total	0.41	3.3	mg/kg	07/15/88	3050/6010(c)
Chromium - Total	0.83	21	mg/kg	07/15/88	3050/6010(c)
Copper - Total	0.41	43	mg/kg	07/15/88	3050/6010(c)
Lead - Total	4	40	mg/kg	07/15/88	3050/6010(c)
Mercury - Total	0.0664	ND	mg/kg	07/22/88	7471(c)
Nickel - Total	0.83	17	mg/kg	07/15/88	3050/6010(c)
Selenium - Total	0.139	ND	mg/kg	07/15/88	3050/7740(c)
Silver - Total	0.74	ND	mg/kg	07/18/88	3050/7760(c)
Thallium - Total	10	20	mg/kg	07/15/88	3050/6010(c)
Zinc - Total	0.41	52	mg/kg	07/15/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/21/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/21/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/21/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.02	mg/l	07/21/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/21/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/22/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/21/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/21/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page 1 of 2

Client: [illegible] Project Name: [illegible] Project/P.O. #: E-1656 Date: 7-11-88

Report To: [illegible] Address: 36 [illegible] Braintree MA Phone #: 617-849-1200

Invoice To: [illegible] Address: [illegible]

Date Samples Collected: [illegible] by: [illegible] Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
1B4	7-11	AM	[illegible] 4	[illegible]										1	0-2'	
2B4	7-11	AM	↓	↓										1	2'-4'	
3B4	7-11	AM	↓	↓										1	4'-6'	
4B4	7-11	AM	↓	↓										1	6'-8'	
5B4	7-11	AM	↓	↓										1	8'-10'	
1B5		AM	[illegible] 5	[illegible]										1	0'-2'	
2B5		AM	↓	↓										1	2'-4'	
3B5		AM	↓	↓										1	4'-6'	
4B5		AM	↓	↓										1	6'-7' NO ODOR	
5B5		AM	↓	↓										1	7'-8' ODOR	
6B5		AM	↓	↓										1	8'-10' PRODUCT	

Relinquished by: Robert [illegible]
Date: 7-11-88 Time: [illegible]

Received by: [illegible]
Date: Time:

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial									
Glass Bottle	✓								
Plastic Bot.									
Pres.	C								
Volume									

Preservation Key: A - Acidified with ____
B - Filtered, C - Sample chilled, D - NaOH,
E - Nathiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: ____
Confirmed by: ____ Surcharge: ____

Location of samples: ____
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: ____

0089-0636

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184	CHAIN OF CUSTODY RECORD	Sample Custodian - (617) 849-6070	Page of

Client: [illegible] Project Name: [illegible] Project/P.O. #: E-16[illegible] Date: 7-11-88

Report To: [illegible] Address: [illegible] Braintree MA [illegible] Phone #: 617 849 1200

Invoice To: [illegible] Address: [illegible]

Date Samples Collected: 7-11-88 by: [illegible] Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis									# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
[illegible]	7-11	[illegible]	[illegible]	[illegible]										1	13'-14.5'	
[illegible]	7-11	[illegible]		[illegible]										1	14.5'-15'	

Relinquished by: [illegible]
Date: 7-11-88 Time: [illegible]

Received by: [illegible]
Date: 7-11-88 Time: [illegible]

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial									
Glass Bottle	✓								
Plastic Bot.									
Pres.	(								
Volume									

Preservation Key: A - Acidified with
B - Filtered, (D - Sample chilled D - NaOH,
E - Nathiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by: Surcharge:

Location of samples:
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other:

0089-0637

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: 001-MW

Date Received: 07/15/88
CHAS Lab #: 8807114

Attn: Mr. David Newton

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: A.W. Schultheis 8/22/88
Alex W. Schultheis
Laboratory Director

0089-0638

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-6 (7-11)

CHAS Lab #: 8807114-05A
Date Received: 07/15/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/18/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	290
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane	10	ND
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	13
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	90
Chlorobenzene	10	ND
Ethylbenzene	10	36
Hazardous Substance List Compounds:		
Acetone	40	93
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	230
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

Hydrocarbon background present (indicative of petroleum products).
Est. concentration of unidentified compounds with RT < benzene: ND *
Est. concentration of unidentified compounds with RT > benzene: 3,300*
(calculated as n-hexane)
Total dichlorobenzenes approximate concentration 33 ug/kg

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 105%
D-8 Toluene: 92%
p-BFB: 110%

Harbors

CHI Environmental Engineering, Inc.
.D.: COMPOSITE 2
ype: Soil

B-6 (14-20)

CHAS Lab #: 8807114-06A
Date Received: 07/15/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/18/88

eter	MDL*	Conc.*	Parameter	MDL*	Conc.*
.ty Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
romethane	20	ND	trans-1,3-Dichloropropene	10	ND
omethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Chloride	20	ND	Bromoform	10	ND
oethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
ıylene Chloride	10	ND	Tetrachloroethene	10	ND
ılorofluoromethane	10	ND	Toluene	10	ND
)ichloroethene	10	ND	Chlorobenzene	10	ND
-Dichloroethane	10	ND	Ethylbenzene	10	ND
ns-1,2-Dichloroethene	10	ND			
roform	10	ND	Hazardous Substance List Compounds:		
2-Dichloroethane	10	ND	Acetone	40	ND
1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
bon Tetrachloride	10	ND	2-Butanone	40	ND
modichloromethane	10	ND	Vinyl Acetate	20	ND
,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
s-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
ichloroethene	10	ND	Styrene	10	ND
enzene	10	ND	Total Xylenes	10	ND
ibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 97%
D-8 Toluene: 97%
p-BFB: 97%

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-6 (14-20)

CHAS Lab #: 8807114-06M
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/05/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	ND			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-6 (7-11)

CHAS Lab #: 8807114-05M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	72,000	mg/kg	07/22/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	72,000	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	2.4	49	mg/kg	07/18/88	9030(c)
Total Solids	--	77.1	%	07/18/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

0089-0642

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-6 (14-20)

CHAS Lab #: 8807114-06M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	64	mg/kg	07/22/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	56	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.9	15	mg/kg	07/18/88	9030(c)
Total Solids	--	88.3	%	07/18/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-6 (7-11)

CHAS Lab #: 8807114-05M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.083	2.28	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	4	4	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	980	mg/kg	07/25/88	3050/6010(c)
Beryllium - Total	0.040	0.080	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.40	4.8	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.80	18	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.40	37	mg/kg	07/22/88	3050/6010(c)
Lead - Total	4	6,500	mg/kg	07/25/88	3050/6010(c)
Mercury - Total	0.0722	0.1031	mg/kg	07/27/88	7471(c)
Nickel - Total	0.80	12	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.124	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.95	ND	mg/kg	07/21/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.40	210	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/21/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	1	mg/l	07/21/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/21/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/21/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	1	mg/l	07/21/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/26/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/21/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/21/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-6 (14-20)

CHAS Lab #: 8807114-06M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.083	1.25	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	4	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	30	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.043	0.043	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.43	1.7	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.85	8.1	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.43	14	mg/kg	07/22/88	3050/6010(c)
Lead - Total	4	7	mg/kg	07/22/88	3050/6010(c)
Mercury - Total	0.0664	ND	mg/kg	07/27/88	7471(c)
Nickel - Total	0.85	8.1	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.125	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.95	ND	mg/kg	07/21/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.43	22	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/21/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/21/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/21/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/21/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/21/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/26/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/21/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/21/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-6 (7-11)

CHAS Lab #: 8807114-05M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/20/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-6 (10-20)

CHAS Lab #: 8807114-06M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/20/88
Analysis Date: 08/01/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-6 (7-11)

CHAS Lab #: 8807114-05M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/20/88
Analysis Date: 07/27/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	10	ND	mg/kg
PCB - Aroclor 1221	10	ND	mg/kg
PCB - Aroclor 1232	10	ND	mg/kg
PCB - Aroclor 1242	10	ND	mg/kg
PCB - Aroclor 1248	10	ND	mg/kg
PCB - Aroclor 1254	10	ND	mg/kg
PCB - Aroclor 1260	10	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-6 (14-20)

CHAS Lab #: 8807114-06M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/20/88
Analysis Date: 07/26/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Method References

(a) "Methods for Chemical Analysis of Water and Wastes," Publication EPA-600/4-79-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, 1979, revised March 1983.

(b) "Standard Methods for the Examination of Water and Wastewater," 16th ed., American Public Health Association, American Water Works Association, Water Pollution Control Federation, Washington, D.C., 1985.

(c) "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," 2nd ed., U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., July 1982.

(d) "The Determination of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils," Publication EPA-600/4-81-045, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, 1981.

(e) "EPA-CLP Organic Analyses of Low and Medium Hazardous Waste Sample (Water and Soil) Procedures Revision," U.S. Environmental Protection Agency, July 1985.

(f) "Test Procedures for Analyses of Organic Pollutants," Code of Federal Regulations, Appendix A, Part 136, July 1, 1985.

(g) "Measurement of Purgeable Organic Compounds in Drinking Water by Gas Chromatography/Mass Spectrometry," Method 524, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(h) "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," Publication EPA-600/4-80-032, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, August 1980.

(i) "Clean Harbors Radiological Environmental Analytical Procedures," Clean Harbors Analytical Services, Braintree, MA, October 1985.

(j) "Methods for Chlorinated Phenoxy Acid Herbicides in Industrial Effluents," MDQARL, Cincinnati, November 23, 1973.

(k) "Annual Book of Standards," Section 11: Water and Environmental Technology, Vols. 11.01-11.04, American Society for Testing and Materials, Philadelphia, 1983, 1984, 1985.

(l) "Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater," U.S. Environmental Protection Agency, September 1978.

(m) "Methods for Organochlorine Pesticides in Industrial Effluents," MDQARL, Environmental Protection Agency, Cincinnati, November 28, 1973.

(n) "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," Techniques of Water-Resources Investigation of the U.S. Geological Survey, Book 5, Chapter A-1, U.S. Department of the Interior, 1979.

(o) "Measurement of Trihalomethanes in Drinking Water by Gas Chromatography/Mass Spectrometry and Selected Ion Monitoring," Method 501.3, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(p) "The Analysis of Trihalomethanes in Finished Waters by the Purge and Trap Method," U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(q) "The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction," U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(r) "Official Methods of Analysis," Association of Official Analytical Chemists, 14th ed., 1984.

(s) "Hach Handbook of Water Analysis," Hach Chemical Company, Loveland, CO, 1979.

(t) H.M. Prichard and T.F. Gesell, "Rapid Measurement of Rn-222 Concentrations in Water with a Commercial Liquid Scintillation Counter," Health Physics, Vol. 33, 1977, pp. 577-581.

(u) "Petroleum Products and Lubricants (I): D56-D1660," Annual Book of ASTM Standards, Volume 5.01, American Society for Testing and Materials, Philadelphia, 1985.

(v) "Petroleum Products and Lubricants (III): D2981-Latest; Catalysts," Annual Book of ASTM Standards, Volume 5.03, American Society for Testing and Materials, Philadelphia, 1985.

0089-0650

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHYS WASTE OIL
P.O. #: 001-MW

Date Received: 07/15/88
CHAS Lab #: 8807133

Attn: Mr. David Newton

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: A W Schultheis 8/22/88

Alex W. Schultheis
Laboratory Director

0089-0651

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: COMPOSITE 1 B-7, 4-10'
Sample Type: Soil

CHAS Lab #: 8807133-14A
Date Received: 07/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/25/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	35
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	TR			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	110
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	TR	Styrene	10	ND
Benzene	10	31	Total Xylenes	10	16
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 91%
D-8 Toluene: 99%
p-BFB: 100%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: COMPOSITE 2 B-7, 12-17'
Sample Type: Soil

CHAS Lab #: 8807133-15A
Date Received: 07/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/25/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 93%
D-8 Toluene: 98%
p-BFB: 96%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: COMPOSITE 3 B-2, 0-6'
Sample Type: Soil

CHAS Lab #: 8807133-16A
Date Received: 07/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/25/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 92%
D-8 Toluene: 96%
p-BFB: 108%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: COMPOSITE 4 8-8, 7-8'
Sample Type: Soil

CHAS Lab #: 8807133-17A
Date Received: 07/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/25/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	210
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane	10	ND
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	TR
Benzene	10	TR
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	54
Chlorobenzene	10	ND
Ethylbenzene	10	ND
Hazardous Substance List Compounds:		
Acetone	40	160
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	73
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

Additional compounds observed in sample (tentative identification):
Total Dichlorobenzene approximate concentration 170 ug/kg

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 96%
D-8 Toluene: 102%
p-BFB: 93%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: COMPOSITE 5 3-3, 8-12'
Sample Type: Soil

CHAS Lab #: 8807133-18A
Date Received: 07/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/19/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	210
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	150
trans-1,2-Dichloroethene	10	120			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	TR	Total Xylenes	10	790
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = ug/kg based on sample weight as received

Hydrocarbon background present (indicative of petroleum products).
Est. concentration of unidentified compounds with RT < benzene: ND *
Est. concentration of unidentified compounds with RT > benzene: 11,000*
(calculated as n-hexane)
Additional compounds observed in sample (tentative identification):
Dichlorobenzene approximate concentration 58 ppb

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 94%
D-8 Toluene: 101%
p-BFB: 82%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: COMPOSITE 6 8-8,12-16'
Sample Type: Soil

CHAS Lab #: 8807133-19A
Date Received: 07/18/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/20/88

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	20	ND
Bromomethane	20	ND
Vinyl Chloride	20	ND
Chloroethane	20	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	ND
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane	10	ND
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	ND
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	20	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	TR
Chlorobenzene	10	ND
Ethylbenzene	10	TR
Hazardous Substance List Compounds:		
Acetone	40	ND
Carbon Disulfide	20	ND
2-Butanone	40	ND
Vinyl Acetate	20	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	ND
Additional Compounds:		
Dibromoethane (EDB)	10	ND
Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = ug/kg based on sample weight as received

Hydrocarbon background present (indicative of petroleum products).
Est. concentration of unidentified compounds with RT < benzene: ND *
Est. concentration of unidentified compounds with RT > benzene: TR *
(calculated as n-hexane)

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 99%
D-8 Toluene: 104%
p-BFB: 95%

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 3-7, 4Y0'
Sample Type: Soil

CHAS Lab #: 8807133-14M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-7, 12-17'
Sample Type: Soil

CHAS Lab #: 8807133-15M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/22/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-3, 0-6'
Sample Type: Soil

CHAS Lab #: 8807133-16M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4 6-8, 7-8'
Sample Type: Soil

CHAS Lab #: 8807133-17M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 5 8-8, 8-12'
Sample Type: Soil

CHAS Lab #: 8807133-18M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 6 B-8, 12-18'
Sample Type: Soil

CHAS Lab #: 8807133-19M
Date Received: 07/15/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/22/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-7, 4-10'
Sample Type: Soil

CHAS Lab #: 8807133-14M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-7, 12-17'
Sample Type: Soil

CHAS Lab #: 8807133-15M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-8, 0-6'
Sample Type: Soil

CHAS Lab #: 8807133-16M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4 8-8, 2-3'
Sample Type: Soil

CHAS Lab #: 8807133-17M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 5 B-3, 3-12'
Sample Type: Soil

CHAS Lab #: 8807133-18M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 6 8-8, 12-18'
Sample Type: Soil

CHAS Lab #: 8807133-19M
Date Received: 07/15/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/19/88
Analysis Date: 07/23/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-7, 4-10'
Sample Type: Soil

CHAS Lab #: 8807133-14M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	7,600	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	6,100	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.7	20	mg/kg	07/20/88	9030(c)
Total Solids	--	84.8	%	07/20/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-7, 12-17'
Sample Type: Soil

CHAS Lab #: 8807133-15M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	460	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	450	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.7	6.9	mg/kg	07/20/88	9030(c)
Total Solids	--	87.1	%	07/20/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-8, 0-6'
Sample Type: Soil

CHAS Lab #: 8807133-16M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	130	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	110	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.7	13	mg/kg	07/20/88	9030(c)
Total Solids	--	93.2	%	07/20/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4 8-8½ >8'
Sample Type: Soil

CHAS Lab #: 8807133-17M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	28,000	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	21,000	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.7	31	mg/kg	07/20/88	9030(c)
Total Solids	--	88.0	%	07/20/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 5 8-8, 3-12'
Sample Type: Soil

CHAS Lab #: 8807133-18M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	9,000	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	7,700	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.7	14	mg/kg	07/20/88	9030(c)
Total Solids	--	89.2	%	07/20/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 6 B-8, 12-18'
Sample Type: Soil

CHAS Lab #: 8807133-19M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	1,700	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	1,600	mg/kg	07/25/88	503D/503E-B(b)
Sulfide	1.5	11	mg/kg	07/20/88	9030(c)
Total Solids	--	87.5	%	07/20/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-7,9-10'
Sample Type: Soil

CHAS Lab #: 8807133-14M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.091	5.44	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	6	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	100	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.042	0.168	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.42	4.6	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.84	36	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.42	51	mg/kg	07/22/88	3050/6010(c)
Lead - Total	4	320	mg/kg	07/25/88	3050/6010(c)
Mercury - Total	0.0706	0.0842	mg/kg	07/27/88	7471(c)
Nickel - Total	0.84	30	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.136	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	1.1	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.42	99	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.3	mg/l	07/25/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/25/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 6-7, 12-17'
Sample Type: Soil

CHAS Lab #: 8807133-15M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.077	2.69	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	5	5	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	50	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.041	0.083	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.41	2.9	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.83	19	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.41	36	mg/kg	07/22/88	3050/6010(c)
Lead - Total	4	30	mg/kg	07/22/88	3050/6010(c)
Mercury - Total	0.0728	ND	mg/kg	07/27/88	7471(c)
Nickel - Total	0.83	15	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.115	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.97	1.5	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.41	36	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/25/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	0.0002	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 8-8, 0-6'
Sample Type: Soil

CHAS Lab #: 8807133-16M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.089	5.10	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	5	5	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	60	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.041	0.041	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.41	3.3	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.82	24	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.41	24	mg/kg	07/22/88	3050/6010(c)
Lead - Total	4	50	mg/kg	07/22/88	3050/6010(c)
Mercury - Total	0.0694	0.1284	mg/kg	07/27/88	7471(c)
Nickel - Total	0.82	17	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.133	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.92	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	10	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.41	68	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.3	mg/l	07/25/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/25/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/6010(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4 6-8, 7-8'
Sample Type: Soil

CHAS Lab #: 8807133-17M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.096	4.77	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	4	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	170	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.044	0.044	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.44	3.0	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.87	18	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.44	20	mg/kg	07/22/88	3050/6010(c)
Lead - Total	4	970	mg/kg	07/25/88	3050/6010(c)
Mercury - Total	0.0684	ND	mg/kg	07/27/88	7471(c)
Nickel - Total	0.87	12	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.143	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.88	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	10	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.44	96	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.6	mg/l	07/25/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/25/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 5 8-8, 8-12'
Sample Type: Soil

CHAS Lab #: 8807133-18M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.082	1.43	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	5	5	mg/kg	07/29/88	3005/6010(c)
Barium - Total	5	50	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.048	0.048	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.48	2.9	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.96	21	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.48	37	mg/kg	07/22/88	3050/6010(c)
Lead - Total	5	20	mg/kg	07/22/88	3050/6010(c)
Mercury - Total	0.0703	ND	mg/kg	07/27/88	7471(c)
Nickel - Total	0.96	16	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.123	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.86	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	10	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.48	46	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/25/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/25/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/25/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/25/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 6 8-8, 12-18'
Sample Type: Soil

CHAS Lab #: 8807133-19M
Date Received: 07/15/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.090	1.81	mg/kg	07/22/88	3050/7060(c)
Antimony - Total	4	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	5	40	mg/kg	07/22/88	3050/6010(c)
Beryllium - Total	0.046	0.046	mg/kg	07/22/88	3050/6010(c)
Cadmium - Total	0.46	2.8	mg/kg	07/22/88	3050/6010(c)
Chromium - Total	0.92	17	mg/kg	07/22/88	3050/6010(c)
Copper - Total	0.46	29	mg/kg	07/22/88	3050/6010(c)
Lead - Total	5	9	mg/kg	07/22/88	3050/6010(c)
Mercury - Total	0.0666	ND	mg/kg	07/27/88	7471(c)
Nickel - Total	0.92	14	mg/kg	07/22/88	3050/6010(c)
Selenium - Total	0.136	ND	mg/kg	07/22/88	3050/7740(c)
Silver - Total	0.92	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	20	mg/kg	07/22/88	3050/6010(c)
Zinc - Total	0.46	33	mg/kg	07/22/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.25	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/27/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 1 8-7, 4-10'
Sample Type: Soil

CHAS Lab #: 8807133-14
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	3300	ND	Di-n-Butylphthalate	3300	ND
1,3-Dichlorobenzene	3300	ND	Fluoranthene	3300	50,000
1,4-Dichlorobenzene	3300	ND	Pyrene	3300	87,000
1,2-Dichlorobenzene	3300	ND	Butylbenzylphthalate	3300	ND
bis(2-Chloroisopropyl)Ether	3300	ND	3,3'-Dichlorobenzidine	6600	ND
N-Nitroso-Di-n-Propylamine	3300	ND	Benzo(a)Anthracene	3300	27,000
Hexachloroethane	3300	ND	bis(2-Ethylhexyl)Phthalate	3300	ND
Nitrobenzene	3300	ND	Chrysene	3300	24,000
Isophorone	3300	ND	Di-n-Octylphthalate	3300	ND
bis(2-Chloroethoxy)Methane	3300	ND	Benzo(b)Fluoranthene	3300	27,000
1,2,4-Trichlorobenzene	3300	ND	Benzo(k)Fluoranthene	3300	**
Naphthalene	3300	6,900	Benzo(a)Pyrene	3300	31,000
4-Chloroaniline	3300	ND	Indeno(1,2,3-cd)Pyrene	3300	12,000
Hexachlorobutadiene	3300	ND	Dibenz(a,h)Anthracene	3300	TR
2-Methylnaphthalene	3300	3,500	Benzo(g,h,i)Perylene	3300	13,000
Hexachlorocyclopentadiene	3300	ND			
2-Chloronaphthalene	3300	ND			
2-Nitroaniline	16000	ND			
Dimethylphthalate	3300	ND			
Acenaphthylene	3300	9,800			
3-Nitroaniline	16000	ND			
Acenaphthene	3300	3,500			
Dibenzofuran	3300	9,000			
2,4-Dinitrotoluene	3300	ND			
2,6-Dinitrotoluene	3300	ND			
Diethylphthalate	3300	ND			
4-Chlorophenyl-phenylether	3300	ND			
Fluorene	3300	12,000			
4-Nitroaniline	16000	ND			
N-Nitrosodiphenylamine	3300	ND			
4-Bromophenyl-phenylether	3300	ND			
Hexachlorobenzene	3300	ND			
Phenanthrene	3300	50,000			
Anthracene	3300	18,000			

0089-0682

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
TR = Trace amount present but below MDL
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 2 B-7, 12-17'
Sample Type: Soil

CHAS Lab #: 8807133-15
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/06/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	790
1,4-Dichlorobenzene	330	ND	Pyrene	330	460
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	**
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	390	Benzo(a)Pyrene	330	TR
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	720			
Anthracene	330	TR			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
TR = Trace amount present but below MDL
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 3 8-3, 0-6'
Sample Type: Soil

CHAS Lab #: 8807133-16
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/06/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	5,200
1,4-Dichlorobenzene	330	ND	Pyrene	330	3,000
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	2,200
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	2,200
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	5,400
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	ND	Benzo(a)Pyrene	330	2,000
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	1,300
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	340
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	1,500
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	TR			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	TR			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	2,800			
Anthracene	330	780			

0089-0684

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
TR = Trace amount present but below MDL
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 4 8-8, >-8'
Sample Type: Soil

CHAS Lab #: 8807133-17
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/06/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	3300	ND	Di-n-Butylphthalate	3300	ND
1,3-Dichlorobenzene	3300	ND	Fluoranthene	3300	ND
1,4-Dichlorobenzene	3300	ND	Pyrene	3300	ND
1,2-Dichlorobenzene	3300	ND	Butylbenzylphthalate	3300	ND
bis(2-Chloroisopropyl)Ether	3300	ND	3,3'-Dichlorobenzidine	6600	ND
N-Nitroso-Di-n-Propylamine	3300	ND	Benzo(a)Anthracene	3300	ND
Hexachloroethane	3300	ND	bis(2-Ethylhexyl)Phthalate	3300	ND
Nitrobenzene	3300	ND	Chrysene	3300	ND
Isophorone	3300	ND	Di-n-Octylphthalate	3300	ND
bis(2-Chloroethoxy)Methane	3300	ND	Benzo(b)Fluoranthene	3300	ND
1,2,4-Trichlorobenzene	3300	ND	Benzo(k)Fluoranthene	3300	ND
Naphthalene	3300	ND	Benzo(a)Pyrene	3300	ND
4-Chloroaniline	3300	ND	Indeno(1,2,3-cd)Pyrene	3300	ND
Hexachlorobutadiene	3300	ND	Dibenz(a,h)Anthracene	3300	ND
2-Methylnaphthalene	3300	ND	Benzo(g,h,i)Perylene	3300	ND
Hexachlorocyclopentadiene	3300	ND			
2-Chloronaphthalene	3300	ND			
2-Nitroaniline	16000	ND			
Dimethylphthalate	3300	ND			
Acenaphthylene	3300	ND			
3-Nitroaniline	16000	ND			
Acenaphthene	3300	ND			
Dibenzofuran	3300	ND			
2,4-Dinitrotoluene	3300	ND			
2,6-Dinitrotoluene	3300	ND			
Diethylphthalate	3300	ND			
4-Chlorophenyl-phenylether	3300	ND			
Fluorene	3300	ND			
4-Nitroaniline	16000	ND			
N-Nitrosodiphenylamine	3300	ND			
4-Bromophenyl-phenylether	3300	ND			
Hexachlorobenzene	3300	ND			
Phenanthrene	3300	ND			
Anthracene	3300	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
Hydrocarbon background present in sample

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 5 B-8, 8-12'
Sample Type: Soil

CHAS Lab #: 8807133-18
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/06/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	2,100
1,4-Dichlorobenzene	330	ND	Pyrene	330	880
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	360
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	390	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	2,200	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	380			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	700			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 6 8-7,12-13'
Sample Type: Soil

CHAS Lab #: 8807133-19
Date Received: 07/15/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	464
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	TR
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	401
Nitrobenzene	330	ND	Chrysene	330	168
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	TR
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	TR	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	TR			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	ND			
Anthracene	330	TR			

Notes: ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184 | CHAIN OF CUSTODY RECORD | Sample Custodian - (617) 849-6070 | Page 1 of 2

Client: CHIEE Project Name: MURPHYS WASTE OIL Project/P.O. #: E-1656 Date: 7-15-1988

Report To: JOANNE DRISCOLL [redacted] Address: 360 WOOD ROAD BRAINTREE MA 02184 Phone #: 849-1200

Invoice To: JOANNE DRISCOLL PROJECT Address: 202 SALEM ST, WOBURN MA

Date Samples Collected: 7-15-1988 by: JILL McGILLIVRAY Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis	# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
SS-1B7	7-15	AM	BORING 7	SOIL		1	0'-2' NO ODOR/PROD.	HOLD
SS-2B7	7-15	AM				1	2'-4' NO ODOR/PROD.	
SS-3B7	7-15	AM				1	4'-6' THICK SOLID KREOSOTE	
SS-4B7	7-15	AM				1	6'-8' SOME LIQ. KREO	COMPOSITE (1)
SS-5B7	7-15	AM				1	8'-10' SEWAGE ODOR SLIGHT PRODUCT COLOR	
SS-6B7	7-15	AM				1	12'-14' V. SLIGHT	COMPOSITE (2)
SS-7B7	7-15	AM				1	15'-17' NO ODOR	
SS-1B8	7-15	PM	BORING 8			1	0'-2' NO	
SS-2B8	7-15	PM				1	2'-4' NO COM (3)	
SS-3B8	7-15	PM				1	4'-6' NO	
SS-4B8	7-15	PM				1	7'-8' YES ODOR	(4)

Relinquished by: [signature]
Date: 7-15-88 Time: [illegible]

Received by: [signature]
Date: 7-15-88 Time: [illegible]

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial									
Glass Bottle	X								
Plastic Bot.									
Pres.	C								
Volume									

Preservation Key: A - Acidified with ____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

(4) COM[redacted] w/ SS-5B8 & SS-6B7

TEST COMPOSITE (1) (2) & (4) PER SAME ANALYSIS 7-14-88

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by: Surcharge:

Location of samples:
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other:

0089-0688

Clean Harbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA., 02184 | [illegible] OF CUSTODY RECORD | [illegible] (617) [illegible] | Page 2 of 2

Client: CHIEE | Project Name: MURPHYS WASTE OIL | Project/P.O. #: E-1656 | Date: 7-15-88

Report To: JOANNE CRISTOLL | Address: 325 WOOD ROAD BRAINTREE MA 02184 | Phone #: 849-1200

Invoice To: JOANNE CRISTOLL | Project Address: 252 SALEM ST, WOBURN MA

Date Samples Collected: 7-15-88 | by: JILL McGILLIVRAY | Date Samples Received:

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis	# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
SS-5B8	7-15	PM	BORING 8	SOIL		1	8'-10' PRODUCT. } COMPOSITE	5
SS-6B8	7-15	PM	↓	↓		1	10'-12' " " } W/SS-4B8	
SS-7B8	7-15	PM	↓	↓		1	12'-14' PRODUCT (LESS) } COMPOSITE	
SS-8B8	7-15	PM	↓	↓		1	16'-18' PRODUCT }	6

Relinquished by: [signature]
Date: 7-15-88 Time: [illegible]

Received by: [signature]
Date: 7/15/88 Time: [illegible]

Relinquished by:
Date: Time:

Received by:
Date: Time:

VOA Vial									
Glass Bottle	X								
Plastic Bot.									
Pres.	C								
Volume									

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)
TEST 5 & 6 SAME ANALYSIS
7-14-88

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested:
Confirmed by: Surcharge:

Location of samples:
Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other:

0089-0689

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: 001-MW

Date Received: 07/18/88
CHAS Lab #: 8807135

Attn: Mr. David Newton

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: A. W. Schultheis 8/26/88

Alex W. Schultheis
Laboratory Director

0089-0690

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: SS-1B10 B-10(4-6)
Sample Type: Soil

CHAS Lab #: 8807135-05X
Date Received: 07/18/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/25/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-9 (6-10)
Sample Type: Soil

CHAS Lab #: 8807135-10M
Date Received: 07/18/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-9(10-16)
Sample Type: Soil

CHAS Lab #: 8807135-11M
Date Received: 07/18/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 08/01/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.05	ND	mg/kg
Beta-BHC	0.05	ND	mg/kg
Delta-BHC	0.05	ND	mg/kg
Gamma-BHC (Lindane)	0.05	ND	mg/kg
Heptachlor	0.05	ND	mg/kg
Aldrin	0.05	ND	mg/kg
Heptachlor Epoxide	0.05	ND	mg/kg
Endosulfan I	0.05	ND	mg/kg
4,4'-DDE	0.05	ND	mg/kg
Dieldrin	0.05	ND	mg/kg
Endrin	0.05	ND	mg/kg
4,4'-DDD	0.05	ND	mg/kg
Endosulfan II	0.05	ND	mg/kg
4,4'-DDT	0.05	ND	mg/kg
Endrin Aldehyde	0.05	ND	mg/kg
Endosulfan Sulfate	0.05	ND	mg/kg
Methoxychlor	0.05	ND	mg/kg
Endrin Ketone	0.05	ND	mg/kg
Chlordane	0.1	ND	mg/kg
Toxaphene	0.2	ND	mg/kg

Notes: ND - Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3
Sample Type: Soil

B-10(6-10)

CHAS Lab #: 8807135-12M
Date Received: 07/18/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4
Sample Type: Soil

B-10 (10-14)

CHAS Lab #: 8807135-13M
Date Received: 07/18/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: SS-1B10
Sample Type: Soil

B-10 (4-6)

CHAS Lab #: 8807135-05X
Date Received: 07/18/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/25/88
Analysis Date: 08/01/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-9 (6-10)

CHAS Lab #: 8807135-10M
Date Received: 07/18/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-9(10-16)

CHAS Lab #: 8807135-11M
Date Received: 07/18/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 07/27/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3
Sample Type: Soil

B-10 (6-10)

CHAS Lab #: 8807135-12M
Date Received: 07/18/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 08/01/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4
Sample Type: Soil

CHAS Lab #: 8807135-13M
Date Received: 07/18/88

B-10 (10-14)

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/21/88
Analysis Date: 07/27/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: SS-1B10 B-10 (4-6)
Sample Type: Soil

CHAS Lab #: 8807135-05X
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.091	7.73	mg/kg	07/27/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	6	50	mg/kg	07/26/88	3050/6010(c)
Beryllium - Total	0.056	0.056	mg/kg	07/26/88	3050/6010(c)
Cadmium - Total	0.56	2.2	mg/kg	07/26/88	3050/6010(c)
Chromium - Total	1.1	16	mg/kg	07/26/88	3050/6010(c)
Copper - Total	0.56	32	mg/kg	07/26/88	3050/6010(c)
Lead - Total	6	280	mg/kg	07/26/88	3050/6010(c)
Mercury - Total	0.0706	0.3270	mg/kg	07/29/88	7471(c)
Nickel - Total	1.1	12	mg/kg	07/26/88	3050/6010(c)
Selenium - Total	0.136	ND	mg/kg	07/27/88	3050/7740(c)
Silver - Total	1.1	ND	mg/kg	07/27/88	3050/7760(c)
Thallium - Total	20	ND	mg/kg	07/26/88	3050/6010(c)
Zinc - Total	0.56	120	mg/kg	07/26/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.2	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.05	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/29/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/27/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-9 (6-10)

CHAS Lab #: 8807135-10M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.105	1.83	mg/kg	07/25/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	5	70	mg/kg	07/26/88	3050/6010(c)
Beryllium - Total	0.047	ND	mg/kg	07/26/88	3050/6010(c)
Cadmium - Total	0.47	3.3	mg/kg	07/26/88	3050/6010(c)
Chromium - Total	0.93	15	mg/kg	07/26/88	3050/6010(c)
Copper - Total	0.47	32	mg/kg	07/26/88	3050/6010(c)
Lead - Total	5	100	mg/kg	07/26/88	3050/6010(c)
Mercury - Total	0.0710	ND	mg/kg	07/29/88	7471(c)
Nickel - Total	0.93	18	mg/kg	07/26/88	3050/6010(c)
Selenium - Total	0.157	ND	mg/kg	07/25/88	3050/7740(c)
Silver - Total	1.1	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	20	mg/kg	07/26/88	3050/6010(c)
Zinc - Total	0.47	46	mg/kg	07/26/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.4	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0004	0.0004	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-9 (10-16)

CHAS Lab #: 8807135-11M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.102	0.769	mg/kg	07/25/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	5	40	mg/kg	07/26/88	3050/6010(c)
Beryllium - Total	0.049	ND	mg/kg	07/26/88	3050/6010(c)
Cadmium - Total	0.49	2.9	mg/kg	07/26/88	3050/6010(c)
Chromium - Total	0.97	17	mg/kg	07/26/88	3050/6010(c)
Copper - Total	0.49	32	mg/kg	07/26/88	3050/6010(c)
Lead - Total	5	9	mg/kg	07/26/88	3050/6010(c)
Mercury - Total	0.0714	ND	mg/kg	07/29/88	7471(c)
Nickel - Total	0.97	14	mg/kg	07/26/88	3050/6010(c)
Selenium - Total	0.154	ND	mg/kg	07/25/88	3050/7740(c)
Silver - Total	0.99	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	20	20	mg/kg	07/26/88	3050/6010(c)
Zinc - Total	0.49	36	mg/kg	07/26/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.46	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/27/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3
Sample Type: Soil

B-10 (6-10)

CHAS Lab #: 8807135-12M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.107	2.95	mg/kg	07/25/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	6	360	mg/kg	07/28/88	3050/6010(c)
Beryllium - Total	0.056	ND	mg/kg	07/26/88	3050/6010(c)
Cadmium - Total	0.56	3.4	mg/kg	07/26/88	3050/6010(c)
Chromium - Total	1.1	29	mg/kg	07/26/88	3050/6010(c)
Copper - Total	0.56	39	mg/kg	07/26/88	3050/6010(c)
Lead - Total	6	2,500	mg/kg	07/28/88	3050/6010(c)
Mercury - Total	0.0787	ND	mg/kg	07/29/88	7471(c)
Nickel - Total	1.1	14	mg/kg	07/26/88	3050/6010(c)
Selenium - Total	0.161	ND	mg/kg	07/25/88	3050/7740(c)
Silver - Total	1.1	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	20	30	mg/kg	07/26/88	3050/6010(c)
Zinc - Total	0.56	120	mg/kg	07/26/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	0.7	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.09	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	1	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/27/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4
Sample Type: Soil

B-10 (10-14)

CHAS Lab #: 8807135-13M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.112	1.40	mg/kg	07/25/88	3050/7060(c)
Antimony - Total	5	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	5	60	mg/kg	07/26/88	3050/6010(c)
Beryllium - Total	0.046	ND	mg/kg	07/26/88	3050/6010(c)
Cadmium - Total	0.46	3.2	mg/kg	07/26/88	3050/6010(c)
Chromium - Total	0.91	19	mg/kg	07/26/88	3050/6010(c)
Copper - Total	0.46	36	mg/kg	07/26/88	3050/6010(c)
Lead - Total	5	20	mg/kg	07/26/88	3050/6010(c)
Mercury - Total	0.0719	ND	mg/kg	07/29/88	7471(c)
Nickel - Total	0.91	16	mg/kg	07/26/88	3050/6010(c)
Selenium - Total	0.168	ND	mg/kg	07/25/88	3050/7740(c)
Silver - Total	0.97	ND	mg/kg	07/25/88	3050/7760(c)
Thallium - Total	10	30	mg/kg	07/26/88	3050/6010(c)
Zinc - Total	0.46	41	mg/kg	07/26/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	0.06	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	07/27/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/27/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: SS-1B10 B-10 (4-6)
Sample Type: Soil

CHAS Lab #: 8807135-05X
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	4,000	mg/kg	07/26/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	1,600	mg/kg	07/26/88	503D/503E-B(b)
Sulfide	1.6	11	mg/kg	07/21/88	9030(c)
Total Solids	--	81.2	%	07/22/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1
Sample Type: Soil

B-9(6-10)

CHAS Lab #: 8807135-10M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	6,200	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	6,000	mg/kg	07/26/88	503D/503E-B(b)
Sulfide	1.6	13	mg/kg	07/21/88	9030(c)
Total Solids	--	92.4	%	07/22/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-7 (10-16)

CHAS Lab #: 8807135-11M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	44	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	44	mg/kg	07/26/88	503D/503E-B(b)
Sulfide	1.7	12	mg/kg	07/21/88	9030(c)
Total Solids	--	87.4	%	07/22/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3
Sample Type: Soil

B-10 (6-10)

CHAS Lab #: 8807135-12M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	9,700	mg/kg	07/26/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	5,900	mg/kg	07/26/88	503D/503E-B(b)
Sulfide	1.6	20	mg/kg	07/21/88	9030(c)
Total Solids	--	85.8	%	07/22/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 4
Sample Type: Soil

B-10(10-14)

CHAS Lab #: 8807135-13M
Date Received: 07/18/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	840	mg/kg	07/25/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	770	mg/kg	07/26/88	503D/503E-B(b)
Sulfide	1.7	30	mg/kg	07/21/88	9030(c)
Total Solids	--	86.9	%	07/22/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: SS 1B10 B-10 (4-6)
Sample Type: Soil

CHAS Lab #: 8807135-05A
Date Received: 07/19/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/21/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND - Below minimum detectable level (MDL)
* - ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 90%
D-8 Toluene: 100%
p-BFB: 101%

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 1
Sample Type: Soil

CHAS Lab #: 8807135-10A
Date Received: 07/19/88

B-9 (6-10)

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/21/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	13			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	TR	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 91%
D-8 Toluene: 102%
p-BFB: 88%

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-7(10-16)

CHAS Lab #: 8807135-11A
Date Received: 07/19/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/21/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 89%
D-8 Toluene: 99%
p-BFB: 101%

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 3
Sample Type: Soil

B-10 (6-10)

CHAS Lab #: 8807135-12A
Date Received: 07/19/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/21/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	70
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 93%
D-8 Toluene: 97%
p-BFB: 99%

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 4
Sample Type: Soil

CHAS Lab #: 8807135-13
Date Received: 07/19/88

B-10(10-14)

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/21/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 94%
D-8 Toluene: 98%
p-BFB: 100%

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: SS-1B10
Sample Type: Soil

B-10(4-6)

CHAS Lab #: 8807135-05
Date Received: 07/19/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/01/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	1,600
1,4-Dichlorobenzene	330	ND	Pyrene	330	2,200
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	1,000
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	380
Nitrobenzene	330	ND	Chrysene	330	1,200
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	2,500
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	ND	Benzo(a)Pyrene	330	980
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	1,200			
Anthracene	330	340			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 1 B-9(6-10)
Sample Type: Soil

CHAS Lab #: 8807135-10
Date Received: 07/19/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	830	ND	Di-n-Butylphthalate	830	ND
1,3-Dichlorobenzene	830	ND	Fluoranthene	830	ND
1,4-Dichlorobenzene	830	ND	Pyrene	830	TR
1,2-Dichlorobenzene	830	ND	Butylbenzylphthalate	830	ND
bis(2-Chloroisopropyl)Ether	830	ND	3,3'-Dichlorobenzidine	1600	ND
N-Nitroso-Di-n-Propylamine	830	ND	Benzo(a)Anthracene	830	ND
Hexachloroethane	830	ND	bis(2-Ethylhexyl)Phthalate	830	TR
Nitrobenzene	830	ND	Chrysene	830	ND
Isophorone	830	ND	Di-n-Octylphthalate	830	ND
bis(2-Chloroethoxy)Methane	830	ND	Benzo(b)Fluoranthene	830	ND
1,2,4-Trichlorobenzene	830	ND	Benzo(k)Fluoranthene	830	ND
Naphthalene	830	ND	Benzo(a)Pyrene	830	ND
4-Chloroaniline	830	ND	Indeno(1,2,3-cd)Pyrene	830	ND
Hexachlorobutadiene	830	ND	Dibenz(a,h)Anthracene	830	ND
2-Methylnaphthalene	830	ND	Benzo(g,h,i)Perylene	830	ND
Hexachlorocyclopentadiene	830	ND			
2-Chloronaphthalene	830	ND			
2-Nitroaniline	4100	ND			
Dimethylphthalate	830	ND			
Acenaphthylene	830	ND			
3-Nitroaniline	4100	ND			
Acenaphthene	830	ND			
Dibenzofuran	830	ND			
2,4-Dinitrotoluene	830	ND			
2,6-Dinitrotoluene	830	ND			
Diethylphthalate	830	ND			
4-Chlorophenyl-phenylether	830	ND			
Fluorene	830	ND			
4-Nitroaniline	4100	ND			
N-Nitrosodiphenylamine	830	ND			
4-Bromophenyl-phenylether	830	ND			
Hexachlorobenzene	830	ND			
Phenanthrene	830	ND			
Anthracene	830	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/l
TR = Trace amount present but below MDL

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 2
Sample Type: Soil

B-9(10-16)

CHAS Lab #: 8807135-11
Date Received: 07/19/88

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/05/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	ND
1,4-Dichlorobenzene	330	ND	Pyrene	330	ND
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	ND
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	ND			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 3
Sample Type: Soil

B-10 (6-10)

CHAS Lab #: 8807135-12
Date Received: 07/19/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	830	ND	Di-n-Butylphthalate	830	ND
1,3-Dichlorobenzene	830	ND	Fluoranthene	830	ND
1,4-Dichlorobenzene	830	ND	Pyrene	830	TR
1,2-Dichlorobenzene	830	ND	Butylbenzylphthalate	830	ND
bis(2-Chloroisopropyl)Ether	830	ND	3,3'-Dichlorobenzidine	1600	ND
N-Nitroso-Di-n-Propylamine	830	ND	Benzo(a)Anthracene	830	ND
Hexachloroethane	830	ND	bis(2-Ethylhexyl)Phthalate	830	TR
Nitrobenzene	830	ND	Chrysene	830	ND
Isophorone	830	ND	Di-n-Octylphthalate	830	ND
bis(2-Chloroethoxy)Methane	830	ND	Benzo(b)Fluoranthene	830	ND
1,2,4-Trichlorobenzene	830	ND	Benzo(k)Fluoranthene	830	ND
Naphthalene	830	ND	Benzo(a)Pyrene	830	ND
4-Chloroaniline	830	ND	Indeno(1,2,3-cd)Pyrene	830	ND
Hexachlorobutadiene	830	ND	Dibenz(a,h)Anthracene	830	ND
2-Methylnaphthalene	830	ND	Benzo(g,h,i)Perylene	830	ND
Hexachlorocyclopentadiene	830	ND			
2-Chloronaphthalene	830	ND			
2-Nitroaniline	4100	ND			
Dimethylphthalate	830	ND			
Acenaphthylene	830	ND			
3-Nitroaniline	4100	ND			
Acenaphthene	830	ND			
Dibenzofuran	830	ND			
2,4-Dinitrotoluene	830	ND			
2,6-Dinitrotoluene	830	ND			
Diethylphthalate	830	ND			
4-Chlorophenyl-phenylether	830	ND			
Fluorene	830	ND			
4-Nitroaniline	4100	ND			
N-Nitrosodiphenylamine	830	ND			
4-Bromophenyl-phenylether	830	ND			
Hexachlorobenzene	830	ND			
Phenanthrene	830	ND			
Anthracene	830	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/l
TR = Trace amount present but below MDL

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Client: CHI Environmental Engineering, Inc.
Sample I.D.: COMPOSITE 4
Sample Type: Soil

CHAS Lab #: 8807135-13
Date Received: 07/19/88

B-(10-10-14)

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 08/03/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	480
1,4-Dichlorobenzene	330	ND	Pyrene	330	500
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	430
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	ND
Nitrobenzene	330	ND	Chrysene	330	ND
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	ND
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	ND
Naphthalene	330	ND	Benzo(a)Pyrene	330	ND
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	ND
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	ND
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	ND
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	ND			
3-Nitroaniline	1600	ND			
Acenaphthene	330	ND			
Dibenzofuran	330	ND			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	ND			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	ND			
Anthracene	330	ND			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-11, 6-14'
Sample Type: Soil

CHAS Lab #: 8807143-07M
Date Received: 07/19/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/25/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	5.0	ND	mg/kg
Beta-BHC	5.0	ND	mg/kg
Delta-BHC	5.0	ND	mg/kg
Gamma-BHC (Lindane)	5.0	ND	mg/kg
Heptachlor	5.0	ND	mg/kg
Aldrin	5.0	ND	mg/kg
Heptachlor Epoxide	5.0	ND	mg/kg
Endosulfan I	5.0	ND	mg/kg
4,4'-DDE	5.0	ND	mg/kg
Dieldrin	5.0	ND	mg/kg
Endrin	5.0	ND	mg/kg
4,4'-DDD	5.0	ND	mg/kg
Endosulfan II	5.0	ND	mg/kg
4,4'-DDT	5.0	ND	mg/kg
Endrin Aldehyde	5.0	ND	mg/kg
Endosulfan Sulfate	5.0	ND	mg/kg
Methoxychlor	5.0	ND	mg/kg
Endrin Ketone	5.0	ND	mg/kg
Chlordane	10	ND	mg/kg
Toxaphene	20	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-11, 15-20'
Sample Type: Soil

CHAS Lab #: 8807143-08M
Date Received: 07/19/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/25/88
Analysis Date: 07/27/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-11, 15-22'
Sample Type: Soil

CHAS Lab #: 8807143-08M
Date Received: 07/19/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/25/88
Analysis Date: 07/28/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

CHI Environmental Engineering
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: 001-MW

Date Received: 07/21/88
CHAS Lab #: 8807170

Attn: Mr. David Newton

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: A.W. Schultheis 8/16/88
Alex W. Schultheis
Laboratory Director

0089-0724

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite 1 B-12, 4-8'
Sample Type: Soil

CHAS Lab #: 8807170-07A
Date Received: 07/21/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/26/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 108%
D-8 Toluene: 97%
p-BFB: 105%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite 2 B-12, B'-12'
Sample Type: Soil

CHAS Lab #: 8807170-08A
Date Received: 07/21/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/26/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 111%
D-8 Toluene: 96%
p-BFB: 102%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite 3 B-12, 12-14' + 18.5-20.5'
Sample Type: Soil

CHAS Lab #: 8807170-09A
Date Received: 07/21/88

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 07/26/88

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	20	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	20	ND	2-Chloroethylvinyl Ether	20	ND
Vinyl Chloride	20	ND	Bromoform	10	ND
Chloroethane	20	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	40	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	20	ND
Carbon Tetrachloride	10	ND	2-Butanone	40	ND
Bromodichloromethane	10	ND	Vinyl Acetate	20	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	10	ND
			Methyl-t-Butylether (MTBE)	20	ND

Notes

ND = Below minimum detectable level (MDL)
* = ug/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D2: 111%
D-8 Toluene: 96%
p-BFB: 107%

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite 1 B-12 4-8'
Sample Type: Soil

CHAS Lab #: 8807170-07A
Date Received: 07/21/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 07/28/88
Analysis Date: 08/10/88

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	660	ND
1,3-Dichlorobenzene	660	ND
1,4-Dichlorobenzene	660	ND
1,2-Dichlorobenzene	660	ND
bis(2-Chloroisopropyl)Ether	660	ND
N-Nitroso-Di-n-Propylamine	660	ND
Hexachloroethane	660	ND
Nitrobenzene	660	ND
Isophorone	660	ND
bis(2-Chloroethoxy)Methane	660	ND
1,2,4-Trichlorobenzene	660	ND
Naphthalene	660	TR
4-Chloroaniline	660	ND
Hexachlorobutadiene	660	ND
2-Methylnaphthalene	660	ND
Hexachlorocyclopentadiene	660	ND
2-Chloronaphthalene	660	ND
2-Nitroaniline	3300	ND
Dimethylphthalate	660	ND
Acenaphthylene	660	1,000
3-Nitroaniline	3300	ND
Acenaphthene	660	TR
Dibenzofuran	660	TR
2,4-Dinitrotoluene	660	ND
2,6-Dinitrotoluene	660	ND
Diethylphthalate	660	ND
4-Chlorophenyl-phenylether	660	ND
Fluorene	660	TR
4-Nitroaniline	3300	ND
N-Nitrosodiphenylamine	660	ND
4-Bromophenyl-phenylether	660	ND
Hexachlorobenzene	660	ND
Phenanthrene	660	5,900
Anthracene	660	1,900
Di-n-Butylphthalate	660	TR
Fluoranthene	660	9,600
Pyrene	660	5,200
Butylbenzylphthalate	660	ND
3,3'-Dichlorobenzidine	1300	ND
Benzo(a)Anthracene	660	4,900
bis(2-Ethylhexyl)Phthalate	660	33,000
Chrysene	660	4,900
Di-n-Octylphthalate	660	ND
Benzo(b)Fluoranthene	660	5,200
Benzo(k)Fluoranthene	660	2,800
Benzo(a)Pyrene	660	5,500
Indeno(1,2,3-cd)Pyrene	660	2,300
Dibenz(a,h)Anthracene	660	TR
Benzo(g,h,i)Perylene	660	2,100

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
TR = Trace amount present but below MDL

0089-0728

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite 2 B-12, B-12'
Sample Type: Soil

CHAS Lab #: 8807170-08A
Date Received: 07/21/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 625 (ref. f)
Extraction Date: 07/28/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	330	ND	Di-n-Butylphthalate	330	ND
1,3-Dichlorobenzene	330	ND	Fluoranthene	330	1,600
1,4-Dichlorobenzene	330	ND	Pyrene	330	920
1,2-Dichlorobenzene	330	ND	Butylbenzylphthalate	330	ND
bis(2-Chloroisopropyl)Ether	330	ND	3,3'-Dichlorobenzidine	660	ND
N-Nitroso-Di-n-Propylamine	330	ND	Benzo(a)Anthracene	330	660
Hexachloroethane	330	ND	bis(2-Ethylhexyl)Phthalate	330	720
Nitrobenzene	330	ND	Chrysene	330	640
Isophorone	330	ND	Di-n-Octylphthalate	330	ND
bis(2-Chloroethoxy)Methane	330	ND	Benzo(b)Fluoranthene	330	490**
1,2,4-Trichlorobenzene	330	ND	Benzo(k)Fluoranthene	330	**
Naphthalene	330	TR	Benzo(a)Pyrene	330	650
4-Chloroaniline	330	ND	Indeno(1,2,3-cd)Pyrene	330	TR
Hexachlorobutadiene	330	ND	Dibenz(a,h)Anthracene	330	TR
2-Methylnaphthalene	330	ND	Benzo(g,h,i)Perylene	330	TR
Hexachlorocyclopentadiene	330	ND			
2-Chloronaphthalene	330	ND			
2-Nitroaniline	1600	ND			
Dimethylphthalate	330	ND			
Acenaphthylene	330	TR			
3-Nitroaniline	1600	ND			
Acenaphthene	330	TR			
Dibenzofuran	330	TR			
2,4-Dinitrotoluene	330	ND			
2,6-Dinitrotoluene	330	ND			
Diethylphthalate	330	ND			
4-Chlorophenyl-phenylether	330	ND			
Fluorene	330	TR			
4-Nitroaniline	1600	ND			
N-Nitrosodiphenylamine	330	ND			
4-Bromophenyl-phenylether	330	ND			
Hexachlorobenzene	330	ND			
Phenanthrene	330	1,100			
Anthracene	330	TR			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample waight as received
TR = Trace amount present but below MDL
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

CleanHarbors

Client: CHI Environmental Engineering, Corp.
Sample I.D.: Composite 3 B-12, 14-16' + 18.5-20.5'
Sample Type: Soil

CHAS Lab #: 8807170-09A
Date Received: 07/21/88

Semi-Volatile Base/Neutral Extractable Organics
by EPA Method 625 (ref. f)
Extraction Date: 07/28/88
Analysis Date: 08/09/88

Base/Neutral Compounds	MDL*	Conc.*	Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	150	ND	Di-n-Butylphthalate	150	ND
1,3-Dichlorobenzene	150	ND	Fluoranthene	150	300
1,4-Dichlorobenzene	150	ND	Pyrene	150	TR
1,2-Dichlorobenzene	150	ND	Butylbenzylphthalate	150	ND
bis(2-Chloroisopropyl)Ether	150	ND	3,3'-Dichlorobenzidine	310	ND
N-Nitroso-Di-n-Propylamine	150	ND	Benzo(a)Anthracene	150	TR
Hexachloroethane	150	ND	bis(2-Ethylhexyl)Phthalate	150	320
Nitrobenzene	150	ND	Chrysene	150	TR
Isophorone	150	ND	Di-n-Octylphthalate	150	ND
bis(2-Chloroethoxy)Methane	150	ND	Benzo(b)Fluoranthene	150	TR
1,2,4-Trichlorobenzene	150	ND	Benzo(k)Fluoranthene	150	ND
Naphthalene	150	ND	Benzo(a)Pyrene	150	TR
4-Chloroaniline	150	ND	Indeno(1,2,3-cd)Pyrene	150	ND
Hexachlorobutadiene	150	ND	Dibenz(a,h)Anthracene	150	ND
2-Methylnaphthalene	150	ND	Benzo(g,h,i)Perylene	150	ND
Hexachlorocyclopentadiene	150	ND			
2-Chloronaphthalene	150	ND			
2-Nitroaniline	790	ND			
Dimethylphthalate	150	ND			
Acenaphthylene	150	ND			
3-Nitroaniline	790	ND			
Acenaphthene	150	ND			
Dibenzofuran	150	ND			
2,4-Dinitrotoluene	150	ND			
2,6-Dinitrotoluene	150	ND			
Diethylphthalate	150	ND			
4-Chlorophenyl-phenylether	150	ND			
Fluorene	150	ND			
4-Nitroaniline	790	ND			
N-Nitrosodiphenylamine	150	ND			
4-Bromophenyl-phenylether	150	ND			
Hexachlorobenzene	150	ND			
Phenanthrene	150	TR			
Anthracene	150	TR			

Notes: ND = Below minimum detectable level (MDL)
* = ug/kg - Based on sample weight as received
TR = Trace amount present but below MDL

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 8-12, 4-8'
Sample Type: Soil

CHAS Lab #: 8807170-0
Date Received: 07/21/

Parameter	MDL	Result	Units	Analysis Date	Method Numb and Referen
Arsenic - Total	0.095	6.20	mg/kg	07/27/88	7060(
Antimony - Total	5	ND	mg/kg	07/29/88	3005/6010(
Barium - Total	4	70	mg/kg	07/27/88	3050/6010(
Beryllium - Total	0.041	ND	mg/kg	07/27/88	3050/6010(
Cadmium - Total	0.41	2.9	mg/kg	07/27/88	3050/6010(
Chromium - Total	0.82	18	mg/kg	07/27/88	3050/6010(
Copper - Total	0.41	27	mg/kg	07/27/88	3050/6010(
Lead - Total	4	30	mg/kg	07/27/88	3050/6010(
Mercury - Total	0.0677	ND	mg/kg	08/02/88	7471(
Nickel - Total	0.82	14	mg/kg	07/27/88	3050/6010(
Selenium - Total	0.143	ND	mg/kg	07/27/88	7740(
Silver - Total	0.97	ND	mg/kg	07/27/88	3050/7760(
Thallium - Total	10	ND	mg/kg	07/27/88	3050/6010(
Zinc - Total	0.41	70	mg/kg	07/27/88	3050/6010(
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(
Barium - EP Toxicity (1)	0.1	0.2	mg/l	07/28/88	3010/6010(
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/6010
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	08/02/88	7470
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/7760

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-1.2, B-1.2'
Sample Type: Soil

CHAS Lab #: 8807170-08M
Date Received: 07/21/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.100	1.25	mg/kg	07/27/88	7060(c)
Antimony - Total	4	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	5	30	mg/kg	07/27/88	3050/6010(c)
Beryllium - Total	0.048	ND	mg/kg	07/27/88	3050/6010(c)
Cadmium - Total	0.48	2.4	mg/kg	07/27/88	3050/6010(c)
Chromium - Total	0.96	11	mg/kg	07/27/88	3050/6010(c)
Copper - Total	0.48	24	mg/kg	07/27/88	3050/6010(c)
Lead - Total	5	20	mg/kg	07/27/88	3050/6010(c)
Mercury - Total	0.0703	ND	mg/kg	08/02/88	7471(c)
Nickel - Total	0.96	9.6	mg/kg	07/27/88	3050/6010(c)
Selenium - Total	0.150	ND	mg/kg	07/27/88	7740(c)
Silver - Total	0.76	ND	mg/kg	07/27/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/27/88	3050/6010(c)
Zinc - Total	0.48	33	mg/kg	07/27/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	08/02/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-12, 12-14' + 18.5-20.5'
Sample Type: Soil

CHAS Lab #: 8807170-09M
Date Received: 07/21/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Arsenic - Total	0.095	1.42	mg/kg	07/27/88	7060(c)
Antimony - Total	4	ND	mg/kg	07/29/88	3005/6010(c)
Barium - Total	4	50	mg/kg	07/27/88	3050/6010(c)
Beryllium - Total	0.041	ND	mg/kg	07/27/88	3050/6010(c)
Cadmium - Total	0.41	2.9	mg/kg	07/27/88	3050/6010(c)
Chromium - Total	0.82	23	mg/kg	07/27/88	3050/6010(c)
Copper - Total	0.41	37	mg/kg	07/27/88	3050/6010(c)
Lead - Total	4	10	mg/kg	07/27/88	3050/6010(c)
Mercury - Total	0.0709	ND	mg/kg	08/02/88	7471(c)
Nickel - Total	0.82	16	mg/kg	07/27/88	3050/6010(c)
Selenium - Total	0.142	ND	mg/kg	07/27/88	7740(c)
Silver - Total	0.97	ND	mg/kg	07/27/88	3050/7760(c)
Thallium - Total	10	ND	mg/kg	07/27/88	3050/6010(c)
Zinc - Total	0.41	37	mg/kg	07/27/88	3050/6010(c)
Arsenic - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Barium - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Cadmium - EP Toxicity (1)	0.01	ND	mg/l	07/28/88	3010/6010(c)
Chromium - EP Toxicity (1)	0.02	ND	mg/l	07/28/88	3010/6010(c)
Lead - EP Toxicity (1)	0.1	ND	mg/l	07/28/88	3010/6010(c)
Mercury - EP Toxicity (1)	0.0002	ND	mg/l	08/02/88	7470(c)
Selenium - EP Toxicity (1)	0.2	ND	mg/l	07/28/88	3010/6010(c)
Silver - EP Toxicity (1)	0.02	ND	mg/l	08/04/88	3010/7760(c)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

(1) Sample was evaluated by EPA Method 1310, EP Toxicity, as described in reference (c).

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-12, 4-8'
Sample Type: Soil

CHAS Lab #: 8807170-07M
Date Received: 07/21/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	300	mg/kg	07/27/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	250	mg/kg	07/27/88	503D/503E-B(b)
Sulfide	1.6	7.0	mg/kg	07/26/88	9030(c)
Total Solids	--	91.2	%	07/26/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-12, S-12'
Sample Type: Soil

CHAS Lab #: 8807170-08M
Date Received: 07/21/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	68	mg/kg	07/26/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	55	mg/kg	07/27/88	503D/503E-B(b)
Sulfide	1.7	3.0	mg/kg	07/26/88	9030(c)
Total Solids	--	87.7	%	07/26/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-12, 12-14' + 18.5-20.5'
Sample Type: Soil

CHAS Lab #: 8807170-09M
Date Received: 07/21/88

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	18	mg/kg	07/28/88	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	17	mg/kg	07/27/88	503D/503E-B(b)
Sulfide	1.5	3.0	mg/kg	07/26/88	9030(c)
Total Solids	--	85.8	%	07/26/88	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-12, 4-3'
Sample Type: Soil

CHAS Lab #: 8807170-07M
Date Received: 07/21/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/26/88
Analysis Date: 07/30/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 2 B-12, S-12'
Sample Type: Soil

CHAS Lab #: 8807170-08M
Date Received: 07/21/88

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/26/88
Analysis Date: 07/30/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.5	ND	mg/kg
Beta-BHC	0.5	ND	mg/kg
Delta-BHC	0.5	ND	mg/kg
Gamma-BHC (Lindane)	0.5	ND	mg/kg
Heptachlor	0.5	ND	mg/kg
Aldrin	0.5	ND	mg/kg
Heptachlor Epoxide	0.5	ND	mg/kg
Endosulfan I	0.5	ND	mg/kg
4,4'-DDE	0.5	ND	mg/kg
Dieldrin	0.5	ND	mg/kg
Endrin	0.5	ND	mg/kg
4,4'-DDD	0.5	ND	mg/kg
Endosulfan II	0.5	ND	mg/kg
4,4'-DDT	0.5	ND	mg/kg
Endrin Aldehyde	0.5	ND	mg/kg
Endosulfan Sulfate	0.5	ND	mg/kg
Methoxychlor	0.5	ND	mg/kg
Endrin Ketone	0.5	ND	mg/kg
Chlordane	1.0	ND	mg/kg
Toxaphene	2.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-12, 12-14' 18.5-20.5'
Sample Type: Soil

CHAS Lab #: 8807170-0
Date Received: 07/21,

Organochlorine Pesticides
by EPA Method 3540/8080

Extraction Date: 07/26/88
Analysis Date: 07/30/88

Parameter	MDL	Concentration	Units
Alpha-BHC	0.05	<0.05	mg/kg
Beta-BHC	0.05	<0.5	mg/kg
Delta-BHC	0.05	<0.5	mg/kg
Gamma-BHC (Lindane)	0.05	<0.5	mg/kg
Heptachlor	0.05	<0.5	mg/kg
Aldrin	0.05	<0.5	mg/kg
Heptachlor Epoxide	0.05	ND	mg/kg
Endosulfan I	0.05	ND	mg/kg
4,4'-DDE	0.05	ND	mg/kg
Dieldrin	0.05	ND	mg/kg
Endrin	0.05	ND	mg/kg
4,4'-DDD	0.05	ND	mg/kg
Endosulfan II	0.05	ND	mg/kg
4,4'-DDT	0.05	ND	mg/kg
Endrin Aldehyde	0.05	ND	mg/kg
Endosulfan Sulfate	0.05	ND	mg/kg
Methoxychlor	0.05	ND	mg/kg
Endrin Ketone	0.05	ND	mg/kg
Chlordane	0.1	ND	mg/kg
Toxaphene	0.2	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 1 B-12, 4-8'
Sample Type: Soil

CHAS Lab #: 8807170-07M
Date Received: 07/21/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/26/88
Analysis Date: 07/29/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: CHI Environmental Engineering
Sample I.D.: COMPOSITE 3 B-12, 12-14' + 15.5-20.5'
Sample Type: Soil

CHAS Lab #: 8807170-09M
Date Received: 07/21/88

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 07/26/88
Analysis Date: 07/29/88

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	0.1	ND	mg/kg
PCB - Aroclor 1221	0.1	ND	mg/kg
PCB - Aroclor 1232	0.1	ND	mg/kg
PCB - Aroclor 1242	0.1	ND	mg/kg
PCB - Aroclor 1248	0.1	ND	mg/kg
PCB - Aroclor 1254	0.1	ND	mg/kg
PCB - Aroclor 1260	0.1	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

APPENDIX G

CleanHarbors
ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: E-1656

Date Received: 01/31/89
CHAS Lab #: 8901272

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard M Ravenelle 2/28/89
Richard M. Ravenelle
Assistant Laboratory Manager

0089-0743

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W89-S15 SS-1 0-2
Sample Type: Soil

CHAS Lab #: 8902055-01A
Date Received: 02/03/89

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.010	ND
Chloromethane	0.020	ND	trans-1,3-Dichloropropene	0.010	ND
Bromomethane	0.020	ND	2-Chloroethylvinyl Ether	0.020	ND
Vinyl Chloride	0.020	ND	Bromoform	0.010	ND
Chloroethane	0.020	ND	1,1,2,2-Tetrachloroethane	0.010	ND
Methylene Chloride	0.010	ND	Tetrachloroethene	0.010	ND
Trichlorofluoromethane	0.010	ND	Toluene	0.010	ND
1,1-Dichloroethene	0.010	ND	Chlorobenzene	0.010	ND
1,1-Dichloroethane	0.010	ND	Ethylbenzene	0.010	ND
trans-1,2-Dichloroethene	0.010	ND			
Chloroform	0.010	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.010	ND	Acetone	0.040	ND
1,1,1-Trichloroethane	0.010	ND	Carbon Disulfide	0.020	ND
Carbon Tetrachloride	0.010	ND	2-Butanone	0.040	ND
Bromodichloromethane	0.010	ND	Vinyl Acetate	0.020	ND
1,2-Dichloropropane	0.010	ND	4-Methyl-2-Pentanone	0.010	ND
cis-1,3-Dichloropropene	0.010	ND	2-Hexanone	0.010	ND
Trichloroethene	0.010	ND	Styrene	0.010	ND
Benzene	0.010	ND	Total Xylenes	0.010	ND
Dibromochloromethane	0.010	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.010	ND
			Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
* = mg/kg based on sample weight as received

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 104%
Toluene-D8: 102%
p-BFB: 86%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S15 SS-1 0-2
Sample Type: Soil

CHAS Lab #: 8902055-01C
Date Received: 02/06/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	210	mg/kg	02/14/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	200	mg/kg	02/14/89	503D/503E-B(b)
Total Solids	--	89.9	%	02/07/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S15 SS-2 4-6
Sample Type: Soil

CHAS Lab #: 8902055-02C
Date Received: 02/06/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	75	mg/kg	02/14/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	37	mg/kg	02/14/89	503D/503E-B(b)
Total Solids	--	89.2	%	02/07/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S15 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902055-03C
Date Received: 02/06/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	13	mg/kg	02/15/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	13	mg/kg	02/15/89	503D/503E-B(b)
Total Solids	--	90.4	%	02/07/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S15 SS-5 15-17
Sample Type: Soil

CHAS Lab #: 8902055-05C
Date Received: 02/06/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	13	mg/kg	02/15/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	13	mg/kg	02/15/89	503D/503E-B(b)
Total Solids	--	90.4	%	02/07/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL/W-89-S16
P.O. #: E-1656

Date Received: 02/02/89
CHAS Lab #: 8902017

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard M. Ravenelle 3/6/89
Richard M. Ravenelle
Assistant Laboratory Manager

0089-0749

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-1 0-2
Sample Type: Soil

CHAS Lab #: 8902017-01A
Date Received: 02/02/89

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.010	ND
Chloromethane	0.020	ND	trans-1,3-Dichloropropene	0.010	ND
Bromomethane	0.020	ND	2-Chloroethylvinyl Ether	0.020	ND
Vinyl Chloride	0.020	ND	Bromoform	0.010	ND
Chloroethane	0.020	ND	1,1,2,2-Tetrachloroethane	0.010	ND
Methylene Chloride -----	0.010	--- TR	Tetrachloroethene	0.010	ND
Trichlorofluoromethane	0.010	ND	Toluene	0.010	ND
1,1-Dichloroethene	0.010	ND	Chlorobenzene	0.010	ND
1,1-Dichloroethane	0.010	ND	Ethylbenzene	0.010	ND
trans-1,2-Dichloroethene	0.010	ND			
Chloroform	0.010	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.010	ND	Acetone	0.040	ND
1,1,1-Trichloroethane	0.010	ND	Carbon Disulfide	0.020	ND
Carbon Tetrachloride	0.010	ND	2-Butanone	0.040	ND
Bromodichloromethane	0.010	ND	Vinyl Acetate	0.020	ND
1,2-Dichloropropane	0.010	ND	4-Methyl-2-Pentanone	0.010	ND
cis-1,3-Dichloropropene	0.010	ND	2-Hexanone	0.010	ND
Trichloroethene	0.010	ND	Styrene	0.010	ND
Benzene	0.010	ND	Total Xylenes	0.010	ND
Dibromochloromethane	0.010	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.010	ND
			Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 102%
Toluene-D8: 102%
p-BFB: 82%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902017-03A
Date Received: 02/02/89

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.010	ND
Chloromethane	0.020	ND	trans-1,3-Dichloropropene	0.010	ND
Bromomethane	0.020	ND	2-Chloroethylvinyl Ether	0.020	ND
Vinyl Chloride	0.020	ND	Bromoform	0.010	ND
Chloroethane	0.020	ND	1,1,2,2-Tetrachloroethane	0.010	ND
Methylene Chloride	0.010	ND	Tetrachloroethene	0.010	ND
Trichlorofluoromethane	0.010	ND	Toluene	0.010	ND
1,1-Dichloroethene	0.010	ND	Chlorobenzene	0.010	ND
1,1-Dichloroethane	0.010	ND	Ethylbenzene	0.010	ND
trans-1,2-Dichloroethene	0.010	ND			
Chloroform	0.010	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.010	ND	Acetone	0.040	ND
1,1,1-Trichloroethane	0.010	ND	Carbon Disulfide	0.020	ND
Carbon Tetrachloride	0.010	ND	2-Butanone	0.040	ND
Bromodichloromethane	0.010	ND	Vinyl Acetate	0.020	ND
1,2-Dichloropropane	0.010	ND	4-Methyl-2-Pentanone	0.010	ND
cis-1,3-Dichloropropene	0.010	ND	2-Hexanone	0.010	ND
Trichloroethene	0.010	ND	Styrene	0.010	ND
Benzene	0.010	ND	Total Xylenes	0.010	ND
Dibromochloromethane	0.010	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.010	ND
			Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
* = mg/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 104%
Toluene-D8: 106%
p-BFB: 87%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-4 8-10
Sample Type: Soil

CHAS Lab #: 8902017-04C
Date Received: 02/02/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	28	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	14	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	87.6	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors Environmental Engineering, Corp.
325 Wood Road
Braintree, MA 02184

Project: MURPHY'S WASTE OIL
P.O. #: E-1656

Date Received: 02/01/89
CHAS Lab #: 8902019

Attn: Ms. Joanne Driscoll

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

Should you have any questions concerning this work, please do not hesitate to contact me.

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA 600/4-79-019, "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", March 1979, and specific QA/QC requirements of the procedures used.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard M. Ravenelle 3/1/89
Richard M. Ravenelle
Assistant Laboratory Manager

0089-0753

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-1 0-2
Sample Type: Soil

CHAS Lab #: 8902019-01C
Date Received: 02/01/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	550	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	350	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	85.4	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-2 4-6
Sample Type: Soil

CHAS Lab #: 8902019-02C
Date Received: 02/01/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	820	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	510	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	82.6	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-3 (6-8)
Sample Type: Soil

CHAS Lab #: 8902019-03A
Date Received: 02/02/89

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	0.020	ND
Bromomethane	0.020	ND
Vinyl Chloride	0.020	ND
Chloroethane	0.020	ND
Methylene Chloride	0.010	ND
Trichlorofluoromethane	0.010	ND
1,1-Dichloroethene	0.010	ND
1,1-Dichloroethane	0.010	ND
trans-1,2-Dichloroethene	0.010	ND
Chloroform	0.010	ND
1,2-Dichloroethane	0.010	ND
1,1,1-Trichloroethane	0.010	ND
Carbon Tetrachloride	0.010	ND
Bromodichloromethane	0.010	ND
1,2-Dichloropropane	0.010	ND
cis-1,3-Dichloropropene	0.010	ND
Trichloroethene	0.010	ND
Benzene	0.010	ND
Dibromochloromethane	0.010	ND
1,1,2-Trichloroethane	0.010	ND
trans-1,3-Dichloropropene	0.010	ND
2-Chloroethylvinyl Ether	0.020	ND
Bromoform	0.010	ND
1,1,2,2-Tetrachloroethane	0.010	ND
Tetrachloroethene	0.010	ND
Toluene	0.010	ND
Chlorobenzene	0.010	ND
Ethylbenzene	0.010	ND
Hazardous Substance List Compounds:		
Acetone	0.040	ND
Carbon Disulfide	0.020	ND
2-Butanone	0.040	ND
Vinyl Acetate	0.020	ND
4-Methyl-2-Pentanone	0.010	ND
2-Hexanone	0.010	ND
Styrene	0.010	ND
Total Xylenes	0.010	TR
Additional Compounds:		
Dibromoethane (EDB)	0.010	ND
Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/kg based on sample weight as received

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 101%
Toluene-D8: 81%
p-BFB: 95%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902019-03M
Date Received: 02/01/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	3,900	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	3,600	mg/kg	02/16/89	503D/503E-B(b)
Phenols	0.45	ND	mg/kg	02/15/89	MOD.420.1(a)
Total Solids	--	80.4	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902019-03M
Date Received: 02/01/89

Polychlorinated Biphenyls (PCB's)
by EPA Method 3550/8080

Extraction Date: 02/09/89
Analysis Date: 02/15/89

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-4 8-10
Sample Type: Soil

CHAS Lab #: 8902019-04C
Date Received: 02/01/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	16,000	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	14,000	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	80.7	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp. CHAS Lab #: 8902019-03M
Sample I.D.: W-89-S17 SS-3 (6-8) Date Received: 02/01/89
Sample Type: Soil

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/09/89
Analysis Date: 02/17/89

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	0.33	ND
1,3-Dichlorobenzene	0.33	ND
1,4-Dichlorobenzene	0.33	ND
1,2-Dichlorobenzene	0.33	ND
bis(2-Chloroisopropyl)Ether	0.33	ND
N-Nitroso-Di-n-Propylamine	0.33	ND
Hexachloroethane	0.33	ND
Nitrobenzene	0.33	ND
Isophorone	0.33	ND
bis(2-Chloroethoxy)Methane	0.33	ND
1,2,4-Trichlorobenzene	0.33	ND
Naphthalene	0.33	ND
4-Chloroaniline	0.33	ND
Hexachlorobutadiene	0.33	ND
2-Methylnaphthalene	0.33	ND
Hexachlorocyclopentadiene	0.33	ND
2-Chloronaphthalene	0.33	ND
2-Nitroaniline	1.60	ND
Dimethylphthalate	0.33	ND
Acenaphthylene	0.33	ND
3-Nitroaniline	1.60	ND
Acenaphthene	0.33	ND
Dibenzofuran	0.33	ND
2,4-Dinitrotoluene	0.33	ND
2,6-Dinitrotoluene	0.33	ND
Diethylphthalate	0.33	ND
4-Chlorophenyl-phenylether	0.33	ND
Fluorene	0.33	ND
4-Nitroaniline	1.60	ND
N-Nitrosodiphenylamine	0.33	ND
4-Bromophenyl-phenylether	0.33	ND
Hexachlorobenzene	0.33	ND
Phenanthrene	0.33	TR
Anthracene	0.33	ND
Di-n-Butylphthalate	0.33	ND
Fluoranthene	0.33	0.48
Pyrene	0.33	0.91
Butylbenzylphthalate	0.33	ND
3,3'-Dichlorobenzidine	0.66	ND
Benzo(a)Anthracene	0.33	TR
bis(2-Ethylhexyl)Phthalate	0.33	ND
Chrysene	0.33	TR
Di-n-Octylphthalate	0.33	ND
Benzo(b)Fluoranthene	0.33	0.43**
Benzo(k)Fluoranthene	0.33	**
Benzo(a)Pyrene	0.33	TR
Indeno(1,2,3-cd)Pyrene	0.33	1.30
Dibenz(a,h)Anthracene	0.33	ND
Benzo(g,h,i)Perylene	0.33	0.35

Acid Compounds	MDL*	Conc.*
Phenol	0.33	ND
2-Chlorophenol	0.33	ND
2-Methylphenol	0.33	ND
4-Methylphenol	0.33	ND
2-Nitrophenol	0.33	ND
2,4-Dimethylphenol	0.33	ND
2,4-Dichlorophenol	0.33	ND
4-Chloro-3-methylphenol	0.33	ND
2,4,6-Trichlorophenol	1.60	ND
2,4,5-Trichlorophenol	1.60	ND
2,4-Dinitrophenol	1.60	ND
4-Nitrophenol	1.60	ND
4,6-Dinitro-2-methylphenol	1.60	ND
Pentachlorophenol	1.60	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/kg based on sample weight as received.
TR = Trace amount present but below MDL
** = benzo(b) and benzo(k)fluoranthenes not resolvable; reported as benzo(b)fluoranthene.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S17 SS-4 8-10
Sample Type: Soil

CHAS Lab #: 8902019-04U1
Date Received: 02/01/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Flashpoint	--	>200	deg F	03/14/89	D1310-84(u)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Clean Harbors Analytical, 325 Wood Rd., Braintree, MA. 02184 | CHAIN OF CUSTODY RECORD | Sample Custodian - (617) 849-6070 | Page 1 of 1

Client: CHI - [illegible] Project Name: [illegible] Project/P.O. #: [illegible] Date: [illegible]

Report To: J. Driscoll Address: [illegible] Phone #: [illegible]

Invoice To: J. Driscoll Address:

Date Samples Collected: 2-1-87 by: Evelyn H. Lewis Date Samples Received: 2-1-87

Airbill/Bill of Lading? Y N NOTE: Samples received unpreserved will be preserved upon arrival at CHAS. Samples were: Preserved Unpreserved

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Type	Analysis: TPH	VOC 624	VOC 8240	PCB	BNA	Acid	VOC 601			# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
1-81-S1A			[illegible]	SOIL	X	X								2		
			[illegible]		X		X							2		
			[illegible]		X	X		X	X	X				2		
			[illegible]		X	X								2		

Relinquished by: [illegible] Date: [illegible] Time: [illegible]

Received by: [illegible] Date: 2-2-87 Time: 11:20 AM

Relinquished by: Date: Time:

Received by: Date: Time:

VOA Vial | Glass Bottle | Plastic Bot. | Pres. | Volume

Preservation Key: A - Acidified with _____
B - Filtered, C - Sample chilled, D - NaOH,
E - NaThiosulfate, W - Sample Ambient, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)

Standard laboratory turnaround time is 2 weeks form date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs 48 Hrs 1 Week (2 Weeks) Other: _____

CHI 119

0089-0762

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18-SS-1 (0-2)
Sample Type: Soil

CHAS Lab #: 8901258-01A
Date Received: 01/31/89

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.010	ND
Chloromethane	0.020	ND	trans-1,3-Dichloropropene	0.010	ND
Bromomethane	0.020	ND	2-Chloroethylvinyl Ether	0.020	ND
Vinyl Chloride	0.020	ND	Bromoform	0.010	ND
Chloroethane	0.020	ND	1,1,2,2-Tetrachloroethane	0.010	ND
Methylene Chloride	0.010	ND	Tetrachloroethene	0.010	ND
Trichlorofluoromethane	0.010	ND	Toluene	0.010	ND
1,1-Dichloroethene	0.010	ND	Chlorobenzene	0.010	ND
1,1-Dichloroethane	0.010	ND	Ethylbenzene	0.010	ND
trans-1,2-Dichloroethene	0.010	ND			
Chloroform	0.010	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.010	ND	Acetone	0.040	ND
1,1,1-Trichloroethane	0.010	ND	Carbon Disulfide	0.020	ND
Carbon Tetrachloride	0.010	ND	2-Butanone	0.040	ND
Bromodichloromethane	0.010	ND	Vinyl Acetate	0.020	ND
1,2-Dichloropropane	0.010	ND	4-Methyl-2-Pentanone	0.010	ND
cis-1,3-Dichloropropene	0.010	ND	2-Hexanone	0.010	ND
Trichloroethene	0.010	ND	Styrene	0.010	ND
Benzene	0.010	ND	Total Xylenes	0.010	ND
Dibromochloromethane	0.010	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.010	ND
			Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
* = mg/kg based on sample weight as received

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 105%
Toluene-D8: 102%
p-BFB: 90%

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18 SS-1 0-2'
Sample Type: Soil

CHAS Lab #: 8901258-01M
Date Received: 01/31/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	110	mg/kg	02/13/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	31	mg/kg	02/14/89	503D/503E-B(b)
Total Solids	--	74.8	%	02/02/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18 SS-2 4'-6'
Sample Type: Soil

CHAS Lab #: 8901258-02M
Date Received: 01/31/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	390	mg/kg	02/13/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	140	mg/kg	02/14/89	503D/503E-B(b)
Total Solids	--	76.7	%	02/02/89	209F(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18 SS-3 6'-8'
Sample Type: Soil

CHAS Lab #: 8901258-03M
Date Received: 01/31/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	26,000	mg/kg	02/14/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	20,000	mg/kg	02/14/89	503D/503E-B(b)
Phenols	0.529	ND	mg/kg	02/10/89	MOD.420.1(a)
Total Solids	--	75.7	%	02/02/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18 SS-3 6'-8'
Sample Type: Soil

CHAS Lab #: 8901258-03M
Date Received: 01/31/89

Polychlorinated Biphenyls (PCB's)
by EPA Method 3550/8080

Extraction Date: 02/02/89
Analysis Date: 02/15/89

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18-SS-3 (6-8)
Sample Type: Soil

CHAS Lab #: 8901258-03A
Date Received: 01/03/89

Semi-Volatile Base/Neutral and Acid Extractable Organics
by EPA Method 8270 (ref. c)
Extraction Date: 02/02/89
Analysis Date: 02/15/89

Base/Neutral Compounds	MDL*	Conc.*
bis(2-Chloroethyl)Ether	1.6	ND
1,3-Dichlorobenzene	1.6	ND
1,4-Dichlorobenzene	1.6	ND
1,2-Dichlorobenzene	1.6	ND
bis(2-Chloroisopropyl)Ether	1.6	ND
N-Nitroso-Di-n-Propylamine	1.6	ND
Hexachloroethane	1.6	ND
Nitrobenzene	1.6	ND
Isophorone	1.6	ND
bis(2-Chloroethoxy)Methane	1.6	ND
1,2,4-Trichlorobenzene	1.6	ND
Naphthalene	1.6	ND
4-Chloroaniline	1.6	ND
Hexachlorobutadiene	1.6	ND
2-Methylnaphthalene	1.6	ND
Hexachlorocyclopentadiene	1.6	ND
2-Chloronaphthalene	1.6	ND
2-Nitroaniline	8.0	ND
Dimethylphthalate	1.6	ND
Acenaphthylene	1.6	ND
3-Nitroaniline	8.0	ND
Acenaphthene	1.6	ND
Dibenzofuran	1.6	ND
2,4-Dinitrotoluene	1.6	ND
2,6-Dinitrotoluene	1.6	ND
Diethylphthalate	1.6	ND
4-Chlorophenyl-phenylether	1.6	ND
Fluorene	1.6	ND
4-Nitroaniline	8.0	ND
N-Nitrosodiphenylamine	1.6	ND
4-Bromophenyl-phenylether	1.6	ND
Hexachlorobenzene	1.6	ND
Phenanthrene	1.6	ND
Anthracene	1.6	ND

Base/Neutral Compounds	MDL*	Conc.*
Di-n-Butylphthalate	1.6	ND
Fluoranthene	1.6	ND
Pyrene	1.6	ND
Butylbenzylphthalate	1.6	ND
3,3'-Dichlorobenzidine	3.3	ND
Benzo(a)Anthracene	1.6	ND
bis(2-Ethylhexyl)Phthalate	1.6	ND
Chrysene	1.6	ND
Di-n-Octylphthalate	1.6	ND
Benzo(b)Fluoranthene	1.6	ND
Benzo(k)Fluoranthene	1.6	ND
Benzo(a)Pyrene	1.6	ND
Indeno(1,2,3-cd)Pyrene	1.6	ND
Dibenz(a,h)Anthracene	1.6	ND
Benzo(g,h,i)Perylene	1.6	ND

Acid Compounds	MDL*	Conc.*
Phenol	1.6	ND
2-Chlorophenol	1.6	ND
2-Methylphenol	1.6	ND
4-Methylphenol	1.6	ND
2-Nitrophenol	1.6	ND
2,4-Dimethylphenol	1.6	ND
2,4-Dichlorophenol	1.6	ND
4-Chloro-3-methylphenol	1.6	ND
2,4,6-Trichlorophenol	8.0	ND
2,4,5-Trichlorophenol	8.0	ND
2,4-Dinitrophenol	8.0	ND
4-Nitrophenol	8.0	ND
4,6-Dinitro-2-methylphenol	8.0	ND
Pentachlorophenol	8.0	ND

Notes: ND = Below minimum detectable level (MDL)
* = mg/kg based on sample weight as received.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S18 SS-4 8'-10'
Sample Type: Soil

CHAS Lab #: 8901258-04M
Date Received: 01/31/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	6,600	mg/kg	02/14/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	5,100	mg/kg	02/14/89	503D/503E-B(b)
Total Solids	--	89.8	%	02/02/89	209F(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902017-03M
Date Received: 02/02/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	13	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	ND	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	94.3	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-2 4-6
Sample Type: Soil

CHAS Lab #: 8902017-02C
Date Received: 02/02/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	ND	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	ND	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	94.9	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902017-03M
Date Received: 02/02/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	13	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	ND	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	94.3	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-1 0-2
Sample Type: Soil

CHAS Lab #: 8902017-01A
Date Received: 02/02/89

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.010	ND
Chloromethane	0.020	ND	trans-1,3-Dichloropropene	0.010	ND
Bromomethane	0.020	ND	2-Chloroethylvinyl Ether	0.020	ND
Vinyl Chloride	0.020	ND	Bromoform	0.010	ND
Chloroethane	0.020	ND	1,1,2,2-Tetrachloroethane	0.010	ND
Methylene Chloride -----	0.010	--- TR	Tetrachloroethene	0.010	ND
Trichlorofluoromethane	0.010	ND	Toluene	0.010	ND
1,1-Dichloroethene	0.010	ND	Chlorobenzene	0.010	ND
1,1-Dichloroethane	0.010	ND	Ethylbenzene	0.010	ND
trans-1,2-Dichloroethene	0.010	ND			
Chloroform	0.010	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.010	ND	Acetone	0.040	ND
1,1,1-Trichloroethane	0.010	ND	Carbon Disulfide	0.020	ND
Carbon Tetrachloride	0.010	ND	2-Butanone	0.040	ND
Bromodichloromethane	0.010	ND	Vinyl Acetate	0.020	ND
1,2-Dichloropropane	0.010	ND	4-Methyl-2-Pentanone	0.010	ND
cis-1,3-Dichloropropene	0.010	ND	2-Hexanone	0.010	ND
Trichloroethene	0.010	ND	Styrene	0.010	ND
Benzene	0.010	ND	Total Xylenes	0.010	ND
Dibromochloromethane	0.010	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.010	ND
			Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 102%
Toluene-D8: 102%
p-BFB: 82%

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-2 4-6
Sample Type: Soil

CHAS Lab #: 8902017-02C
Date Received: 02/02/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	ND	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	ND	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	94.9	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp.
Sample I.D.: W-89-S16 SS-3 6-8
Sample Type: Soil

CHAS Lab #: 8902017-03M
Date Received: 02/02/89

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Total Oil & Grease by IR	10	13	mg/kg	02/16/89	503B/503D(b)
Petroleum Hydrocarbon Oil & Grease by IR	10	ND	mg/kg	02/16/89	503D/503E-B(b)
Total Solids	--	94.3	%	02/03/89	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

Clean Harbors

Client: Clean Harbors Environmental Engineering, Corp. CHAS Lab #: 8902017-01A
Sample I.D.: W-89-S16 SS-1 0-2 Date Received: 02/02/89
Sample Type: Soil

Volatile Organic Analysis
by EPA Method 8240 (ref. c)

Analysis Date: 02/14/89

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	0.010	ND
Chloromethane	0.020	ND	trans-1,3-Dichloropropene	0.010	ND
Bromomethane	0.020	ND	2-Chloroethylvinyl Ether	0.020	ND
Vinyl Chloride	0.020	ND	Bromoform	0.010	ND
Chloroethane	0.020	ND	1,1,2,2-Tetrachloroethane	0.010	ND
Methylene Chloride -----	0.010	--- TR	Tetrachloroethene	0.010	ND
Trichlorofluoromethane	0.010	ND	Toluene	0.010	ND
1,1-Dichloroethene	0.010	ND	Chlorobenzene	0.010	ND
1,1-Dichloroethane	0.010	ND	Ethylbenzene	0.010	ND
trans-1,2-Dichloroethene	0.010	ND			
Chloroform	0.010	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	0.010	ND	Acetone	0.040	ND
1,1,1-Trichloroethane	0.010	ND	Carbon Disulfide	0.020	ND
Carbon Tetrachloride	0.010	ND	2-Butanone	0.040	ND
Bromodichloromethane	0.010	ND	Vinyl Acetate	0.020	ND
1,2-Dichloropropane	0.010	ND	4-Methyl-2-Pentanone	0.010	ND
cis-1,3-Dichloropropene	0.010	ND	2-Hexanone	0.010	ND
Trichloroethene	0.010	ND	Styrene	0.010	ND
Benzene	0.010	ND	Total Xylenes	0.010	ND
Dibromochloromethane	0.010	ND			
			Additional Compounds:		
			Dibromoethane (EDB)	0.010	ND
			Methyl-t-Butylether (MTBE)	0.020	ND

Notes

ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = mg/kg based on sample weight as received

No additional peaks observed in sample.

QA/QC Surrogate Recoveries:
1,2-Dichloroethane-D4: 102%
Toluene-D8: 102%
p-BFB: 82%

0089-0777

EXHIBIT 3.c

I, John Darcy, City Clerk of the City of Woburn, Mass. hereby certify that the notice of variance from Bd. of Appeals has been received & recorded in this office 11/4/88 and no appeal was received during the 20 days next after such receipt & recording of said notice

11-25-88 John Darcy
Date John Darcy

THE COMMONWEALTH OF MASSACHUSETTS

WOBURN
CITY OR TOWN

Y-N

BOARD OF APPEALS

November 25 19 88

NOTICE OF VARIANCE

Conditional or Limited Variance or Special Permit

(General Laws Chapter 40A, Section 18 as amended)

Notice is hereby given that a Conditional or Limited Variance or Special Permit has been granted

To Murphy's Waste Oil Service, Inc.
Owner or Petitioner

Address 252 Salem Street

City or Town Woburn, MA.

Variance on height of fence from 6 ft. to 8 ft. for security
Identify Land Affected
of storage facility located at 252 Salem Street

by the ~~Town~~ City of Woburn Board of Appeals affecting the rights of the owner with respect to the use of premises on

252 Salem Street Woburn
Street City or Town

the record title standing in the name of

Old Oil Realty Trust

whose address is 16 Harriet Avenue Burlington MA.
Street City or Town State

by a deed duly recorded in the Middlesex County Registry of Deeds in Book Page BK. 13231 Pg. 240 Registry District of the Land Court

Certificate No. Book Page

The decision of said Board is on file with the papers in Decision or Case No.
in the office of the ~~Town~~ City Clerk

Certified this day of 19

Board of Appeals: Robert L. Martin Chairman
Board of Appeals

James F. Doherty Clerk
Board of Appeals

19 at o'clock and minutes M.

Received and entered with the Register of Deeds in the County of

Book Page

ATTEST

Register of Deeds

0089-0779

Notice to be recorded by Land Owner.

MSD 03/20/89 09:40:47 31 16.00

City of Woburn
Massachusetts

BOARD OF APPEALS

After Obtaining Your NOTICE OF VARIANCE,

YOU MUST RECORD YOUR NOTICE IN CAMBRIDGE AT THE REGISTRY OF DEEDS : Proof of Recording is NOT a receipt from the cashier at the Registry. Proof would be either:

1. A copy of the documents with the Registry time stamp shown on the pages, or,
2. The actual document after it is recorded and returned to you by mail with the Book and Page stamped on it.

A copy is your best option, since you can get a copy as soon as you record the documents. The original document will be kept by the Registry for up to a year before it is returned to you, so that is not practical to wait if you must start construction within a year. If the Registry officials give you any problems, have them call the City Clerk's Office or the Building Commissioner, or the Secretary to the Board of Appeals.

OBTAINING THE BUILDING PERMIT : Secondly, you must present the Building Commissioner with the proof that you recorded the documents, BEFORE any building permit will be issued.

Remember: A Special Permit is valid for two years; a Variance for one year; if they are not recorded within those times, they can become invalid.

Board of Appeals, Secretary, Anne M. Beauchamp
Edward A. J. Poskus, Building Commissioner
John Darcy, City Clerk
4/88

City of Woburn
Massachusetts

BOARD OF APPEALS

CITY CLERKS OFFICE
88 NOV -4 PM 4:09
WOBURN, MASS. 01801

IN THE MATTER OF THE PETITION OF

MURPHY'S WASTE OIL SERVICE, INC.
252 SALEM STREET

A Public Hearing was held on Wednesday, September 14, 1988, at 8:00 p.m. on the petition of Murphy's Waste Oil Service, Inc., 252 Salem Street, Woburn, MA., for a variance on height of fence from 6 ft. to 8 ft. for security of storage facility.

The Property upon which the variance is sought is located at 252 Salem Street, Woburn, MA.

The Board fixed Wednesday, September 14, 1988, for the hearing on the petition and caused notice of the time and of the place for the hearing on the subject matter to be published in the Daily Times on August 30, 1988, and September 7, 1988.

Notice of the hearing was mailed, postage, pre-paid, to all owners of the property deemed by the Board to be affected thereby as they appear on the most recent tax list, (including among others the owners of the other land lying within a 300 foot radius of the premises as they appear on such tax lists). A hearing before the Board was held on September 14, 1988, at 8:00 p.m. at which time all interested parties were given full opportunity to be heard.

The Board viewed the premises and is familiar with the area in which the variance is sought.

The Board in makings it's decision has considered the character of the neighborhood, the topography factors of the situs, the evidence presented at the Public Hearing and applicable zoning by-law and statutory law.

The Board hereby grants this variance for the following reasons, in accordance with the plan dated August 12, 1988, and on file with the Board.

1. There are no special conditions affecting this particular parcel of land and buildings which do not affect generally the zoning district in which it is located.
2. A Literal enforcement of the provisions of the ordinance or by-law would involve a substantial hardship, financial or otherwise to the petitioners.
3. Desirable relief may be granted without substantial detriment to the public good.
4. It will not nullify or substantial derogate from the intent and purpose by the ordinance or by-law.

The Board hereby grants this variance. The Board voted thusly on this variance.

Robert L. Martin	Yes
James J. Long	Yes
Philip J. McGovern	Yes
James P. Doherty	Yes
Ernest Barbas	Yes
Kenneth R. Summers	Yes

Robert L Martin
ROBERT L. MARTIN, CHAIRMAN

0089-0782

I, John Darcy, City Clerk of the City of Woburn, Mass. hereby certify that the notice of variance from Bd. of Appeals has been received & recorded in this office 11/4/88 and no appeal was received during the 20 days next after such receipt & recording of said notice

11-25-88 John Darcy
Date John Darcy

JAMES J. LONG, MEMBER

PHILIP J. McGOVERN, MEMBER

JAMES P. DOHERTY, MEMBER

Ernest Barbas
ERNEST BARBAS, MEMBER

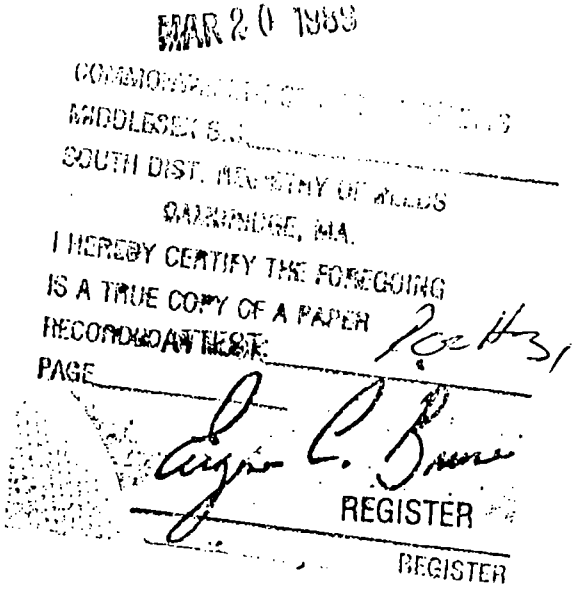
MAR 2 0 1985
MIDDLESEX S.S.
SOUTH DIST. REGISTRY OF DEEDS
CAMBRIDGE, MA.
I HEREBY CERTIFY THE FOREGOING
IS A TRUE COPY OF A PAPER
RECORDED AT THIS BOOK
PAGE
REGISTER
REGISTER

EXHIBIT 4.a.iii

STOCK PURCHASE AGREEMENT

This Stock Purchase Agreement is entered into this 21 day of February, 1989, by and between John F. Murphy and Joan E. Murphy, husband and wife, both of Burlington, Massachusetts (hereinafter jointly being referred to as the "Sellers" and individually as a "Seller"); Murphy's Waste Oil Service, Inc., a Massachusetts business corporation having its principal place of business at Woburn, Massachusetts (hereinafter referred to as the "Company"), and Clean Harbors of Kingston, Inc., a Massachusetts business corporation having its principal place of business at Braintree, Massachusetts (hereinafter referred to as the "Purchaser").

Recitals

The Sellers own all of the issued and outstanding capital stock of the Company. Purchaser desires to purchase all issued and outstanding stock of the Company, under such circumstances as will insure continuity of the oil storage and transfer station business of the Company. To this end, Purchaser intends to continue the retention of Joan E. Murphy for consultation to the Company for a period of time and to secure the benefit of a new, long term real estate lease for the Company's business premises owned by Old Oil Realty Trust of which the Sellers are the trustees and beneficiaries.

Now therefore, for valuable consideration which each party hereto acknowledges receiving from the other, and upon the mutual covenants set forth below, the parties covenant and agree as follows.

Agreement

Article I

Purchase of Capital Stock; Closing; Purchase Price

1.1 - Capital Stock. On the basis of the representations and warranties contained herein, and subject to the terms and conditions hereof, the Purchaser agrees to purchase, and the Sellers to sell, all of the issued and outstanding shares of capital stock of the Company (the "Stock") owned as follows:

Shareholders	No./Shares	Certificate Nos.
John F. Murphy	90	2
Joan E. Murphy	10	1

Both as of the date hereof and as of the Closing Date, the Stock shall be and constitute all of the issued and outstanding shares of stock of the Company, with no person or entity having any present, contingent or future right or option to acquire any additional shares of stock the Company.

1.2 - Purchase Price. The consideration to be paid for the Stock (the "Purchase Price") shall be One Hundred Seventy-Five Thousand Dollars ($175,000), plus whatever amount shall at the Closing be held for the benefit of the Company by the Massachusetts Insolvency Fund, payable to the Sellers at the Closing by certified or bank teller's or cashier's check.

1.3 - Date, Time and Place of Closing. The Closing shall take place at 10:00 a.m. local time on February , 1989 or at such other time and date as the parties may agree upon in writing (such date being hereinafter referred to as the "Closing Date" and such time on such date being referred to as the "Closing") at 16 Harriet Avenue, Burlington, Massachusetts 01803.

Until the Closing, Seller shall have control of the Company and shall be responsible for its operations as set forth herein.

1.4 - Action to be Taken at the Closing. Subject to the terms and conditions set forth in this Agreement, it is agreed that at the Closing:

(a) Seller will deliver to Purchaser, or to Purchaser's nominee designated by written notice to the Seller at least five (5) days prior to the Closing Date, certificates representing all of the issued and outstanding shares of the stock of the Company, duly endorsed in blank.

(b) Purchaser will deliver to Seller the Purchase Price.

(c) The Company and Joan E. Murphy will enter into the Consulting and Non-Competition Agreement in the form of Exhibit A to this Agreement (the "Consulting and Non-Competition Agreement").

(d) The Sellers, as trustees of Old Oil Realty Trust, shall enter into a new real estate lease with the Company pertaining to the property at 252 (Rear) Salem Street, Woburn, Massachusetts (the "Premises") in the form attached hereto as Exhibit B, and any prior leases pertaining to the Premises shall be terminated without obligation or liability to either party thereto.

(e) Sellers will provide the Purchaser with the resignations of all officers and directors of the Company.

(f) The Company shall pay any outstanding bills due Clean Harbors, or an appropriate set-off shall be made to the Purchase Price for the amount due the Company from the Massachusetts Insolvency Fund (a credit to Seller) and the amount due Clean Harbors from the Company (a credit to Purchaser).

ARTICLE II

Representations and Warranties of the Company and the Sellers

The Company and the Sellers hereby jointly and severally represent and warrant to Purchaser as of the date hereof and again as of the Closing as follows:

2.1 - Due Organization. The Company is a corporation duly organized and legally existing under the laws of the Commonwealth of Massachusetts which has the power and authority to conduct all of the activities conducted by it and to own or lease all of the assets owned or leased by it. The Company does not own any shares of stock or any other securities of any corporation or have any interest in any firm, partnership, association or other entity except as listed on Exhibit C hereto. Complete and correct copies of the Articles of Organization and all amendments thereto and the By-laws of the Company are attached hereto as Exhibit C-2, and no changes therein will be made subsequent to the date hereof and prior to the Closing.

2.2 - Stock. The Stock is validly issued and outstanding and fully paid and nonassessable. Subsequent to the date hereof and prior to the Closing, the Company will not issue or acquire any shares of its capital stock. The Company does not have outstanding any options to purchase or any rights or warrants to subscribe for, or any contracts or commitments to issue or sell, shares of its capital stock or any such warrants, convertible securities or obligations. Sellers are the record and beneficial owner of all of the issued and outstanding capital stock of the Company free and clear of any liens, pledges, hypothecations, options, warrants, puts, calls, commitments, claims, transfer restrictions (except for such restrictions on transfer as may arise pursuant to applicable securities laws) or other charges or encumbrances, and there are no other owners, beneficial or of record, of any capital stock of the Company. When the Stock is transferred to the Purchaser at the Closing, the Purchaser will acquire good and valid title to all of the issued and outstanding capital stock of the Company, free and clear of any and all charges or encumbrances of any kind.

2.3 - Financial Statements. Attached hereto as Exhibit D are the tax returns for the Company for the fiscal years ending September 30, 1984, 1985 and 1986 (the "Tax Returns") which accurately reflect the gross receipts and expenses of the Company on the cash method of accounting for the periods indicated. The Company has no contingent or other liabilities (including without limitation, tax liabilities) which are not reflected in the Agreement or the Schedules attached hereto.

2.4 - Machinery, Vehicles and Equipment. Set forth as Exhibit E is a complete and correct list of all machinery, vehicles, equipment, furniture, fixtures, inventory and/or other personal property owned by the Company on the date hereof.

2.5 - Title to Assets. The Company has good and merchantable title to all of its assets and properties, including the assets reflected on the balance sheet (the "Balance Sheet") included as part of the Tax Returns (other than merchandise since disposed of in the ordinary course of business), with the following exceptions (the "Permitted Encumbrances"):

(a) liens, mortgages, pledges and encumbrances reflected in the Balance Sheet and the Exhibits hereto;

(b) liens for taxes not yet due or which are being contested in good faith by appropriate proceedings and which have been disclosed to Purchaser and of which Purchaser is aware prior to the Closing to the extent such liens or taxes were not properly accruable at the date of the Balance Sheet; and

(c) other liens or encumbrances incidental to the conduct in the ordinary course of the business of the Company to the extent not required to be disclosed in the Balance Sheet or the notes thereto and which do not materially detract from the value of the properties and assets of the Company.

2.6 - No Leases of Personal Property. None of the assets of the Company are held or will be held at the Closing by the Company as lessee under any lease or as a conditional sale vendee under a conditional sale contract or other title retention agreement, except as set forth in Exhibit F.

2.7 - Licenses and Permits. Attached hereto as Exhibit G is, to the best of the knowledge and belief of the Sellers and the Company, a complete and correct list and summary description or copies of all licenses, permits, approvals, site assignments, patents and trademarks now owned or held by the Company. All of said licenses, etc. were duly issued and, except as described below in this Agreement, no litigation, administrative proceedings, or, to the best of the Seller's and the Company's knowledge, investigations, or adverse claims are pending with respect thereto. The Company has not granted any license or sublicense to any third parties with respect thereto. The Company possesses all necessary licenses, permits, site assignments, etc. to conduct its business as now operated except as may be fully described on Exhibit G. The Company possesses no patents, patent applications, trademarks or trademark applications except as otherwise listed on Exhibit G, and no litigation nor adverse claims are pending with respect thereto.

2.8 - Insurance. The Company is insured and has other instruments of financial responsibility as described in Exhibit H, and all of the policies and instruments set forth therein are in full force and effect, with the Company in full performance thereunder.

2.9 - Contracts. Attached hereto as Exhibit I is a brief description of all contracts and other agreements, if any, which are binding on the Company, with the exception of the following:

(a) contracts or commitments for the purchase of materials, inventory and supplies by the Company entered into in the ordinary and usual course of business which do not individually exceed $1,000 and which have a duration of less than three months; and

(b) contracts or commitments for the sale of goods or products by the Company entered into in the ordinary and usual course of business which do not individually involve an amount or value in excess of $1,000 and which have a duration of less than three months.

The Company is not in default under any of said instruments, nor is any default or failure to perform by the Company alleged by any party to any such instrument, and no act or event has occurred which with notice or lapse of time, or both, would constitute a default under any such instrument.

2.10 - Employee Plans and Contracts. The Company will have no continuing obligations under any pension, retirement, bonus, deferred compensation, stock purchase, profit sharing, insurance or similar plan or arrangement for the benefit of employees, oral or written, other than arrangements described in Exhibit J. Participation by employees of the Company under any such plans or arrangements will be terminated at the Closing, and Seller shall cause any benefits resulting from said terminations to be issued in the normal course of business. In connection with any such plan or arrangement, there have not been any "prohibited transactions" within the meaning of Section 406(a) of the Employee Retirement Income Security Act of 1974 ("ERISA") and there have not been any "reportable events" within the meaning of Section 403(b) of ERISA. All reports and filings with respect to said fringe benefit plans required to be made pursuant to state or federal law have been timely filed, except as otherwise set forth in Exhibit J.

The Company has no oral or written contract or agreement of employment with any officer, salesman or other employee, or agency, territorial franchise, sales representative or other service agreement, not terminable without penalty on notice of one month or less, or with any labor union, except those described in Exhibit K.

2.11 - Contracts. The Company does not have any contracts not specified in this Agreement or the Exhibits hereto which are binding on the Company or on any other party and which might materially adversely affect the Company's properties, business or financial condition.

2.12 - All Necessary Approvals. The Company has been granted all material certificates, licenses, approvals, site assignments, permits and franchises from any federal, state, municipal or other governmental instrumentality, agency or commission or similar body which may be necessary to lawfully carry on its business and which are in full force and effect, and there are no outstanding or claimed violations of the same except as set forth on Exhibits L. All of said certificates, licenses, etc. were duly issued, and no litigation, administrative proceedings or, to the best of the Company's knowledge, investigations, or adverse claims are pending with respect thereto. Neither Sellers nor the Company make any representation or warranty that pending permit or license applications will be granted or approved by relevant regulatory agencies or any representation or warranty that existing licenses, permits, approvals or site assignments will be renewed or extended by such agencies. All parties hereto shall use all reasonable efforts to amend or conform the said certificates, licenses, etc. to the transactions contemplated under this Agreement.

2.13 - Liabilities. The Company does not have any liabilities, fixed or contingent, other than:

(a) liabilities fully reflected in the Balance Sheet;

(b) liabilities arising out of commitments, contracts or other agreements or arrangements described in the Exhibits to this Agreement, including liabilities excepted by Section 2.9 hereof; and

(c) liabilities incurred since the date of the Balance Sheet in the ordinary and usual course of business which have no material adverse effect on its financial condition or on the conduct of its business.

2.14 - All Assets Shown. The Company does not have any assets which are not fully reflected in the Balance Sheet, excepting only assets acquired since the date of the Balance Sheet in the ordinary and usual course of business which have no material effect on its financial condition or on the conduct of its business.

2.15 - Taxes. Except as provided in Section 2.5(b), the Company has prepared and filed in good faith all appropriate federal, state, local and other tax returns of every kind and nature for all periods on or before the due dates of such returns (as extended by any valid extensions of time) and have paid all

taxes shown to be due by said returns or on any assessments received by the Company or have made adequate provision for the payment thereof. The provisions for taxes (federal, state, local and other), and interest and penalties, if any, with respect thereto, reflected in the Balance Sheet are adequate to cover any and all taxes and any interest and penalties in connection therewith which have been or may be assessed with respect to the properties, business and operations of the Company for the period ended on the date of said Balance Sheet and all prior periods. No claim or liability is pending or has been assessed or threatened against the Company in connection with any such taxes except as reflected in the Balance Sheet.

All taxes or other assessments and levies which the Company is or was required by law to withhold or collect have been duly withheld and collected, and have been paid over to the proper governmental authorities or are held by the Company in separate bank accounts for such payment and all such withholdings and collections and all other payments due in connection therewith are duly set forth on the books of the Company.

2.16 - Litigation. Except as set forth in Exhibit L, there are no actions, suits, demands, claims or proceedings pending or, to the best of the Company's knowledge and belief threatened against or affecting the Company or the property of the Company in any court or before any federal, state, municipal or other governmental department, agency, commission, board or other instrumentality or before any arbitrator (all of which claims are adequately covered by insurance); nor is there any pending or, to the best of the Company's knowledge and belief, threatened governmental investigation(s) involving the Company, including inquiries, citations, notices of violation or complaints by the Federal Trade Commission, or any other federal, state or local administration that may have a material adverse effect upon the operations of the Company. There are no outstanding orders, decrees or stipulations to which the Company is a party affecting the Company or any of its activities. The Company is not in material default with respect to any judgment, order, decree, award, rule or regulation of any court or any governmental department, agency, commission, board or other instrumentality or arbitrators. Except to the extent indicated in Exhibit L, the Sellers and the Company are not aware of any potential or threatened claims against the Company with respect to the storage, treatment, handling, transportation, disposal or spillage of oils or hazardous wastes or materials, or any violation of any federal, state or local environmental laws, by-laws, ordinances, rules or regulations, including, without limitation, claims arising under Massachusetts G. L. c. 21E and 42 USCA secs. 9601 - 9657.

2.17 - Employee Disputes. There is no pending or threatened dispute between the Company and any of its employees which might materially and adversely affect the continuance of the business of the Company that is not covered by Sellers' indemnity under this Agreement.

2.18 - Accounts Receivable. The accounts receivable set forth on the Balance Sheet arose in the ordinary course of business and Seller has no knowledge of any particular account which may not be collectable in full.

2.19 - Inventory. The merchandise inventories included on the Balance Sheet are valued in accordance with generally accepted accounting principles, at the lower of cost or market, and are accurate and complete with respect to quantities. There have been no changes in the inventories reflected on the Balance Sheet since the date thereof except those resulting from purchases in the ordinary course of business and from operations and sales in the ordinary course of business.

2.20 - No Changes Since Balance Sheet. Since the date of the Balance Sheet there has not been (except as otherwise disclosed in the Exhibits hereto):

(a) Any material adverse change in assets, liabilities, financial condition, business, business organization or personnel of the Company or in relationships with suppliers, customers or others except as otherwise contemplated or disclosed under this Agreement;

(b) Any disposition, sale or issuance by the Company of any of its capital stock or grant of any option or right to acquire any of its capital stock or any acquisition or retirement for a consideration by the Company of any of its capital stock or any declaration or payment by the Company of any dividend or other distribution of or with respect to its capital stock;

(c) Any sale, mortgage, pledge or other disposition of any asset owned by the Company at the close of business on the date of the Balance Sheet, or acquired by the Company since said date other than in the ordinary and usual course of business;

(d) Any expenditure or commitment by the Company for the acquisition of assets of any kind, other than inventories and supplies acquired in the ordinary course of business;

(e) Any damage, destruction or loss (whether or not insured) materially and adversely affecting the property or business of the Company;

(f) Any general wage or salary increase by the Company except in the ordinary course of business;

(g) Any increase in the compensation payable or to become payable by the Company to any officer or employee except in the ordinary course of business;

(h) Any loans or advances by or to the Company other than renewals or extensions of existing indebtedness;

(i) Any cancellation by the Company of any indebtedness owing to it or any cancellation or settlement by the Company of any claims against others;

(j) Any sale, assignment or transfer by the Company of any patent, trademark, trade name, copyright, license, franchise, certificate, permit, site assignment, or other intangible asset;

(k) Any charge, demand or claim, other than in the ordinary course of business, pertaining to the transportation, storage, disposal, treatment or spilling of hazardous substances or oils or of any material violation of any environmental law, by-law, ordinance, code, rule or regulation except as described in Exhibits I and M and except as covered by Sellers' indemnity under this Agreement; or

(l) Any transaction of any kind not in the ordinary and usual course of business.

2.21 - Broker. No agent or broker or other person acting pursuant to authority of Sellers or the Company is entitled to any commission or finder's fee in connection with the transactions contemplated by this Agreement.

2.22 - Offices and Directors. The officers and directors of the Company are as listed in Exhibit M. Seller will cause to be delivered to Purchaser at the Closing the resignations of all directors and officers effective as of the Closing, unless otherwise designated by Purchaser, and there shall be no termination payments due said officers or directors other than normal current salary and fringe benefits.

2.23 - Authority. Sellers and the Company have the power and authority to execute and deliver this Agreement, to consummate the transactions hereby contemplated and to take all other actions required to be taken by Sellers and the Company pursuant to the provisions hereof. This Agreement is valid and binding upon Sellers and the Company and each of them in accordance with its terms. Neither the execution and delivery of

this Agreement nor the consummation of the transactions hereby contemplated will constitute any material violation or breach of any provision of any contract or other instrument to which Sellers or the Company is a party or by which any of the assets of the Company may be affected or secured; or of any order, writ, injunction, decree, statute, rule, regulation, permit, approval, or license; nor will the creation of any lien, charge or encumbrance on any of the assets of the Company result.

2.24 - Untrue Statements. Neither this Agreement nor any statement, list or certificate furnished or to be furnished to Purchaser pursuant hereto or in connection with this Agreement or any of the transactions hereby contemplated knowingly contains or will contain any untrue statement of a material fact or knowingly omits or will omit to state a material fact necessary in order to make the statements contained herein and therein, in light of the circumstances in which they are made, not misleading.

2.25 - Bank Accounts. Attached hereto as Exhibit N is a true and complete list of all bank accounts (including without limitation checking accounts, savings accounts, N.O.W. accounts or similar accounts), safe deposit boxes and money market fund accounts or similar deposit accounts of the Company, together with a list of all authorized signatories with respect thereto. The Company is not party to any contract, agreement or arrangement pursuant to which the Company has deposited any sums or pursuant to which the Company is holding on deposit any such sums, except as listed in Exhibit N.

2.26 - Board Authorization. The Board of Directors has duly authorized the execution and delivery of this Agreement by the Company.

ARTICLE III

Representations and Warranties of Purchaser

Purchaser represents and warrants to Seller as of the date hereof and again as of the Closing that:

3.1 - Due Organization. Purchaser is, and at the Closing Time will be, a corporation duly organized, validly existing and in good standing under the laws of the Commonwealth of Massachusetts.

3.2 - Purchaser Agreements. The performance of this Agreement and the agreements provided for herein to which Purchaser will be a party (the "Purchaser Agreements") will be duly and legally authorized by the Board of Directors of Purchaser. Purchaser will have the power and authority to execute and deliver the Purchaser Agreements, to consummate the transactions hereby contemplated and to take all other actions required to be taken by it pursuant to the provisions hereof, and the Purchaser Agreements will be valid and binding upon Purchaser

in accordance with their terms. Neither the execution and delivery of the Purchaser Agreements, nor the consummation of the transactions hereby contemplated by Purchaser will constitute any violation or breach of the Articles of Organization or the By-laws of Purchaser. Neither the execution and delivery of this Agreement, the Purchaser Agreements, nor the consummation of the transactions contemplated thereby, will constitute any violation or breach any provision of any contract or other instrument to which Purchaser is or will be a party or by which any of the assets of Purchaser may be affected or secured, or any order, writ, injunction, decree, statute, rule or regulation, or will result in the creation of any lien, charge, or encumbrance on any of the assets of Purchaser.

3.3 - Broker. No agent or broker or other person acting pursuant to authority of Purchaser is entitled to any commission or finder's fee in connection with the transactions contemplated by this Agreement.

3.4 - No Untrue Statement. No representation or warranty by Purchaser in this Agreement and no statement or certificate furnished or to be furnished by or on behalf of Purchaser pursuant to this Agreement or in connection with the transactions contemplated by this Agreement contains or will contain any untrue statement of a material fact, or omits or will omit to state a material fact necessary to make the statements therein not misleading.

3.5 - Representations True at Closing. If the sale provided for in this Agreement is consummated at the Closing, all of the representations and warranties of Purchaser contained in this Agreement will be true and correct at and as of the Closing, except for changes contemplated or permitted by this Agreement.

ARTICLE IV

Conditions to Obligations of Sellers

The obligations of Sellers to transfer the Stock to Purchaser on the terms and conditions contained herein shall be subject to the fulfillment at or prior to the Closing of each of the following conditions, any or all of which may be waived in whole or in part by Sellers:

4.1 - Representations True at Closing. The representations and warranties contained in Article III hereof expressly made as of the Closing shall be true at and as of the Closing, and all of the other representations and warranties contained in said Article III shall be true at and as of the Closing as though such representations and warranties were made at and as of the Closing.

4.2 - Compliance with Agreements. Purchaser shall have performed and complied with all agreements and conditions on its part required by this Agreement to be performed or complied with prior to or at the Closing.

4.3 - Certificates of Purchaser. Sellers shall have received certificates of Purchaser and its President, dated the Closing Date, certifying to the fulfillment of the conditions specified in Section 5.1 and 5.2 of this Article V.

4.4 - Clerk's Certificate. Purchaser shall have furnished counsel for Sellers with certified resolutions and votes of Purchaser's Board of Directors duly and legally authorizing the execution and performance of this Agreement and any other agreements executed in connection herewith and of the Company's new Board of Directors, elected by Purchaser, duly and legally authorizing the execution and performance of the Company Related Agreements.

4.5 - Opinion of Counsel. Purchaser shall have delivered an opinion of its counsel in the form set forth in Exhibit O-1.

ARTICLE V

Conditions to Obligations of Purchaser

The obligations of Purchaser to acquire the Stock from Sellers on the terms and conditions contained herein shall be subject to the fulfillment at or prior to the Closing of each of the following conditions, any or all of which may be waived in whole or in part by Purchaser:

5.1 - Representations True at Closing. The representations and warranties contained in Article II hereof expressly made as of the Closing, and all of the other representations and warranties contained in said Article II shall be true and correct in all material respects at and as of the Closing as though such representations and warranties were made at and as of the Closing.

5.2 - Compliance with Agreements. Sellers and the Company shall have performed and complied with all agreements and conditions on their part required by this Agreement to be performed or complied with prior to or at the Closing, including the execution of the new Lease which is Exhibit B hereto.

5.3 - Approvals and Certificates. Purchaser shall have received:

(a) those permits or approvals which are required under federal, state or local laws in order to close the sale of the stock contemplated herein; and

(b) a certificate of the Sellers, dated the Closing Date, certifying to the fulfillment of the conditions specified in Sections 5.1 and 5.2 of Article V.

5.4 - Opinion of Counsel. Purchaser shall have received an opinion of Seller's counsel, dated the Closing Date, in the form set forth as Exhibit 0-2 attached hereto.

Such opinion shall cover such related matters as Purchaser may reasonably require. Counsel may rely upon the representations and warranties of Sellers and shall not be required to make any independent review or investigation other than of the corporate record and stock books of the Company and the records of the Corporations division of the Commonwealth of Massachusetts.

5.5 - Delivery of Books and Records. Sellers shall cause to be delivered to Purchaser at the Closing the corporate minute books, seal, stock record books and stock transfer books of the Company, and any subsidiaries thereof.

5.6 - Original Documents. Sellers shall cause to be delivered to Purchaser at the Closing the original, executed copies, if available, of all assignments, bills of sale, contracts, mortgages, leases, franchises, permits, and all other documents pertaining to any property owned or used by the Company in its operations.

5.7 - No Litigation. No suit or action or legal, administrative, arbitration or other proceeding or investigation shall have been instituted or threatened against the Company which might materially and adversely affect the financial condition of the Company or the conduct of its business.

5.8 - Going Business. The going business of the Company and its business organizations and personnel shall have been substantially preserved intact and shall not have been materially impaired.

5.9 - Relationships with Customers. The relations of the Company with its suppliers, customers and others shall have been substantially preserved intact and shall not have been materially impaired.

5.10 - Title to Assets. The Company shall have at the time of Closing good and marketable title to all of its assets and properties, free and clear of any and all liens, mortgages, pledges and/or encumbrances, excepting only the Permitted Encumbrances referenced in Section 2.5 hereinabove, and Seller shall have delivered to Purchaser certificates of good standing from the Secretary of State and the Corporations Division of the Department of Revenue with respect to the Company.

ARTICLE VI

6.1 - Indemnity by Sellers. Sellers hereby agree to jointly and severally indemnify and hold harmless Purchaser and the Company against and save Purchaser harmless from any and all losses, liabilities, damages and expenses of any kind or nature (including reasonable attorneys' fees) to the extent such are caused by (a) any breach or inaccuracy of any representation, warranty, covenant or agreement of the Company or Sellers contained in this Agreement (or any certificate, agreement or other instrument furnished to Purchaser by the Company or Sellers), or the failure by the Company or Sellers to perform any covenant or satisfy any condition to be performed or satisfied by the Company or Sellers pursuant to this Agreement, (b) the existence of any undisclosed tax liabilities accrued as of the date of the Balance Sheet, together with all reasonable expenses incurred by the Company in defending against the assertion of any such liability, provided, however, that such indemnification shall be made only in the event the assertion of such liability is made within three (3) years of the Closing Date and only if Purchaser and/or the Company give notice to Sellers of such asserted liability within thirty (30) days after receiving notice of any claim that such tax liability exists , (c) any handling, treatment, storage, disposal or spillage of hazardous wastes or waste oils by Company; and (d) any claims or demands arising out of Section 107 of the Comprehensive Environmental Response Compensation and Liability Act of 1980, 42 USC 9601 et. seq., or Massachusetts G.L. c. 21E. Sellers shall have the right, at their option, to defend against or negotiate the settlement of any such claims with respect to which a right of indemnification hereunder is asserted and Purchaser shall allow Sellers access to the books and records of the Company pertaining to any such matters; provided, however, that Purchaser and its counsel shall have the right to review and participate in all matters of defense, negotiation and settlement.

ARTICLES VII

Other Provisions

7.1 - Survival of Representation. All of the respective representations, warranties and agreements of the parties hereto shall survive consummation of the transactions contemplated by this Agreement.

7.2 - Extension of Time. Sellers or Purchaser may extend the time for or waive the performance of any of the obligations or warranties of the other, or waive compliance by the other with any of the covenants or conditions contained in this Agreement. Any such extension or waiver shall be in writing and signed by the Seller or the Purchaser, as the case may be.

7.3 - Notices. Any notice to a party hereto pursuant to this Agreement shall be given by certified or registered mail, postage prepaid, or by private courier requesting evidence of receipt as a part of its service, addressed,

if to Sellers to:	John F. and Joan E. Murphy 16 Harriet Avenue Burlington, MA 01803
with a copy to:	Edward S. Guidoboni, Esq. P.O. Box 1367 1266 Main Street Concord, MA 01742
if to Purchaser to:	Alan S. McKim, President Clean Harbors of Kingston, Inc. 325 Wood Road Braintree, MA 02184
with a copy to:	C. Michael Malm, Esq. Davis, Malm & D'Agostine One Boston Place Boston, MA 02108

or to such other address as may be designated in writing by either party from time to time in accordance herewith, and shall be deemed delivered when placed in the mails or delivered to such delivery service so addressed.

7.4 - Successors and Assigns. This Agreement shall inure to the benefit of, and be binding on and enforceable against Purchaser, Sellers, the Company and their respective heirs, executors, administrators, trustees, legal representatives, successors and assigns. In the event that Purchaser shall designate a nominee to take possession of the Stock, all agreements made, or to be made herein on behalf of the Purchaser shall be binding upon any such nominee as well as the Purchaser.

7.5 - Counterpart Originals. This Agreement may be executed in any number of counterparts, each of which, when all parties shall have signed, shall be deemed an original.

7.6 - Confidentiality. Any confidential information obtained by either party hereto from the other shall not be disclosed or used by any such party should the transaction not be effected, and each party shall return to the other all documents and written information obtained from such other party as such other party's counsel may request in writing.

7.7 - Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts applicable to contracts made and to be performed therein and cannot be changed or terminated orally, but only in writing duly signed by all parties.

IN WITNESS WHEREOF, the parties have executed this Agreement under seal as of the date first above written.

SELLERS:

Witness

John F. Murphy

Witness

Joan E. Murphy

COMPANY:

Murphy's Waste Oil Services, Inc.

By
Its duly authorized

PURCHASER:

Clean Harbors of Kingston, Inc.

By
Its duly authorized officer

EXHIBIT 4.c

LEASE AGREEMENT ORIGINAL

This Lease Agreement is entered into as of this 8th day of February, 1989, by and between John F. Murphy and Joan E. Murphy, both of Burlington, Massachusetts, as Trustees of Old Oil Realty Trust u/d/t dated December 29, 1980 and recorded with Middlesex South District Registry of Deeds in Book 14080, Page 304 ("Landlord"), and Murphy's Waste Oil Service, Inc., a Massachusetts corporation having its principal place of business at Woburn, Massachusetts ("Tenant")

1. Lease Agreement. Landlord hereby agrees to lease to Tenant, and Tenant hereby agrees to lease from Landlord, the Property described below upon the terms and conditions described herein.

2. Property. Approximately 147,271.58 square feet of land shown as Lot 1 and land shown as "N/F John F. Murphy, Trustee," upon the Plan attached hereto as Exhibit A, located at 252 Salem Street, Woburn, Massachusetts, together with (i) all improvements thereon, and (ii) the Landlord's right to connect and build a railroad spur track from the Property to the rail track shown on the Plan as contained in a deed from Anna M. Quinn and J. Frank Quinn to Francis J. Good, recorded with Middlesex South Registry of Deeds in Book 13231, Page 240. The land and any improvements and appurtenance are collectively hereinafter sometimes referred to as "the Property."

3. A. Term. The Term of this Lease shall be for five (5) years commencing on February __, 1989 (the "Commencement Date") and ending on February __, 1994. Tenant shall have the right to occupy the Property prior to the Commencement Date, subject to the terms and conditions of this Lease, except that no rent shall be payable with respect to the period prior to the Commencement Date.

B. Option to Extend. Provided Tenant is not in default hereunder at the end of the then existing term, and Tenant notifies Landlord of its election to extend the term at least ninety (90) days prior to the expiration of term, Tenant shall have the option to extend the term of this Lease for two additional periods of five (5) years each, upon the same terms and conditions as contained herein except that the rent shall be adjusted as set forth in Section 4B below, by written notice to Landlord as set forth above.

4. A. Rent. Tenant shall pay Landlord rent at the rate of Sixty Thousand ($60,000) Dollars per year, payable in monthly installments of Five Thousand ($5,000) Dollars in advance ON THE FIRST DAY OF EACH MONTH included within the Term, with rent for any portion of a month at the beginning and end of the Term being prorated.

B. Adjusted Rent. Provided Tenant has exercised its option to extend the term as set forth in Section 3B above, the rent during the extended term shall be increased in proportion to any increase in the Consumer Price Index between the month of February, 1989 and the month of February immediately preceding the

first lease year of the option period in question. The term "Consumer Price Index" shall mean the "Consumer Price Index for all Urban Consumers, U.S. City Average, All Items (1982=84), unadjusted for seasonal variations, published by the U.S. Department of Labor, Bureau of Labor Statistics. If the Index is not in existence when a determination is to be made, Landlord and Tenant shall agree upon a substitute index which shall accurately reflect any increase in the cost of living.

5. Real Estate Taxes. In addition to the rent set forth in Section 4 above, Tenant shall pay directly to the City of Woburn, as additional rent, all real estate taxes levied against the Property during the term or payable with respect to any fiscal tax year during which this Lease shall be in effect, prorated for the fiscal tax years during which the term of this Lease shall commence and terminate. Tenant shall have the right to apply for and shall, if it does so apply, be entitled to the net amount of any real estate tax abatement received by Landlord after deduction of all expenses incurred in obtaining the same.

6. Utilities. Tenant shall pay directly to the proper utility company all utilities consumed on the Property and shall be responsible to pay all deposits required therefore.

7. Use of Leased Property. Tenant shall use the Property as a waste oil transfer storage and handling facility or for such uses as may be allowed under the zoning ordinances of the City of Woburn. Landlord agrees to cooperate with Tenant and to execute any and all documents, applications or permits which may be required to operate a waste oil facility at the Property provided

Tenant agrees to indemnify and hold Landlord harmless from and against any cost, expense or liability resulting from the same, except if caused by Landlord or its agents.

8. Compliance with Laws. Tenant acknowledges that no trade or occupation shall be conducted at the Property or use made thereof which will be unlawful, improper, noisy or offensive, or contrary to any law or any municipal by-law or ordinance in force in the city or town in which the Property are situated, and, if such shall occur, Tenant shall be fully responsible for any and all liabilities therefore. Tenant shall not conduct any activity which shall cause oils or hazardous materials to be released or spilled on the Property, and in the event that any accidental spill of the same shall occur by Tenant or any of its agents, employees or invitees, Tenant shall be responsible for cleaning up the same; provided, however, that Tenant shall not be responsible for any spill or release which occurred prior to the execution of this Lease and Landlord shall indemnify and hold Tenant harmless from the same.

9. Fire Insurance. Tenant shall, during the term of this Lease, maintain fire and "all-risk" casualty insurance on the building at the Property in an amount which is not less than eighty (80%) percent of the replacement cost of the building. The Tenant shall not permit any use of the Property which will make voidable any insurance on the building or its contents or which shall be contrary to any law or regulation from time to time established by the New England Fire Insurance Rating Association, or any similar body succeeding to its powers.

10. Maintenance of Property. Tenant has agreed to accept the Property in its so-called "as-is" condition. Tenant agrees to maintain the Property in the same condition as it shall be upon the Commencement Date or as it may be put in during the term of this Lease, reasonable wear and tear, damage by fire and other casualty only excepted, and whenever necessary, to replace plate glass and other glass therein. Tenant shall not permit the Property to be overloaded, damaged, stripped or defaced, nor suffer any waste.

11. Alterations - Additions. Tenant shall not make structural alterations or additions to the Property without the prior consent of Landlord, which consent shall not be unreasonably withheld or delayed. All such alterations shall be at Tenant's expense and shall be in quality at least equal to the present construction. Tenant shall not permit any mechanics' liens, or similar liens, to remain upon the Property for labor and material furnished to Tenant or claimed to have been furnished to Tenant in connection with work of any character performed or claimed to have been performed at the direction of Tenant and shall cause any such lien to be released or discharged forthwith without cost to Landlord. Any alterations or improvements to the Property made by the Tenant shall become the property of the Landlord at the termination of occupancy as provided herein.

12. Subordination. This Lease shall be subject and subordinate to any and all mortgages, deeds of trust and other instruments in the nature of a mortgage, now or at any time here-

after, a lien or liens on the Property provided any such mortgagee shall agree to recognize all of Tenant's rights under this Lease. Tenant shall, when requested, promptly execute and deliver such written instruments as shall be necessary to show the subordination of this Lease to any such mortgage, deed of trust or other such instrument in the nature of a mortgage provided such mortgagee shall agree to recognize the terms and conditions of this Lease.

13. Landlord's Access. Landlord may, at reasonable times, enter to view the Property and to make repairs as Landlord should elect to do and within three (3) months of the end of the Term may show the Property to others.

14. Indemnification and Liability. Tenant shall save the Landlord harmless from all loss and damage occasioned by the use or escape of water or by the bursting of pipes, as well as from any claim or damage resulting from neglect in not removing snow and ice from the Property, by any nuisance made or suffered on the Property or by any release of oil or hazardous materials upon the Property, unless such loss is caused by the negligence of the Landlord or by prior activities of Landlord or its agents or servants.

15. Tenant's Liability Insurance. Tenant shall maintain with respect to the Property, comprehensive public liability insurance in the amount of at least One Million ($1,000,000.00) Dollars with property damage insurance in limits of at least Two Hundred Fifty Thousand ($250,000.00) Dollars in responsible companies qualified to do business in Massachusetts and in good

standing therein. Tenant shall deposit with the Landlord certificates for such insurance at or prior to the commencement of the term, and thereafter within fifteen (15) days prior to the expiration of any such policies. Each party hereby waives subrogation rights against the other party to the extent of its insurance coverage.

16. Default and Bankruptcy. In the event that:

(a) The Tenant shall default in the payment of any installment of rent or other sum herein specified and such default shall continue for fifteen (15) days after written notice thereof; or

(b) The Tenant shall default in the observance or performance of any other of the Tenant's covenants, agreements, or obligations hereunder and such default shall not be corrected within thirty (30) days after written notice thereof; or

(c) The Tenant shall be declared bankrupt or insolvent according to law, or, if any assignment shall be made of Tenant's property for the benefit of creditors, then the Landlord shall have the right thereafter, while such default continues, to reenter and take complete possession of the Property, to declare the term of this Lease ended, and remove the Tenant's effects, without prejudice to any remedies which might be otherwise used for arrears of rent or other default. The Tenant shall indemnify the Landlord against all loss of rent and other payments which the Landlord may incur by reason of such termination during the residue of the term including, but not limited to, all costs associated with reletting the Property. If the Tenant shall

default, after reasonable notice thereof, in the observance or performance of any conditions or covenants on Tenant's part to be observed or performed under or by virtue of any of the provisions in any article of this Lease, the Landlord, without being under any obligation to do so and without thereby waiving such default, may remedy such default for the account and at the expense of the Tenant. If the Landlord makes any expenditures or incurs any obligations for the payment of money in connection therewith, including but not limited to, reasonable attorney's fees in instituting, procuring or defending any action or proceeding, such sums paid or obligations incurred, with interest at the rate of twelve (12%) percent per annum and costs, shall be paid to Landlord by Tenant as additional rent.

17. Notice. Any notice from the Landlord to the Tenant relating to the Property, or to the occupancy thereof, shall be deemed duly served if mailed to Clean Harbors of Kingston, Inc., 325 Wood Road, Braintree, Massachusetts, 02184, registered or certified mail, return receipt requested, postage prepaid, or if sent by a courier company which as part of its service will provide a receipt upon delivery. All rent and any notice from the Tenant to the Landlord relating to the Property, or to the occupancy thereof, shall be deemed duly served, if delivered or if mailed to the Landlord by registered or certified mail, return receipt requested, postage prepaid, addressed to the Landlord at 16 Harriet Avenue, Burlington, Massachusetts 01803 or to such other address as Landlord may by notice designate to the Tenant.

18. Surrender. The Tenant shall at the expiration or other termination of this Lease remove all Tenant's goods and effects from the Property and shall repair all holes or damage to surfaces left or caused by the removal of signs or other fixtures or equipment attached to the Property. Tenant shall deliver to the Landlord the Property and all keys, locks thereto, and other fixtures in connection therewith and all alterations and additions made to or upon the Property, in the same condition as they were at the Commencement Date, or as they were put in during the term, reasonable wear and tear and damage by fire or other casualty only excepted. In the event of the Tenant's failure to remove any of Tenant's property from the Property, Landlord is hereby authorized, without liability to Tenant for loss or damage thereto, and at the sole risk of Tenant, to remove and store any of the Tenant's property at Tenant's expense, or to retain the same under Landlord's control or to sell at public or private sale, without notice, any or all of the property not removed by Tenant, and to apply the net proceeds of such sale to the payment of any sum due hereunder, or to destroy such property.

19. Right of First Refusal. Landlord shall not sell (during the term of this Lease) or lease (for periods subsequent to the term of this Lease) all or any part of the Property without first offering the Property to the Tenant on the same terms and conditions as Landlord would sell or lease all or part of the Property to any third party after having received a bona fide written offer from such third party. Upon receipt of any such offer from a third party, Landlord shall notify Tenant of

such offer and identify the name of the third party and the terms and conditions of such offer. Tenant shall have the right to exercise this right of first refusal by written notice to Landlord within thirty (30) days after receipt of such notice and offer from Landlord, setting forth a time, business day (which shall not be more than ninety (90) days from the date of Tenant's notice of exercise of this Right of First Refusal) and place of closing in the Greater Boston Area at which time and place the deed shall be delivered and the purchase price paid. If Tenant shall not exercise its Right of First Refusal hereunder, or if Landlord shall not sell or lease the Property to the identified third party on the terms and conditions offered to Tenant within a period of four (4) months from the date of Landlord's offer to Tenant, Landlord shall not sell or lease the Property to any third party without again first offering the same to Tenant as set forth above. If Tenant shall exercise this Right of First Refusal, at the time of the closing Landlord shall deliver to Tenant a duly authorized and executed deed to the Property and such further documents as may be required to convey clear record and marketable title to the Property free of all liens and encumbrances except those which exist as of the execution date of this Lease or which have been created or caused by Tenant, and Tenant shall pay Landlord the full purchase price by wire transfer or by certified or bank teller's check.

20. Flammable Storage License. Landlord represents that it currently has a duly issued and valid flammable storage permit for the storage of 125,000 gallons of (waste) oil which has been

renewed through _____. From and after the date hereof and during the term of this Lease, Landlord shall promptly upon receipt of an application for an annual certificate of registration forward the same to Tenant (or have the City of Woburn send the annual registration form directly to Tenant), and Tenant shall be responsible for payment of the fee for such certificate of registration.

21. Option to Purchase. At any time during the Term of this Lease, Tenant shall have the option to purchase the Property at a Purchase Price equal to $600,000, adjusted in proportion to any increase in the Consumer Price Index, referred to in Section 4B above, between the month of February, 1989 and the last month for which the Price Index has been published on the date which is ten (10) days prior to the closing date. If Tenant shall exercise this option, it shall do so by written notice to the Landlord designating a time, business day, and place of closing within the Greater Boston Area at which time and place a deed shall be delivered to the Tenant, or to Tenant's nominee designated by notice to Landlord at least five (5) days prior to the closing date, conveying clear record and marketable title to the Property free of all liens and encumbrances except those which exist as of the date of this Lease and taxes which are not due and payable at the time of the closing (closing adjustments to be apportioned and allocated in accordance with conveyancing practice in the City of Boston). Tenant shall pay Landlord the

full Purchase Price by certified, bank or treasurer's check. The closing shall take place within ninety (90) days after the exercise of this option to purchase.

22. Applicable Law and Construction. This Lease shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, and, if any provisions of this Lease shall to any extent be invalid, the remainder of this Lease shall not be affected thereby. This Lease may be amended, and the provisions hereof may be waived or modified, only by instruments in writing executed by Landlord and Tenant. The titles of the several Articles and sections contained herein are for convenience only and shall not be considered in construing this Lease. Unless repugnant to the context, the words "Landlord" and "Tenant" appearing in this Lease shall be construed to mean those named above and their respective successors and assigns, and those claiming through or under them respectively.

Witness the execution hereof as of the 8th day of February, 1989.

LANDLORD:

John F. Murphy

Joan E. Murphy

TENANT:

Murphy's Waste Oil Service, Inc.

By its duly authorized officer

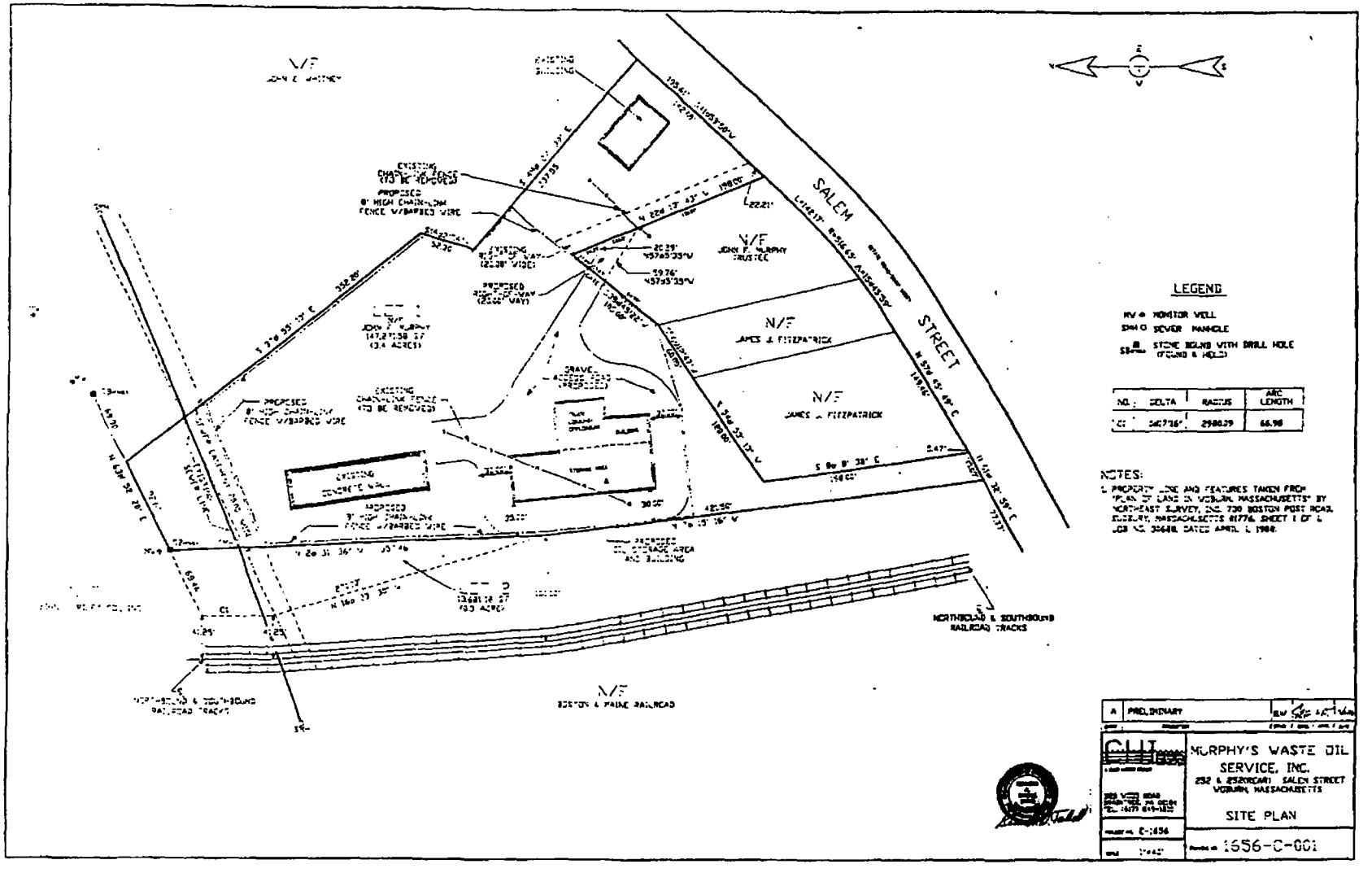
SALEM STREET
N/F
JOHN F. MURPHY TRUSTEE
N/F
JAMES J. FITZPATRICK
N/F
JAMES J. FITZPATRICK
N/F
BOSTON & MAINE RAILROAD
NORTHBOUND & SOUTHBOUND RAILROAD TRACKS
PROPOSED 8' HIGH CHAIN-LINK FENCE W/BARBED WIRE
EXISTING CHAIN-LINK FENCE (TO BE REMOVED)
EXISTING CONCRETE WALL
PROPOSED STORAGE AREA AND BUILDING
GRAVEL ACCESS ROAD (PROPOSED)
EXISTING SEWER LINE
LEGEND
MW MONITOR WELL
SMH SEWER MANHOLE
STONE BOUND WITH DRILL HOLE (FOUND & HELD)
NO. | DELTA | RADIUS | ARC LENGTH
C1 | 1°40'16" | 2388.29 | 69.76
NOTES:
1. PROPERTY LINE AND FEATURES TAKEN FROM "PLAN OF LAND IN WOBURN, MASSACHUSETTS" BY NORTHEAST SURVEY, INC. 730 BOSTON POST ROAD, SUDBURY, MASSACHUSETTS 01776, SHEET 1 OF 1, JOB NO. 30488, DATED APRIL 1, 1988.
A PRELIMINARY
MURPHY'S WASTE OIL SERVICE, INC.
252 & 252R(REAR) SALEM STREET
WOBURN, MASSACHUSETTS
SITE PLAN
1656-C-001

EXHIBIT A

MURPHY'S WASTE OIL SERVICE
A CLEAN HARBORS CO.
252 Salem Street
Woburn, MA 01801
(617) 935-9066
(617) 272-4211

October 13, 1993

John H. Murphy, Trustee
Joan E. Murphy, Trustee
Old Oil Realty Trust
16 Harriet Avenue
Burlington, Massachusetts 01803

Re: Lease Dated February 8, 1989
for Premises Located at 252 Salem
Street, Woburn, Massachusetts

Dear Mr. and Mrs. Murphy:

Pursuant to Section 3.B of the above-referenced Lease, Murphy's Waste Oil Service, Inc. hereby exercises its option and elects to extend the term of the Lease for an additional five-year period commencing on February 8, 1994 and expiring on February 7, 1999.

If you have any questions, please contact Steve Masse at (617) 849-1800, extension 4460.

Very truly yours,

James A. Pitts
Vice President

JAP:alh

cc: Jules B. Selden, Esquire
Mr. Stephen J. Masse

ORIGINAL

AMENDMENT 1 TO LEASE AGREEMENT DATED FEBRUARY 8, 1989, AS EXTENDED BY LETTER DATED OCTOBER 13, 1993, BY AND BETWEEN OLD OIL REALTY TRUST, AS LANDLORD, AND MURPHY'S WASTE OIL SERVICE, INC., AS TENANT, FOR THE PREMISES LOCATED AT 252 AND 252 REAR SALEM STREET, WOBURN, MASSACHUSETTS

WHEREAS, Joan E. Murphy and the late John F. Murphy, Trustees of Old Oil Realty Trust, as Landlord, and Murphy's Waste Oil Service, Inc., as Tenant, entered into a certain Lease Agreement dated February 8, 1989 (the "Lease" or "Lease Agreement") whereby Landlord leased to Tenant the premises known and numbered as 252 and 252 Rear Salem Street, Woburn, Massachusetts ("the Property"); and

WHEREAS, by letter dated October 13, 1993, Tenant exercised its option to extend the term of the Lease through February 7, 1999; and

WHEREAS, Landlord and Tenant have negotiated certain changes to the Lease and desire to amend the Lease Agreement.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the execution of a Settlement Agreement of even date, and for other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the Landlord and Tenant, intending to be legally bound, agree that the Lease Agreement shall be amended as follows:

1. Section 3A, "Term" is revised to read as follows:

   The present term of the Lease shall terminate at midnight on February 7, 1999.

2. In Section 3B, "Option to Extend", the following changes are made:

   The phrase "then existing term" in the second line is

deleted and the phrase "present term" is substituted therefore; and

The phrase "five (5) years each" in line 6 is deleted, and the phrase "seven (7) years each" is substituted therefor.

3. The following Section 3C is added to the Lease Agreement:

C. Early Termination. Notwithstanding anything to the contrary herein, Tenant shall have the option to terminate this Lease at any time without cause upon ninety (90) days prior written notice to the Landlord. Tenant shall vacate the Property on or before the expiration of said 90-day period, and, upon vacating the Property, or the expiration of ninety (90) days, whichever occurs later, Tenant shall have no further obligations to pay rent or additional rent.

4. In Section 4A, "Rent", the following sentence is inserted at the end of the existing section:

Landlord and Tenant acknowledge that the rent for the remainder of the current Lease term is $6,562.50 per month.

5. In Section 4B, "Adjusted Rent", the first sentence is deleted, and the following is substituted therefor:

Provided Tenant has exercised its option to extend the term as set forth in Section 3B above, the rent for the first 7-year extended term shall be increased at the beginning of said term in proportion to any increase in the Consumer Price Index ("CPI"). The rent for the second 7-year extended term shall be increased at the beginning of and annually during said term in proportion to any increase in the CPI. In calculating the rent for the first 7-year extension term and for each subsequent extension year, the rent for the immediately preceding year shall be multiplied by a fraction,

the numerator of which is the CPI for the last month of the preceding year and the denominator of which is the CPI for February 1989.

6. The following Section 4C is added to the Lease Agreement:

C. Corrective Action Account. Fifty percent (50%) of the rent payable to Landlord pursuant to Sections 4A and 4B above shall be withheld and retained by the Tenant and recorded in a ledger account (the "Corrective Action Account") to cover the costs of Corrective Action as that term is defined in Section 23 of this Lease Agreement. Tenant shall maintain said Account subject to the following:

(i) Tenant shall accrue simple interest at the rate of five percent (5%) per annum on the balance of the Corrective Action Account. Said interest shall be credited directly to the Corrective Action Account.

(ii) Disbursements to Tenant from the Corrective Action Account, and accountings from Tenant to Landlord, shall be made as set forth in Section 23 of this Lease Agreement.

(iii) Upon the termination of this Lease (including any extension), if there is any amount left in the Corrective Action Account after all Corrective Action charges have been paid, the balance (including accrued interest, if any) will be paid to the Landlord; provided, however, that the Tenant shall have the right to retain said balance (a) to the extent that it has been claimed by Tenant but not disbursed pending the expiration of applicable time limits or conclusion of any resolution or arbitration

proceeding pursuant to Section 23 herein or (b) to cover the estimated costs for the four-month period commencing at the termination of this Lease for Corrective Action tasks then in progress but not completed as of the date of said termination. If the actual costs are less than the claimed or estimated costs, as applicable, the difference will be paid to the Landlord at the conclusion of the resolution or arbitration proceedings or end of said four-month period, as the case may be.

7. Section 8, "Compliance with Laws" is renumbered as Section 8A, and the following Sections 8B and 8C are added to the Lease Agreement:

B. Notwithstanding anything to the contrary herein, during the term of this Lease Agreement, the Landlord's indemnity pursuant to Section 8A above shall be limited to reimbursement to Tenant from the Corrective Action Account pursuant to Sections 4C and 23 of this Lease Agreement and/or a reduction of the Purchase Price pursuant to Section 21B of this Lease Agreement.

C. Upon any transfer of title to the Property from the Landlord to the Tenant or its nominee, Tenant will release the Landlord from any further indemnification obligations pursuant to Section 8A above, otherwise said indemnification obligations shall survive any termination of this Lease Agreement.

8. In Section 17, the address for notices sent by Landlord to Tenant is be changed to read as follows:

Clean Harbors Environmental Services, Inc.
1501 Washington Street
P.O. Box 850327
Braintree, MA 02185-0327
Attn: Jules B. Selden, Esq. - Law Department,

or to such other address as Tenant may by notice designate to the Landlord.

9. Section 21, "Option to Purchase" is renumbered as Section 21A and the first sentence is revised to read as folows:

At any time during the term of this Lease (including any extensions), Tenant shall have the option to purchase the Property at a Purchase Price equal to $600,000.00, adjusted in proportion to any increase in the CPI referred to in Section 4B above between the month of February 1989 and the last month for which the CPI has been published on the date which is ten (10) days prior to the closing date (the "Adjusted Price") and reduced, as applicable, pursuant to Section 21B below.

10. The following Sections 21B and 21C are added to the Lease Agreement:

B. Reduction for Corrective Action Costs. To the extent that Tenant's expenditures for Corrective Action exceed the amounts reimbursed to the Tenant from the Corrective Action Account ("Unreimbursed Expenses"), the Adjusted Price shall be reduced by the amount of the Unreimbursed Expenses, subject to the minimum Purchase Price provisions of Section 21C below. In calculating the Unreimbursed Expenses for determining the Purchase Price reduction, expenses incurred for Corrective Action tasks but not reimbursed as of the date of said purchase shall be

included.

C. Minimum Purchase Price.

(i) If Tenant exercises its option to purchase the Property prior to the expiration of the first 7-year extension term, the Purchase Price shall be the higher of (a) the Adjusted Price reduced by the Unreimbursed Expenses or (b) $250,000.00.

(ii) If, by the expiration of the first 7-year extension term, Tenant has not exercised its option to purchase the Property, the Purchase Price shall be the higher of (a) the Adjusted Price reduced by the Unreimbursed Expenses or (b) $125,000.00.

11. The following Section 23 is added to the Lease Agreement:

23. A. Corrective Action. The term "Corrective Action", as used in this Lease Agreement, shall mean any and all site assessments (i.e., investigations, monitoring, surveys, testing and other information gathering activities to identify the existence, source, nature and/or extent of releases of oil or hazardous materials) and site remediation or related activities undertaken by Tenant pursuant to Massachusetts General Laws, Chapters 21C and/or 21E and/or pursuant to the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), 42 USC 9601 et seq. as required by statutory or regulatory authority on the Property itself or on adjacent properties or other properties in the vicinity of the Property, except with respect to spills or releases caused by Tenant since February 8, 1989.

B. Advising Landlord of Corrective Action. Tenant shall provide Landlord with copies of all scopes of work, reports, correspondence, and other materials relating to

Corrective Action submitted to or received from federal, state or local regulatory agencies.

C. Reimbursement for Corrective Action Costs. Tenant shall be reimbursed for its expenses for Corrective Action from the Corrective Action Account established pursuant to Section 4C above, subject to the following:

(i) Tenant shall have the right to debit said reimbursement from rent and/or interest credited to the Corrective Action Account.

(ii) Tenant shall be reimbursed on an "at-cost" basis for both in-house and external expenditures for Corrective Action. Such expenditures made or incurred on Tenant's behalf by any subsidiary of Clean Harbors, Inc. shall be deemed to have been expended by Tenant.

(iii) The Corrective Action Account will be debited quarterly at the beginning of each quarter for amounts spent during the prior calendar quarter for Corrective Action. Tenant will provide Landlord with a quarterly report detailing Corrective Action performed during the prior quarter and will not make a charge against the Corrective Action Account until ten (10) days after such report has been received by the Landlord. Landlord will have ten (10) days from the receipt of such report to object to the application of funds for reimbursement of the costs reflected in such report. Such objections shall be in writing to the address for notices set forth in Section 17. In the event of a disagreement with respect to the necessity of the activity undertaken or the amount charged for

such activities, the Landlord and Tenant shall make a good faith effort to resolve the dispute between themselves. If the dispute has not been resolved within thirty (30) days of the date on which the Landlord has made an objection, the Landlord shall submit the dispute to arbitration before a single arbitrator selected through the American Arbitration Association within sixty (60) days of its original receipt of the quarterly report or such objections are deemed to be waived. Landlord and Tenant agree that the arbitration is to be an expedited one and that the proceeding shall be limited to two (2) hours with each party having one (1) hour to make a presentation and each party to bear its own cost. The decision of the arbitrator will be binding and final. Landlord and Tenant agree that prior to such proceedings they will exchange relevant documents. In the event that either party does not prevail in three (3) consecutive arbitrations, that nonprevailing party will be liable to the other for its reasonable costs of arbitration for the last (third) arbitration, including reasonable attorneys fees and reasonable employee time. Any liability on either the Tenant or Landlord for costs under this paragraph, shall be satisfied by payment by the other party within thirty (30) days of the decision of the arbitrator. Payment to the Tenant may be satisfied by rent offsets, and if the Lease has been terminated, by offset against any amount owed by Tenant, its parent or its affiliates to the Landlord. Should either the Landlord or the Tenant decline to agree to an offer of settlement prior to arbitration and at arbitration receive an award or determination

equal to or less favorable than the offer, that party will be deemed to have not prevailed.

(iv) At any time that the balance of the Corrective Action Account is insufficient to reimburse Tenant's current Corrective Action expenses, Tenant shall be entitled to reimbursement for those expenses from rent or interest subsequently credited to the Corrective Action Account.

All other terms, conditions and provisions of the Lease Agreement which are not modified by this Amendment 1 remain unchanged.

This Amendment 1 to the Lease Agreement is executed in duplicate counterparts, each of which shall be deemed to be an original hereof but both of which together shall constitute one and the same agreement.

IN WITNESS WHEREOF, the Landlord and Tenant execute this Amendment 1 to the Lease Agreement as of the 1st day of April 1998.

OLD OIL REALTY TRUST, Landlord

By: Joan E. Murphy Trustee
Joan E. Murphy, Trustee

MURPHY'S WASTE OIL SERVICE, INC., Tenant

By: Roger Koenecke
Roger Koenecke, Vice President

Clean Harbors
ENVIRONMENTAL SERVICES, INC.
1501 WASHINGTON STREET, P.O. BOX 850327 • BRAINTREE, MA 02185-0327
(781) 849-1800
Visit our Website at www.cleanharbors.com

JULES B. SELDEN
SENIOR COUNSEL
EXTENSION 4182

LAW DEPARTMENT
(781) 849-1800
FAX (781) 356-1375

VIA CERTIFIED MAIL, RETURN RECEIPT REQUESTED

October 7, 1998

Joan E. Murphy, Trustee
Old Oil Realty Trust
16 Harriet Avenue
Burlington, MA 01803

Re: Lease of Premises Located at
252 and 252 Rear Salem Street, Woburn MA

Dear Mrs. Murphy:

Pursuant to Section 3B of the Lease, as amended, for the above-referenced premises, Clean Harbors Environmental Services, Inc., on behalf of the Tenant, Murphy's Waste Oil Service, Inc. ("Murphy's"), hereby provides notice that Murphy's exercises its option to extend the term of the Lease for an additional seven (7) years commencing on February 8, 1999.

Very truly yours,

Jules B. Selden
Senior Counsel

cc: Gene Cookson - CHESI
Scott Day - CHESI
George P. Luker, Esq.

0089-0825

ORIGINAL

AMENDMENT 2 TO LEASE AGREEMENT DATED FEBRUARY 8, 1989, AS EXTENDED BY LETTERS DATED OCTOBER 13, 1993 AND OCTOBER 7, 1998, BY AND BETWEEN OLD OIL REALTY TRUST, AS LANDLORD, AND MURPHY'S WASTE OIL SERVICE, INC., AS TENANT, FOR THE PREMISES LOCATED AT 252 AND 252 REAR SALEM STREET, WOBURN, MASSACHUSETTS

WHEREAS, Joan E. Murphy and the late John F. Murphy, Trustees of Old Oil Realty Trust, as Landlord, and Murphy's Waste Oil Service, Inc., as Tenant, entered into a certain Lease Agreement dated February 8, 1989 (the "Lease" or "Lease Agreement") whereby Landlord leased to Tenant the premises known and numbered as 252 and 252 Rear Salem Street, Woburn, Massachusetts ("the Property"); and

WHEREAS, on April 1, 1998, Landlord and Tenant executed Amendment 1 to the Lease Agreement; and

WHEREAS, the provisions of Paragraph 5 of Amendment 1 of the Lease Agreement contain an error which Landlord and Tenant have agreed to correct.

NOW, THEREFORE, consideration of the mutual covenants contained herein and for other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the Landlord and Tenant, intending to be legally bound, agree that the Lease Agreement shall be further amended as follows:

1. Paragraph 5 of Amendment 1 to the Lease Agreement, is deleted, and replaced by the following:

In Section 4B, "Adjusted Rent", the first sentence is deleted, and the following is substituted therefor:

Provided Tenant has exercised its option to extend the term as set forth in Section 3B above, the rent for the first 7-year extended term shall be increased at the beginning of said term in proportion to any increase in

the Consumer Price Index ("CPI"). The rent for the second 7-year extended term shall be increased at the beginning of and annually during said term in proportion to any increase in the CPI. In calculating the rent for the first 7-year extension term and for each subsequent extension year, the rent for the immediately preceding year shall be multiplied by a fraction, the numerator of which is the CPI for the last month of the preceding year and the denominator of which is the CPI for the month of the last rent increase.

All other terms, conditions and provisions of the Lease Agreement and Amendment 1 thereto which are not modified by this Amendment 2 remain unchanged.

This Amendment 2 to the Lease Agreement is executed in duplicate counterparts, each of which shall be deemed to be an original hereof but both of which together shall constitute one and the same agreement.

IN WITNESS WHEREOF, the Landlord and Tenant execute this Amendment 2 to the Lease Agreement as of the 1st day of February 1999.

OLD OIL REALTY TRUST, Landlord

By: Joan E. Murphy
Joan E. Murphy, Trustee

MURPHY'S WASTE OIL SERVICE, INC., Tenant

By: Roger Koenecke
Roger Koenecke, Vice President

EXHIBIT 4.e

SETTLEMENT AGREEMENT

AGREEMENT made as of the first day of April 1998 by and between Murphy's Waste Oil Service, Inc., ("MWO"), Clean Harbors Environmental Services, Inc. ("Clean Harbors"), Old Oil Realty Trust (the "Trust" or "Landlord") and Joan Murphy ("Murphy"), all of whom are collectively referred to herein as the "Parties."

WHEREAS, MWO is the tenant and the Trust is the landlord under a lease dated February 8, 1989 (the "Lease"); pertaining to property at 252 and 252 Rear Salem Street Woburn, Massachusetts ("Property");

WHEREAS, MWO and Murphy are parties to a Consulting and Non-Competition Agreement dated February 8, 1989 (the "Consulting Agreement");

WHEREAS, certain disputes have arisen under the Lease and the Consulting Agreement which the parties now wish to resolve by agreement;

WHEREAS, the disputes have resulted in litigation between the parties, including Middlesex Superior Court CA No. 97-04516D, Land Court Misc. No. 241639 and Middlesex Superior Court CA No. 97-5163 (collectively the "Litigation") which the Parties now wish to resolve finally and completely by agreement,

NOW, THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the Parties, the Parties agree as follows:

1. MWO agrees to pay to the Trust the sum of $85,000.00 as full and final payment of all rent due under the Lease and all additional rent (as that term is defined in the Lease) through April 1, 1998 except for those additional rent items listed on Schedule A hereto, which MWO agrees to pay. The sum of $85,000.00 will be paid within 10 days after the execution of this Agreement by Murphy and the Trust. MWO agrees to pay Murphy the sum of $214,137.00 as full and final payment of all claims asserted by Murphy for amounts due under the Consulting Agreement. Of this amount, MWO will pay $15,000.00 to Murphy within 10 days of the execution of this Agreement by Murphy and the balance in 36 equal monthly installments of $6,614.22 principal and interest, with interest at the rate of 12% per annum on the unpaid balance. Payment will commence the first day of the first month after the execution of this Agreement and will be made on the first day of each month thereafter until paid in full. Clean Harbors guarantees the payment of the foregoing amounts and will procure a bond to secure payment of the deferred amounts.

2. MWO and the Trust will enter into a ratification and amendment to the Lease ("Lease Amendment") which will provide for the following:

a. The rent for the current term will continue at the rate of $6,562.50 per month. MWO will continue to be responsible for additional rent as that term is defined in the Lease.

b. The current option to extend the lease for a period of five (5) years commencing in February 1999 will be deleted and replaced with two lease extension options, each for a period of seven (7) years, the first option period commencing on February 8, 1999. The base rent will be increased at the beginning of the first option period to reflect any change in the CPI as that term is defined in the Lease and at the beginning of and annually during the second option period to reflect the change in the CPI.

c. So long as the Lease (including any option period) is in force, fifty percent (50%) of the monthly rent will be withheld and retained by MWO and recorded in a ledger account (the "Corrective Action Account") to cover the costs of corrective action. The term "Corrective Action", as used in this Agreement, shall mean any and all site assessments (i.e., investigations, monitoring, surveys, testing and other information gathering activities to identify the existence, source, nature and/or extent of releases of oil or hazardous materials) and site remediation or related activities undertaken by MWO pursuant to Massachusetts General laws, Chapters 21C and/or 21E and/or pursuant to the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), 42 USC 9601 et seq., as required by statutory or regulating authority, on the Property itself or on adjacent properties or other properties in the vicinity of the Property, except with respect to spills or releases caused by MWO since February 8, 1989. Simple interest at the rate of 5% per annum will accrue on any balance in the Corrective Action Account. As set forth below, the Corrective Action Account balance, including any accrued interest, will be reduced by any necessary amounts spent or incurred by MWO, Clean Harbors or their affiliates for Corrective Action. Such charges will be on a cost basis.

d. The Corrective Action Account will be debited quarterly at the beginning of each quarter for amounts spent during the prior calendar quarter for Corrective Action. MWO will provide the Trust with a quarterly report detailing Corrective Action performed during the prior quarter and will not make a charge against the Corrective Action Account until 10 days after such report has been received by the Trust. The Trust will have 10 days from the receipt of such report to object in writing to the application of funds for reimbursement of the costs reflected in such report. In the event of a disagreement with respect to the necessity of the activity undertaken or the amount charged for such activities, the Trust and MWO will make a good faith effort to resolve the dispute between themselves. If the dispute has not been resolved within 30 days of the date on which the Trust has made an objection, the Trust shall submit the dispute to arbitration before a single arbitrator selected through the American Arbitration Association within 60 days of its original receipt of the quarterly report or such objections are deemed to be waived. The Trust and MWO agree that the arbitration is to be an expedited one and that the proceeding shall be

limited to two hours with each party having one hour to make a presentation and each party to bear its own cost. The decision of the arbitrator will be binding and final. The Trust and MWO agree that prior to such proceedings they will exchange relevant documents. In the event that either party does not prevail in three consecutive arbitrations, that non-prevailing party will be liable to the other for its reasonable costs of arbitration for the last (third) arbitration including reasonable attorneys fees and reasonable employee time. Any liability on either MWO or the Trust for costs under this paragraph, shall be satisfied by payment to the other party within 30 days of the decision of the arbitrator. Payment to MWO may be satisfied by rent offsets, and if the Lease has been terminated, by offset against any amount owed by Clean Harbors or MWO or its parent or affiliates to the Trust. Should either party decline to agree to an offer of settlement prior to arbitration and at arbitration receive an award or determination equal to or less favorable than the offer, that party will be deemed to have not prevailed.

e. Upon the termination of the Lease (including any extension) if there is any amount left in the Corrective Action Account after all Corrective Action charges have been paid, the balance (including accrued interest, if any) will be paid to the Trust; provided, however, that MWO shall have the right to retain said balance (i) to the extent that it has been claimed by MWO but not disbursed pending the expiration of applicable time limits or conclusion of any resolution or arbitration proceeding pursuant to Paragraph 2.d above or (ii) to cover estimated costs for the four-month period commencing at the termination of the Lease for Corrective Action tasks then in progress but not completed as of the date of said termination. If the actual costs are less than the claimed or estimated costs, as applicable, the difference will be paid to the Trust at the conclusion of the resolution or arbitration proceedings or end of said four-month period, as the case may be.

f. The Lease Amendment will provide an option pursuant to which MWO may purchase the Property at any time during the term of the Lease (including any extension) for the sum of $600,000.00 as that sum shall be increased for the CPI adjustment as provided in the Lease ("Adjusted Price") and reduced by any amount expended by Clean Harbors, MWO or any of their affiliates after the date hereof for Corrective Action which amounts were not reimbursed from the Corrective Action Account established by subparagraph 2.c above ("Unreimbursed Expenses."). In calculating the Unreimbursed Expenses for determining the purchase price reduction, expenses incurred for Corrective Action tasks but not reimbursed as of the date of said purchase shall be included. If the option to purchase is exercised prior to the expiration of the first lease extension term the purchase price will be the higher of the Adjusted Price less Unreimbursed Expenses or the minimum purchase price of $250,000.00. If the option to purchase is not exercised before the expiration of the first option term, the purchase price will be the higher of the Adjusted Price less Unreimbursed Expenses or the minimum purchase price of $125,000.00.

g. Upon any transfer of title to MWO or its nominee, Clean Harbors and MWO will release Murphy and the Trust from any further indemnification obligations.

3. MWO shall have the option to terminate the Lease at any time without cause upon ninety (90) days prior written notice to the Landlord. MWO shall vacate the Property on or before the expiration of said 90-day period, and, upon vacating the Property, or the expiration of 90 days, which ever occurs later, MWO shall have no further obligations to pay rent or additional rent.

4. Concurrent with the execution of this Agreement, the Parties will execute mutual general releases which shall release all claims that any party may have against any other party through the date of this Agreement except such obligations as are created by this Agreement, the prospective obligations under the Lease as amended by the Lease Amendment including the indemnification provisions contained in the Lease, provided that for Corrective Action expenses incurred during the term of the Lease, MWO and Clean Harbors may only seek indemnification as provided herein. It is the understanding and intention of the parties that MWO and Clean Harbors may seek indemnification beyond recourse to the Corrective Action Account or a reduction of the purchase price only in the event that the Lease is terminated other than by purchase and the property vacated, and then only for expenses incurred after the termination of the Lease. The Trust and Murphy shall provide releases that run to all Clean Harbors and MWO affiliates, their parent corporation, their respective officers, directors, employees and agents.

5. Upon the execution of this Agreement, the parties will cause their counsel to file stipulations of dismissal dismissing all of the Litigation with prejudice, waiving all rights of appeal and with each party to bear its or her own costs. Murphy and the Trust will execute such documents as may be necessary to release the bond posted in connection with the pending litigation.

6. All payments to be made to Murphy or the Trust pursuant to this Agreement (including rent and additional rent payments) shall be paid to George P. Luker ("Luker") as attorney for Murphy or the Trust unless and until different instructions are provided to Clean Harbors and MWO in writing by Murphy or the Trust. Murphy and the Trust acknowledge that such payments to Luker will discharge the obligations for which such payments are tendered.

7. **Miscellaneous.**

a. **Governing Law.** This Agreement shall be governed by and construed and enforced in accordance with the internal laws, and not the laws of conflicts, of the Commonwealth of Massachusetts. Each of the parties to this Agreement agrees that any suit for the enforcement of this Agreement may be brought in the courts of the Commonwealth of Massachusetts or any Federal court sitting therein and consents to the non-exclusive jurisdiction of such court. Each party hereby waives any

objection that it may now or hereafter have to venue in Massachusetts of any such suit and will not assert that such suit in Massachusetts is brought in any inconvenient forum.

b. **Assigns.** This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective heirs, successors and assigns.

c. **Entire Agreement, Etc.** This Agreement and the Lease Amendment of even date contains the entire understanding of the Parties relating to the subject matter hereof, supersedes all prior agreements and understandings relating to the subject matter hereof and shall not be amended except by written instrument hereafter signed by all of the parties hereto.

d. **Counterparts.** This Agreement may be executed by the Parties in separate counterparts, each of which when so executed and delivered shall be an original, but all such counterparts shall together constitute but one and the same instrument.

e. **Section Headings.** The headings of sections of subsections are for reference only and shall not limit or control the meaning thereof.

f. **Intention of the Parties:** Notwithstanding anything appearing herein that may appear to be contrary:

(1) Joan E. Murphy individually, and her heirs and assigns are released by MWO and Clean Harbors from any claims for indemnification contained in the Stock Purchase Agreement of February 8, 1989, provided that, except as otherwise limited by this Agreement and the Lease Amendment of even date, the parties reserve all other rights as they may now have or may hereafter accrue.

(2) That no payments due to Joan E. Murphy under the Consulting Agreement and no payment of rent payable to Old Oil Realty Trust provided in Paragraph 1 of this Settlement Agreement, and no payment of rents to be due under the Lease of February 8, 1989 as amended, shall be withheld or claimed as a setoff for Corrective Action during the period of time the Lease is in effect, except 50% of the rental amounts which will be withheld and credited to the Corrective Action Account provided in Paragraph 2.c above.

(3) This compromise Settlement between the parties terminates all claims for indemnification by and among the parties for all expenditures by MWO and Clean Harbors made for all periods to the date of this Agreement. Any claim for indemnification after the date of this

Agreement and during the term of the Lease will be satisfied as provided in paragraphs 2.c and 2.f above.

(4) In the event of future litigation, unless otherwise specifically provided by this Agreement, all parties reserve all applicable defenses at law and in equity, including those previously raised by the litigation, to be terminated by this Agreement.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as an agreement under seal of the day and year first above written.

Clean Harbors Environmental Services, Inc.
by

Roger Koenecke, Senior Vice President

Joan Murphy

Murphy's Waste Oil Service, Inc.

by

Carl Pavchetty, Jr., Vice President

Old Oil Realty Trust
by

Joan Murphy, Trustee

Execution Date: June 25, 1998

J:\MATSKO\CLEANHBS\MURPHY\SETAG2.WPD

Schedule A

1. Flammable Storage License Fee for the period April 30, 1998 through April 30, 1999, totaling $1,320.00.

2. Fiscal Year 1998 Real Estate taxes, for 252 Salem Street, Woburn, totaling $12,328.83.

3. Fiscal Year 1998 Real Estate taxes for 250 Salem Street, totaling $1,210.61

4. Water and Sewer bill for billing date December 31, 1997 totaling $146.00. (Acct 006609-00).

5. Water and Sewer bill for billing date December 31, 1997, totaling $136.00. (Acct 010748-00).

LIMITED RELEASE

June 18, 1998

For good and valuable consideration the receipt of which is hereby acknowledged, Murphy's Waste Oil Service, Inc. ("MWO") and Clean Harbors Environmental Services, Inc. ("Clean Harbors") hereby remise, release and forever discharge Old Oil Realty Trust ("Trust") and Joan Murphy ("Murphy"), and their heirs, executors, administrators, successors or assigns from all debts, demands, actions, causes of actions, suits, sum and sums of money due, accounts, specialties, covenants, contracts, controversies, agreements, damages, executions, and liabilities and any and all other claims of every kind, nature and description whatsoever, both in LAW AND EQUITY, we now have or ever had from the beginning of the world to this date and more especially on account of the transactions, facts and occurrences set forth in all of the pleading in Middlesex Superior Court CA No. 97-04516D, Land Court Misc. No. 241639 and Middlesex Superior Court CA No. 97-5163, as well as all transactions, facts and occurrences related thereto whether or not stated therein, excepting herefrom the rights of the parties under a settlement agreement ("Settlement Agreement") dated as of April 1, 1998 by and between the parties hereto and the prospective obligations under a lease ("Lease") between MWO as the tenant and the Trust as the landlord dated February 8, 1989 as amended by a Lease Amendment including the indemnification provisions contained in the Lease and the indemnification provisions contained in a Stock Purchase Agreement dated February 8, 1989 by and between MWO, Clean Harbors and Murphy, provided that for Corrective Action expenses (as defined in the Settlement Agreement) incurred during the term of the Lease, MWO and Clean Harbors may only seek indemnification as provided in the Settlement Agreement.

Murphy's Waste Oil Service, Inc.
By:

Carl Paschetag, Jr.
Vice President

Clean Harbors Environmental Services, Inc.
By:

Roger Kaenecke
Senior Vice President

Signed in presence of

J:\MATSKO\CLEANHBS\MURPHY\CLENHRB.REL

EXHIBIT 4.g

SECTION C
WASTE ANALYSIS PLAN

1.0 INTRODUCTION

1.1 General

This Waste Analysis Plan has been developed by Murphy's Waste Oil Service, Inc. (Murphy's) pursuant to the requirements of 310 CMR 30.513 to document the procedures which will be used to determine the identity and acceptability of each incoming load of hazardous waste that arrives at and is intended for storage and handling at Murphy's waste oil storage and transfer facility located at 252 Salem Street in Woburn, MA.

This Plan specifies incoming inspection and acceptance criteria, describes the frequency of and procedures for sampling incoming and outgoing waste streams, and identifies the analytical testing methods for waste oil, wastewater, oily solids/debris, and specification used oil fuels.

1.2 Types and Sources of Hazardous Wastes

1.2.1 Acceptable Waste Streams

Under the terms of the RCRA Part B license, Murphy's is authorized to accept five (5) types of hazardous waste streams:

1. Waste oils (liquids) listed as Massachusetts state hazardous waste code number MA01 in 310 CMR 30.131;

2. "Specification used oil fuel" and "off-specification used oil fuel" which are listed as state hazardous waste codes MA97 and MA98 and meet the criteria of 310 CMR 30.216;

3. Off-specification unused (virgin) waste oils that exhibit a characteristic of hazardous waste, that are managed as "commercial chemical products" in accordance with 310 CMR 30.212(7), and that are shipped to Murphy's as an MA97 regulated recyclable material.

4. MA01-category waste oils (liquids) which contain greater than 1,000 parts per million (ppm) of the halogenated solvent compounds listed under hazardous waste codes F001 and F002 in 310 CMR 30.131. MA01/F001/F002 mixtures are typically produced by generators who, for example, may have mixed degreasing solvents from a parts washing operation into a tank or drum containing waste oil. Such MA01/F001/F002 mixtures are intended to be accepted for storage and transfer only and are not blended or otherwise mixed with the general MA01/MA97/MA98 waste oil streams;

5. Oil-contaminated solids identified by hazardous waste code MA01. Such material includes, but is not limited to, soil, absorbent materials (e.g., speedy-dri), and debris (e.g., rocks, stick, protective equipment) generated from oil spill clean-up activities;

6. Non-hazardous "white oils" as defined in 310 CMR 30.010 and identified as MA waste code MA99 when shipped on a hazardous waste manifest;

7. Non-hazardous wastewaters which are identified by MA waste code MA99 when shipped on a hazardous waste manifest, and which are generated in association with an oil spill remediation or waste oil related process (e.g., wastewater that has been separated from oil), and do not display any visible sheen of oil; and

8. Industrial wipers and sorptive minerals contaminated with waste oil designated non-hazardous under the Massachusetts Department of Environmental Protection Policy 92-02 entitled "Waste Management Guidance For Industrial Wipers and Sorptive Minerals Contaminated With Waste Oil."

Typical types/sources of waste oils to be received at Murphy's include: spent motor oils and lubricating oils collected at small quantity generator locations such as service stations and engine repair shops; industrial oils and lubricants; oil product/sludges from storage tank cleanouts, and; oil/water mixtures retrieved from spill cleanup actions.

1.2.2 Unacceptable Waste Streams

All incoming wastes are subject to the procedures outlined in this Waste Analysis Plan to ensure that it is one of the four authorized waste streams described in Section 1.2.1 above. Murphy's will not accept any hazardous waste which:

1. Contains polychlorinated biphenyls (PCB's) in concentrations equal to or greater than fifty (50) ppm. Such material is a hazardous waste (MA02) pursuant to 310 CMR 30.131.

2. Exhibits a hazardous characteristic as defined in 310 CMR 30.122 through 30.124, including:
   - Ignitability (D001) (except waste oil liquids which have a flash point greater than or equal to 100°F pursuant to 310 CMR 30.216);
   - Corrosivity (D002); and
   - Reactivity (D003).

3. Is mixed with any hazardous waste listed in 310 CMR 30.130 (i.e., F-, K-, P-, or U- codes), except in such cases where the material is MA01 waste oil that has been contaminated with F001/F002 halogenated solvent compounds.

2.0 WASTE ACCEPTANCE ANALYTICAL PARAMETERS/RATIONALE

2.1 MA01 and MA01/F001/F002 Liquids

2.1.1 Prequalification Procedures

No waste prequalification is required for MA01 or MA01/F001/F002 liquids. Instead, Murphy's shall rely on:

1. Knowledge of the general characteristics of the oil product prior to use as provided by a review of Material Safety Data Sheets, or other references;
2. Knowledge of the process in which the oil was used (e.g., lubricant, crank case oil, heating oil), knowledge of the other waste materials handled at the site of generation; and
3. Prior experience with identical or similar waste streams.

2.1.2 Waste Pick-up Requirements

At the time of waste pick-up, Murphy's shall conduct an in-field screening for total halogens using the test kit method outlined in Section 3.2.3 below.

Any waste stream which shows a total halogens concentration of 999 ppm or less shall be shipped as MA01. Any waste stream which tests positive for total halogens at a concentration of 1,000 ppm or greater shall be shipped as MA01/F001/F002.

2.1.3 Onsite Waste Acceptance Criteria

2.1.3.1 Manifest Review and Visual Inspection of Incoming Loads

Each incoming load of MA01 or MA01/F001/F002 waste must be accompanied by a properly completed hazardous waste manifest and land disposal restriction notification form, and shall be sampled and analyzed upon arrival. Samples from each load will be visually inspected to verify that the actual material received at the facility matches the general waste description on the manifest.

2.1.3.2 Minimum Waste Conformance Testing

Murphy's shall perform waste conformance testing of each incoming liquid load for flash point, PCB's, and total halogens using the methods described in Sections 3.2.1 through 3.2.4 below.

Incoming loads which are found to have a flash point of less than 100°F shall be rejected and shipped to Clean Harbors of Braintree, Inc. or other approved facility as a D001 (ignitable) hazardous waste.

Incoming loads which are found to contain PCB's at

concentrations of greater than or equal to 50 ppm will be rejected and shipped to Clean Harbors of Braintree, Inc. or other approved facility as an MA02 (PCB's) hazardous waste.

Incoming loads which are found to have a total halogen concentration of less than 1,000 ppm will be accepted as MA01 for storage and processing.

Incoming loads which are found through test kit screening to contain a total halogen concentration of greater than or equal to 1,000 ppm will be either: (1) presumed to be contaminated with F001/F002 solvents and accepted for storage as MA01/F001/F002 storage tank, or; (2) re-sampled and analyzed per the "rebuttable presumption test" described in section 3.2.4 below.

Under the "rebuttable presumption test", if the total concentration of halogenated constituents listed in 310 CMR 30.260 is less than or equal to 999 ppm, the load will be accepted as MA01. if the total concentration of halogenated constituents is determined to be greater than or equal to 1,000 ppm, the load will be designated as a hazardous waste and either be (1) rejected and shipped to an alternative facility, or: (2) accepted as an MA01/F001/F002 mixed waste oil.

2.2 MA97 and MA98 used oil fuels

2.2.1 Prequalification Procedures

Pursuant to 801 CMR 4.07(5), recyclable materials, including MA97 and MA98, are exempt from the MA Hazardous Waste Transporters Fee. In order to show that a waste oil meets the criteria for a specification used oil fuel, Murphy's requires a full prequalification analysis of all MA97 waste streams. The prequalification analysis includes the specification used oil fuel criteria listed in 310 CMR 30.216 (see Table C-1), as well as PCB's. The prequalification analysis may be conducted by any qualified analytical laboratory. Once the prequalification results are known, the material is assigned the MA97 waste code, and the waste is qualified as acceptable for Murphy's.

Table C-1: Specification Used Oil Fuel Parameters
[310 CMR 30.216]

Constituent or Property	Allowable Level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum

Flash Point	100°F minimum
Total Halogens	4,000 ppm maximum

Off-specification used oil fuels (MA98) may be shipped by a licensed hazardous waste transporter, which has "marketer authority" in accordance with 310 CMR 30.255(4), to a facility licensed pursuant to 310 CMR 30.800, provided the used oil is analyzed for total halogen content at the site of generation, and the total halogen content is determined to be less than 1000 parts per million. Murphy's may accept and manage MA98 waste streams delivered by transporters which have "marketer" authority.

2.2.2 Waste Pick-up Requirements

Given the extensive prequalification analysis required to assign the MA97 code, no in-field testing is required at the time of waste pick up. However, a copy of the analytical results must accompany the load being shipped.

Off-specification used oil fuels (MA98) are prequalified by the transporter by determining total halogen content at the site of generation.

2.2.3 Onsite Waste Acceptance Criteria

2.2.3.1 Manifest Review and Visual Inspection of Incoming Loads

Each load of MA97 specification used oil fuel must be accompanied by a properly completed hazardous waste manifest, along with a copy of the analytical results. All loads will be visually inspected to verify that the actual material received at the facility matches the description on the manifest.

Each load of MA98 specification used oil fuel must be accompanied by a properly completed hazardous waste manifest. The results of the total halogen analysis must be written on the manifest, and must indicate a concentration of <1000 ppm.

2.2.3.2 Minimum Waste Conformance Testing

Murphy's shall perform waste conformance testing of each incoming MA97 and MA98 liquid load for flash point, PCB's and total halogens using the methods described in Sections 3.2.1 through 3.2.4 below.

2.3 Virgin Oils as Off-specification Commercial Chemical Products

The DEP clarified in an October 1996 letter to the regulated community that unused bulk fuel oil product that no longer meets the specifications as a virgin fuel oil (i.e., is no longer suitable for its intended purpose without reprocessing) meets the definition of an off-specification "commercial chemical product" (as defined in 310 CMR 30.010) if it also exhibits a characteristic of hazardous waste (e.g., flashpoint less than

140°F). Appendix C-1 includes a copy of the DEP letter.

Generators may characterize these unused waste oils as off-specification commercial chemical products in accordance with 310 CMR 30.212(7), and ship them off-site as a Class A regulated recyclable material (MA97). The 21 day presumptive approval requirements for a Class A recycling permit pursuant to 310 CMR 30.221(2) apply to generators who want to manage their off-specification virgin oils in this manner.

Murphy's may accept unused waste oils that are managed in this manner as a MA97 regulated recyclable material.

2.3.1 Prequalification Procedures

Prior to receiving a shipment of a virgin oil classified as an off-specification commercial chemical product, Murphy's will obtain from the generator either:

a) a copy of the generators Class A recycling permit application showing date of submittal to the DEP, or

b) a letter from the generator certifying that they have submitted the Class A recycling permit application and indicating the date of submittal to the DEP.

This paperwork may accompany the shipment. Murphy's will not accept shipments of this material for at least 21 days from the date the generator submitted the Class A permit application to the DEP.

2.3.2 Waste Pick-up Requirements

Given the requirement to review the paperwork described in subsection 2.2.1 above, no in-field testing is required at the time of waste pick up.

2.3.3 Onsite Waste Acceptance Criteria

2.3.3.1 Manifest Review and Visual Inspection of Incoming Loads

Each load of MA97 virgin oil classified as an off-specification commercial chemical product must be accompanied by a properly completed hazardous waste manifest. All loads will be visually inspected to verify that the actual material received at the facility matches the description on the manifest.

2.3.3.2 Minimum Waste Conformance Testing

Murphy's shall perform waste conformance testing of each incoming MA97 load for flash point, PCB's and total halogens using the methods described in Sections 3.2.1 through 3.2.4 below.

2.4 Oil-Contaminated Soil/Debris

2.4.1 Soil/Debris With Virgin Oil

2.4.1.1 Prequalification Procedures

Murphy's will require generators of soil/debris from virgin oil product spills to analyze the soil or debris to determine that it does not exhibit a hazardous characteristic pursuant to 310 CMR 30.120, and that it does not contain PCB's at a concentration of 50 ppm or greater.

However, in lieu of actual analytical sampling and analysis, Murphy's will allow a generator to rely on their knowledge of the virgin oil product which was spilled to demonstrate that the soil/debris: 1) does not exhibit a characteristic of a hazardous waste pursuant to 310 CMR 30.120 (i.e., is not a D-code), and; 2) is not listed as a hazardous waste pursuant to 310 CMR 30.130 (i.e., not an F-, K-, P-, or U-code). The chemical/physical information (e.g., flash point) needed to make that determination will be gathered from MSDS's or other standard technical reference books.

If a generator elects to rely on knowledge of the virgin oil product, Murphy's will require that the generator provide a certification statement to be included on, or attached to, the manifest accompanying the load. The certification shall state that the soil/debris:

1. Is oily waste soil/debris generated from the spill of a "virgin" oil product;
2. Does not exhibit a characteristic of a hazardous waste pursuant to 310 CMR 30.120 (i.e., is not a D-code);
3. Is not listed as a hazardous waste pursuant to 310 CMR 30.130 (i.e., not an F-, K-, P-, or U-code, or MA02 waste);
4. Has not been mixed with a characteristic or listed hazardous waste.

If a generator elects to utilize actual analytical test data, a copy of the data must be submitted to Murphy's for review and approval.

Murphy's notes that the requirement to test for waste code D018 through D043 may be waived if the soil/debris qualifies as petroleum-contaminated media or debris generated from an underground storage tank release which is being remediated pursuant to a corrective action measure taken under 40 CFR 280.

2.4.1.2 Pick-up Requirements

Given the unique nature of virgin oil-contaminated soil and debris, no in-field testing is required.

2.4.1.3 Onsite Waste Acceptance Criteria

2.4.1.3.1 Manifest Review and Visual Inspection of Incoming Loads

Each load of soil/debris (waste code MA01 only) must be

accompanied by a properly completed hazardous waste manifest which includes the certification statement discussed in Section 2.3.1.1 above. All loads will be visually inspected to verify that the actual material received at the facility matches the description on the manifest.

2.4.1.3.2 Minimum Waste Conformance Testing

Given the unique nature of virgin oil-contaminated soil/debris, no onsite waste conformance testing is required.

2.4.2 Soil/Debris With Used Oil Product

2.4.2.1 Prequalification Procedures

For soil or debris that is contaminated with a used oil product (e.g., soil or debris generated from the clean-up of a "waste" oil product spill, tank bottoms from a waste oil tank, residuals from a oil/water separator) the generator will be required to complete Clean Harbors Inc.'s "Generator Waste Material Profile Sheet" (GWMPS). A copy of the GWMPS form in included in Appendix C-2.

The generator will be required to analyze the soil or debris to determine that it does not exhibit a hazardous characteristic pursuant to 310 CMR 30.120, and that it does not contain PCB's at a concentration of 50 ppm or greater. At a minimum, Murphy's will require analytical results for flash point (D001), corrosivity (D002), reactivity (D003), toxic metals (D004-D011), toxic organics (D018 through D043), and PCB's (MA02). The analysis may be conducted by Clean Harbors Environmental Services, Inc. (CHESI) analytical laboratory in Braintree, MA or other qualified analytical laboratory. The results must be submitted to Murphy's, along with the completed GWMPS form, for review and approval.

Murphy's notes that the requirement to test for waste code D018 through D043 may be waived if the soil/debris qualifies as petroleum-contaminated media or debris generated from an underground storage tank release which is being remediated pursuant to a corrective action measure taken under 40 CFR 280.

2.4.2.2 Pick-up Requirements

Given the extensive prequalification analysis required for waste oil contaminated soil and debris, no in-field testing is required at the time of waste pick up.

2.4.2.3 Onsite Waste Acceptance Criteria

2.4.2.3.1 Manifest Review and Visual Inspection of Incoming Loads

Each load of soil or debris must be accompanied by a properly completed hazardous waste manifest (waste code MA01). All loads will be visually inspected to verify that the actual material

received at the facility matches the description on the manifest.

2.4.2.3.2 Minimum Waste Conformance Testing

Given the extensive prequalification analysis required for soil and debris by releases of used oil products, no conformance testing is required. However, appropriate analytical data must be submitted to Murphy's prior to acceptance.

2.4.3 Industrial Wipers and Sorptive Minerals Contaminated With Waste Oil

Under MA Department of Environmental Protection (DEP) Policy 92-02, "Industrial Wipers and Sorptive Minerals Contaminated With Waste Oil" (see Appendix C-3), certain "sorptive materials" (e.g., absorbent clays and diatomaceous earth materials) and "industrial wipers" (e.g., shop towels and rags) are not considered to be hazardous wastes when they: 1) do not contain free-flowing waste oil (as defined by the "one drop test" described in the policy), and; 2) are used only for spills or leaks when collection of waste oil as liquid is not feasible or practical.

Murphy's shall accept such "industrial wipers" and "sorptive minerals" as non-hazardous waste which meets the conditions of Policy 92-02. Materials accepted under this exclusion will not be subject to the prequalification and analytical test requirements of Section 2.3.1 or 2.3.2 above.

Murphy's shall, however, inspect each load of materials accepted under this Policy to ensure that the wastes are "industrial wipers" or "sorptive materials" that qualify for the exemption, and that they meet the requirements of the "one drop test". All industrial wipers and sorptive materials shipped to Murphy's under this Policy must be accompanied by either a bill of lading or a hazardous waste manifest under state hazardous waste code MA99 (not a hazardous waste).

3.0 ANALYTICAL/SAMPLING METHODS

3.1 General

Analytical testing of samples collected as part of this Plan will be performed by Murphy's, CHESI, or other qualified laboratory.

Murphy's is equipped to conduct flash point testing by Pensky-Martens method, PCB's analysis by gas chromatograph (GC) analysis, and total halogens by test kit method. All other analyses are conducted at CHESI or other qualified laboratories.

The analytical procedures and equipment used by Murphy's, CHESI, or other approved laboratory will conform with standard analytical procedures approved by US EPA and/or ASTM.

3.2 Specific Analytical Methods

"total organic halogens" concentration will be determined using a methodology developed by CHESI. A discussion of the methodology and the specific analytical procedures for the "total organic halogens" test is included in Appendix C-5.

Alternatively, for non-hazardous organic halogenated constituents such as chlorinated parafins, Murphy's may accept a certification from the generator based on the generator's knowledge of the process generating the waste. In this case, the generator shall provide Murphy's with both a completed Waste Material Profile Sheet and an Material Safety Data Sheet for the particular non-hazardous chlorinated compound present in the generator's waste oil.

If the total concentration of halogenated constituents listed in 310 CMR 30.160 is less than or equal to 999 ppm, the load will be accepted as MA01. If the total concentration of halogenated constituents is greater than or equal to 1,000 ppm, and the presumption that the oil has been mixed with a halogenated hazardous waste cannot be rebutted, the load will be designated as a hazardous waste, and will either be (1) rejected and shipped to an alternate facility, or: (2) accepted as an MA01/F001/F002 mixed waste oil.

3.3 Sampling Methods

All sampling conducted pursuant to this Plan shall be performed by qualified Murphy's employees or approved testing laboratories retained by Murphy's.

All of the sampling procedures and equipment used by Murphy's will conform with approved American Society for Testing Materials (ASTM) and/or US EPA protocol (see Table C-2) to ensure the retrieval of reliable and representative samples. Specific sampling procedures will be dependent on both the nature of the material and the size and type of storage container.

3.4 Sample Collection/Retention

3.4.1 Offsite Waste Oil Pick-Up Locations

At each waste oil pick-up location, one (1) sample will be obtained from each waste oil tank or other container prior to the waste oil being pumped into the collection truck. Samples may be composited for locations with multiple containers of the same waste stream. The sample bottle(s) will be capped and labeled with the name, date and location of the waste oil source. The pick-up sample will be transported with the load to the facility.

3.4.2 Onsite Procedures

Murphy's will collect and analyze at least one (1) sample from each incoming bulk transport truck prior to signing the accompanying manifest and offloading the material into the receiving tank. Drummed liquids will be sampled at a rate of one

(1) sample per batch per generator.

As described in Section 3.1 above, samples from incoming loads will be analyzed at Murphy's, CHESI, or other qualified laboratories. Any sample which is transported from Murphy's to CHAS (or other qualified laboratory) for analysis will be accompanied by an appropriately completed chain-of-custody (COC) document. See CHESI's Quality Assurance/Quality Control (QA/QC) plan in Appendix C-6 for a copy of the COC form and procedures.

3.4.3 Sample Retention

3.4.3.1 Collection Location Samples

The samples collected at each of the waste oil pick-up locations will be retained until such time that the bulk load has been sampled, analyzed, and found to meet the acceptance criteria of the facility. If the load is deemed acceptable, the pick-up samples from the various collection locations will be incorporated into the bulk load.

Table C-2: Sampling Methods and Equipment

Material	Method	Equipment
Extremely viscous liquid	ASTM D140-70(a)	Tubing or thief
Containerized liquid	SW-846	Coliwassa, thief, or Bacon bomb
Sludges/solids	ASTM D1452-65(a)	Trier

References:

1. American Society for Testing Materials. Annual Book of ASTM Standards, Parts 15, 19, 31. 1982.

2. US Environmental Protection Agency. Test Methods for Evaluating Solid Waste. 1980.

3.4.3.2 Accepted Incoming Loads

A sample from incoming bulk loads which have been analyzed and accepted into the facility will be retained in a secure environment for 30 days. All retained samples will be labeled and the information will be transcribed to a sample log kept by the facility manager.

4.0 FREQUENCY OF ANALYSIS

The initial load of hazardous waste from each generator shall be subject to the sampling and analysis procedures described in Section 2.0. However, the requirement for prequalification analysis may be waived for the second and subsequent shipments of hazardous waste from a generator with a reoccurring process. If Murphy's suspects or is notified by the generator that the process generating the waste has changed, the prequalification procedures will be repeated.

5.0 PROCEDURES FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

Since the facility is limited to accepting only waste oil, or waste oil mixed with halogenated solvents, the likelihood of ignitable, reactive, or incompatible waste materials being present at the facility is low.

As noted above, Murphy's waste sampling and analysis program incorporates testing for characteristics of hazardous wastes and strict Quality Assurance/Quality Control protocol to ensure complete and accurate analyses of candidate waste oil streams. This provides assurance that no ignitable, reactive, or otherwise incompatible wastes enter the facility.

6.0 WASTE MOVEMENT WITHIN THE FACILITY

6.1 Storage and Consolidation of MA01/F001/F002 Mixtures

All MA01/F001/F002 mixtures shall be be stored in segregated storage tanks. All loading/offloading of oil/halogen mixtures will be conducted using flexible hoses so as to not contaminate the facility's pumping/piping system.

MA01/F001/F002 mixtures shall not, under any circumstances, be commingled or otherwise mixed with the general MA01, MA97, and MA98 waste streams. If any inadvertent mixing of halogenated and non-halogented oil stream should occur, the resultant mixture shall be managed and disposed of as a MA01/F001/F002 waste.

6.2 Storage and Consolidation of MA01, MA97, and MA98

Murphy's shall commingle MA01, MA97, and MA98 waste streams within the bulk storage tanks at the facility so as to produce a consistent, blended fuel oil product which is suitable for end use as a supplemental fuel.

Murphy's shall rely on the prequalification analysis (if required) and/or the conformance testing results to determine the proper ratios for blending of streams. All blended streams shall be subject to the outgoing waste analysis requirements described in Section 7.0 below.

6.3 Storage and Consolidation of MA01 Solids/Debris

Any oily solids/debris (waste code MA01) accepted from offsite sources or generated at the Murphy's facility from the waste screening process, tank/truck cleanings, and spill cleanup activities will be stored onsite in the rolloff container. Solids/debris accepted from offsite shall, upon receipt, be directly loaded into the rolloff container.

Sludges/solids generated from onsite handling of MA01/F001/F002 mixtures shall not be commingled or otherwise mixed into the MA01 solids rolloff.

7.0 OUTGOING WASTE ANALYTICAL REQUIREMENTS

7.1 MA01, MA97, and MA98 Liquids

Prior to shipment to an offsite burner, marketer, or treatment/storage facility, Murphy's shall determine the PCB and used oil fuel parameter composition of each outgoing batch. The determination shall be based on actual analytical results from a representative sample of the load, or on mathematical calculations (i.e., weighted averages) using the analytical results of the waste streams that were commingled to produce the outgoing load.

Based on the analytical/calculated results, the outgoing waste oil will be designated as either:

1. Specification used oil fuel (MA97), provided that the "total halogen" concentration is equal to or less than 3,999 ppm and that the flash point and metal concentrations meet the limits listed in Table C-1; OR

2. Off-specification used oil fuel (MA98), in cases where the "total halogen" concentration is equal to or greater than 4,000 ppm, or the flash point or any one of the metals exceeds the limits listed in Table C-1.

Supplemental analyses may be required based on end-user or treatment facility specifications. Typical supplemental parameters can include: pH; specific gravity; percent oil and grease; water content; bottom sediment and water (BS&W); BTU value, and; sulfer content.

All reclaimed specification used oil fuel shipped from the facility shall be accompanied by a hazardous waste manifest or bill of lading which:

1. Identifies the material as specification used oil fuel which has been derived from waste oil;
2. If on a manifest, uses the hazardous waste code MA97, and;
3. Includes the results of all analyses.

Specification waste oil may be sold as a fuel supplement for use in

industrial and non-industrial boilers and furnaces, provided that the PCB content is "non-detectable" (<2 ppm), and that the receiver facility is in compliance with the facility permitting requirements of 310 CMR 30.256 and/or 40 CFR 266.4.

All reclaimed off-specification used oil shipped from the facility shall be accompanied by a manifest which:

1. Identifies the material as off-specification oil fuel which has been derived from waste oil;
2. Uses the hazardous waste code MA98, and;
3. Includes the results of all analyses.

Murphy's shall, pursuant to 310 CMR 30.255(2), ship off-specification used oil only to receiver facilities that are located in Massachusetts and which have notified DEP of their activity and meet the requirements of 310 CMR 30.255(2)(a) and 40 CFR 266.4, or to facilities that are located outside of Massachusetts and which have the legal authority to accept the used oil pursuant to applicable statutes and regulations in effect where the facility is located.

7.2 MA01/F001/F002 Mixtures

Prior to the shipment to an offsite treatment/storage/disposal facility, Murphy's shall determine the composition of the batch on actual analytical results from a representative sample of the load, or on mathematical calculations (i.e., weighted averages) using the analytical results of the waste streams that were commingled to produce the outgoing load.

All MA01/F001/F002 material shipped from the facility shall be accompanied by a properly completed hazardous waste manifest and land disposal restriction notification. The waste will be shipped to approved hazardous waste treatment/storage/disposal facilities for subsequent incineration or use in a hazardous waste fuel blending program.

7.3 Oily Sludges/Solids

Any oily solids/debris (waste code MA01) accepted from offsite sources or generated at the Murphy's facility from the waste screening process, tank/truck cleanings, and spill cleanup activities will be stored onsite in the rolloff container and shipped offsite for landfilling or incineration.

Murphy's will sample and analyze each outgoing load of soil/debris to determine the most suitable method of disposal given the physical/chemical characteristics. The specific parameters of interest will be dependent on the particular disposal option under consideration.

8.0 LAND DISPOSAL RESTRICTIONS

8.1 General Documentation Requirements

Pursuant to 40 CFR 268.7 and 310 CMR 30. 756, Murphy's is responsible for maintaining copies of the Land Disposal Restrictions (LDR) documentation prepared by the original generator and accompanying each shipment of F001/F002 waste into the facility. Murphy's is also responsible for preparing and keeping LDR documentation for each load of hazardous waste generated at and shipped from the facility. The content and format requirements for the various types of LDR documents are summarized in Section 8.1.1 and 8.1.2 below.

8.1.1 Incoming Waste Streams

Prior to formal acceptance at the facility, all incoming waste shipments of F001/F002 waste will be checked for compliance with the LDR documentation requirements specified in 40 CFR 268.7 and 310 CMR 30.756. The actual documentation must meet one (or possibly more if the shipment is a mixed waste stream) of the following two formats:

1. Generator Notification -- Incoming shipments which contain a hazardous waste that does not meet the currently-valid treatment standard must be accompanied by a "generator notification" that has been completed and signed by the generator. The notification must include the following information:
   -- EPA Hazardous Waste No(s).
   -- Treatability group [i.e., wastewater or nonwastewater]
   -- Treatment Standard
      a. For F001/F002 wastes, the treatment standard must include the name of the constituent(s).
      -- Manifest number of the shipment
   -- Waste analysis data, where available

2. Generator Certification -- If the generator determines (either through actual testing or by applying knowledge of the waste) that the shipment meets the applicable treatment standards, the generator notification must also include a "generator certification" statement whose wording is identical to §268.7(a)(3)(i).

For the sake of consistency, Murphy's has developed standardized forms to be used for all incoming hazardous waste shipments. The forms include Form LDR1, the "Generator Land Disposal Restriction Notification Form". A copy of Form LDR1 presented in Appendix C-7.

8.1.2 Outgoing Hazardous Waste Streams

Murphy's accepts F001/F002 hazardous waste for storage and consolidation prior to subsequent shipment to an offsite TSD for treatment and/or disposal. All outgoing wastes are shipped in their original container or in consolidated (bulked) form without having undergone any "treatment". Under RCRA, Murphy's is considered the "generator" of all hazardous wastes shipped from the

facility and must comply with the LDR's generator recordkeeping requirements.

Murphy's will provide all appropriate LDR documentation (using Murphy's Forms LDR1 or other such forms designated by the receiving TSD facility) as described in Section 8.1.1 above for each outgoing shipment of restricted hazardous waste.

8.2 Records Retention

Murphy's will retain onsite a copy of all notifications, certifications, waste analysis data, and other LDR documentation (for both incoming and outgoing shipments) on file as part of the operating record at the facility for at least five years.

8.3 LDR Testing Requirements

In order to determine the specific LDR status of incoming or outgoing shipments, Murphy's will rely on information that is: 1) provided by the original generator (based on the generator's knowledge or actual testing of the waste) or; 2) gathered through testing conducted in accordance with this Waste Analysis Plan.

It is important to note that because Murphy's conducts only storage and transfer activities, it is not required to conduct any periodic LDR corroborative testing of wastes pursuant to Part 268 or Part 264 requirements. Corroborative testing for LDR compliance purposes is required only of facilities which conduct treatment and/or land disposal activities.

EXHIBIT 4.n

ACN-Providence, LLC

455 George Washington Highway
Smithfield, RI 02917-1996
Phone (401) 231-2100 • Fax (401) 231-7960
www.americancontainernet.com

RECEIVING TICKET
3350

RECEIVED FROM: CLEAN HARBORS
C/O: MURPHY'S WASTE
ADDRESS:
CITY & STATE: WOBURN MA

DRUM SHIPMENTS 2001 to PRESENT

TRAILER 4010 (2)
☐ DELIVERY ☐ WITHOUT DELIVERY
☐ BOX ☑ REGULAR P/U
PAID: ☐

Quantity	Description Prior t	Unit Price	Amount
134	55 GALLON EMPTY OPEN HEAD DRU		
3	55 GAL PLASTIC		
9	55 GALLON EMPTY CLOSED HEA		
	30 GALLON POLY OR STEEL (Circ		
	JUNK ITEMS FOR SCRAP PREPAI		
	PICK-UP FEE		
	OTHER		
146	TOTAL **ALL DRUMS SUBJECT TO FINAL GRADING AT PLANT**		

☐ ALL DRUMS PICKED UP, OR
☑ 30 DRUMS LEFT BEHIND. TRAILER FILLED? ☑ YES ☐ NO
☐ OK FOR P/U ASAP ☒ CUSTOMER WILL CALL

☐ NOT SUITABLE FOR P/U DUE TO: ☐ 173.29 ☐ 261.7 ☐ 261.33 (e)
☐ GRADING DISPUTE ☐ OTHER _____

1. This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION. (49 CFR 172.204)
2. It is further certified that all containers are empty; that all plugs, covers and rings are securely in place. (49 CFR 173.29)
3. It is further certified that all containers are properly classified, described, and offered for shipment according to the applicable regulations of the ENVIRONMENTAL PROTECTION AGENCY (40 CFR Parts 260-263), and that they are EMPTY as defined in 40 CFR 261.7, and have not contained "acutely hazardous waste," as listed in 40 CFR 261.33(e), and that all "RQ" markings apply only to the original, filled containers and not to these empty containers.

Customer Confirmation Driver arrived at: _____ AM/PM Driver departed: _____ AM/PM

SHIPPER: CLEAN HARBORS STANLEY OSINSKI BY: _____

THIS IS YOUR RECEIPT FOR EMPTY DRUMS PICKED UP. PLEASE REFERENCE ALL INQUIRIES TO THE TICKET NUMBER SHOWN ABOVE. PLEASE MAKE ANY INQUIRIES WITHIN FIVE DAYS FROM THE PICKUP DATE.

DRUMS ARE PICKED UP SUBJECT TO OUR *DRUM PICKUP AGREEMENT* AND OUR WRITTEN *DRUM ACCEPTANCE POLICY*. IF YOU DO NOT HAVE A COPY OF THIS *POLICY*, PLEASE CALL FOR ONE.

TO PROTECT OUR EMPLOYEES AND EQUIPMENT, WE MUST BE AWARE OF THE HAZARDS OF ANY RESIDUAL MATERIALS IN THESE DRUMS. ACCORDINGLY, PLEASE ENSURE THAT WE RECEIVE FROM YOU A MATERIAL SAFETY DATA SHEET (MSDS) AT THE TIME OF THE FIRST SHIPMENT OF EACH PRODUCT TYPE FORMERLY FILLED IN THESE DRUMS.

DRUMS SUBJECT TO COUNT AND INSPECTION AT AMERICAN CONTAINER NET'S YARD. OUR DRIVERS ARE NOT INSPECTORS. THEY MAY PICK UP SOME DRUMS WHICH HAVE NO VALUE TO US

APPLICABLE, WILL BE MADE IN ACCORDANCE WITH OUR CURRENT *DRUM PICKUP AGREEMENT*.

ALL DRUMS AND DRUM ACCESSORIES PICKED UP ON THIS TICKET ARE FOR RESALE AND THEREFORE ARE TAX EXEMPT. RHODE ISLAND CERTIFICATE OF REGISTRATION NUMBER 200847488 - 00.

THANK YOU FOR YOUR BUSINESS

0089-0855

CUSTOMER COPY

ACN-Providence, LLC

455 George Washington Highway
Smithfield, RI 02917-1996
Phone (401) 231-2100 • Fax (401) 231-7960
www.americancontainernet.com

RECEIVING TICKET
3646

RECEIVED FROM: Clean Harbors
C/O:
ADDRESS: [illegible] Salem St
CITY & STATE: Woburn MA 01801

DATE: 4/6/05 TRAILER NO.: 4579

PICKUP WAS: ☒ WITH DELIVERY ☐ WITHOUT DELIVERY ☐ DROPPED BOX ☒ REGULAR P/U
SUPPLIER DELIVERY TO YARD: ☐
RECEIVED BY: [illegible]

Quantity	Description Prior to Grading	Final Grading Code	Number of Drums	Unit Price	Amount
	55 GALLON EMPTY OPEN HEAD DRUMS COVERS RINGS				
113					
	55 GALLON EMPTY CLOSED HEAD DRUMS				
	30 GALLON POLY OR STEEL (Circle One)				
	JUNK ITEMS FOR SCRAP PREPARATION				
	PICK-UP FEE				
6	OTHER SALVAGE				
119	TOTAL **ALL DRUMS SUBJECT TO FINAL GRADING AT PLANT**				

☒ ALL DRUMS PICKED UP, OR
☐ _____ DRUMS LEFT BEHIND. TRAILER FILLED? ☐ YES ☐ NO
☐ OK FOR P/U ASAP ☐ CUSTOMER WILL CALL

☐ NOT SUITABLE FOR P/U DUE TO: ☐ 173.29 ☐ 261.7 ☐ 261.33 (e)
☐ GRADING DISPUTE ☐ OTHER _____

1. This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION. (49 CFR 172.204)
2. It is further certified that all containers are empty; that all plugs, covers and rings are securely in place. (49 CFR 173.29)
3. It is further certified that all containers are properly classified, described, and offered for shipment according to the applicable regulations of the ENVIRONMENTAL PROTECTION AGENCY (40 CFR Parts 260-263), and that they are EMPTY as defined in 40 CFR 261.7, and have not contained "acutely hazardous waste," as listed in 40 CFR 261.33(e), and that all "RQ" markings apply only to the original, filled containers and not to these empty containers.

Customer Confirmation Driver arrived at: _____ AM/PM Driver departed at: _____ AM/PM

SHIPPER: [illegible] BY: [illegible]

THIS IS YOUR RECEIPT FOR EMPTY DRUMS PICKED UP. PLEASE REFERENCE ALL INQUIRIES TO THE TICKET NUMBER SHOWN ABOVE. PLEASE MAKE ANY INQUIRIES WITHIN FIVE DAYS FROM THE PICKUP DATE.

DRUMS ARE PICKED UP SUBJECT TO OUR *DRUM PICKUP AGREEMENT* AND OUR WRITTEN *DRUM ACCEPTANCE POLICY*. IF YOU DO NOT HAVE A COPY OF THIS *POLICY*, PLEASE CALL FOR ONE.

TO PROTECT OUR EMPLOYEES AND EQUIPMENT, WE MUST BE AWARE OF THE HAZARDS OF ANY RESIDUAL MATERIALS IN THESE DRUMS. ACCORDINGLY, PLEASE ENSURE THAT WE RECEIVE FROM YOU A MATERIAL SAFETY DATA SHEET (MSDS) AT THE TIME OF THE FIRST SHIPMENT OF EACH PRODUCT TYPE FORMERLY FILLED IN THESE DRUMS.

DRUMS SUBJECT TO COUNT AND INSPECTION AT AMERICAN CONTAINER NET'S YARD. OUR DRIVERS ARE NOT INSPECTORS. THEY MAY PICK UP SOME DRUMS, WHICH [illegible] OR ITEMS FOR WHICH WE MUST CHARGE A FEE FOR PROPER DISPOSAL. CHARGES, WHERE APPLICABLE, WILL BE MADE IN ACCORDANCE WITH OUR CURRENT *DRUM PICKUP AGREEMENT*.

ALL DRUMS AND DRUM ACCESSORIES PICKED UP ON THIS TICKET ARE FOR RESALE AND THEREFORE ARE TAX EXEMPT. RHODE ISLAND CERTIFICATE OF REGISTRATION NUMBER 200847488 - 00.

THANK YOU FOR YOUR BUSINESS

0089-0856

ACN-Providence, LLC

455 George Washington Highway
Smithfield, RI 02917-1996
Phone (401) 231-2100 • Fax (401) 231-7960
www.americancontainernet.com

RECEIVING TICKET
3720

RECEIVED FROM: Clean Harbors.
C/O: Murphy oil
ADDRESS:
CITY & STATE: W Oburn MI.

DATE: 2-14-05 TRAILER NO.: 2804
PICKUP WAS: ☑ WITH DELIVERY ☐ WITHOUT DELIVERY ☐ DROPPED BOX ☑ REGULAR P/U
SUPPLIER DELIVERY TO YARD: ☐
RECEIVED BY: [signature]

Quantity	Description Prior to Grading	Final Grading Code	Number of Drums	Unit Price	Amount
	55 GALLON EMPTY OPEN HEAD DRUMS COVERS RINGS				
153	mixed S-T-C Steel + Plastic				
	55 GALLON EMPTY CLOSED HEAD DRUMS				
	30 GALLON POLY OR STEEL (Circle One)				
	JUNK ITEMS FOR SCRAP PREPARATION				
	PICK-UP FEE				
	OTHER				
153	TOTAL **ALL DRUMS SUBJECT TO FINAL GRADING AT PLANT**				

☑ ALL DRUMS PICKED UP, OR
☐ _____ DRUMS LEFT BEHIND. TRAILER FILLED? ☑ YES ☐ NO
☐ OK FOR P/U ASAP ☐ CUSTOMER WILL CALL

☐ NOT SUITABLE FOR P/U DUE TO: ☐ 173.29 ☐ 261.7 ☐ 261.33 (e)
☐ GRADING DISPUTE ☐ OTHER _____

1. This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION. (49 CFR 172.204)
2. It is further certified that all containers are empty; that all plugs, covers and rings are securely in place. (49 CFR 173.29)
3. It is further certified that all containers are properly classified, described, and offered for shipment according to the applicable regulations of the ENVIRONMENTAL PROTECTION AGENCY (40 CFR Parts 260-263), and that they are EMPTY as defined in 40 CFR 261.7, and have not contained "acutely hazardous waste," as listed in 40 CFR 261.33(e), and that all "RQ" markings apply only to the original, filled containers and not to these empty containers.

Customer Confirmation Driver arrived at: _____ AM/PM Driver departed at: _____ AM/PM

SHIPPER: Clean Harbors / Murphy's waste oil BY: [signature] (Stan Asinski)

THIS IS YOUR RECEIPT FOR EMPTY DRUMS PICKED UP. PLEASE REFERENCE ALL INQUIRIES TO THE TICKET NUMBER SHOWN ABOVE. PLEASE MAKE ANY INQUIRIES WITHIN FIVE DAYS FROM THE PICKUP DATE.

DRUMS ARE PICKED UP SUBJECT TO OUR *DRUM PICKUP AGREEMENT* AND OUR WRITTEN *DRUM ACCEPTANCE POLICY*. IF YOU DO NOT HAVE A COPY OF THIS *POLICY*, PLEASE CALL FOR ONE.

TO PROTECT OUR EMPLOYEES AND EQUIPMENT, WE MUST BE AWARE OF THE HAZARDS OF ANY RESIDUAL MATERIALS IN THESE DRUMS. ACCORDINGLY, PLEASE ENSURE THAT WE RECEIVE FROM YOU A MATERIAL SAFETY DATA SHEET (MSDS) AT THE TIME OF THE FIRST SHIPMENT OF EACH PRODUCT TYPE FORMERLY FILLED IN THESE DRUMS.

DRUMS SUBJECT TO COUNT AND INSPECTION AT AMERICAN CONTAINER NET'S YARD. OUR DRIVERS ARE NOT INSPECTORS. THEY MAY PICK UP SOME DRUMS WHICH HAVE NO VALUE TO US [illegible] WHICH WE MUST CHARGE A FEE FOR PROPER DISPOSAL. CHARGES, WHERE APPLICABLE, WILL BE MADE IN ACCORDANCE WITH OUR CURRENT *DRUM PICKUP AGREEMENT*.

ALL DRUMS AND DRUM ACCESSORIES PICKED UP ON THIS TICKET ARE FOR RESALE AND THEREFORE ARE TAX EXEMPT. RHODE ISLAND CERTIFICATE OF REGISTRATION NUMBER 200847488 - 00.

THANK YOU FOR YOUR BUSINESS

0089-0857

ACN-Providence, LLC

455 George Washington Highway
Smithfield, RI 02917-1996
Phone (401) 231-2100 • Fax (401) 231-7960
www.americancontainernet.com

RECEIVING TICKET
3927

RECEIVED FROM: Clean Harbors
C/O: Murphy's Waste Oil
ADDRESS:
CITY & STATE: Woburn MA.

DATE: 12/23/04
TRAILER NO.: 2805
PICKUP WAS: ☒ WITH DELIVERY ☐ WITHOUT DELIVERY ☐ DROPPED BOX ☒ REGULAR P/U
SUPPLIER DELIVERY TO YARD: ☐
RECEIVED BY:

Quantity	Description Prior to Grading	Final Grading Code	Number of Drums	Unit Price	Amount
142	55 GALLON EMPTY OPEN HEAD DRUMS COVERS RINGS				
11	55 GALLON EMPTY CLOSED HEAD DRUMS				
2	30 GALLON POLY OR STEEL (Circle One) OK				
	JUNK ITEMS FOR SCRAP PREPARATION				
	PICK-UP FEE				
	OTHER				
155	TOTAL **ALL DRUMS SUBJECT TO FINAL GRADING AT PLANT**				

☒ ALL DRUMS PICKED UP, OR
☐ _____ DRUMS LEFT BEHIND. TRAILER FILLED? ☒ YES ☐ NO
☐ OK FOR P/U ASAP ☒ CUSTOMER WILL CALL

☐ NOT SUITABLE FOR P/U DUE TO: ☐ 173.29 ☐ 261.7 ☐ 261.33 (e)
☐ GRADING DISPUTE ☐ OTHER _____

1. This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION. (49 CFR 172.204)
2. It is further certified that all containers are empty; that all plugs, covers and rings are securely in place. (49 CFR 173.29)
3. It is further certified that all containers are properly classified, described, and offered for shipment according to the applicable regulations of the ENVIRONMENTAL PROTECTION AGENCY (40 CFR Parts 260-263), and that they are EMPTY as defined in 40 CFR 261.7, and have not contained "acutely hazardous waste," as listed in 40 CFR 261.33(e), and that all "RQ" markings apply only to the original, filled containers and not to these empty containers.

Customer Confirmation Driver arrived at: _____ AM/PM Driver departed at: _____ AM/PM
SHIPPER: Clean Harbors BY: [signature]

THIS IS YOUR RECEIPT FOR EMPTY DRUMS PICKED UP. PLEASE REFERENCE ALL INQUIRIES TO THE TICKET NUMBER SHOWN ABOVE. PLEASE MAKE ANY INQUIRIES WITHIN FIVE DAYS FROM THE PICKUP DATE.

DRUMS ARE PICKED UP SUBJECT TO OUR *DRUM PICKUP AGREEMENT* AND OUR WRITTEN *DRUM ACCEPTANCE POLICY*. IF YOU DO NOT HAVE A COPY OF THIS *POLICY*, PLEASE CALL FOR ONE.

TO PROTECT OUR EMPLOYEES AND EQUIPMENT, WE MUST BE AWARE OF THE HAZARDS OF ANY RESIDUAL MATERIALS IN THESE DRUMS. ACCORDINGLY, PLEASE ENSURE THAT WE RECEIVE FROM YOU A MATERIAL SAFETY DATA SHEET (MSDS) AT THE TIME OF THE FIRST SHIPMENT OF EACH PRODUCT TYPE FORMERLY FILLED IN THESE DRUMS.

DRUMS SUBJECT TO COUNT AND INSPECTION AT AMERICAN CONTAINER NET'S YARD. OUR DRIVERS ARE NOT INSPECTORS. THEY MAY PICK UP SOME DRUMS WHICH HAVE NO VALUE TO US [illegible] WHICH WE MUST CHARGE A FEE FOR PROPER DISPOSAL. CHARGES, WHERE APPLICABLE, WILL BE MADE IN ACCORDANCE WITH OUR CURRENT *DRUM PICKUP AGREEMENT*.

ALL DRUMS AND DRUM ACCESSORIES PICKED UP ON THIS TICKET ARE FOR RESALE AND THEREFORE ARE TAX EXEMPT. RHODE ISLAND CERTIFICATE OF REGISTRATION NUMBER 200847488 - 00.

THANK YOU FOR YOUR BUSINESS

0089-0858

ACN-Providence, LLC

455 George Washington Highway
Smithfield, RI 02917-1996
Phone (401) 231-2100 • Fax (401) 231-7960
www.americancontainernet.com

RECEIVING TICKET

2666

RECEIVED FROM: Clean Harbors Murphys

C/O:

ADDRESS:

CITY & STATE: Woburn Me.

DATE: 10-5-04 TRAILER NO.: 4038

PICKUP WAS: ☑ WITH DELIVERY ☐ WITHOUT DELIVERY
☐ DROPPED BOX ☑ REGULAR P/U

SUPPLIER DELIVERY TO YARD: ☐

RECEIVED BY:

Quantity	Description Prior to Grading	Final Grading Code	Number of Drums	Unit Price	Amount
	55 GALLON EMPTY OPEN HEAD DRUMS COVERS RINGS				
116	Mixed S-T-C				
	55 GALLON EMPTY CLOSED HEAD DRUMS				
	30 GALLON POLY OR STEEL (Circle One)				
	JUNK ITEMS FOR SCRAP PREPARATION				
	PICK-UP FEE				
	OTHER				
116	TOTAL **ALL DRUMS SUBJECT TO FINAL GRADING AT PLANT**				

☑ ALL DRUMS PICKED UP, OR
☐ _____ DRUMS LEFT BEHIND. TRAILER FILLED? ☐ YES ☑ NO
☐ OK FOR P/U ASAP ☐ CUSTOMER WILL CALL

☐ NOT SUITABLE FOR P/U DUE TO: ☐ 173.29 ☐ 261.7 ☐ 261.33 (e)
☐ GRADING DISPUTE ☐ OTHER _____

1. This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION. (49 CFR 172.204)
2. It is further certified that all containers are empty; that all plugs, covers and rings are securely in place. (49 CFR 173.29)
3. It is further certified that all containers are properly classified, described, and offered for shipment according to the applicable regulations of the ENVIRONMENTAL PROTECTION AGENCY (40 CFR Parts 260-263), and that they are EMPTY as defined in 40 CFR 261.7, and have not contained "acutely hazardous waste," as listed in 40 CFR 261.33(e), and that all "RQ" markings apply only to the original, filled containers and not to these empty containers.

Customer Confirmation Driver arrived at: _____ AM/PM Driver departed at: _____ AM/PM

SHIPPER: Steven D'Ambrosio BY: _____

THIS IS YOUR RECEIPT FOR EMPTY DRUMS PICKED UP. PLEASE REFERENCE ALL INQUIRIES TO THE TICKET NUMBER SHOWN ABOVE. PLEASE MAKE ANY INQUIRIES WITHIN FIVE DAYS FROM THE PICKUP DATE.

DRUMS ARE PICKED UP SUBJECT TO OUR *DRUM PICKUP AGREEMENT* AND OUR WRITTEN *DRUM ACCEPTANCE POLICY*. IF YOU DO NOT HAVE A COPY OF THIS *POLICY*, PLEASE CALL FOR ONE.

TO PROTECT OUR EMPLOYEES AND EQUIPMENT, WE MUST BE AWARE OF THE HAZARDS OF ANY RESIDUAL MATERIALS IN THESE DRUMS. ACCORDINGLY, PLEASE ENSURE THAT WE RECEIVE FROM YOU A MATERIAL SAFETY DATA SHEET (MSDS) AT THE TIME OF THE FIRST SHIPMENT OF EACH PRODUCT TYPE FORMERLY FILLED IN THESE DRUMS.

DRUMS SUBJECT TO COUNT AND INSPECTION AT AMERICAN CONTAINER NET'S YARD. OUR DRIVERS ARE NOT INSPECTORS. THEY MAY PICK UP SOME DRUMS WHICH HAVE NO VALUE TO US

APPLICABLE, WILL BE MADE IN ACCORDANCE WITH OUR CURRENT *DRUM PICKUP AGREEMENT*.

ALL DRUMS AND DRUM ACCESSORIES PICKED UP ON THIS TICKET ARE FOR RESALE AND THEREFORE ARE TAX EXEMPT. RHODE ISLAND CERTIFICATE OF REGISTRATION NUMBER 200847488 - 00.

THANK YOU FOR YOUR BUSINESS

0089-0859

CUSTOMER COPY

ACN-Providence, LLC

455 George Washington Highway
Smithfield, RI 02917-1996
Phone (401) 231-2100 • Fax (401) 231-7960
www.americancontainernet.com

RECEIVING TICKET

2068

RECEIVED FROM: Murphys Clean Harbors | DATE: 9-13-04 | TRAILER NO.: 4585

C/O:

ADDRESS: 252 Salem st Woburn

CITY & STATE: Woburn ma.

PICKUP WAS: ☐ WITH DELIVERY ☑ WITHOUT DELIVERY
☐ DROPPED BOX ☐ REGULAR P/U

SUPPLIER DELIVERY TO YARD: ☐

RECEIVED BY: [signature]

Quantity	Description Prior to Grading	Final Grading Code	Number of Drums	Unit Price	Amount
	55 GALLON EMPTY OPEN HEAD DRUMS COVERS RINGS				
176	Mix Drums				
	55 GALLON EMPTY CLOSED HEAD DRUMS				
	30 GALLON POLY OR STEEL (Circle One)				
	JUNK ITEMS FOR SCRAP PREPARATION				
	PICK-UP FEE				
	OTHER				
176	TOTAL **ALL DRUMS SUBJECT TO FINAL GRADING AT PLANT**				

☑ ALL DRUMS PICKED UP, OR
☐ _____ DRUMS LEFT BEHIND. TRAILER FILLED? ☐ YES ☑ NO
☐ OK FOR P/U ASAP ☐ CUSTOMER WILL CALL

☐ NOT SUITABLE FOR P/U DUE TO: ☐ 173.29 ☐ 261.7 ☐ 261.33 (e)
☐ GRADING DISPUTE ☐ OTHER _____

1. This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION. (49 CFR 172.204)
2. It is further certified that all containers are empty; that all plugs, covers and rings are securely in place. (49 CFR 173.29)
3. It is further certified that all containers are properly classified, described, and offered for shipment according to the applicable regulations of the ENVIRONMENTAL PROTECTION AGENCY (40 CFR Parts 260-263), and that they are EMPTY as defined in 40 CFR 261.7, and have not contained "acutely hazardous waste," as listed in 40 CFR 261.33(e), and that all "RQ" markings apply only to the original, filled containers and not to these empty containers.

Customer Confirmation Driver arrived at: _____ AM/PM Driver departed at: _____ AM/PM

SHIPPER: Clean Harbors Fina BY: [signature]

THIS IS YOUR RECEIPT FOR EMPTY DRUMS PICKED UP. PLEASE REFERENCE ALL INQUIRIES TO THE TICKET NUMBER SHOWN ABOVE. PLEASE MAKE ANY INQUIRIES WITHIN FIVE DAYS FROM THE PICKUP DATE.

DRUMS ARE PICKED UP SUBJECT TO OUR *DRUM PICKUP AGREEMENT* AND OUR WRITTEN *DRUM ACCEPTANCE POLICY*. IF YOU DO NOT HAVE A COPY OF THIS *POLICY*, PLEASE CALL FOR ONE.

TO PROTECT OUR EMPLOYEES AND EQUIPMENT, WE MUST BE AWARE OF THE HAZARDS OF ANY RESIDUAL MATERIALS IN THESE DRUMS. ACCORDINGLY, PLEASE ENSURE THAT WE RECEIVE FROM YOU A MATERIAL SAFETY DATA SHEET (MSDS) AT THE TIME OF THE FIRST SHIPMENT OF EACH PRODUCT TYPE FORMERLY FILLED IN THESE DRUMS.

DRUMS SUBJECT TO COUNT AND INSPECTION AT AMERICAN CONTAINER NET'S YARD. OUR DRIVERS ARE NOT INSPECTORS. THEY MAY PICK UP SOME DRUMS WHICH HAVE NO VALUE TO US

APPLICABLE, WILL BE MADE IN ACCORDANCE WITH OUR CURRENT *DRUM PICKUP AGREEMENT*.

ALL DRUMS AND DRUM ACCESSORIES PICKED UP ON THIS TICKET ARE FOR RESALE AND THEREFORE ARE TAX EXEMPT. RHODE ISLAND CERTIFICATE OF REGISTRATION NUMBER 200847488 - 00.

THANK YOU FOR YOUR BUSINESS

0089-0860

CUSTOMER COPY

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

_____

_____

_____

Driver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North Pc Boulevard
Baltimo MD 21219
Toll Free (8 703-7867

Received from Clean Harbo

Date 7-27-04 Box # 457

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc. 288 mi

All drums are subject to grading at our Smithfield, R.I. pl

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national ronmental Protection Agency regulations, 40 CFR 261.7*, and they have been proper pared for transportation under the regulations of the U.S. Department of Transport , 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be removed ing the practices commonly employed to remove materials n that type of container, e.g., pouring, pumping, and aspiratin nd

(ii) No more than 2.5 centimeters (one inch) of residue ain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste m erial is an overriding constraint and may remain in an empty contain only if it cannot be removed by normal means. The rationale for this ovision is that there are certain tars and other extremely viscous terials that will remain in the container even after the container is e ied by normal means."

For residues of products specifically listed by name in 0 CFR 261.33(e), EPA says the container is empty only "if the conta r . . . has been triple-rinsed using a solvent capable of removing" the oduct, or has been cleaned by another method shown to achieve e valent removal.

**DOT's 49 CFR 173.29 says that all openings on t empty container must be closed, and that all markings and labels m be in place as if the drum were full of its original contents. A DOT ipping paper is not required for transportation of a drum for reconditi ng via contract or private motor carrier. DOT placarding is not re ed for vehicles carrying empty containers.

NO FLOWABLE MATERIA S

0089-0861

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

_____

_____

_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North Pc Boulevard
Baltimor MD 21219
Toll Free (8 703-7867

E 243

Received from Mark Hartman

Date 4-24-07 Box # 25

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc. 55 gal

All drums are subject to grading at our Smithfield, R.I. pl

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national ! onmental Protection Agency regulations, 40 CFR 261.7*, and they have been proper! pared for transportation under the regulations of the U.S. Department of Transport. 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 C 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be removed ng the practices commonly employed to remove materials f n that type of container, e.g., pouring, pumping, and aspirating nd

(ii) No more than 2.5 centimeters (one inch) of residue ain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste m erial is an overriding constraint and may remain in an empty contain only if it cannot be removed by normal means. The rationale for this ovision is that there are certain tars and other extremely viscous terials that will remain in the container even after the container is e tied by normal means."

For residues of products specifically listed by name i 0 CFR 261.33(e), EPA says the container is empty only "if the conte r . . . has been triple-rinsed using a solvent capable of removing" th oduct, or has been cleaned by another method shown to achieve e valent removal.

**DOT's 49 CFR 173.29 says that all openings on t empty container must be closed, and that all markings and labels m be in place as if the drum were full of its original contents. A DO ipping paper is not required for transportation of a drum for recondit ng via contract or private motor carrier. DOT placarding is not re ed for vehicles carrying empty containers.

NO FLOWABLE MATERIA 3

0089-0862

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

_____

_____

_____

Driver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North [illegible]int Boulevard
Baltir[illegible]e, MD 21219
Toll Free [illegible]38) 703-7867

Received from Glen Hall

Date 6-10-04 Box # 90[illegible]

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc. 225

All drums are subject to grading at our Smithfield, R.I [illegible]nt.

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the nation[illegible]nvironmental Protection Agency regulations, 40 CFR 261.7*, and they have been pro[illegible] prepared for transportation under the regulations of the U.S. Department of Transp[illegible]tion, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 4[illegible]FR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remov[illegible] using the practices commonly employed to remove material[illegible] from that type of container, e.g., pouring, pumping, and aspirat[illegible], and

(ii) No more than 2.5 centimeters (one inch) of resid[illegible] remain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of wast[illegible]aterial is an overriding constraint and may remain in an empty cont[illegible]er only if it cannot be removed by normal means. The rationale for t[illegible] provision is that there are certain tars and other extremely visco[illegible] materials that will remain in the container even after the container i[illegible]mptied by normal means."

For residues of products specifically listed by nam[illegible]n 40 CFR 261.33(e), EPA says the container is empty only "if the co[illegible]iner . . . has been triple-rinsed using a solvent capable of removing" [illegible] product, or has been cleaned by another method shown to achiev[illegible] equivalent removal.

**DOT's 49 CFR 173.29 says that all openings or[illegible]he empty container must be closed, and that all markings and labels[illegible]ust be in place as if the drum were full of its original contents. A [illegible] shipping paper is not required for transportation of a drum for recon[illegible]oning via contract or private motor carrier. DOT placarding is not[illegible]uired for vehicles carrying empty containers.

0089-0863

NO FLOWABLE MATERI[illegible]LS

Castrol Heavy Duty Lubricants
9300 Pulaski Highway
Baltimore MD 21220

Castrol Location Jack Rd

EMPTY DRUM CERTIFICATION

We hereby certify that these drums are "empty" as that term is defined in the national Environmental Protec Agency regulations, 40 CFR 261.7*, and that they have been properly prepared for transportation under regulations of the U.S. Department of Transportation, 49 CFR 173.29.**

Date 8-5-03 Customer Murphy Auto

Number of Drums 2 Signature
Title

*With regard to most regulated residues, EPA's 40 CFR 261.7 says: " A container... is empty if:

(i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, and

(ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, or

(iii) (A) no more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or

(B) no more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

EPA has explained this rule, noting that "one inch of waste material is an overriding constraint and may remain in an empty container only if it cannot be removed by normal means. The rationale for this provision is that there are certain tars and other extremely viscous materials that will remain in the container even after the container is emptied by normal means."

For residues of products specifically listed by name in 40 CFR 261.31, 261.32, or 261.33(e), EPA says the container is empty only "if the container... has been triple-rinsed using a solvent capable of removing the product, or has been cleaned by some other method shown to achieve equivalent removal."

**DOT's 49 CFR 173.29 says "an empty package containing only the residue of a hazardous material shall be offered for transportation and transported in the same manner as when it previously contained a greater quantity of that hazardous material."

Additionally, 173.29 says "Any hazardous material shipping name and identification number markings, any hazard warning labels or placards, or any other markings indicating that the material is hazardous are removed, obliterated, or securely covered in transportation."

A DOT shipping paper is not required for transportation of a drum for reconditioning via contract or private motor carrier. DOT placarding is not required for vehicles carrying empty containers.

CUSTOMER COPY

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

_____

_____

_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible] Boulevard
Baltimc MD 21219
Toll Free ([illegible]) 703-7867

Received from _____

Date _____ Box # _____

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc. _____

All drums are subject to grading at our Smithfield, R.I. p[illegible]t.

Customer _____ Driver _____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]*ironmental Protection Agency regulations, 40 CFR 261.7*, and they have been prope*[illegible]*repared for transportation under the regulations of the U.S. Department of Transpo*[illegible]*n, 49 CFR 173.29.***

**With regard to most regulated residues, EPA's 40* [illegible]*R 261.7 says: "A container . . . is empty if:*

(i) All wastes have been removed that can be remove[illegible]*sing the practices commonly employed to remove materials* [illegible]*om that type of container, e.g., pouring, pumping, and aspiratir* [illegible]*and*

(ii) No more than 2.5 centimeters (one inch) of residue [illegible]*main on the bottom of the container. . . ."*

EPA has explained this rule, saying that "one inch of waste [illegible]*terial is an overriding constraint and may remain in an empty conta*[illegible]*only if it cannot be removed by normal means. The rationale for th*[illegible]*rovision is that there are certain tars and other extremely viscous* [illegible]*aterials that will remain in the container even after the container is* [illegible]*ptied by normal means."*

For residues of products specifically listed by name [illegible]*40 CFR 261.33(e), EPA says the container is empty only "if the cont*[illegible]*er . . . has been triple-rinsed using a solvent capable of removing" th*[illegible]*product, or has been cleaned by another method shown to achieve* [illegible]*ivalent removal.*

***DOT's 49 CFR 173.29 says that all openings on* [illegible]*empty container must be closed, and that all markings and labels* [illegible]*st be in place as if the drum were full of its original contents. A DO* [illegible]*shipping paper is not required for transportation of a drum for recondi*[illegible]*ning via contract or private motor carrier. DOT placarding is not re*[illegible]*ired for vehicles carrying empty containers.*

0089-0865

NO FLOWABLE MATERIA[illegible]S

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible] Boulevard
Baltimo[illegible] MD 21219
Toll Free ([illegible]) 703-7867

5 [illegible]489

0089-0866

Received from Clean Harbo[illegible]

[illegible]

Date 3-24-04 Box # 406

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc. 2001 [illegible]

All drums are subject to grading at our Smithfield, R.I. p[illegible]t.

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]ronmental Protection Agency regulations, 40 CFR 261.7*, and they have been prope[illegible]epared for transportation under the regulations of the U.S. Department of Transpor[illegible]n, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remove[illegible]ing the practices commonly employed to remove materials [illegible]m that type of container, e.g., pouring, pumping, and aspiratir[illegible]and

(ii) No more than 2.5 centimeters (one inch) of residue [illegible]main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste [illegible]erial is an overriding constraint and may remain in an empty contai[illegible] only if it cannot be removed by normal means. The rationale for thi[illegible]ovision is that there are certain tars and other extremely viscous [illegible]aterials that will remain in the container even after the container is [illegible]tied by normal means."

For residues of products specifically listed by name [illegible]0 CFR 261.33(e), EPA says the container is empty only "if the cont[illegible]er . . . has been triple-rinsed using a solvent capable of removing" th[illegible]roduct, or has been cleaned by another method shown to achieve [illegible]ivalent removal.

**DOT's 49 CFR 173.29 says that all openings on [illegible] empty container must be closed, and that all markings and labels [illegible]t be in place as if the drum were full of its original contents. A DO[illegible]hipping paper is not required for transportation of a drum for recondi[illegible]ing via contract or private motor carrier. DOT placarding is not re[illegible]red for vehicles carrying empty containers.

NO FLOWABLE MATERIA[illegible]S

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North [illegible]nt Boulevard
Baltim[illegible], MD 21219
Toll Free [illegible]8) 703-7867

0089-0867

Received from [illegible]

Date [illegible] Box # [illegible]

Open Head [illegible] Closed Head [illegible]

Plastic [illegible] Polylined _____

Junk 3-OH Misc. _____

All drums are subject to grading at our Smithfield, R.I. [illegible]nt.

Customer [illegible] Driver [illegible]

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the nationa[illegible] [illegible]vironmental Protection Agency regulations, 40 CFR 261.7*, and they have been prop[illegible] prepared for transportation under the regulations of the U.S. Department of Transp[illegible]on, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remov[illegible] [illegible]sing the practices commonly employed to remove materials [illegible]om that type of container, e.g., pouring, pumping, and aspirati[illegible] and

(ii) No more than 2.5 centimeters (one inch) of residu[illegible] [illegible]main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste [illegible]terial is an overriding constraint and may remain in an empty conta[illegible]r only if it cannot be removed by normal means. The rationale for th[illegible] [illegible]rovision is that there are certain tars and other extremely viscou[illegible] [illegible]aterials that will remain in the container even after the container is [illegible]ptied by normal means."

For residues of products specifically listed by name [illegible] 40 CFR 261.33(e), EPA says the container is empty only "if the con[illegible]ner . . . has been triple-rinsed using a solvent capable of removing" t[illegible] [illegible]roduct, or has been cleaned by another method shown to achieve [illegible]uivalent removal.

**DOT's 49 CFR 173.29 says that all openings on [illegible] empty container must be closed, and that all markings and labels [illegible]st be in place as if the drum were full of its original contents. A D[illegible] shipping paper is not required for transportation of a drum for recon[illegible]ning via contract or private motor carrier. DOT placarding is not r[illegible]ired for vehicles carrying empty containers.

NO FLOWABLE MATERI[illegible]S

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible] Boulevard
Baltim[illegible], MD 21219
Toll Free ([illegible]) 703-7867

F [illegible]702

0089-0868

Received from Clean Harbors

Date 2/10 Box # [illegible]

Open Head 54 Closed Head 1

Plastic_____ Polylined_____

Junk_____ Misc._____

All drums are subject to grading at our Smithfield, R.I. p[illegible]t.

Customer [signature] Driver ERIC

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]vironmental Protection Agency regulations, 40 CFR 261.7*, and they have been prop[illegible] [illegible]repared for transportation under the regulations of the U.S. Department of Transpo[illegible]n, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remov[illegible] [illegible]sing the practices commonly employed to remove materials [illegible]m that type of container, e.g., pouring, pumping, and aspirati[illegible] and

(ii) No more than 2.5 centimeters (one inch) of residue [illegible]main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste [illegible]terial is an overriding constraint and may remain in an empty conta[illegible] only if it cannot be removed by normal means. The rationale for th[illegible] [illegible]rovision is that there are certain tars and other extremely viscou[illegible] [illegible]aterials that will remain in the container even after the container is [illegible]ptied by normal means."

For residues of products specifically listed by name [illegible] 40 CFR 261.33(e), EPA says the container is empty only "if the con[illegible] [illegible]er . . . has been triple-rinsed using a solvent capable of removing" t[illegible] [illegible]roduct, or has been cleaned by another method shown to achieve [illegible]uivalent removal.

**DOT's 49 CFR 173.29 says that all openings on [illegible] empty container must be closed, and that all markings and labels [illegible]st be in place as if the drum were full of its original contents. A D[illegible] [illegible]shipping paper is not required for transportation of a drum for recondi[illegible] [illegible]ning via contract or private motor carrier. DOT placarding is not r[illegible] [illegible]ired for vehicles carrying empty containers.

NO FLOWABLE MATERIA[illegible]S

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North F t Boulevard
Baltim , MD 21219
Toll Free ( ) 703-7867

Received from _____

Date _____ Box # 350

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc. 148

All drums are subject to grading at our Smithfield, R.I. p nt.

Customer _____ Driver _____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national vironmental Protection Agency regulations, 40 CFR 261.7*, and they have been prop prepared for transportation under the regulations of the U.S. Department of Transpo on, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remov using the practices commonly employed to remove materials om that type of container, e.g., pouring, pumping, and aspirati , and

(ii) No more than 2.5 centimeters (one inch) of residu main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste terial is an overriding constraint and may remain in an empty conta r only if it cannot be removed by normal means. The rationale for th provision is that there are certain tars and other extremely viscou aterials that will remain in the container even after the container is ptied by normal means."

For residues of products specifically listed by name 40 CFR 261.33(e), EPA says the container is empty only "if the con ner . . . has been triple-rinsed using a solvent capable of removing" t product, or has been cleaned by another method shown to achieve uivalent removal.

**DOT's 49 CFR 173.29 says that all openings on e empty container must be closed, and that all markings and labels st be in place as if the drum were full of its original contents. A D shipping paper is not required for transportation of a drum for recond ning via contract or private motor carrier. DOT placarding is not r ired for vehicles carrying empty containers.

NO FLOWABLE MATERIA S

0089-0869

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible] Boulevard
Baltim[illegible] MD 21219
Toll Free ([illegible]) 703-7867

Received from Clean Harbor [illegible]

Date [illegible] Box # 45 [illegible]

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc. 55 M[illegible]

All drums are subject to grading at our Smithfield, R.I. p[illegible]t.

Customer [illegible] Driver [illegible]

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]ronmental Protection Agency regulations, 40 CFR 261.7*, and they have been proper[illegible] [illegible]epared for transportation under the regulations of the U.S. Department of Transpor[illegible]n, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remove[illegible] [illegible]ing the practices commonly employed to remove materials [illegible]m that type of container, e.g., pouring, pumping, and aspiratir[illegible] [illegible]nd

(ii) No more than 2.5 centimeters (one inch) of residue [illegible]main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste [illegible]terial is an overriding constraint and may remain in an empty conta[illegible] [illegible] only if it cannot be removed by normal means. The rationale for thi[illegible] [illegible]rovision is that there are certain tars and other extremely viscous [illegible]aterials that will remain in the container even after the container is [illegible]tied by normal means."

For residues of products specifically listed by name [illegible]0 CFR 261.33(e), EPA says the container is empty only "if the con[illegible]er . . . has been triple-rinsed using a solvent capable of removing" t[illegible] [illegible]roduct, or has been cleaned by another method shown to achieve [illegible]ivalent removal.

**DOT's 49 CFR 173.29 says that all openings on [illegible] empty container must be closed, and that all markings and labels [illegible]t be in place as if the drum were full of its original contents. A DC[illegible] [illegible]hipping paper is not required for transportation of a drum for recondi[illegible]ing via contract or private motor carrier. DOT placarding is not r[illegible]red for vehicles carrying empty containers.

NO FLOWABLE MATERIA[illegible]S

0089-0870

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North Pc Boulevard
Baltimo MD 21219
Toll Free (8 703-7867

Received from _____

Date_____ Box #_____

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc._____

All drums are subject to grading at our Smithfield, R.I. p t.

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national ronmental Protection Agency regulations, 40 CFR 261.7*, and they have been prope epared for transportation under the regulations of the U.S. Department of Transpor , 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remove ing the practices commonly employed to remove materials m that type of container, e.g., pouring, pumping, and aspiratin end

(ii) No more than 2.5 centimeters (one inch) of residue main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste r terial is an overriding constraint and may remain in an empty contai only if it cannot be removed by normal means. The rationale for thi ovision is that there are certain tars and other extremely viscous aterials that will remain in the container even after the container is e tied by normal means."

For residues of products specifically listed by name 0 CFR 261.33(e), EPA says the container is empty only "if the cont er . . . has been triple-rinsed using a solvent capable of removing" th roduct, or has been cleaned by another method shown to achieve ivalent removal.

**DOT's 49 CFR 173.29 says that all openings on empty container must be closed, and that all markings and labels r t be in place as if the drum were full of its original contents. A DO hipping paper is not required for transportation of a drum for recondi ing via contract or private motor carrier. DOT placarding is not re red for vehicles carrying empty containers.

NO FLOWABLE MATERIA S

0089-0871

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

_____

_____

_____

'eceiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible] Boulevard
Baltimo[illegible] MD 21219
Toll Free ([illegible] 703-7867

0089-0872

Received from [illegible]

Date 7-12-03 Box # [illegible]

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc. 174 [illegible]

All drums are subject to grading at our Smithfield, R.I. p[illegible]

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]ronmental Protection Agency regulations, 40 CFR 261.7*, and they have been proper[illegible]epared for transportation under the regulations of the U.S. Department of Transport[illegible]n, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remove[illegible]ing the practices commonly employed to remove materials [illegible]m that type of container, e.g., pouring, pumping, and aspiratin[illegible]nd

(ii) No more than 2.5 centimeters (one inch) of residue [illegible]ain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste m[illegible]erial is an overriding constraint and may remain in an empty contai[illegible] only if it cannot be removed by normal means. The rationale for this [illegible]ovision is that there are certain tars and other extremely viscous [illegible]terials that will remain in the container even after the container is e[illegible]tied by normal means."

For residues of products specifically listed by name i[illegible]0 CFR 261.33(e), EPA says the container is empty only "if the cont[illegible]r . . . has been triple-rinsed using a solvent capable of removing" th[illegible]roduct, or has been cleaned by another method shown to achieve e[illegible]ivalent removal.

**DOT's 49 CFR 173.29 says that all openings on t[illegible] empty container must be closed, and that all markings and labels m[illegible]t be in place as if the drum were full of its original contents. A DO[illegible]hipping paper is not required for transportation of a drum for recondit[illegible]ing via contract or private motor carrier. DOT placarding is not re[illegible]ed for vehicles carrying empty containers.

NO FLOWABLE MATERIA[illegible]S

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible] Boulevard
Baltimc MD 21219
Toll Free (8[illegible]) 703-7867

Received from_____

Date_____ Box #_____

Open Head_____ Closed Head_____

Plastic_____ Polylined_____

Junk_____ Misc._____

All drums are subject to grading at our Smithfield, R.I. p[illegible]nt.

Customer_____ Driver_____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]vironmental Protection Agency regulations, 40 CFR 261.7*, and they have been proper[illegible]repared for transportation under the regulations of the U.S. Department of Transpor[illegible]n, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]FR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remove[illegible]sing the practices commonly employed to remove materials [illegible]om that type of container, e.g., pouring, pumping, and aspiratin[illegible]and

(ii) No more than 2.5 centimeters (one inch) of residue [illegible]main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste [illegible]terial is an overriding constraint and may remain in an empty contai[illegible] only if it cannot be removed by normal means. The rationale for thi[illegible]rovision is that there are certain tars and other extremely viscous [illegible]aterials that will remain in the container even after the container is [illegible]otied by normal means."

For residues of products specifically listed by name 40 CFR 261.33(e), EPA says the container is empty only "if the cont[illegible]er . . . has been triple-rinsed using a solvent capable of removing" th[illegible]product, or has been cleaned by another method shown to achieve [illegible]ivalent removal.

**DOT's 49 CFR 173.29 says that all openings on [illegible] empty container must be closed, and that all markings and labels [illegible]t be in place as if the drum were full of its original contents. A DO[illegible]hipping paper is not required for transportation of a drum for recondi[illegible]ning via contract or private motor carrier. DOT placarding is not re[illegible]red for vehicles carrying empty containers.

0089-0873

NO FLOWABLE MATERIA[illegible]S

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code: _____ Date: _____

Customer PO No.: _____ Reference No.: _____

	Units		Units
Open Head-Plain Cover		Open Head-2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - 2 Bung Cover	
1A2 w/ Side Bung		1A2 Silicone	
1A1 Unlined #1		1A2 - Nylon Flg. Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal	
Plastic Drums 55 & 30 gal.		Small Containers	
5 gal. steel		5 gal. plastic	
Odd Size Steel		Odd Size Plastic	
Recovery Drum Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums For Return	
C.M.S. / Lease Drums		Trailer Cleaning Charge	

Note: _____

Receiver: _____

Russell-Stanley

5145 1

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 N Point Boulevard
[illegible]more, MD 21219
Toll [illegible] (888) 703-7867

Received from _____

Date _____ Box # _____

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc. _____

All drums are subject to grading at our Smithfield [illegible] plant.

Customer _____ Driver _____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the [illegible]nal Environmental Protection Agency regulations, 40 CFR 261.7*, and they have bee[illegible]operly prepared for transportation under the regulations of the U.S. Department of [illegible]portation, 49 CFR 173.29.**

*With regard to most regulated residues, EP[illegible] 40 CFR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be r[illegible]oved using the practices commonly employed to remove ma[illegible]als from that type of container, e.g., pouring, pumping, and a[illegible]ating, and

(ii) No more than 2.5 centimeters (one inch) of [illegible]due remain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of [illegible]te material is an overriding constraint and may remain in an empty [illegible]ntainer only if it cannot be removed by normal means. The rationale [illegible] this provision is that there are certain tars and other extremely [illegible]ous materials that will remain in the container even after the contai[illegible] is emptied by normal means."

For residues of products specifically listed by [illegible]me in 40 CFR 261.33(e), EPA says the container is empty only "if t[illegible] container . . . has been triple-rinsed using a solvent capable of remo[illegible]" the product, or has been cleaned by another method shown to a[illegible]ve equivalent removal.

**DOT's 49 CFR 173.29 says that all openin[illegible] on the empty container must be closed, and that all markings and [illegible]els must be in place as if the drum were full of its original contents. [illegible] DOT shipping paper is not required for transportation of a drum for r[illegible]onditioning via contract or private motor carrier. DOT placarding is[illegible]t required for vehicles carrying empty containers.

0089-0874

NO FLOWABLE MATEI[illegible]ALS

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note: _____

_____

_____

_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible]t Boulevard
Baltim[illegible], MD 21219
Toll Free ([illegible])703-7867

Received from MURPHY - WASTE OIL [illegible]

Date 4/29/02 Box # VAN

Open Head 43 Closed Head 76

Plastic 5 Polylined _____

Junk _____ Misc. 1 - PKG OVERPACK

All drums are subject to grading at our Smithfield, R.I. [illegible]nt.

Customer _____ Driver ERIC

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the nationa[illegible]vironmental Protection Agency regulations, 40 CFR 261.7*, and they have been prop[illegible] prepared for transportation under the regulations of the U.S. Department of Transpo[illegible]on, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40[illegible]FR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remov[illegible]using the practices commonly employed to remove materials[illegible]om that type of container, e.g., pouring, pumping, and aspirati[illegible], and

(ii) No more than 2.5 centimeters (one inch) of residu[illegible]emain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste[illegible]terial is an overriding constraint and may remain in an empty conte[illegible]r only if it cannot be removed by normal means. The rationale for th[illegible]provision is that there are certain tars and other extremely viscou[illegible]materials that will remain in the container even after the container is[illegible]mptied by normal means."

For residues of products specifically listed by name[illegible]40 CFR 261.33(e), EPA says the container is empty only "if the cor[illegible]iner . . . has been triple-rinsed using a solvent capable of removing" t[illegible] product, or has been cleaned by another method shown to achieve[illegible]quivalent removal.

**DOT's 49 CFR 173.29 says that all openings on[illegible]e empty container must be closed, and that all markings and labels[illegible]st be in place as if the drum were full of its original contents. A D[illegible] shipping paper is not required for transportation of a drum for recond[illegible]ning via contract or private motor carrier. DOT placarding is not r[illegible]ired for vehicles carrying empty containers.

0089-0875

NO FLOWABLE MATERIALS

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note: _____

_____

_____

_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North P[illegible]t Boulevard
Baltim[illegible], MD 21219
Toll Free ([illegible]) 703-7867

Received from CLEAN HARBORS [illegible]

Date 6/12/02 Box # 1401

Open Head 74 Closed Head 2

Plastic 60 Polylined _____

Junk 3 Misc. _____

All drums are subject to grading at our Smithfield, R.I. p[illegible]nt.

Customer _____ Driver ERIC

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the national [illegible]vironmental Protection Agency regulations, 40 CFR 261.7*, and they have been prope[illegible]prepared for transportation under the regulations of the U.S. Department of Transpor[illegible]n, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 40 [illegible]R 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remove[illegible]sing the practices commonly employed to remove materials [illegible]om that type of container, e.g., pouring, pumping, and aspiratir[illegible] and

(ii) No more than 2.5 centimeters (one inch) of residu[illegible] main on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of waste [illegible]terial is an overriding constraint and may remain in an empty conta[illegible] only if it cannot be removed by normal means. The rationale for th[illegible]rovision is that there are certain tars and other extremely viscou[illegible]aterials that will remain in the container even after the container is [illegible]ptied by normal means."

For residues of products specifically listed by name [illegible]40 CFR 261.33(e), EPA says the container is empty only "if the con[illegible]er . . . has been triple-rinsed using a solvent capable of removing" t[illegible]product, or has been cleaned by another method shown to achieve [illegible]ivalent removal.

**DOT's 49 CFR 173.29 says that all openings on [illegible] empty container must be closed, and that all markings and labels [illegible]st be in place as if the drum were full of its original contents. A DO[illegible] shipping paper is not required for transportation of a drum for recondi[illegible]ning via contract or private motor carrier. DOT placarding is not r[illegible]ired for vehicles carrying empty containers.

NO FLOWABLE MATERIA[illegible]S

0089-0876

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code: _____ Date: _____

Customer PO No.: _____ Reference No.: _____

	Units		Units
Open Head-Plain Cover		Open Head-2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - 2 Bung Cover	
1A2 w/ Side Bung		1A2 Silicone	
1A1 Unlined #1		1A2 - Nylon Flg. Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal	
Plastic Drums 55 & 30 gal.		Small Containers	
5 gal. steel		5 gal. plastic	
Odd Size Steel		Odd Size Plastic	
Recovery Drum Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums For Return	
C.M.S. / Lease Drums		Trailer Cleaning Charge	

Note: _____

Receiver: _____

Russell-Stanley

514736

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 No[illegible] Point Boulevard
B[illegible]more, MD 21219
Toll F[illegible] (888) 703-7867

Received from _____

Date _____ Box # _____

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc. _____

All drums are subject to grading at our Smithfield, [illegible]. plant.

Customer _____ Driver _____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the n[illegible]al Environmental Protection Agency regulations, 40 CFR 261.7*, and they have been [illegible]perly prepared for transportation under the regulations of the U.S. Department of Tr[illegible]portation, 49 CFR 173.29.**

*With regard to most regulated residues, EPA[illegible]0 CFR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be r[illegible]oved using the practices commonly employed to remove mat[illegible]ls from that type of container, e.g., pouring, pumping, and as[illegible]ting, and

(ii) No more than 2.5 centimeters (one inch) of r[illegible]due remain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of v[illegible]te material is an overriding constraint and may remain in an empty [illegible]tainer only if it cannot be removed by normal means. The rationale [illegible] this provision is that there are certain tars and other extremely v[illegible]ous materials that will remain in the container even after the contair[illegible]is emptied by normal means."

For residues of products specifically listed by [illegible]ne in 40 CFR 261.33(e), EPA says the container is empty only "if th[illegible]container . . . has been triple-rinsed using a solvent capable of remov[illegible]" the product, or has been cleaned by another method shown to ac[illegible]ve equivalent removal.

**DOT's 49 CFR 173.29 says that all openin[illegible]on the empty container must be closed, and that all markings and l[illegible]ls must be in place as if the drum were full of its original contents. [illegible] DOT shipping paper is not required for transportation of a drum for r[illegible]nditioning via contract or private motor carrier. DOT placarding is [illegible]t required for vehicles carrying empty containers.

NO FLOWABLE MATEI[illegible]ALS

0089-0877

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code:_____ Date:_____

Customer P.O No. :_____ Reference No.:_____

Open Head - Plain Cover		Open Head - 2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	

1A2 - Plain Cover		1A2 - Bung Cover	
1A2 w/ Side Bung		1A2 - Silicone	
1A1 Unlined #1		1A2 Tri - Sure Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	

Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Smalll Containers	
5 gal. Steel		5 gal. Plastic	
Odd size Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums for Return	
C.M.S./ Lease Drums		Trailer Cleaning Charge	

Note:_____

Receiver:_____

New England Container

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 North [illegible]nt Boulevard
Baltir[illegible]e, MD 21219
Toll Free [illegible]38) 703-7867

[illegible]186

Received from [illegible]

Date [illegible] Box # [illegible]

Open Head 94 Closed Head 3

Plastic_____ Polylined_____

Junk_____ Misc._____

All drums are subject to grading at our Smithfield, R.I. [illegible]ant.

Customer_____ Driver [illegible]

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the nation[illegible] Environmental Protection Agency regulations, 40 CFR 261.7*, and they have been pro[illegible] prepared for transportation under the regulations of the U.S. Department of Transp[illegible]tion, 49 CFR 173.29.**

*With regard to most regulated residues, EPA's 4[illegible]FR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be remo[illegible] using the practices commonly employed to remove materia[illegible] from that type of container, e.g., pouring, pumping, and aspira[illegible], and

(ii) No more than 2.5 centimeters (one inch) of resid[illegible] remain on the bottom of the container. . . ."

EPA has explained this rule, saying that "one inch of wast[illegible] material is an overriding constraint and may remain in an empty cont[illegible]er only if it cannot be removed by normal means. The rationale for t[illegible] provision is that there are certain tars and other extremely visco[illegible] materials that will remain in the container even after the container i[illegible]mptied by normal means."

For residues of products specifically listed by name [illegible] 40 CFR 261.33(e), EPA says the container is empty only "if the co[illegible]iner . . . has been triple-rinsed using a solvent capable of removing" [illegible] product, or has been cleaned by another method shown to achiev[illegible] equivalent removal.

**DOT's 49 CFR 173.29 says that all openings o[illegible] the empty container must be closed, and that all markings and label[illegible] must be in place as if the drum were full of its original contents. A [illegible]T shipping paper is not required for transportation of a drum for recon[illegible]ioning via contract or private motor carrier. DOT placarding is not [illegible]quired for vehicles carrying empty containers.

NO FLOWABLE MATERI[illegible]LS

0089-0878

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code: _____ Date: _____

Customer PO No.: _____ Reference No.: _____

	Units		Units
Open Head-Plain Cover		Open Head-2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	
1A2 - Plain Cover		1A2 - 2 Bung Cover	
1A2 w/ Side Bung		1A2 Silicone	
1A1 Unlined #1		1A2 - Nylon Flg. Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	
Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal	
Plastic Drums 55 & 30 gal		Small Containers	
5 gal. steel		5 gal. plastic	
Odd Size Steel		Odd Size Plastic	
Recovery Drum Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums For Return	
C.M.S. / Lease Drums		Trailer Cleaning Charge	

Note: _____

Receiver: _____

Russell-Stanley

503997

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 P
Point Boulevard
more, MD 21219
e (888) 703-7867

Received from Clean Har

Date 6-29-01 Box # 2

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc 16

All drums are subject to grading at our Smithfiel plant.

Customer _____ Driver _____

EMPTY DRUM CERTIFICATIO

These drums are "empty" as that term is defined in th nal Environmental Protection Agency regulations, 40 CFR 261.7 and they have b operly prepared for transportation under the regulations of the U.S. Department of portation, 49 CFR 173.29.

With regard to most regulated residues, E 40 CFR 261.7 says: "A container ... is empty if:

(i) All wastes have been removed that can be oved using the practices commonly employed to remove m als from that type of container, e.g., pouring, pumping, and ating, and

(ii) No more than 2.5 centimeters (one inch) of due remain on the bottom of the container ..."

EPA has explained this rule saying that "one inch o te material is an overriding constraint and may remain in an empt ntainer only if it cannot be removed by normal means." The rational this provision is that there are certain toxic and other extremely ous materials that will remain in the container even after the cont is emptied by normal means.

For residues of products specifically listed b ne in 40 CFR 261.33(e), EPA says the container is empty only if ontainer ... has been triple-rinsed using a solvent capable of rem the product, or has been cleaned by another method shown to ve equivalent removal.

DOT's 49 CFR 173.29 says that all open on the empty container must be closed and that all markings and ls must be in place as if the drum were full of its original content DOT shipping paper is not required for transportation of a drum for nditioning via contract or private motor carrier. DOT placarding t required for vehicles carrying empty containers.

NO FLOWABLE MATE ALS

6780-0800

GRADING REPORT
*TO BE COMPLETED AT PROCESSING FACILITY

Account Code: _____ Date: _____

Customer PO No.: _____ Reference No.: _____

	Units		Units
Open Head-Plain Cover		Open Head-2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	
1A2 - Plain Cover		1A2 - 2 Bung Cover	
1A2 w/ Side Bung		1A2 Silicone	
1A1 Unlined #1		1A2 - Nylon Flg. Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	
Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal	
Plastic Drums 55 & 30 gal.		Small Containers	
5 gal. steel		5 gal. plastic	
Odd Size Steel		Odd Size Plastic	
Recovery Drum Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums For Return	
C.M.S. / Lease Drums		Trailer Cleaning Charge	

Note: _____

Receiver: _____

Russell-Stanley

504032

455 George Washington Highway
Smithfield, RI 02917-1996
Toll Free (800) 333-3109

4601 N Point Boulevard
nore, MD 21219
Toll (888) 703-7867

Received from Dean Ha[illegible]

Date 8-7-01 Box# 4 79

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc 13 mixed

All drums are subject to grading at our Smithfield plant

Customer _____ Driver _____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the [illegible]al Environmental Protection Agency regulations, 40 CFR 261.7, and they have be[illegible]perly prepared for transportation under the regulations of the U.S. Department of [illegible]ortation, 49 CFR 173.29.

*With regard to most regulated residues, EP[illegible] 40 CFR 261.7 says: "A container . . . is empty if:

(i) All wastes have been removed that can be [illegible]ved using the practices commonly employed to remove ma[illegible]ls from that type of container, e.g., pouring, pumping, and a[illegible]ting, and

(ii) No more than 2.5 centimeters (one inch) of [illegible]ue remain on the bottom of the container.

EPA has explained this rule, saying that "one inch of [illegible]e material is an overriding constraint and may [illegible] empty [illegible]tainer only if it cannot be removed by normal means." The rationale [illegible] this provision is that there are certain tars and other extremely [illegible]ous materials that will remain in the container even after the conta[illegible] is emptied by normal means.

For residues of products specifically listed by [illegible]e in 40 CFR 261.33(e), EPA says the container is empty only "if t[illegible]ontainer . . . has been triple-rinsed using a solvent capable of remo[illegible] the product, or has been cleaned by another method shown to a[illegible]e equivalent removal."

**DOT's 49 CFR 173.29 says that all openi[illegible]n the empty container must be closed, and that all markings and [illegible]s must be in place as if the drum were full of its original contents [illegible] DOT shipping paper is not required for transportation of a drum for [illegible]nditioning via contract or private motor carrier. DOT placarding i[illegible] required for vehicles carrying empty containers.

NO FLOWABLE MATE[illegible]ALS

0089-0880

GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code: _____ Date: _____

Customer PO No.: _____ Reference No.: _____

	Units		Units
Open Head-Plain Cover		Open Head-2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	
1A2 - Plain Cover		1A2 - 2 Bung Cover	
1A2 w/ Side Bung		1A2 Silicone	
1A1 Unlined #1		1A2 - Nylon Flg. Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	
Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal		Small Containers	
5 gal. steel		5 gal. plastic	
Odd Size Steel		Odd Size Plastic	
Recovery Drum Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums For Return	
C.M.S. / Lease Drums		Trailer Cleaning Charge	

Note:

Receiver:

0089-0881

Russell-Stanley

455 George Washington Highway 4601
Smithfield, RI 02917-4996
Toll Free (800) 333-3109 To

Received from Ocean Med

Date 10-23-01 Box# 4

Open Head Closed Head

Plastic Polylined

Junk Misc 145

All drums are subject to grading at our Smithfiel

Customer [illegible] Driver

EMPTY DRUM CERTIFICATIO

These drums are "empty" as that term is defined in th Protection Agency regulations, 40 CFR 261.7, and they have t transportation under the regulations of the U.S. Department o 173.29.

• With regard to most regulated residues, E says: "A container . . . is empty if:

(i) All wastes have been removed that can be practices commonly employed to remove . . . type of container . . . pouring, pumping, and

(ii) No more than 2.5 cm (one inch) re the bottom of the container . . .

EPA has explained this rule, saying that "one inch re an overriding constraint and may remain in an emp it cannot be removed by normal means. The rationa is that there are certain wastes and other extreme that will remain in the container even after the cont normal means."

• For residues of products specifically listed t 261.33(e), EPA says the container is empty only if has been triple-rinsed using a solvent capable of rem or has been cleaned by another method shown to removal."

• DOT, 49 CFR 173.29, says that all oper container must be closed, and that all markings an place on the drum when all of its contents papers not required for transportation be drum to container for which motor carrier vehicles carrying empty containers

NO FLOWABLE MATE

2 505546

Point Boulevard
more, MD 21219
(888) 703-7867

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40 CFR 261.7

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GRADING REPORT
TO BE COMPLETED AT PROCESSING FACILITY

Account Code: _____ Date: _____

Customer PO No.: _____ Reference No.: _____

	Units		Units
Open Head-Plain Cover		Open Head-2 Bung Cover	
Open Head w/ Side Bung		Open Head Silicone	
1A2 - Plain Cover		1A2 - 2 Bung Cover	
1A2 w/ Side Bung		1A2 Silicone	
1A1 Unlined #1		1A2 - Nylon Flg. Cover	
1A1 Unlined #2		1A1 Silicone	
1A1 Lined #1		1A1 - 1.1 mm Cutter	
1A1 Cutter		Chop Out	
Open Head 30 gal.		Closed Head 30 gal.	
Polylined Drums		Polylined Under 30 gal.	
Plastic Drums 55 & 30 gal.		Small Containers	
5 gal. steel		5 gal. plastic	
Odd Size Steel		Odd Size Plastic	
Recovery Drum Steel		Recovery Drum Plastic	
Junk, Damaged, Foreign		Freight Charge	
I.B.C.		Heavy Drums For Return	
C.M.S. / Lease Drums		Trailer Cleaning Charge	

Note: _____

Receiver: _____

Russell-Stanley

505860

455 George Washington Highway — 4601 N
Smithfield, RI 02917-1996 — Point Boulevard
Toll Free (800) 333-3109 — Toll — more, MD 21219 — (888) 703-7867

Received from: Clean Harbors

Date 12-7-01 Box # 4

Open Head _____ Closed Head _____

Plastic _____ Polylined _____

Junk _____ Misc 175

All drums are subject to grading at our Smithfield plant

Customer _____ Driver _____

EMPTY DRUM CERTIFICATION

These drums are "empty" as that term is defined in the Environmental Protection Agency's regulations 40 CFR ... and they have been properly prepared for transportation under the regulations of the U.S. Department of Transportation, 49 CFR 173.29.

*With regard to non-acutely hazardous residues, 40 CFR 261.7 says: "A container ... is empty if:

(i) All wastes have been removed that can be practically removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, and

(ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container ...

EPA has explained this rule saying that one inch of material is an overriding constraint and may be more than empty if it cannot be removed by normal means. The rationale is that there are certain tars and other extremely viscous materials that will remain in the container even after the container is emptied by normal means ...

For residues of products specifically listed in 40 CFR 261.33(e), EPA says the container is empty only if it has been triple-rinsed using a solvent capable of removing the product, or has been cleaned by another method shown to be equivalent for removal ...

**DOT 49 CFR 173.29 says that all openings on the empty container must be closed and that all markings and placards must be in place as if the drum were full of its normal content ... paper is not required for transportation of drums for contract or private motor carriers ... DOT placarding is not required for vehicles carrying empty containers ...

NO FLOWABLE MATERIALS

2880-6800

EXHIBIT 4.v

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
05-06								
Environmental Impairment Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$30M per claim $30M aggregate	5/1/05 - 5/1/06	No	Yes
04-05								
General Liability	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$2M per occ. $3M aggregate	11/1/04 - 11/1/05	Yes	No
Auto Liabilty	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$5M Combined Single Limit	11/1/04 - 11/1/05	Yes	Contains MCS-90 Endorsement
Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	American Guarantee & Liability Insurance Company	1400 American Lane Schaumburg, IL 60196	$25M per occ. $25M aggregate	11/1/04 - 11/1/05	Yes	No
Contractors Pollution Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	11/1/04 - 11/1/05	No	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$5M per claim $5M aggregate	11/1/04 - 11/1/05	N o	Yes
Environmental Impairment Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$30M per claim $30M aggregate	5/1/04 - 5/1/05	No	Yes
03-04								
General Liability	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$2M per occ. $3M aggregate	11/17/03 - 11/1/04	Yes	No
Auto Liabilty	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$5M Combined Single Limit	11/17/03 - 11/1/04	Yes	Contains MCS-90 Endorsement
Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1400 American Lane Schaumburg, IL 60196	$15M per occ. $15M aggregate	11/17/03 - 11/1/04	Yes	No
Excess Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	American Guarantee & Liability Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per occ. $10M aggregate	11/17/03 - 11/1/04	Yes	No
Contractors Pollution Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	11/1/03 - 11/1/04	No	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$5M per claim $5M aggregate	11/1/03 - 11/1/04	N o	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Environmental Impairment Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$30M per claim $30M aggregate	5/1/03 - 5/1/04	No	Yes
02-03								
General Liability	CHESI	1501 Washington St. Braintree, MA 02185	Lumbermens Mutual Casualty Company	1 Kemper Drive, Long Grove, IL 60049	$1M per occ. $3M aggregate	11/1/02 - 3/17/03	Yes	No
General Liability	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	3/17/03 - 11/17/03	Yes	No
Auto Liabilty	CHESI	1501 Washington St. Braintree, MA 02185	Lumbermens Mutual Casualty Company	1 Kemper Drive, Long Grove, IL 60049	$2M Combined Single Limit	11/1/02 - 3/17/03	Yes	Contains MCS-90 Endorsement
Auto Liabilty	CHESI	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$5M Combined Single Limit	3/17/03 - 11/17/03	Yes	Contains MCS-90 Endorsement
Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	Continental Casualty Company	CNA Plaza, Chicago, IL 60685	$25M per occ. $25M aggregate	11/1/02 - 3/17/03	Yes	No (Contains MCS-90 Endorsement for excess Auto Liability)
Umbrella Liability	CHES	1501 Washington St. Braintree, MA 02185	Ace American Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$25M per occ. $25M aggregate	3/17/03 - 11/17/03	Yes	No (Contains MCS-90 Endorsement for excess Auto Liability)
Excess Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	Clarendon America Insurance Company	1177 Avenue of the Americas, New York, NY 10036	$5M per occ. $5M aggregate	11/1/02 - 3/17/03	Yes	No
Contractors Pollution Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	11/1/02 - 11/1/03	No	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$2M per claim $2M aggregate	11/1/02 - 11/1/03	N o	Yes
Environmental Impairment Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$30M per claim $30M aggregate	5/1/02 - 5/1/03	No	Yes
01-02								
General Liability	CHESI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/01 - 11/1/02	Yes	No
Auto Liabilty	CHESI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/01 - 11/1/02	No	Yes
Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$30M per occ. $30M aggregate	11/1/01 - 11/1/02	No	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Contractors Pollution Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	11/1/01 - 11/1/02	No	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$2M per claim $2M aggregate	11/1/01 - 11/1/02	N o	Yes
Environmental Impairment Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$30M per claim $30M aggregate	5/1/01 - 5/1/02	No	Yes
00-01								
General Liability	CHI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/00 - 11/1/01	Yes	No
Auto Liabilty	CHI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/00 - 11/1/01	No	Yes
Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$30M per occ. $30M aggregate	11/1/00 - 11/1/01	Yes	No, except with respect to accidental upset and overturn of vehicles
Contractors Pollution Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	12/19/00 - 11/1/01	No	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$2M per claim $2M aggregate	12/19/00 - 11/1/01	N o	Yes
Environmental Impairment Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$30M per claim $30M aggregate	5/1/00 - 5/1/01	No	Yes
99-00								
General Liability	CHI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/99 - 11/1/00	Yes	No
Auto Liability	CHI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/99 - 11/1/00	No	Yes
Umbrella Liability	CHESI	1501 Washington St. Braintree, MA 02185	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$30M per occ. $30M aggregate	11/1/99 - 11/1/00	Yes	No except with respect to accidental upset and overturn of vehicles
Contractors Pollution Liability	CHESI	1501 Washington St. Braintree, MA 02185	Zurich Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	12/19/99 - 12/99/00	No	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$2M per claim $2M aggregate	1/27/99 - 1/27/00 & 1/27/00 - 12/19/00	N o	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$2M per claim $2M aggregate	1/27/00 - 12/19/00	N o	Yes
[redacted]								
Excess Pollution Liability **98-99**	CHI	1501 Washington St. Braintree, MA 02185	Lloyd's of London	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/98 - 5/1/00	No	Yes
General Liability	CHI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/98 - 11/1/99	Yes	No
Auto Liability	CHI	1501 Washington St. Braintree, MA 02185	Pacific Employers' Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/98 - 11/1/99	No	Yes
Umbrella Liability	CHI	1501 Washington St. Braintree, MA 02185	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$30M per occ. $30M aggregate	11/1/98 - 11/1/99	Yes	No except with respect to accidental upset and overturn of vehicles
Contractors Pollution Liability	CHI	1501 Washington St. Braintree, MA 02185	Zurich Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	12/19/98 - 12/19/99	No	Yes
Professional Liability	CHESI	1501 Washington St. Braintree, MA 02185	Steadfast Insurance Company	1400 American Lane Schaumburg, IL 60196	$4M per claim $4M aggregate	1/27/98 - 1/27/99	N o	Yes
Environmental Impairment Liability	CHI	1501 Washington St. Braintree, MA 02185	[redacted]					
Excess Pollution Liability **97-98**	CHI	1501 Washington St. Braintree, MA 02185	Lloyd's of London	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/98 - 5/1/00	No	Yes
General Liability	CHI	1501 Washington St. Braintree, MA 02185	CIGNA Property and Casualty Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/97 - 11/1/98	Yes	No
Auto Liability	CHI	1501 Washington St. Braintree, MA 02185	CIGNA Property and Casualty Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/97 - 11/1/98	No	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Umbrella Liability	CHI	1501 Washington St. Braintree, MA 02185	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$30M per occ. $30M aggregate	11/1/97 - 11/1/98	Yes	No except with respect to accidental upset and overturn of vehicles
Contractors Pollution Liability	CHI	1501 Washington St. Braintree, MA 02185	Zurich Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	12/19/97 - 12/19/98	No	Yes
Professional Liability	CHI	1501 Washington St. Braintree, MA 02185	[redacted]					
Environmental Impairment Liability	CHI	1501 Washington St. Braintree, MA 02185	[redacted]					
Excess Pollution Liability	CHI	1501 Washington St. Braintree, MA 02185	Lloyds & British Companies	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/97 - 5/1/98	No	Yes
96-97								
General Liability	CHI	1501 Washington St. Braintree, MA 02185	CIGNA Property and Casualty Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/96 - 11/1/97	Yes	No
Auto Liability	CHI	1501 Washington St. Braintree, MA 02185	CIGNA Property and Casualty Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/96 - 11/1/97	No	Yes
Umbrella Liability	CHI	325 Wood Road Braintree, MA 02185	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$30M per occ. $30M aggregate	11/1/96 - 11/1/97	Yes	No except with respect to accidental upset and overturn of vehicles
Contractors Pollution Liability	CHI	325 Wood Road Braintree, MA 02185	Zurich Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	12/19/96 - 12/19/97	No	Yes
Professional Liability	CHI	325 Wood Road Braintree, MA 02185	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$1M occurrence $1M aggregate	12/31/96 - 12/31/97	No	Yes
Environmental Impairment Liability	CHI	325 Wood Road Braintree, MA 02185	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	1/1/96 - 1/1/97	No	Yes
Excess Pollution Liability	CHI	325 Wood Road Braintree, MA 02185	Lloyds & British Companies	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/96 - 5/1/97	No	Yes
95-96								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02269	Indemnity Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/95 - 11/1/96	Yes	No

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Auto Liabilty	CHI	325 Wood Road Braintree, MA 02184	CIGNA Insurance Company	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/95 - 11/1/96	No	Yes & MCS-90 Endorsement
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02269	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$15M per occ. $15M aggregate	11/1/95 - 11/1/96	No	Yes (Contains MCS-90 Endorsement for excess Auto Liability)
Excess Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lexington	200 State Street, Boston, MA 02109	$15M per occ. $15M aggregate	11/1/95 - 11/1/96	[redacted]	[redacted]
Contractors Pollution Liability	CHI	325 Wood Road Braintree, MA 02184	Zurich Insurance Company	1400 American Lane Schaumburg, IL 60196	$10M per claim $10M aggregate	12/19/95 - 12/19/96	No	Yes
Professional Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$1M per claim $1M aggregate	1/1/95 -1/1/96	No	Yes
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	1/1/95 - 1/1/96	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02269	Lloyds & British Companies	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/95 - 5/1/96	No	Yes
94-95								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/94 - 11/1/95	[redacted]	[redacted]
Auto Liabilty	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/94 - 11/1/95	[redacted]	[redacted]
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$15M per occ. $15M aggregate	11/1/94 - 11/1/95	[redacted]	[redacted]
Excess Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lexington	200 State Street, Boston, MA 02109	$15M per occ. $15M aggregate	11/1/94 - 11/1/95	[redacted]	[redacted]
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$10M per claim $10M aggregate	12/19/94 - 12/19/95	No	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Professional Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$1M per claim $1M aggregate	1/1/94 - 1/1/95	No	Yes
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	1/1/94 - 1/1/95	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02269	Lloyds & British Companies	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/94 - 5/1/95	No	Yes
93-94								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/93 - 11/1/94	[redacted]	[redacted]
Auto Liabilty	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/93 - 11/1/94	[redacted]	[redacted]
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$15M per occ. $15M aggregate	11/1/93 - 11/1/94	[redacted]	[redacted]
Excess Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lexington	200 State Street, Boston, MA 02109	$10M per occ. $10M aggregate	11/1/93 - 11/1/94	[redacted]	[redacted]
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Acstar Insurance Company	233 Main Street, New Britian, CT 08050	$2M per claim $5M aggregate	12/19/93 - 12/19/94	No	Yes
Professional Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$1M per claim $1M aggregate	1/1/93 - 1/1/94	No	Yes
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	1/1/93 - 1/1/94	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lloyds & British Companies	33 Aldgate High Street, London EC3N 1AQ	$29M per claim $29M aggregate	5/1/93 - 5/1/94	No	Yes
92-93								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/92 - 11/1/93	Yes	No

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Auto Liabilty	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/92 - 11/1/93	Yes	MCS-90 Endorsement provided
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$15M per occ. $15M aggregate	11/1/92 - 11/1/93	Yes	No
Excess Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lexington	200 State Street, Boston, MA 02109	$5M per occ. $5M aggregate	11/1/92 - 11/1/93	Yes	No
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	United Coastal Insurance Company	233 Main Street, New Britian, CT 06050	$2M per claim $5M aggregate	12/19/92 - 12/19/93	No	Yes
Professional Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$1M per claim $1M aggregate	6/1/92 - 12/31/92	???	???
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	1/1/92 - 1/1/93	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lloyds & British Companies	18 Mansell Street, London E18AA	$29M per claim $29M aggregate	5/1/92 - 5/1/93	No	Yes
91-92								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M per occ. $3M aggregate	11/1/91 - 11/1/92	Yes	No
Auto Liabilty	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Company of North America	1601 Chestnut Street Philadelphia, PA 19101	$1M Combined Single Limit	11/1/91 - 11/1/92	Yes	MCS-90 Endorsement provided
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$15M per occ. $15M aggregate	11/1/91 - 11/1/92	Yes	No
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	United Coastal Insurance Company	233 Main Street, New Britian, CT 06050	$1M per claim $5M aggregate	12/19/91 - 12/19/92	No	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	1/1/91 - 1/1/92	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lloyds & British Companies	Willis Faber & Dumas Ltd. 10 Trinity Square, London EC3P3AX	$29M per claim $29M aggregate	5/1/89 - 5/1/92	No	Yes
90-91								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$1M per occ. $3M aggregate	11/1/90 - 11/1/91	Yes	No
Auto Liabilty	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$1M Combined Single Limit	11/1/90 - 11/1/91	No	MCS-90 Endorsement provided
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$10M per occ. $10M aggregate	11/1/90 - 11/1/91	Yes	No
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	United Coastal Insurance Company	233 Main Street, New Britian, CT 06050	$1M per claim $5M aggregate	12/19/90 - 12/19/91	No	Yes
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	12/15/89 - 1/1/91	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lloyds & British Companies	Willis Faber & Dumas Ltd. 10 Trinity Square, London EC3P3AX	$29M per claim $29M aggregate	5/1/89 - 5/1/92	No	Yes
89-90								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$1M per occ. $3M aggregate	11/1/89 - 11/1/90	Yes	No
Auto Liabilty	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$1M Combined Single Limit	11/1/89 - 11/1/90	No	MCS-90 Endorsement provided
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company of Pittsburgh	70 Pine Street, New York, NY 10270	$10M per occ. $10M aggregate	11/1/89 - 11/1/90	???	???
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	United Coastal Insurance Company	One Corporate Center, Hartford, CT 06103	$1M per claim $5M aggregate	12/19/89 - 12/19/90	No	Yes

Policy	Insured	Insured Address	Insurer	Insurer Address	Policy Limits	Policy Period	Pollution Exclusion	Coverage for Sudden & Non-Sudden Accidents
Environmental Impairment Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Northeast Casualty Risk Retention Group	7 Burlington Drive, Burlington, VT 05401	$3M per claim $6M aggregate	12/15/89 - 1/1/91	No	Yes
Excess Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Lloyds & British Companies	Willis Faber & Dumas Ltd. 10 Trinity Square, London EC3P3AX	$29M per claim $29M aggregate	5/1/89 - 5/1/92	No	Yes
88-89								
General Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$1M per occ. $1M aggregate	11/1/88 - 11/1/89	Yes	No
Auto Liabilty	CHI	325 Wood Road, Braintree, MA 02184	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$1M each person $1M ea accident	11/1/88 - 11/1/89	No	MCS-90 Endorsement provided
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	National Union Fire Insurance Company	70 Pine Street, New York, NY 10270	$10M per occ. $10M aggregate	11/1/88 - 11/1/89	Yes	No
Contractors Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Planet Insurance Company	Sun Prairie, WI	$1M per claim $2M aggregate	12/19/88 - 12/19/89	No	Yes
Pollution Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	United National Insurance Company		$1M per claim $1M aggregate	12/15/88 - 12/15/89	No	Yes
Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Insurance Corporation of America		$5M excess of $1M Pollution Liability			
Excess Umbrella Liability	CHI	1200 Crown Colony Drive, Quincy, MA 02169	Hanover Guaranty Insurance Company Ltd.		$4M excess of $5M Umbrella Liability			

EXHIBIT 4.x.iv

EXHIBIT A

CONSULTING AND NON-COMPETITION AGREEMENT

This Consulting and Non-Competition Agreement is made and entered into as of February __, 1989 by and between **Murphy's Waste Oil Service, Inc.**, a Massachusetts corporation with its principal offices at 252 Rear Salem Street, Woburn, Massachusetts (the "Company") and **Joan E. Murphy**, residing at 16 Harriet Avenue, Burlington, Massachusetts ("Murphy").

RECITALS

A. The Company and John F. Murphy and Joan E. Murphy have entered into a Stock Purchase Agreement of even date herewith, to which this Non-Competition Agreement is ancillary and an integral part, pursuant to which Clean Harbors of Kingston, Inc., a Massachusetts corporation with principal offices at 325 Wood Road, Braintree, Massachusetts ("Clean Harbors") is purchasing all of the issued and outstanding stock of the Company;

B. Murphy has been an officer, director and employee of the Company with knowledge of and experience in the business conducted by the Company but now wishes to limit her involvement with the Company;

C. The Company wishes to avail itself of the experience and advice of Murphy, and Murphy is willing to furnish such advice;

D. The Company and its sole stockholder, Clean Harbors, desire to make certain that Murphy will keep confidential the information she acquired as an officer, director or employee of the Company, and that the Company will have the benefit of Murphy's agreement not to compete, all as provided herein; and

E. Murphy is willing to keep confidential certain information and is also willing to refrain from engaging directly or indirectly in competition with the Company during the term hereof, all as provided herein.

COVENANTS

In consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Consulting Services/Term of Agreement. Murphy will, to the extent consistent with her other activities and commitments, use her best efforts to provide consulting services to the Company from time to time, for a period of thirty (30) months (the "term"), commencing on the date hereof and ending August __, 1991. Such services shall consist of advice, at the request of the Company, to the president of the Company with respect to the operation of a petroleum reclamation, storage and transfer station; it being understood that the failure of the Company to request consulting services shall not relieve the Company of its obligations to make required payments hereunder. The performance by Murphy of consulting services shall be at the request of the president of the Company upon reasonable notice to Murphy, from time to time, and Murphy agrees to use her reasonable efforts, consistent with her other activities and commitments, to provide consultation within the time requested for such performance. In the event of the inability of Murphy to be available to consult at the Company's business location in Woburn, Massachusetts, she may, when necessary, consult by phone.

2. Confidential Information. Murphy recognizes that, as officer, director and employee of the Company, she has had access to Confidential Information (as hereinafter defined) which is the property of the Company. She, therefore, agrees that:

(a) She shall not, at any time, for as long as any Confidential Information shall remain confidential or otherwise remain wholly or partially protectable, use or disclose directly, or indirectly, to any person outside of the Company any such Confidential Information;

(b) During the term hereof, she shall not directly or indirectly divert or, by aid to others, do anything which would tend to divert from the Company any trade or business with any customer with whom she has had any contact or association in her capacities as officer, director or employee of the Company, or as consultant to the Company, or with any party whose identity or potential as a customer was confidential or learned by her during her association with the Company;

(c) During the term hereof, she shall not, either directly or indirectly, induce or attempt to induce any person with whom she has become acquainted during her association with the Company to leave the employment of the Company;

(d) As used in this Consulting and Non-Competition Agreement, the term "Confidential Information" shall mean all business information of any nature and in any form which, at the time or times concerned, is not generally known to those persons engaged in business similar to that conducted or contemplated by the Company and which relates to any one or more of the aspects of the past or present business of the Company, including development projects, policies, processes, formulas, techniques, know-how, and other facts relating to the operation of a petroleum reclamation, storage and transfer station or relating to plant layout operations, customer lists, customer requirements, sales, financial matters and other trade secrets.

3. Non-Competition. During the term hereof, Murphy will not directly or indirectly own, manage, operate, join, control, or participate in the ownership, management, operation or control of, or be connected as an officer, employee, partner, consultant, licensor, joint venturer, principal or controlling shareholder, or in any directive or advisory capacity whatsoever with, or reopen or establish any business or have any connection with any business which is competitive with the past or current business activities of the Company, its affiliates or subsidiaries, insofar as such activities relate to the operation of an oil storage and transfer station as conducted by the Company, its affiliates or subsidiaries at any place within the Commonwealth of Massachusetts or the State of Maine. If at any time the foregoing provisions shall be deemed to be invalid or unenforceable or are prohibited by the laws of the state or place where they are to be enforced, by reason of being vague or unreasonable as to duration or place of performance, this Section shall be considered divisible and shall become and be immediately amended to include only such time and such area as shall be determined to be reasonable and enforceable by the court or other body having jurisdiction over this Agreement; and the Company and Murphy expressly agree that this Section, as so amended, shall be valid and binding as though any invalid or unenforcable provision has not been included herein.

4. Consideration. In consideration for entering into and agreeing to the terms hereof, the Company agrees to pay Murphy the sum of One Hundred Ten Thousand ($110,000.00) Dollars in ten (10) equal successive quarterly installments of Eleven Thousand ($11,000.00) Dollars each, in arrears, with the first such installment to be payable three (3) months from the date hereof and on the same day of each successive quarter thereafter. Such installments shall continue to be paid to Murphy's estate upon the event of her death, until payment of the entire amount of the

consideration shall have been made. The Company shall reimburse her for all previously approved travel and other business expenses incurred for the benefit of the Company in rendering services hereunder. Reimbursement shall be conditional upon providing proper documentation in accordance with Company policies.

5. Remedies. Murphy understands that the Company would not have an adequate remedy at law for any material breach or threatened breach by Murphy of any one or more of the covenants set forth in Sections 2 and 3 of this Consulting and Non-Competition Agreement. Murphy agrees that any such material breach shall cause irreparable harm to the Company for which there is no adequate remedy at law, and in the event of such material breach or threatened breach, the Company may, in addition to the other remedies which may be available to it, obtain an injunction or restraining order to enjoin Murphy from the breach or threatened breach of this Agreement.

6. Miscellaneous. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, personal representatives, successors and assigns, and may be amended only by written agreement signed by both parties. If any provision or provisions of this Agreement shall be held for any reason invalid or unenforceable, the remaining provisions shall nonetheless be valid and enforceable provisions. Any notice required or permitted hereunder shall be sent registered or certified mail, or by overnight courier service, prepaid, to Murphy at 16 Harriet Avenue, Burlington, Massachusetts, and to the Company at 325 Wood Road, Braintree, Massachusetts 01824, or to such other address as either party shall designate for such notice by giving written notice to the other as herein specified. This Agreement shall be construed and interpreted in accordance with the laws of the Commonwealth of Massachusetts.

IN WITNESS WHEREOF, the parties hereto have executed this Consulting and Non-Competition Agreement under seal as of the date first above written.

WITNESSES:

_____ _____
Joan E. Murphy

MURPHY'S WASTE OIL
SERVICE, INC.

_____ By: _____
Thereunto duly authorized

WOBURN PAGE

MEMORANDUM

TO: Ed Pawlowski E.P. 2/14/86

FROM: S. Shapiro

DATE: February 13, 1986

SUBJECT: Compliance with license suspension, Order of January 2, 1986
Murphy's Waste Oil Service
Ashland Industrial Fuel

I visited the above mentioned facilities, as directed, on February 10, 1986 to assure compliance with Department orders to suspend facility licenses due to the lack of a financial mechanism meeting requirements of 310 CMR 30.908. The following is a description of the results of my visits to the facilities:

Murphy's Waste Oil Service MAD 06658805

I met Joan Murphy at the facility and followed here directly to her home to view Daily Pick-up Manifests for activities occurring between February 3, 1986 and February 7, 1986. Fifty clients were served during this time resulting in 10,500 gallons of oil being delivered to Cyn Oil in Stoughton. Three thousand gallons, picked up on February 3, 1986 were stored on Truck D-1 until February 10, 1986 when it was delivered to a client (Manifest for February 10, 1986 was not available). Generator's names were on file with receipts, logs and signatures included.

Ashland Industrial Fuel MAD 980579213

I met with John Glynn, President and Lisa Glynn at the facility office. Mr. Glynn has arranged hazardous waste storage with Zecco, Inc. in Northboro. An arrangement is in progress to "swap" used oil for new fuel oil to be stored in clean tanks at AIF. Mr. Glynn is in the process of negotiating for insurance coverage compliant with 310 CMR 30.908. The company uses the Uniform Hazardous Waste Manifest for recording. Since copies of the manifest go to the Department, I obtained copies of those available for February 7, 1986 only as examples. Other manifests designated Zecco as destination and were properly receipted. Note that manifest prepared by Poly-Structure is of the form declared obsolete as of April 1985.

SS/ae

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

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BOSTON DEQE

NOTES RELATIVE TO

SUBJECT: John J. Riley Company, 228 Salem Street
Woburn, Mass.

BY: Robert Cleary RC

DATE: July 7, 1981

On July 1, 1981 the writer accompanied Mr. Richard Leighton of the EPA and Ms. Susan Titus, an Image Analyst, working with the EPA Environmental Photo Interpertation Center, on a tour of Woburn in order to verify from the ground their interpertation of aerial photographs of East and North Woburn. During this trip we walked the Boston and Maine Railroad tracks near the Riley Company tannery on Salem Street. Two observations of possible environmental concern were noted. First, on the slope leading down from the tannery to the railroad tracks we observed yellow and gray colored material that appeared to be dumped down the embankment. Drainage from this embankment enters a culvert at the railroad tracks, crosses under the tracks and empties into the drainage ditch on the east side of the tracks. This ditch flows south to the wetlands north of Whittemore Pond. In a section of the ditch from the outfall of the culvert down as far as Salem Street there was a whitish material covering the rocks.

The second observation concerns a manhole on the east side of the rail tracks. It is located 10-15 feet north of the dike around Murphy Waste Oil's storage tanks. The manhole was surrounded by fresh sand and gravel. The material was discolored blue and had small pieces of blue material intermixed with it. It is the writer's opinion that the blue material was scraps of tanned "blue sides" leather. The writer has no explanation for the placement of this fill around the manhole except that it was used to cover or absorb material spilled near the manhole-or flowing out the manhole, or that the manhole had been raised recently.

RC/lmm

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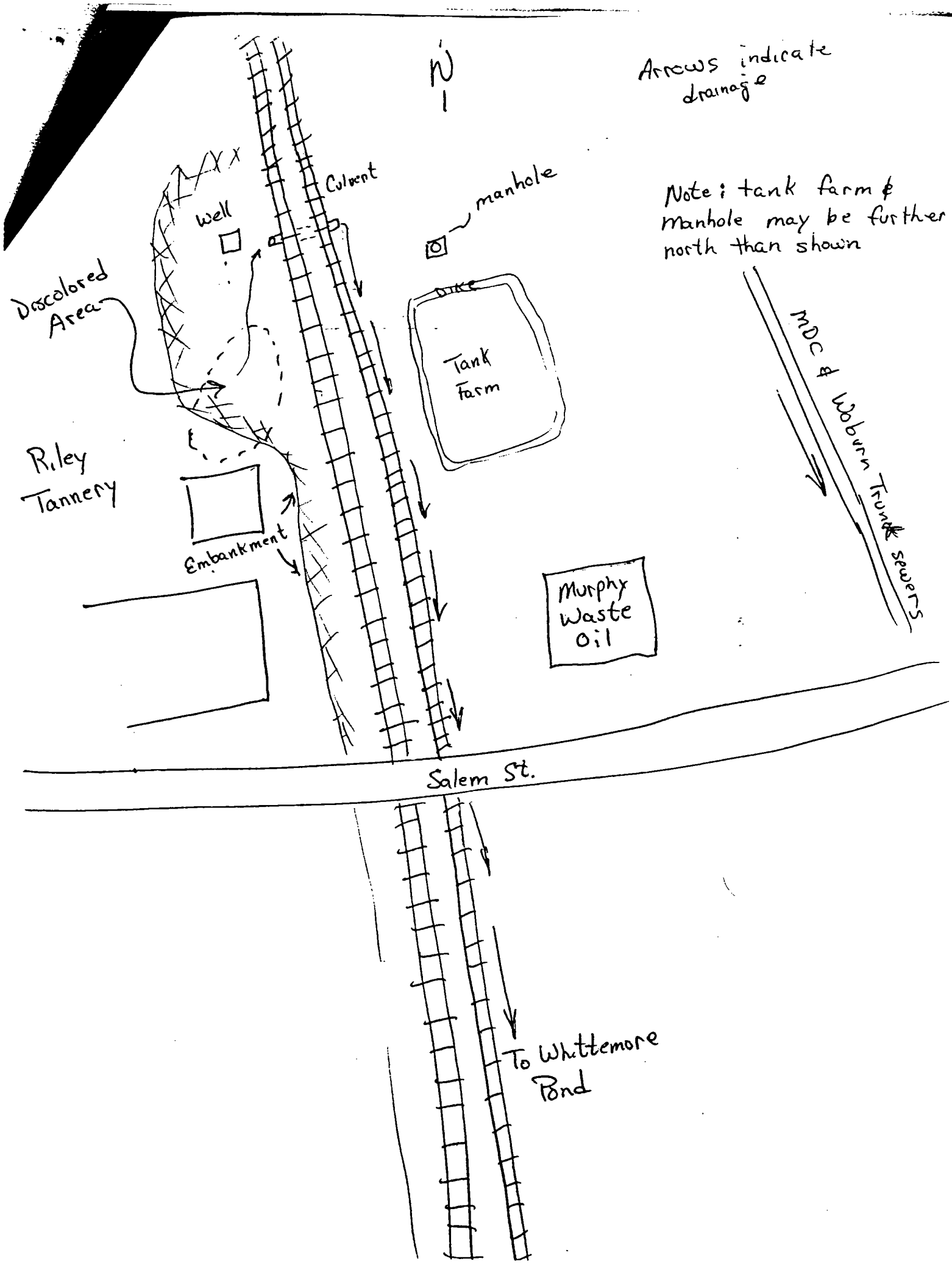
N
Arrows indicate drainage
Culvert
manhole
well
Discolored Area
Note: tank farm & manhole may be further north than shown
Tank Farm
MDC & Woburn Trunk sewers
Riley Tannery
Embankment
Murphy Waste Oil
Salem St.
To Whittemore Pond