R. Rossi

CITY OF CAMBRIDGE

57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

July 15, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: Description of the Conservation Commission's involvement with the W.R. Grace site and Russell Field

Background

The MBTA tunnel right of way runs through property owned by the Grace Company. Portions of the property have been used for disposal of process wastes resulting from the manufacture of Daxad. During the subsurface investigation phase for tunnel design, contamination was found within the proposed tunnel construction limits where wastes had been dumped in the mid 1960's and covered with soil. It was this acidic situation which had to be remedied to allow construction of the concrete subway tunnel. Grace and the MBTA split the cost of neutralizing the sludge and contaminated soil in the path of the tunnel and transport to the sanitary landfill at Kingston, MA.

The state D.E.Q.E. performed fairly extensive analysis of the remaining soil on Grace property within the tunnel construction limits as the basis for determining suitability as fill. This was because the material to be removed was otherwise desirable and not all of it was needed for tunnel backfill. Most was used as daily cover for landfill operations.

The D.E.Q.E. did require that excavated soil which had been most contiguous to the acid sludge area was to be stockpiled on site and that the stockpiled soil was to be used as backfill over the tunnel. Some napthalene is present in this soil which accounts for the odor problem but D.E.Q.E. does not consider the amount toxic or hazardous.

Consultants to the MBTA, Goldberg, Zoino Associates, defined the limits of contamination during the design period in 1978, and Grace Company employed the firm of Haley & Aldrich, Inc. to provide additional data with respect to the extent of contaminated sludges disposed of on site. The two firms were in general agreement about areas of sludge disposal. The map submitted to the Conservation Commission by the MBTA in August, 1980 which showed the areas of acid sludge, was based on the work of Goldberg, Zoino.

Conservation Commission

East of the parkway, there have been two filings with the Conservation Commission by the MBTA under the Wetlands Protection Act because of construction impacts to wetland areas located beside the parkway and adjacent to Jerry's Pond, as well as Jerry's Pond. Designated floodplain areas are also a factor.

1. File #123-19 MBTA Construction Contract 091-508A
   Notice of Intent, November 13, 1979
   Superceding Orders of Condition issued by D.E.Q.E., March 28, 1980
   Second D.E.Q.E. permit extension, April 23, 1982

This was a request to construct the tunnel segment east of the parkway and to use Russell Field for storage of backfill. The Russell Field area was to serve as the major depository of backfill material (that excavated material judged suitable) for the adjacent tunnel section as well as the other cut and cover tunnel segments. Stripped top soil from Russell Field was also to be stored there. As can be seen from the attached page of Superceding Orders from D.E.Q.E. the concern focused on management of the stockpiled materials from an erosion and sedimentation point of view. During operations the backfill storage area did extend to outside of the area designated in the Orders and it was not covered or seeded as requested (see attached highlighted note).

2. File #123-24 MBTA Acid Sludge Solidification
   Notice of Intent, August 29, 1980
   Second Extension Permit, October 5, 1982
   Amended Orders of Condition, issued July 8, 1983

The Orders of Condition issued October, 1981 for the acid sludge solidification and removal project included a requirement for

subsequent monitoring of test wells over an 18 month period in order to evaluate effectiveness of the removal operation. All but one of the 12 wells that were included in the monitoring program were destroyed during the removal of the acid sludge and construction of the tunnel, and the monitoring program was never carried out. The T did put in three new wells this spring to begin to pick up where they left off. The parameters to be tested in the original groundwater monitoring plan were limited to ph, sulfates and conductivity, which reflected the construction related concerns of the MBTA. To direct implementation of a groundwater monitoring program at this point the Commission has had prepared Amended Orders of Condition which call for new test wells and broadens the scope of parameters to be tested to include napthalene. These Amended Orders were issued July 8, 1983; a copy is attached with a map of new well locations.

The Amended Orders were worked out with representatives of the MBTA and there is no reason to believe they will not comply this time. A final filing is expected sometime this summer relative to the Red Line Extension which will cover mainly compensatory flood storage provisions.

The Commission is aware that there are concerns regarding the extent and type of possible soil and groundwater contamination at the W.R. Grace site. A fair amount of testing has already occured since 1978, by the MBTA, Grace Company and D.E.Q.E. In addition, the development firm now planning for the site apparently intends to do a complete site analysis. The Commission would be happy to participate in any overall review to be undertaken by City officials.

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

January 17, 1983

Report on site visit to subway construction site at Alewife Brook by DEQE on January 13, 1983

Present: Sterling Wall, DEQE, John Carey, MBTA, Don Kidston, MBTA, Elsie Fiore, Arlington Conservation Commission, Ted Coughlin, Cambridge DPW, Janet Burns, Cambridge Conservation Commission

A site visit was conducted by Sterling Wall of the DEQE Northeast Regional Office relative to Superceding Orders of Conditions for projects #123-19 and #123-20. Because work on these two projects is expected to continue beyond the expiration date of the Orders, the MBTA has requested extensions of the Orders.

Mr. Wall reviewed the project boundaries, elements and status of the different MBTA contracts presently under construction. Items in both Orders were discussed point by point. Issues discussed included flood storage, turbidity in Yates Pond and management of backfill storage at Russell Field. Backfill at Russell Field is expected to be removed by spring of 1983. Mr. Kidston reported that the engineering consultants of the MBTA have not yet determined the cause of turbidity in Yates Pond.

Condition 13 in #123-20 will require later review. This calls for construction of a new wetland east of the station entrance to compensate for the loss of an existing wetland adjacent to Jerry's Pond. Mr. Kidston said the final Red Line Notice of Intent will probably be filed before the effective date of the new wetland protection regulations, April 1. It was suggested to him that a design review with the Cambridge Conservation Commission would be helpful before the submission. The reconstructed wetland will not be part of the new submission.

The group walked the area around Yates Pond and Alewife Brook, and the area around Jerry's Pond and Russell Field. Mr. Wall observed turbidity in Yates Pond and thought it was due to a combination of overland flow off of the haul road and airborne material. At Russell Field Mr. Wall noted that the area of backfill was outside of the area designated in the Orders and quite close to Jerry's Pond. In view of the removal schedule of this spring, he does not recommend moving the backfill at this time. He did ask for the berm and diversion swale to be improved. Jerry's Pond appeared to be very clear and free of turbidity. MR. Wall suggested periodic checks of the site and if there was evidence of an erosion problem, to call him and he would recommend partial removal of the backfill, or placement of hay bales or fibrous material.

D.E.Q.E.'s Superceding Orders

CONDITIONS CONTINUED: PAGE 2A FILE NUMBER: 123-19

12. No material shall be stored on the westerly portion of the "Backfill Storage Area" which is designated as wetlands on Plan 11 (b) above.

13. All runoff from the Backfill Storage Area shall be directed to sediment trapping basins, which shall be maintained in good working condition. Plans for such basins shall be submitted to the Department for approval prior to construction.

14. The stored backfill material shall be protected from erosion by placement of impervious membrane cover, or by temporary loaming and seeding, and the working area of placement and removal shall be kept to as small a size as practical.

15. "Russell Field shall be restored to the ground elevation existing at the time of filing of the notice of intent not later than the completion date as established in Contract No. 091-002 between the City of Cambridge and the MBTA."

16. During excavation of the westerly 150 feet of tunnel, representative soil samples shall be taken every 50 feet along the base line at 10' increments of depth. Said samples shall be speedily analyzed for pH an $SO_4^=$; and all materials having $SO_4^= > 500$ p.p.m., (dry weight basis) or $pH < 4.0$ when 10 grams of dried soil is mixed with 100 milliliters of distilled water shall be separately stored under cover, and shall be subject to such additional testing and special handling as shall be required by the Department. Immediately upon receipt of results of the "routine" analyses required above, the Department's Northeast Regional Office shall be notified of the results by telephone.

A final Environmental Impact Report (EIR) for this project has been filed on September 15, 1977 with the Secretary of Environmental Affairs (EOEA #02082). Said EIR describes the environmental impact of this project and sets forth those measures necessary to minimize and prevent any potential significant adverse impact to the environment. Said measures are reflected in the conditions of this action. On October 24, 1977, the Secretary issued a statement that said adequately and properly complies with G.L. C.30, S. 62 to 62H, inclusive.

CITY OF CAMBRIDGE

57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

June 27, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: W.R. Grace Site

Presumably you have by now a statement from Ed Pawlowski of DEQE on the acid sludge removal story, although I understand writing assignments are not his strong suit.

The Conservation Commission is holding a Hearing Tuesday, June 28, and expects to issue Amended Orders of Condition with respect to groundwater monitoring in the tunnel area. The Hearing may be "continued" since it was recently learned that W.R. Grace has received a letter from EPQ notifying them that EPA will conduct a survey. The Commission may wait to find out more about this before proceeding with its own Amended Orders.

Also, while DEQE data and that submitted to the Conservation Commission by the T, is confined to the immediate tunnel area, the Commission has also recently learned that Hines Industries will undertake an analysis of the entire site. The consulting firm of Haley and Aldrich is preparing a proposal for Hines of a testing program reported to cost about $250,000. And, according to Todd Mansfield of Hines Industries, W.R. Grace has commited to mitigation of site conditions if test results indicate such a need.

Finally, as the backfill containing napthelene is being moved around right now odor complaints might occur.

Volume A — Top 1' of soil at grace/MBTA site.

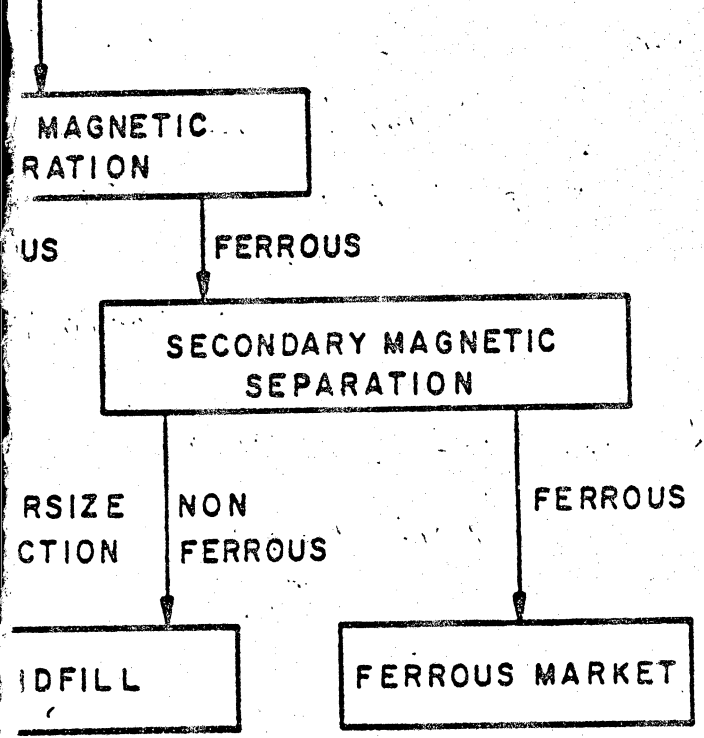
→ Used as tunnel backfill

Volume B - clean soils brought in to bring site back to original grade after sludge was dug out.

→ Removed to area sanitary landfill

Volume C - contained low ~~conc~~. concentrations of naphthalene that leached out of sludge over the years

→ used as tunnel backfill

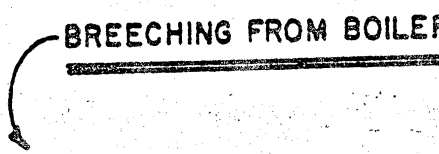


SCHEMATIC

COVERY FACILITY

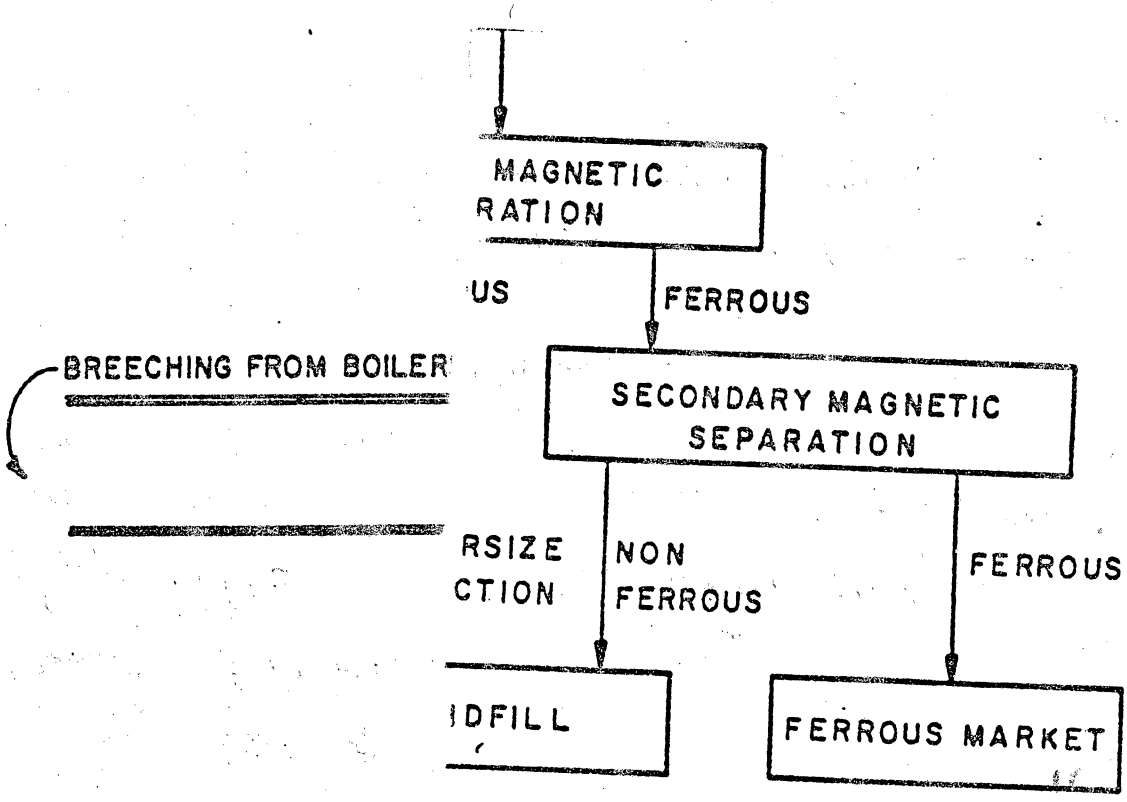
Volume D - Those soils deep enough or far enough away from sludge deposits that they were not impacted

→ Removal to area sanitary landfills



ST

AT ENERGY



ST SCHEMATIC

AT ENERGY COVERY FACILITY

Volume A — Top 1' of soil at grade / MBTA site.
→ Used as tunnel backfill

Volume B - clean soils brought in to bring site back to original grade after sludge was dug out.
→ Removed to area sanitary landfills

Volume C - contained low ~~conc~~ concentrations of naphthalene that leached out of sludge over the years
→ used as tunnel backfill

Volume D - Those soils deep enough or far enough away from sludge deposits that they were not impacted
→ Removed to area sanitary landfills

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Red Line Extension – Northwest
58 Day Street, W. Somerville, MA 02144

EP

January 8, 1982

RECEIVED
JAN 11 19[illegible]

Perini Corporation
P.O. Box 200
Cambridge, MA 02140

Attention: Mr. J. W. Bertonazzi
Project Manager

Gentlemen:

Re: MBTA Contract #091-601 -
Alewife Station/Garage/Tunnel
Excavation East of Alewife Brook Parkway

WSHA

Several meetings have been held with Mr. E. Pawlowski of DEQE regarding disposal of the excavation material from the construction site east of Alewife Brook Parkway.

The following guidelines are to be used during this excavation process. These guidelines cover the area from station 310+00 on the 091-508A contract to station 317+00 on the 091-601 contract. These areas are more generally outlined on the following plans:

Plan #54433 - Construction Staging Plan, Contract #091-508A
Plan #SK1782 Soil Profile dated December 1981.

1. Volume "A" -

Removal of 1 foot of surface material

Excavate the top one foot (1') of material within the tunnel construction limits as indicated in red on Plan #54433 and place in a stockpile area for use as backfill on the Red Line Project.

Contract #091-508A - From Sta. 310+00 to 313+23
Excavation between slurry walls

Contract #091-601 - From Sta. 313+23 to 317+00
Excavation between slurry walls and from 50' relief section outside the slurry walls both north and south side

2. Volume "B" -

   Removal of material down to elev. 104±

   The next layer of material can be excavated to approx. two feet below the top level of bracing (elev. 104±) within the slurry walls and down to elev. 108 in the relief area (50' north and south) outside the walls from sta. 313+23 to sta. 317.

   This material can be removed to any landfill area as it consists mostly of backfill material brought onto the site or of original earth outside the original sludge deposits.

3. Volume "C" -

   Removal of material below elev. 104 between sta. 314 and 317 as outlined in green on the plan of soil profile

   Excavate this material and place in a stockpile area for use as backfill on the Red Line Project.

4. Volume "D" -

   Removal of clay and stratified clays and sands below and outside of area indicated in green

   Excavate this material in accordance with Section -02200 of the contract documents.

Very truly yours,

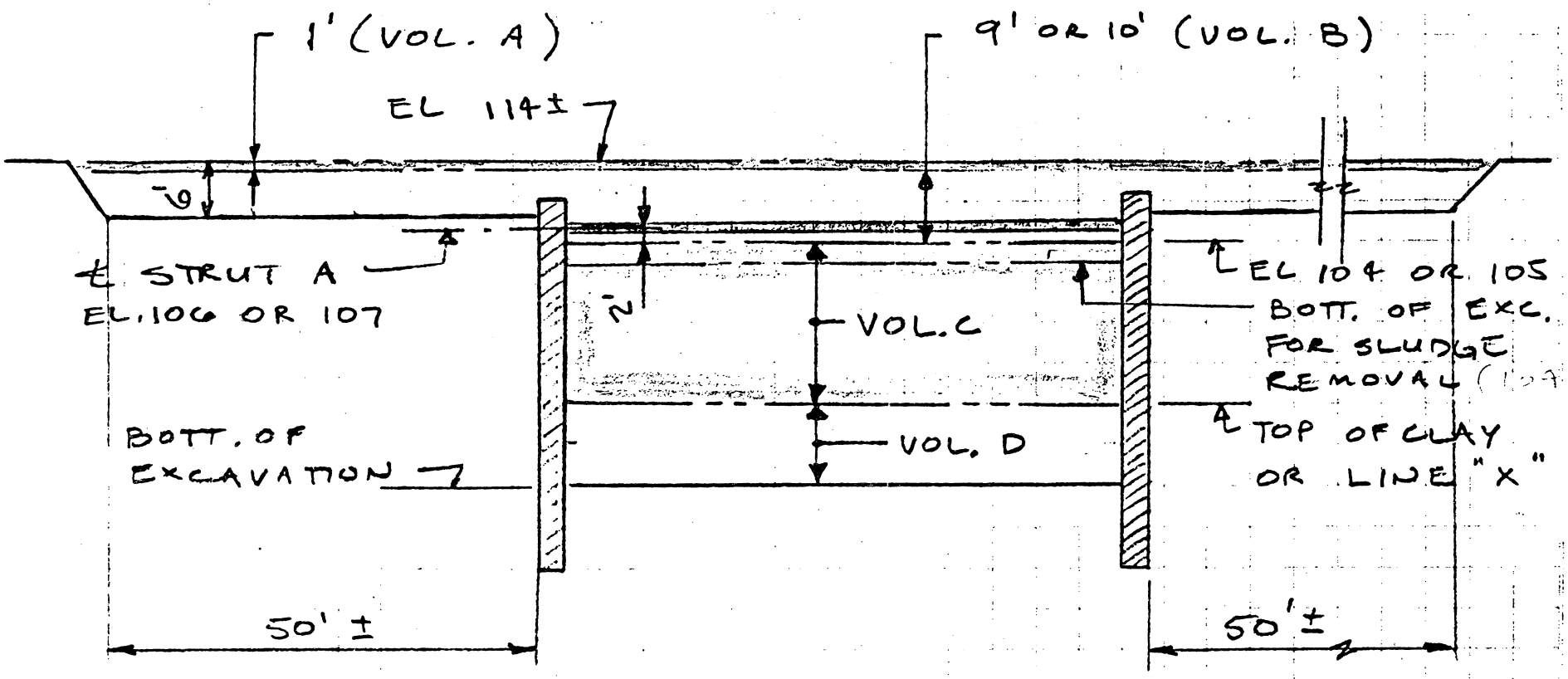
John A. Carey

John A. Carey
Project Manager - Construction

JAC/rh

Attachments

cc: [redacted] - DEQE
F. Keville
H. Haywood
J. Dyer
G. Perko, S&P
L. Moore, WFEM



601 STATION / TUNNEL CROSS SECTION

SVERDRUP & PARCEL

JOB _____

COMPUTATIONS FOR _____

SHEET NO. _____ OF _____

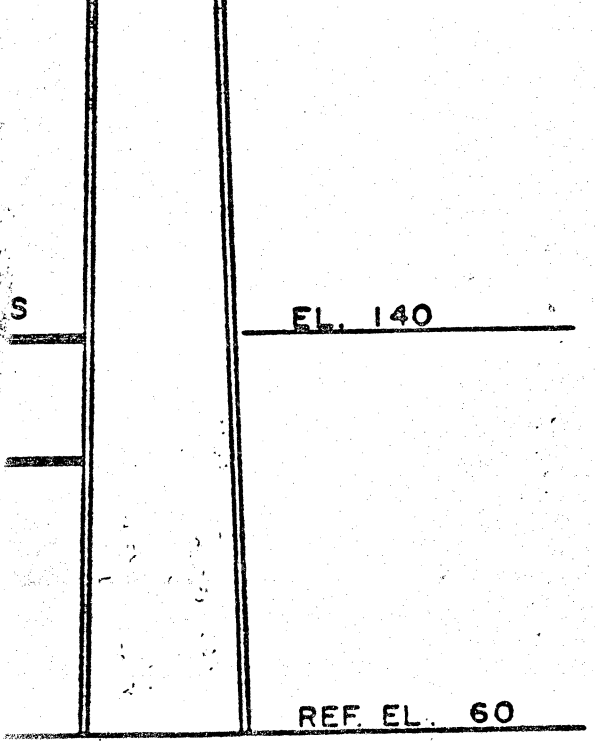
DATE _____

BY _____ CHKD _____

Disposal was never allowed or properly approved by N.H. officials.

Disposal actually took place in Kingston, MA.

Refers to sludge spread on ground over the years.



ACK PROFILE
CONVERSION FACILITY

SCALE 1"= 40'

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

50 High Street, Boston, MA 02110

Ed P file WSH

ep 4/22/81

April 14, 1981

Mr. William J. St. Hilaire
Regional Environmental Engineer
Dept. of Environmental Quality Engineering
323 New Boston Road
Woburn, Massachusetts 01801

Dear Mr. St. Hilaire:

DEQE No. 123-24
Sludge Solidification-Cambridge

In accordance with the Notice of Intent and your letter to W. R. Grace dated April 23, 1980, we advise you of the following:

- Solidification of the processed waste started on April 10, 1981.
- The solidified material is being transported to Salem, N. H., per the enclosed letter.

If you have any questions, please contact me at 617-722-3152.

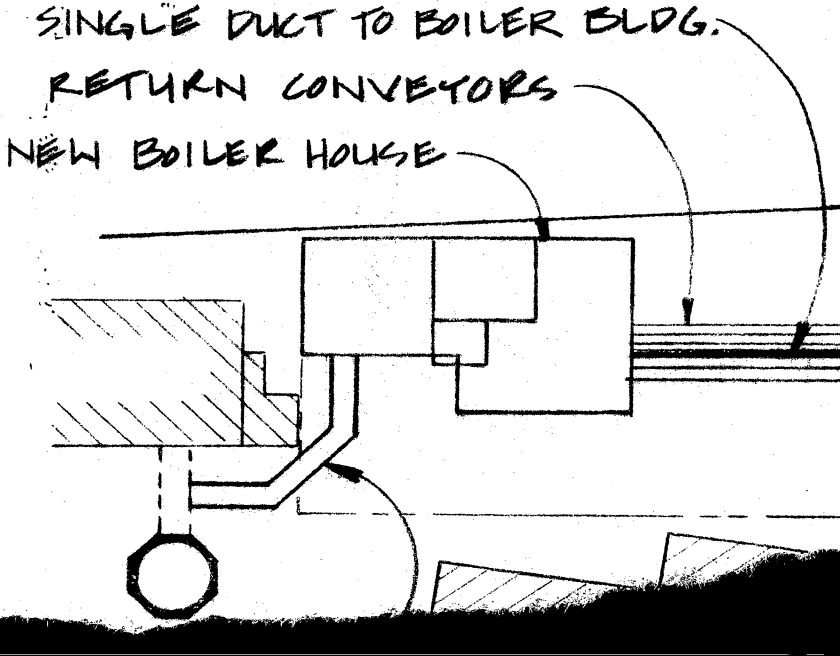
Sincerely,

Charles B. Steward
Environmental Coordinator

Enc.
CBS/ab

cc: L. Hines (W.R.Grace & Co.) (W/Enc.)
Cambridge Conservation Commission "
J. A. Carey (MBTA) "

Refers to sludge that was in the process lagoon.


SINGLE DUCT TO BOILER BLDG.
RETURN CONVETORS
NEW BOILER HOUSE

GRACE

Organic Chemicals Division

W.R. Grace & Co.
Poisson Avenue
Nashua, N.H. 03061

(603) 888-2320

Dick
Ed
WSH

November 18, 1980

cf File 11/24

Mr. William St. Hilaire
Regional Environmental Engineer
Department of Environmental
Quality Engineering
323 New Boston Street
Woburn, Mass. 01801

NOV 2 1

Subject: Cambridge Waste Lagoon

Dear Mr. St. Hilaire:

This letter will confirm my phone conversation yesterday, November 17, with Ed Pawlowski regarding solidification of the wastes accumulated in the Building #27 process lagoon. Solid Tek Inc. will begin solidifying these wastes the end of this week and expects to be completed by Thanksgiving. As I discussed with Ed, I will notify him when Solid Tek's equipment is operational, so that he can observe the solidification process.

A landfill site has not been selected at this time. We are planning to use the same site to be selected by the MBTA for the remaining process wastes.

If you have any questions on this project or need any additional information, please contact me at the above address and phone number.

Very truly yours,

Lauchlin V. Hines
Project Engineer

LVH/sd

cc: D.H. Chapman
A.R. Campbell

file copy

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

August 1, 1980

WSHA

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

Dear Mr. Steward:

On July 17, 1980, a meeting attended by representatives of the MBTA, W.R. Grace and Company, Sverdrup and Parcel, Solidtek, SCA Services, Cambridge Conservation Commission, and the Department of Environmental Quality Engineering, was held to discuss alternatives for the disposal of solidified acid sludge wastes which will be generated by the treatment of acid sludge waste now located on the property of W.R. Grace and Company, in Cambridge. Acceptable disposal practices for a particular waste are derived, in part, from the classification of that waste. This letter will serve to notify you as to how this Department is classifying the waste in question.

It is proposed to treat the Grace acid sludge by a solidification process which is designed to stabilize wastes to the point that contaminants will be bound within the resulting solid and prevented from leaching out, even under acidic conditions. Although Solidtek has tested solidified samples of the Grace waste more rigorously than required by the US EPA toxicant extraction procedure, questions remain as to the stability of the solidified waste in a landfill environment. The severe and variable conditions that exist within a landfill, i.e. little or no oxygen, variable heat and pressure, complex chemical and biochemical reactions, and the presence of metals and organics in high concentration, can not be duplicated in a laboratory test. As such, the fate of pollutants that are bound in a solidified waste can not be predicted in cases where these wastes are buried with refuse in a landfill. Based on this conclusion, the Department is classifying the solidified acid sludge as a special waste subject to 310 CMR 19.16: (1) due to the handling that will be required for the disposal of this waste. This solidified waste can be safely disposed of at a landfill facility, provided that it is not mixed with biodegradeable refuse. As such, it must be isolated in a separate area of the landfill, or on top of closed sections, and covered.

You are reminded that before any waste designated as special can be disposed of at a landfill facility, approval of the local Board of Health must be obtained in

August 1, 1980

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

conformance with the above regulation, 310 CMR 19:16 (1).

If you have any further questions, please contact Mr. William St. Hilaire, P.E., at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Eep/law

CC: Cambridge Board of Health
Cambridge Conservation Commission
W.R. Grace, Allan Campbell, Assistant Counsel
DHW

Original [illegible]
FILE COPY: Carbon Copies mailed 4/23/80

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
[illegible] New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

WSH
BKM

April 23, 1980

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, Massachusetts 02110

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

Dear Mr. Steward:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Quality Engineering has received your letter of April 7, 1980 relative to the treatment and disposal of sludge, contaminated water, and contaminated soil currently in the path of the proposed MBTA Red Line Extension on W.R. Grace & Company property in Cambridge. Should the MBTA be required to handle the above noted disposal, the following procedures are proposed:

1. Sludge will be removed, solidified in an approved manner and disposed of in an approved sanitary landfill.

2. Any water required for the solidification process will be pumped from contaminated groundwater in the area of the sludge piles. Should further dewatering be required during tunnel construction, it is proposed to adjust the pH of this water with lime and inject it back into the ground in the area of contaminated groundwater.

3. Contaminated soil (as determined by existing EPA leachability tests and classification criteria) will be mixed with clean fill until it can pass the leachability test. It is then proposed to use this material as clean fill.

The Department has recently approved solidification as a means for W.R. Grace to neutralize the sludge that currently exists in their lined lagoon. Conceptual approval was also given for the use of that method in neutralizing the sludge and filter cake process waste that has been disposed of adjacent to the lined lagoon. In view of this, the Department conceptually approves of the solidification scheme proposed by the MBTA subject to the same conditions imposed in the W.R. Grace approval, a copy

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

of which is enclosed.

Your proposal to inject neutralized water back into the ground is not a preferred alternative at this time. At the very least, this proposal would require further chemical analyses and groundwater flow data, and probably a discharge permit through the Division of Water Pollution Control. Neutralization and discharge to the MDC sewage system would not require such a discharge permit. Also, the treatment of contaminated soil by dilution, mixing with clean fill, would not result in the classification of the diluted product as a clean fill by this Department. It is the Department's understanding that further chemical analyses of the excavated soil in question is planned in any case. Discussion of further disposal alternatives for this material should be done when all pertinent test results are available. The Department would be willing to consider interim storage as a temporary solution until such time as all test results are available and a suitable disposal plan can be designed and approved.

If you have any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Ewsth/lkw

CC: Cambridge Board of Health
City Hall
Cambridge, Massachusetts 02140

Conservation Commission
City Hall
Cambridge, Massachusetts 02140

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

CC's Continued:

Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp, Dresser & McKee, Inc.
One Center Plaza
Boston, Massachusetts 02108
ATTENTION: Mr. John Splendore

Mr. William Cass, Director
D.H.M.
Room 320 - 600 Washington Street
Boston, Massachusetts 02111

Sabin Lord, Water Pollution Control

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Co.
62 Whittmore Avenue
Cambridge, Massachusetts 02140

Environmental Quality Div.
MDC
20 Somerset Street, 8th Floor
Boston, Massachusetts

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

file

April 23, 1980

WSH

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Company
62 Whittmore Avenue
Cambridge, Massachusetts 02140

RE: CAMBRIDGE-Solid Wastes
W.R. Grace, Proposed Disposal
of On-Site Process Waste

Dear Mr. Campbell,

The Metropolitan Boston-Northeast Regional Office of the Department of Environmental Quality Engineering has reviewed disposal alternatives for the sludge and filter cake process wastes that have been disposed of on-site at the W.R. Grace manufacturing facility in Cambridge. One alternative addresses solidification of the wastes which are presently contained in the existing process lagoon and, the other, a preliminary proposal for on-site encapsulationfor the remaining wastes. Regarding the 1st alternative, the effectiveness of solidification in preventing the formation of toxic leachate was demonstrated by Solid Tek-Solidification Technology Systems, Inc., of Morrow, Georgia. The sludge was solidified and leachate from the product,prepared according to procedures presented in the December 28, 1978 Federal Register, was analyzed for toxic parameters by Recra Research, Inc. of Tonawanda, New York. The results received by this office on January 30, 1980, indicate that all parameters identified as toxic are not present in amounts above the limits currently proposed by the Environmental Protection Agency. These limits are set at ten times the interim primary drinking water standards. Based on these results, it is concluded that solidification of the sludge followed by burial in a sanitary landfill is a viable disposal method that would have no adverse environmental impacts.

The Department is of the opinion that the proposed solidification process is in conformance with modern sanitary engineering standards and hereby approves of this proposal subject to the following conditions.

1. The Department be notified when the solidification process begins.

2. Disposal of the product solid waste be at an approved sanitary landfill site.

3. The name and location of the landfill be provided to the Department prior to the commencement of the proposed work.

4. Quality Control of the solidification and disposal process be

provided again prior to the commencement of work.

The Department may require specific testing to assure such quality control.

The other alternative involves sludge from the lined lagoon and filter cake from the manufacturing process that has been disposed of on the ground in two separate areas adjacent to the sludge lagoon. In one of the areas, the waste is in direct contact with groundwater, which has lead to degradation of groundwater quality in the area. It is through this area that the MBTA proposes to dig a tunnel for the extension of its Red Line. The Department has required that the sources of contamination be removed or contained. Proper disposal could be accomplished by utilizing any of the following methods.

1. All waste could be removed from the site and disposed of out of state at an approved hazardous waste disposal facility. This removal would have to be conducted by a firm that is licensed to transport hazardous waste.

2. All waste could be solidified in the manner approved for the sludge in the lined lagoon. The solidified waste could then be disposed of at an approved sanitary landfill.

3. The waste could be encapsulated on-site. Such on-site disposal would have to meet all provisions of Section 150 A of Chapter 111 of the General Laws, the "Regulations for the Disposal of Solid Waste by Sanitary Landfill", and the Wetlands Protection Act, General Laws Chapter 131, Section 40.

On March 13, 1980, a meeting was held between officials of W.R. Grace and engineers from this Department to discuss the proposed waste encapsulation alternative as a means of disposal. A preliminary plan was submitted indicating the proposed location and method of on-site disposal. The Department understands that the plan is preliminary, and offers these comments for your consideration:

1. A clear site preparation plan must be submitted showing (a) 1½ foot clay liner topped by 1 foot of sand or gravel to ensure liner intergrity during construction and operation, (b) 1½ foot thick clay final cover over the waste, (c) enough top soil over the clay cover that will support vegetation, (d) side slopes no steeper than 3 to 1, (e) a minimum of 4 feet vertical between the base of waste and seasonal high groundwater elevation, and (f) protection against inundation by the 100 year flood.

2. Volume calculations for loss of 100 year flood storage capacity and possible compensatory storage alternatives must be

included as part of the entire proposal, and submitted to the Conservation Commission as a Notice of Intent.

3. Specifications for soils to be used as liner material and final cover must be provided.

4. Due to the high organic content of the waste, adequate provisions must be made for the venting of gas.

5. A detailed schedule of operations must be submitted as part of the engineering plan.

6. An "assignment"pursuant to M.G.L. S. 150 A of C. 111 is not required for this clean up operation, and

7. On-Site encapsulation may require the filing of an Environmental Notification Form with the MEPA unit of the Executive Office of Environmental Affairs.

Also, please be advised that the above preliminary disposal site lies within 60 ft. of Jerry's Pond in violation of Regulation 11.5 of 310 CMR 19.00, the Regulations for the Disposal of Solid Wastes by Sanitary Landfill.

If there are any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

by Bruce K. MacAllister

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston-Northeast Region

TFM/Eejp/jb

CC: Cambridge Board of Health
City Hall
Cambridge, MA

Cambridge Conservation Commissione
City Hall
Cambridge, MA

CC: Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp Dresser & McKee, Inc.
One Center Plaza
Boston, MA 02108

Attention: Mr. John Splendore

Mr. William Cass, Director
DHW
Room 320
600 Washington St.
Boston, MA

Charles B. Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

Sabin Lord, W.P.C.

Mr. Sam Mygatt, Director
MEPA Unit, EOEA
20th Floor
100 Cambridge Street
Boston, MA

GHR
ENGINEERING CORPORATION

RECEIVED
OCT 1 Recd

CL-8991

September 28, 1981
Job #2458

Mass. Department of Environmental
Quality Engineering
Southeast Region
Lakeville Hospital
Lakeville, MA 02346

Attention: Mr. Robert Fagan, Chief Land Use Section

Gentlemen:

This is to confirm our conversation of today concerning the disposal of the W.R. Grace solidified acid-sludge within the Kingston Sanitary Landfill. It was agreed that the sludge could be placed in a 2- to 3-foot layer and that this material would be placed on a clay base and capped with a 12-inch layer of clay (permeability 10^{-7} or 10^{-8} cm/sec.).

If you have any questions concerning this confirmation, please feel free to contact me.

Very truly yours,

GHR ENGINEERING CORPORATION

Phillip H. Spath, P.E.
Manager, Kingston Office

PHS:mc

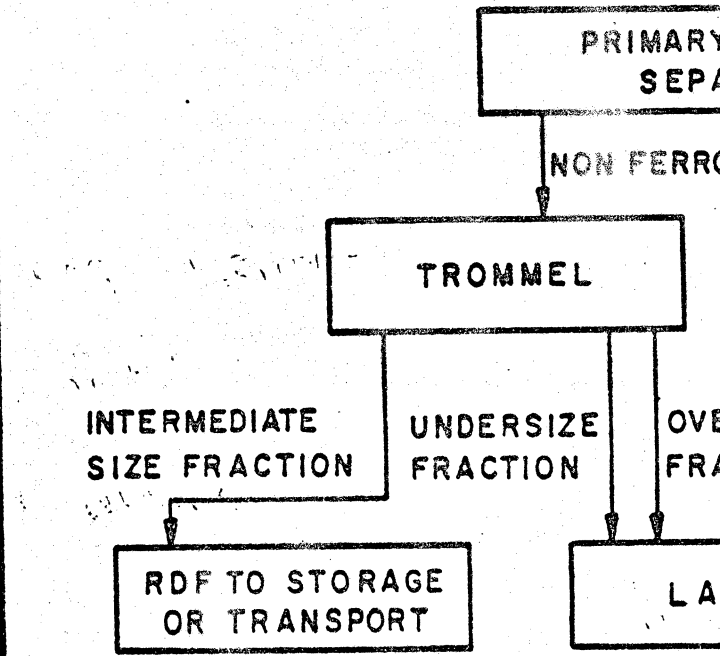
cc: Kingston Board of Health
Dept. of the Attorney General, Maxine Lipellis
Board of Selectmen, Town of Kingston
William St. Hilaire, DEQE, Northeast Region
Robert Donovan, Hazardous Waste Coordinator
Governors Office, Kevin Donovan
Thomas F. McLoughlin

GHR
CIVIL ENGINEERS
LAND SURVEYORS
ENVIRONMENTAL CONSULTANTS

75 TARKILN HILL ROAD NEW BEDFORD, MASSACHUSETTS 02745 617-995-5136

Refers to soils currently stockpiled on Grace property next to former Russell Field.

Comprised of Volume A and Volume C soils.



PROCESS

RESOURCE RE

File

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

The Commonwealth of Massachusetts

Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

June 22, 1983

Mr. Paul Murphy, Director
Health Department
City Hall
Somerville, Massachusetts 02143

Re: Somerville, MBTA Fill Project at Davis Square

Dear Mr. Murphy:

This office has received your correspondence dated June 6, 1983 in which you ask for an assessment of the quality of soil being used to backfill part of the MBTA's Redline Extension near Davis Square in Somerville. This site was inspected by an engineer from this office on June 1, 1983. The inspection was made at the request of a resident of Somerville who's property abuts the tunnel at the area in question. Enclosed, please find a copy of a memorandum which describes the aforementioned inspection and conclusions drawn.

As stated in this memorandum, it is the Department's position that this soil will not pose a health threat or nuisance to residents of the area once work is completed. While the soil from Russell Field in Cambridge is being transported to and spread out over the tunnel there may be some odor noticeable. Observations made at the site indicate that this odor is faint, and only noticeable when one is very close to the backfilling operation. Experience has shown that minimal amounts of clean cover will prevent any further release of odor. With an average of six feet of gravel proposed for the final layer of cover over the tunnel, future release of nuisance odor to the atmosphere will be eliminated.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours,

EP RJC

Richard J. Chalpin, Deputy
Regional Environmental Engineer

RJC/Eep/rm
cc: DEQE, Division of Hazardous Waste, One Winter St., 8th Floor, Boston
Mr. John A. Carey, Redline Extension N.W., 58 Day Street, W. Somerville, MA
Mrs. Joyce Kelly, 37 Kingston Street, Somerville, MA 02144
Mr. Tom Pelham, Director of Community Development, City Hall, 93 Highland Ave., Somerville, MA

File.

Memorandum for the Record

By: Edward Pawlowski EP

Date: June 14, 1983

Subject: Somerville, MBTA Fill Project at Davis Square

On Wednesday, June 1, 1983, the writer inspected the MBTA's Redline Extension tunnel construction project near Davis Square in Somerville. The inspection was made in response to a complaint received from Joyce Kelly, 37 Kingston St., Somerville, on May 31, 1983. Mrs. Kelly complained of "sewer-like" odor emanating from soil being used by the MBTA to back fill a portion of the new Redline tunnel near her house and Davis Square.

The writer met with John Carey, MBTA, and discussed the odor problems with him. Mr. Carey stated that the filling operation near Davis Square had commenced on the previous day, May 31, with the fill originating from a stockpile adjacent to Russel Field in Cambridge. The stockpiled fill had originally been excavated during tunnel construction adjacent to WR Grace and Company. The fill, predominantly clay, was mixed with sandy soil to improve its handling characterstics and stockpiled for future use as tunnel backfill. This process was performed with the approval of DEQE. The MBTA attempted to use this soil as backfill over the new tunnel in the vicinity of WR Grace this past spring. The wet spring weather, however, rendered the clayey soil viturally unworkable and other soils had to be used. With dryer (relatively) weather in May, the clayey stockpile became workable and was scheduled to be used as backfill in the vicinity of Davis Square. This is the activity that commenced on May 31.

The area of active backfilling near Davis Square was inspected by the writer and Mr. Carey. The writer carried an H-NU photoionization analyzer which is a portable instrument used in the field to detect the presence of organic chemicals in air. The instrument was first used on a walkway that crosses the tunnel at a point just down-wind of the active backfill area. The instrument reading was at background levels at this location. A very faint odor of naphthalene was noticeable on occasion. Naphthalene odor is discernable to most people at concentrations as low as 1 part per billion in air. The H-NU will not register the presence of chemicals in air until the chemical concentration exceeds roughly 200 parts per billion. As such, the presence of naphthalene in air can be detected by an observer long before it will be detected by the H-NU. The current standard for naphthalene in air in the workplace is 10,000 parts per billion (10 parts per million). This standard, known as the Threshold Limit Value, is the average concentration of naphthalene allowable in the workplace for persons working eight hours a day, five days a week, for their working lifetime.

The writer next went down into the area being backfilled and walked along side freshly deposited clay and sand fill with the H-NU operating. Again, the H-NU read at background levels while a faint naphthalene odor was detectable on occasion. At numerous locations, the soil was examined directly by breaking up pieces of clay to expose previously unexposed soil surfaces to the air. An exact tabulation of results was not made in the field. At the time, however, it was the writers opinion that soil samples exhibiting no odor roughly equalled in number those that exhibited a slight naphthalene odor. No soil samples exhibited a strong odor of naphthalene.

After inspecting the tunnel, the writer called at Mrs. Kelly's house to inform her that the inspection had been made. There was nobody home at the time so a note was left for her to contact the writer by telephone. The writer spoke to Mrs. Kelly and her husband at length on June 2, 1983, explaining the results of the inspection.

The soil stockpile next to Russell Field was examined by the writer on June 1 to verify that this was the source of soil being used to backfill the tunnel near Davis Square. The writer found a shovel-dozer in operation, loading trucks that then went directly to the tunnel location in question. No naphthalene odor was evident adjacent to, or on top of this stockpile. The writer was not able to get closer than 100 feet away from the working face due to muddy conditions and danger of collapse of steep slopes which resulted from digging into the side of the stockpile.

The naphthalene odor noticeable in some of the soil being used as tunnel backfill is due to low concentrations of that chemical that have been found in soils adjacent to the WR Grace Company in Cambrige. The concentrations are not considered hazardous. Readings on portable test equipment indicate that, even in close proximity to the soil, concentrations of naphthalene in air are far below the Threshold Limit Value for naphthalene in air in the workplace. The odor itself while not hazardous can be a nuisance to persons subjected to it in their homes or public areas. As such, the backfill project utilizing this soil should be completed as soon as possible. According to Mr. Carey, the MBTA plans to use approximately 6 feet of clean fill to complete the tunnel backfilling job. This clean gravel will be used to allow for the planting of vegetation, trees, etc. (clayey soil, such as that coming from Russell Field, is not suitable for planting). Experience at the Cambridge construction site has shown that as little as 6 inches of clean cover placed over naphthalene containing soil is enough to completely eliminate any odor of naphthalene in the air. As such, it is the writers opinion that once this project is complete, any odor associated with the Russell Field soil will be completely contained by the blanket of gravel fill to be placed over it and will not constitute a hazard or a nuisance to area residents or the environment.

EP/rm

Refers to soils that did not exhibit any contamination and were allowed to be taken to area land fills.

(Volume D soils)

SH

STEAM

FILL

CHEMATIC

IG AND BOILER PLANT

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

File
11/5/82

November 1, 1982

Mr. Ralph Spade
R & R Trucking
Bates Road
So. Merrimack, NH 03054

RE: CAMBRIDGE, MBTA
Redline Extension,
Approved Use of Clay
Fill

Dear Mr. Spade:

This Office has received your correspondence dated October 23, 1982 in which you request that the Department provide you with an opinion as to acceptable uses for clay and sandy clay being excavated from the MBTA Redline Extension tunnel construction project in Cambridge

The Department has been closely involved with this project since early 1979 due to a soil contamination problem detected during preliminary engineering studies of soils in the right-of-way of the proposed tunnel immediately to the east of Alewife Brook Parkway. During the past four years, contaminated soils were identified and removed from the site to an approved disposal facility. Contiguous soils were analyzed extensively to determine the extent and degree of any contamination that may have migrated from contaminated soils. Only low levels of contamination were observed in the contiguous soils; any soil exhibiting such low levels of contamination were excavated and stockpiled on site for future use as backfill on top of the completed tunnel.

Soils to the west of Alewife Brook Parkway (Alewife Station and garage) and those generally deeper than twenty feet below original grade to the east of Alewife Brook Parkway have been found to be free of unusual levels of chemical contamination. These soils, predominantly clay and sandy clay, have been hauled during the past few years to sanitary landfills for use as daily cover. This operation has been done with the knowledge and approval of the Department. These soils are not hazardous in nature and provide good quality [redacted] cover for sanitary landfill operations.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours

William J. St. Hilaire

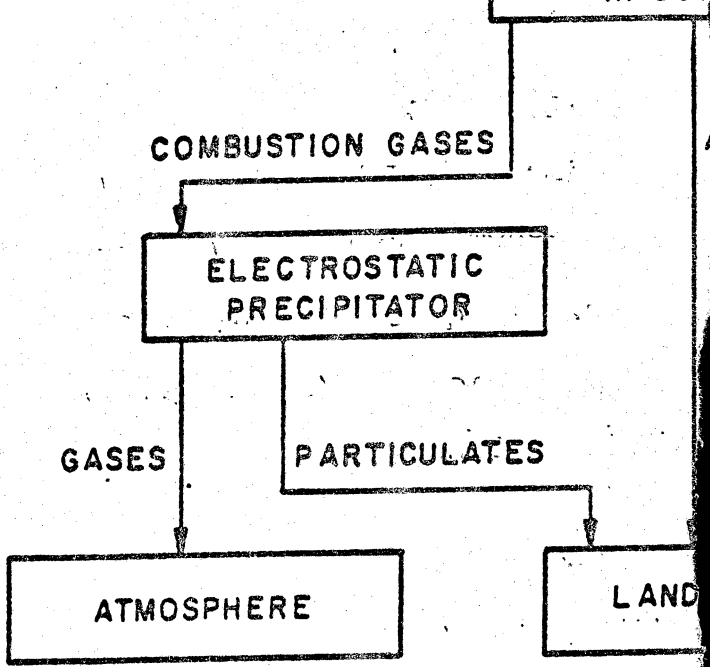
EP
EHM

William J. St. Hilaire, P.E.
Regional Environmental Engineer

WJSH/EP/lmm
cc: DEQE, DHW, One Winter Street-8th Floor, Boston, Mass. 02108
John Powers, MBTA, 58 Day Street, Somerville, Mass. 02144

Volume C was soil found to contain low concentrations of naphthalene. It was excavated + stockpiled for use as tunnel backfill.

The term "special waste" was used by the MBTA engineer. It was NOT classified as such by DEQE.



PROCESS S

RDF RECEIVING BUILDI

Report on Solidified Sludge & Special Waste - 4/20/82

Contracts 091.601 - 091.508A

1 - Solidified Sludge - Hauled to Kingston, MA

As of 4/16/82 approximately 19,525 cubic yards have been hauled to Kingston. If hauling continues this week the estimated 2,000 yards remaining should be completed.

2 - Special Waste Being Stockpiled at Russell Field

As of 4/16/82 all of the material designated by S&P Plan SK-1782 Volume C has been excavated and hauled to Russell Field. Volume B has been removed off site by the contractor to landfills in Peabody and Tewksbury, MA Volume A has been removed and stockpiled at Russell Field.

Howard M. Haywood
James J. Dyer
Resident Engineers

CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 498-9011

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

August 8, 1983

To the Honorable, the City Council:

Enclosed please find a copy of a variety of reports from both the Conservation Commission and the Commonwealth of Massachusetts Department of Environmental Quality Engineering relating to the removal of both acid sludge and additional soil from the W. R. Grace site.

Essentially all D.E.Q.E. requirements were complied with. The acid sludge was treated, solidified and removed to an approved sanitary landfill outside the City.

The remaining soil, which did contain napthalene in amounts not considered harmful by D.E.Q.E. was approved for use as backfill by D.E.Q.E.

Very truly yours,

Robert W. Healy
City Manager

RWH/b

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

July 15, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: Description of the Conservation Commission's involvement with the W.R. Grace site and Russell Field

Background

The MBTA tunnel right of way runs through property owned by the Grace Company. Portions of the property have been used for disposal of process wastes resulting from the manufacture of Daxad. During the subsurface investigation phase for tunnel design, contamination was found within the proposed tunnel construction limits where wastes had been dumped in the mid 1960's and covered with soil. It was this acidic situation which had to be remedied to allow construction of the concrete subway tunnel. Grace and the MBTA split the cost of neutralizing the sludge and contaminated soil in the path of the tunnel and transport to the sanitary landfill at Kingston, MA.

The state D.E.Q.E. performed fairly extensive analysis of the remaining soil on Grace property within the tunnel construction limits as the basis for determining suitability as fill. This was because the material to be removed was otherwise desirable and not all of it was needed for tunnel backfill. Most was used as daily cover for landfill operations.

The D.E.Q.E. did require that excavated soil which had been most contiguous to the acid sludge area was to be stockpiled on site and that the stockpiled soil was to be used as backfill over the tunnel. Some napthalene is present in this soil which accounts for the odor problem but D.E.Q.E. does not consider the amount toxic or hazardous.

Consultants to the MBTA, Goldberg, Zoino Associates, defined the limits of contamination during the design period in 1978, and Grace Company employed the firm of Haley & Aldrich, Inc. to provide additional data with respect to the extent of contaminated sludges disposed of on site. The two firms were in general agreement about areas of sludge disposal. The map submitted to the Conservation Commission by the MBTA in August, 1980 which showed the areas of acid sludge, was based on the work of Goldberg, Zoino.

Conservation Commission

East of the parkway, there have been two filings with the Conservation Commission by the MBTA under the Wetlands Protection Act because of construction impacts to wetland areas located beside the parkway and adjacent to Jerry's Pond, as well as Jerry's Pond. Designated floodplain areas are also a factor.

1. File #123-19 MBTA Construction Contract 091-508A
   Notice of Intent, November 13, 1979
   Superceding Orders of Condition issued by D.E.Q.E., March 28, 1980
   Second D.E.Q.E. permit extension, April 23, 1982

This was a request to construct the tunnel segment east of the parkway and to use Russell Field for storage of backfill. The Russell Field area was to serve as the major depository of backfill material (that excavated material judged suitable) for the adjacent tunnel section as well as the other cut and cover tunnel segments. Stripped top soil from Russell Field was also to be stored there. As can be seen from the attached page of Superceding Orders from D.E.Q.E. the concern focused on management of the stockpiled materials from an erosion and sedimentation point of view. During operations the backfill storage area did extend to outside of the area designated in the Orders and it was not covered or seeded as requested (see attached highlighted note).

2. File #123-24 MBTA Acid Sludge Solidification
   Notice of Intent, August 29, 1980
   Second Extension Permit, October 5, 1982
   Amended Orders of Condition, issued July 8, 1983

The Orders of Condition issued October, 1981 for the acid sludge solidification and removal project included a requirement for

subsequent monitoring of test wells over an 18 month period in order to evaluate effectiveness of the removal operation. All but one of the 12 wells that were included in the monitoring program were destroyed during the removal of the acid sludge and construction of the tunnel, and the monitoring program was never carried out. The T did put in three new wells this spring to begin to pick up where they left off. The parameters to be tested in the original groundwater monitoring plan were limited to ph, sulfates and conductivity, which reflected the construction related concerns of the MBTA. To direct implementation of a groundwater monitoring program at this point the Commission has had prepared Amended Orders of Condition which call for new test wells and broadens the scope of parameters to be tested to include napthalene. These Amended Orders were issued July 8, 1983; a copy is attached with a map of new well locations.

The Amended Orders were worked out with representatives of the MBTA and there is no reason to believe they will not comply this time. A final filing is expected sometime this summer relative to the Red Line Extension which will cover mainly compensatory flood storage provisions.

The Commission is aware that there are concerns regarding the extent and type of possible soil and groundwater contamination at the W.R. Grace site. A fair amount of testing has already occured since 1978, by the MBTA, Grace Company and D.E.Q.E. In addition, the development firm now planning for the site apparently intends to do a complete site analysis. The Commission would be happy to participate in any overall review to be undertaken by City officials.

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

January 17, 1983

Report on site visit to subway construction site at Alewife Brook by DEQE on January 13, 1983

Present: Sterling Wall, DEQE, John Carey, MBTA, Don Kidston, MBTA, Elsie Fiore, Arlington Conservation Commission, Ted Coughlin, Cambridge DPW, Janet Burns, Cambridge Conservation Commission

A site visit was conducted by Sterling Wall of the DEQE Northeast Regional Office relative to Superceding Orders of Conditions for projects #123-19 and #123-20. Because work on these two projects is expected to continue beyond the expiration date of the Orders, the MBTA has requested extensions of the Orders.

Mr. Wall reviewed the project boundaries, elements and status of the different MBTA contracts presently under construction. Items in both Orders were discussed point by point. Issues discussed included flood storage, turbidity in Yates Pond and management of backfill storage at Russell Field. Backfill at Russell Field is expected to be removed by spring of 1983. Mr. Kidston reported that the engineering consultants of the MBTA have not yet determined the cause of turbidity in Yates Pond.

Condition 13 in #123-20 will require later review. This calls for construction of a new wetland east of the station entrance to compensate for the loss of an existing wetland adjacent to Jerry's Pond. Mr. Kidston said the final Red Line Notice of Intent will probably be filed before the effective date of the new wetland protection regulations, April 1. It was suggested to him that a design review with the Cambridge Conservation Commission would be helpful before the submission. The reconstructed wetland will not be part of the new submission.

The group walked the area around Yates Pond and Alewife Brook, and the area around Jerry's Pond and Russell Field. Mr. Wall observed turbidity in Yates Pond and thought it was due to a combination of overland flow off of the haul road and airborne material. At Russell Field Mr. Wall noted that the area of backfill was outside of the area designated in the Orders and quite close to Jerry's Pond. In view of the removal schedule of this spring, he does not recommend moving the backfill at this time. He did ask for the berm and diversion swale to be improved. Jerry's Pond appeared to be very clear and free of turbidity. MR. Wall suggested periodic checks of the site and if there was evidence of an erosion problem, to call him and he would recommend partial removal of the backfill, or placement of hay bales or fibrous material.

D.E.Q.E.'s Superceding Orders

12. No material shall be stored on the westerly portion of the "Backfill Storage Area" which is designated as wetlands on Plan 11 (b) above.

13. All runoff from the Backfill Storage Area shall be directed to sediment trapping basins, which shall be maintained in good working condition. Plans for such basins shall be submitted to the Department for approval prior to construction.

14. The stored backfill material shall be protected from erosion by placement of impervious membrane cover, or by temporary loaming and seeding, and the working area of placement and removal shall be kept to as small a size as practical.

15. "Russell Field shall be restored to the ground elevation existing at the time of filing of the notice of intent not later than the completion date as established in Contract No. 091-002 between the City of Cambridge and the MBTA."

16. During excavation of the westerly 150 feet of tunnel, representative soil samples shall be taken every 50 feet along the base line at 10' increments of depth. Said samples shall be speedily analyzed for pH an $SO_4^=$; and all materials having $SO_4^= > 500$ p.p.m., (dry weight basis) or $pH < 4.0$ when 10 grams of dried soil is mixed with 100 milliliters of distilled water shall be separately stored under cover, and shall be subject to such additional testing and special handling as shall be required by the Department. Immediately upon receipt of results of the "routine" analyses required above, the Department's Northeast Regional Office shall be notified of the results by telephone.

A final Environmental Impact Report (EIR) for this project has been filed on September 15, 1977 with the Secretary of Environmental Affairs (EOEA #02082). Said EIR describes the environmental impact of this project and sets forth those measures necessary to minimize and prevent any potential significant adverse impact to the environment. Said measures are reflected in the conditions of this action. On October 24, 1977, the Secretary issued a statement that said adequately and properly complies with G.L. C.30, S. 62 to 62H, inclusive.

CITY OF CAMBRIDGE

57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

June 27, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: W.R. Grace Site

Presumably you have by now a statement from Ed Pawlowski of DEQE on the acid sludge removal story, although I understand writing assignments are not his strong suit.

The Conservation Commission is holding a Hearing Tuesday, June 28, and expects to issue Amended Orders of Condition with respect to groundwater monitoring in the tunnel area. The Hearing may be "continued" since it was recently learned that W.R. Grace has received a letter from EPQ notifying them that EPA will conduct a survey. The Commission may wait to find out more about this before proceeding with its own Amended Orders.

Also, while DEQE data and that submitted to the Conservation Commission by the T, is confined to the immediate tunnel area, the Commission has also recently learned that Hines Industries will undertake an analysis of the entire site. The consulting firm of Haley and Aldrich is preparing a proposal for Hines of a testing program reported to cost about $250,000. And, according to Todd Mansfield of Hines Industries, W.R. Grace has commited to mitigation of site conditions if test results indicate such a need.

Finally, as the backfill containing napthelene is being moved around right now odor complaints might occur.

Volume A – Top 1' of soil at Grace/MBTA site.
→ Used as tunnel backfill

Volume B - clean soils brought in to bring site back to original grade after sludge was dug out
→ Removed to area sanitary landfill

Volume C - contained low ~~conc.~~ concentrations of naphthalene that leached out of sludge over the years
→ used as tunnel backfill

Volume D - Those #soi
deep enough or far
enough away from
sludge depos.ts that they
were not impacted
→ Removal to area
Sanitary landfills

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

Red Line Extension – Northwest
58 Day Street, W. Somerville, MA 02144

January 8, 1982

RECEIVED
JAN 11 19

Perini Corporation
P.O. Box 200
Cambridge, MA 02140

Attention: Mr. J. W. Bertonazzi
Project Manager

Gentlemen:

Re: MBTA Contract #091-601 -
Alewife Station/Garage/Tunnel
Excavation East of Alewife Brook Parkway

Several meetings have been held with Mr. E. Pawlowski of DEQE regarding disposal of the excavation material from the construction site east of Alewife Brook Parkway.

The following guidelines are to be used during this excavation process. These guidelines cover the area from station 310+00 on the 091-508A contract to station 317+00 on the 091-601 contract. These areas are more generally outlined on the following plans:

Plan #54433 - Construction Staging Plan, Contract #091-508A
Plan #SK1782 Soil Profile dated December 1981.

1. Volume "A" -

Removal of 1 foot of surface material

Excavate the top one foot (1') of material within the tunnel construction limits as indicated in red on Plan #54433 and place in a stockpile area for use as backfill on the Red Line Project.

Contract #091-508A - From Sta. 310+00 to 313+23
Excavation between slurry walls

Contract #091-601 - From Sta. 313+23 to 317+00
Excavation between slurry walls and from 50' relief section outside the slurry walls both north and south side

2. Volume "B" -

Removal of material down to elev. 104±

The next layer of material can be excavated to approx. two feet below the top level of bracing (elev. 104±) within the slurry walls and down to elev. 108 in the relief area (50' north and south) outside the walls from sta. 313+23 to sta. 317.

This material can be removed to any landfill area as it consists mostly of backfill material brought onto the site or of original earth outside the original sludge deposits.

3. Volume "C" -

Removal of material below elev. 104 between sta. 314 and 317 as outlined in green on the plan of soil profile

Excavate this material and place in a stockpile area for use as backfill on the Red Line Project.

4. Volume "D" -

Removal of clay and stratified clays and sands below and outside of area indicated in green

Excavate this material in accordance with Section -02200 of the contract documents.

Very truly yours,

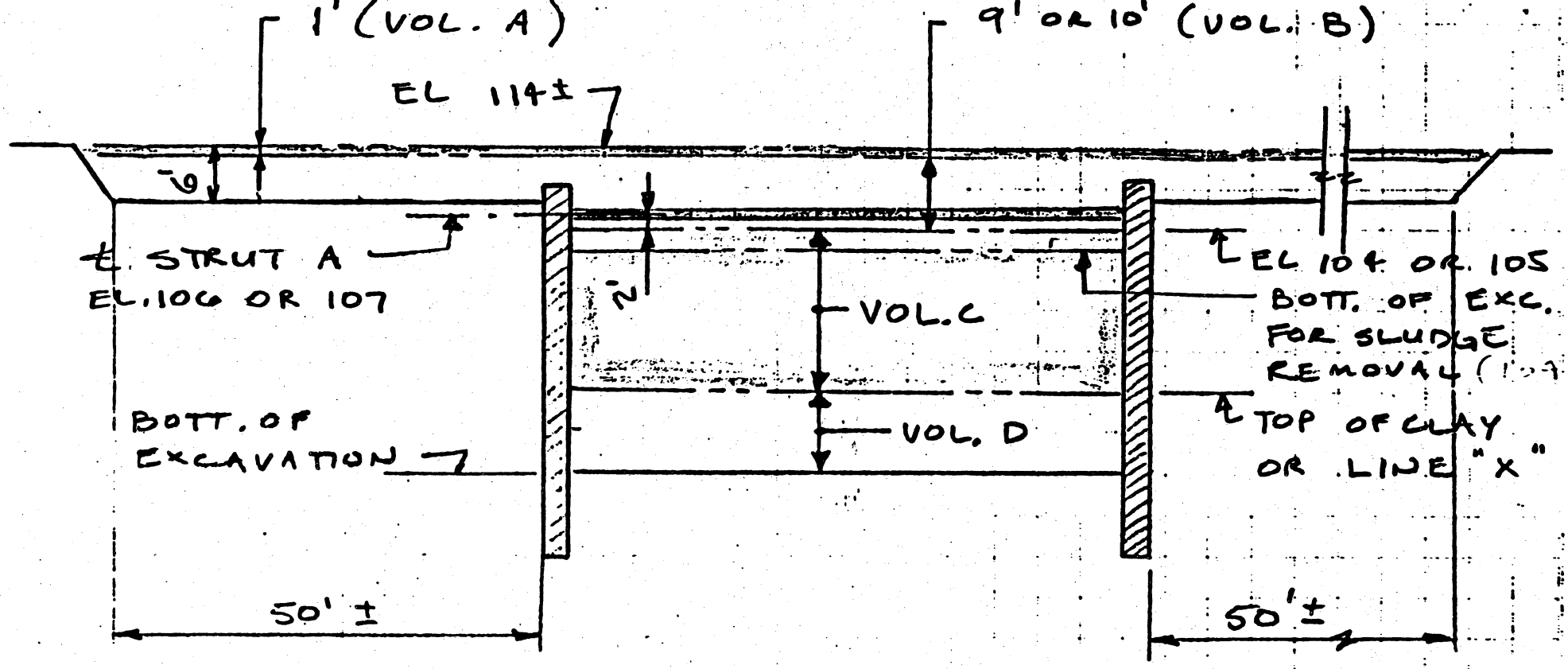
John A. Carey

John A. Carey
Project Manager - Construction

JAC/rh

Attachments

cc: [redacted] - DEQE
F. Keville
H. Haywood
J. Dyer
G. Perko, S&P
L. Moore, WFEM



60' STATION / TUNNEL CROSS SECTION

SVERDRUP & PARCEL

JOB _____ SHEET NO. _____ OF _____

COMPUTATIONS FOR _____ DATE _____

BY _____ CHKD _____

Disposal was never allowed or properly approved by N.H. officials.

Disposal actually took place in Kingston, MA.

Refers to sludge spread on ground over the years.

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

50 High Street, Boston, MA 02110

Ed P. file WSH

4/22/81

April 14, 1981

Mr. William J. St. Hilaire
Regional Environmental Engineer
Dept. of Environmental Quality Engineering
323 New Boston Road
Woburn, Massachusetts 01801

Dear Mr. St. Hilaire:

DEQE No. 123-24
Sludge Solidification-Cambridge

In accordance with the Notice of Intent and your letter to W. R. Grace dated April 23, 1980, we advise you of the following:

- Solidification of the processed waste started on April 10, 1981.
- The solidified material is being transported to Salem, N. H., per the enclosed letter.

If you have any questions, please contact me at 617-722-3152.

Sincerely,

Charles B. Steward
Environmental Coordinator

Enc.
CBS/ab

cc: L. Hines (W.R.Grace & Co.) (W/Enc.)
Cambridge Conservation Commission "
J. A. Carey (MBTA) "

Refers to sludge that was in the process lagoon.

GRACE

Organic Chemicals Division

W.R. Grace & Co.
Poisson Avenue
Nashua, N.H. 03061

(603) 888-2320

Ed
WSH

November 18, 1980

zp
File
11/24

Mr. William St. Hilaire
Regional Environmental Engineer
Department of Environmental
Quality Engineering
323 New Boston Street
Woburn, Mass. 01801

NOV

Subject: Cambridge Waste Lagoon

Dear Mr. St. Hilaire:

This letter will confirm my phone conversation yesterday, November 17, with Ed Pawlowski regarding solidification of the wastes accumulated in the Building #27 process lagoon. Solid Tek Inc. will begin solidifying these wastes the end of this week and expects to be completed by Thanksgiving. As I discussed with Ed, I will notify him when Solid Tek's equipment is operational, so that he can observe the solidification process.

A landfill site has not been selected at this time. We are planning to use the same site to be selected by the MBTA for the remaining process wastes.

If you have any questions on this project or need any additional information, please contact me at the above address and phone number.

Very truly yours,

Lauchlin V. Hines
Project Engineer

LVH/sd

cc: D.H. Chapman
A.R. Campbell

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

August 1, 1980

WSA

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

Dear Mr. Steward:

On July 17, 1980, a meeting attended by representatives of the MBTA, W.R. Grace and Company, Sverdrup and Parcel, Solidtek, SCA Services, Cambridge Conservation Commission, and the Department of Environmental Quality Engineering, was held to discuss alternatives for the disposal of solidified acid sludge wastes which will be generated by the treatment of acid sludge waste now located on the property of W.R. Grace and Company, in Cambridge. Acceptable disposal practices for a particular waste are derived, in part, from the classification of that waste. This letter will serve to notify you as to how this Department is classifying the waste in question.

It is proposed to treat the Grace acid sludge by a solidification process which is designed to stabilize wastes to the point that contaminants will be bound within the resulting solid and prevented from leaching out, even under acidic conditions. Although Solidtek has tested solidified samples of the Grace waste more rigorously than required by the US EPA toxicant extraction procedure, questions remain as to the stability of the solidified waste in a landfill environment. The severe and variable conditions that exist within a landfill, i.e. little or no oxygen, variable heat and pressure, complex chemical and biochemical reactions, and the presence of metals and organics in high concentration, can not be duplicated in a laboratory test. As such, the fate of pollutants that are bound in a solidified waste can not be predicted in cases where these wastes are buried with refuse in a landfill. Based on this conclusion, the Department is [redacted] to 310 CMR 19.16: (1) due to the handling that will be required for the disposal of this waste. This solidified waste can be safely disposed of at a landfill facility, provided that it is not mixed with biodegradeable refuse. As such, it must be isolated in a separate area of the landfill, or on top of closed sections, and covered.

You are reminded that before any waste designated as special can be disposed of at a landfill facility, approval of the local Board of Health must be obtained in

August 1, 1980

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

conformance with the above regulation, 310 CMR 19:16 (1).

If you have any further questions, please contact Mr. William St. Hilaire, P.E., at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin TFM
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Eep/law

CC: Cambridge Board of Health
Cambridge Conservation Commission
W.R. Grace, Allan Campbell, Assistant Counsel
DHW

GHR
ENGINEERING CORPORATION

RECEIVED
OCT 1 Recd

CL-8991

September 28, 1981
Job #2458

Mass. Department of Environmental
Quality Engineering
Southeast Region
Lakeville Hospital
Lakeville, MA 02346

Attention: Mr. Robert Fagan, Chief Land Use Section

Gentlemen:

This is to confirm our conversation of today concerning the disposal of the W.R. Grace solidified acid-sludge within the Kingston Sanitary Landfill. It was agreed that the sludge could be placed in a 2- to 3-foot layer and that this material would be placed on a clay base and capped with a 12-inch layer of clay (permeability 10^{-7} or 10^{-8} cm/sec.).

If you have any questions concerning this confirmation, please feel free to contact me.

Very truly yours,

GHR ENGINEERING CORPORATION

Phillip H. Spath, P.E.
Manager, Kingston Office

PHS:mc

cc: Kingston Board of Health
Dept. of the Attorney General, Maxine Lipellis
Board of Selectmen, Town of Kingston
William St. Hilaire, DEQE, Northeast Region
Robert Donovan, Hazardous Waste Coordinator
Governors Office, Kevin Donovan
Thomas F. McLoughlin

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
205 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

WSTA
BKM

April 23, 1980

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, Massachusetts 02110

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

Dear Mr. Steward:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Quality Engineering has received your letter of April 7, 1980 relative to the treatment and disposal of sludge, contaminated water, and contaminated soil currently in the path of the proposed MBTA Red Line Extension on W.R. Grace & Company property in Cambridge. Should the MBTA be required to handle the above noted disposal, the following procedures are proposed:

1. Sludge will be removed, solidified in an approved manner and disposed of in an approved sanitary landfill.

2. Any water required for the solidification process will be pumped from contaminated groundwater in the area of the sludge piles. Should further dewatering be required during tunnel construction, it is proposed to adjust the pH of this water with lime and inject it back into the ground in the area of contaminated groundwater.

3. Contaminated soil (as determined by existing EPA leachability tests and classification criteria) will be mixed with clean fill until it can pass the leachability test. It is then proposed to use this material as clean fill.

The Department has recently approved solidification as a means for W.R. Grace to neutralize the sludge that currently exists in their lined lagoon. Conceptual approval was also given for the use of that method in neutralizing the sludge and filter cake process waste that has been disposed of adjacent to the lined lagoon. In view of this, the Department conceptually approves of the solidification scheme proposed by the MBTA subject to the same conditions imposed in the W.R. Grace approval, a copy

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

of which is enclosed.

Your proposal to inject neutralized water back into the ground is not a preferred alternative at this time. At the very least, this proposal would require further chemical analyses and groundwater flow data, and probably a discharge permit through the Division of Water Pollution Control. Neutralization and discharge to the MDC sewage system would not require such a discharge permit. Also, the treatment of contaminated soil by dilution, mixing with clean fill, would not result in the classification of the diluted product as a clean fill by this Department. It is the Department's understanding that further chemical analyses of the excavated soil in question is planned in any case. Discussion of further disposal alternatives for this material should be done when all pertinent test results are available. The Department would be willing to consider interim storage as a temporary solution until such time as all test results are available and a suitable disposal plan can be designed and approved.

If you have any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Ewsth/lkw

CC: Cambridge Board of Health
City Hall
Cambridge, Massachusetts 02140

Conservation Commission
City Hall
Cambridge, Massachusetts 02140

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

CC's Continued:

Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp, Dresser & McKee, Inc.
One Center Plaza
Boston, Massachusetts 02108
ATTENTION: Mr. John Splendore

Mr. William Cass, Director
D.H.M.
Room 320 - 600 Washington Street
Boston, Massachusetts 02111

Sabin Lord, Water Pollution Control

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Co.
62 Whittmore Avenue
Cambridge, Massachusetts 02140

Environmental Quality Div.
MDC
20 Somerset Street, 8th Floor
Boston, Massachusetts

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

file

WSA

April 23, 1980

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Company
62 Whittmore Avenue
Cambridge, Massachusetts 02140

RE: CAMBRIDGE-Solid Wastes
W.R. Grace, Proposed Disposal
of On-Site Process Waste

Dear Mr. Campbell,

The Metropolitan Boston-Northeast Regional Office of the Department of Environmental Quality Engineering has reviewed disposal alternatives for the sludge and filter cake process wastes that have been disposed of on-site at the W.R. Grace manufacturing facility in Cambridge. One alternative addresses solidification of the wastes which are presently contained in the existing process lagoon and, the other, a preliminary proposal for on-site encapsulation for the remaining wastes. Regarding the 1st alternative, the effectiveness of solidification in preventing the formation of toxic leachate was demonstrated by Solid Tek-Solidification Technology Systems, Inc., of Morrow, Georgia. The sludge was solidified and leachate from the product, prepared according to procedures presented in the December 28, 1978 Federal Register, was analyzed for toxic parameters by Recra Research, Inc. of Tonawanda, New York. The results received by this office on January 30, 1980, indicate that all parameters identified as toxic are not present in amounts above the limits currently proposed by the Environmental Protection Agency. These limits are set at ten times the interim primary drinking water standards. Based on these results, it is concluded that solidification of the sludge followed by burial in a sanitary landfill is a viable disposal method that would have no adverse environmental impacts.

The Department is of the opinion that the proposed solidification process is in conformance with modern sanitary engineering standards and hereby approves of this proposal subject to the following conditions.

1. The Department be notified when the solidification process begins.

2. Disposal of the product solid waste be at an approved sanitary landfill site.

3. The name and location of the landfill be provided to the Department prior to the commencement of the proposed work.

4. Quality Control of the solidification and disposal process be

provided again prior to the commencement of work.

The Department may require specific testing to assure such quality control.

The other alternative involves sludge from the lined lagoon and filter cake from the manufacturing process that has been disposed of on the ground in two separate areas adjacent to the sludge lagoon. In one of the areas, the waste is in direct contact with groundwater, which has lead to degradation of groundwater quality in the area. It is through this area that the MBTA proposes to dig a tunnel for the extension of its Red Line. The Department has required that the sources of contamination be removed or contained. Proper disposal could be accomplished by utilizing any of the following methods.

1. All waste could be removed from the site and disposed of out of state at an approved hazardous waste disposal facility. This removal would have to be conducted by a firm that is licensed to transport hazardous waste.

2. All waste could be solidified in the manner approved for the sludge in the lined lagoon. The solidified waste could then be disposed of at an approved sanitary landfill.

3. The waste could be encapsulated on-site. Such on-site disposal would have to meet all provisions of Section 150 A of Chapter 111 of the General Laws, the "Regulations for the Disposal of Solid Waste by Sanitary Landfill", and the Wetlands Protection Act, General Laws Chapter 131, Section 40.

On March 13, 1980, a meeting was held between officials of W.R. Grace and engineers from this Department to discuss the proposed waste encapsulation alternative as a means of disposal. A preliminary plan was submitted indicating the proposed location and method of on-site disposal. The Department understands that the plan is preliminary, and offers these comments for your consideration:

1. A clear site preparation plan must be submitted showing (a) 1½ foot clay liner topped by 1 foot of sand or gravel to ensure liner intergrity during construction and operation, (b) 1½ foot thick clay final cover over the waste, (c) enough top soil over the clay cover that will support vegetation, (d) side slopes no steeper than 3 to 1, (e) a minimum of 4 feet vertical between the base of waste and seasonal high groundwater elevation, and (f) protection against inundation by the 100 year flood.

2. Volume calculations for loss of 100 year flood storage capacity and possible compensatory storage alternatives must be

included as part of the entire proposal, and submitted to the Conservation Commission as a Notice of Intent.

3. Specifications for soils to be used as liner material and final cover must be provided.

4. Due to the high organic content of the waste, adequate provisions must be made for the venting of gas.

5. A detailed schedule of operations must be submitted as part of the engineering plan.

6. An "assignment"pursuant to M.G.L. S. 150 A of C. 111 is not required for this clean up operation, and

7. On-Site encapsulation may require the filing of an Environmental Notification Form with the MEPA unit of the Executive Office of Environmental Affairs.

Also, please be advised that the above preliminary disposal site lies within 60 ft. of Jerry's Pond in violation of Regulation 11.5 of 310 CMR 19.00, the Regulations for the Disposal of Solid Wastes by Sanitary Landfill.

If there are any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

by Bruce H. Maillet

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston-Northeast Region

TFM/Eejp/jb

CC: Cambridge Board of Health
City Hall
Cambridge, MA

Cambridge Conservation Commissione
City Hall
Cambridge, MA

CC: Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp Dresser & McKee, Inc.
One Center Plaza
Boston, MA 02108

Attention: Mr. John Splendore

Mr. William Cass, Director
DHW
Room 320
600 Washington St.
Boston, MA

Charles B. Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

Sabin Lord, W.P.C.

Mr. Sam Mygatt, Director
MEPA Unit, EOEA
20th Floor
100 Cambridge Street
Boston, MA

Refers to soils currently stockpiled on Grace property next to former Russell Field.

Comprised of Volume A and Volume C soils.

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

June 22, 1983

Mr. Paul Murphy, Director
Health Department
City Hall
Somerville, Massachusetts 02143

Re: Somerville, MBTA Fill Project at Davis Square

Dear Mr. Murphy:

This office has received your correspondence dated June 6, 1983 in which you ask for an assessment of the quality of soil being used to backfill part of the MBTA's Redline Extension near Davis Square in Somerville. This site was inspected by an engineer from this office on June 1, 1983. The inspection was made at the request of a resident of Somerville who's property abuts the tunnel at the area in question. Enclosed, please find a copy of a memorandum which describes the aforementioned inspection and conclusions drawn.

As stated in this memorandum, it is the Department's position that this soil will not pose a health threat or nuisance to residents of the area once work is completed. While the soil from Russell Field in Cambridge is being transported to and spread out over the tunnel there may be some odor noticeable. Observations made at the site indicate that this odor is faint, and only noticeable when one is very close to the backfilling operation. Experience has shown that minimal amounts of clean cover will prevent any further release of odor. With an average of six feet of gravel proposed for the final layer of cover over the tunnel, future release of nuisance odor to the atmosphere will be eliminated.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours,

EP RJC

Richard J. Chalpin, Deputy
Regional Environmental Engineer

RJC/Eep/rm
cc: DEQE, Division of Hazardous Waste, One Winter St., 8th Floor, Boston
Mr. John A. Carey, Redline Extension N.W., 58 Day Street, W. Somerville, MA
Mrs. Joyce Kelly, 37 Kingston Street, Somerville, MA 02144
Mr. Tom Pelham, Director of Community Development, City Hall, 93 Highland Ave., Somerville, MA

Memorandum for the Record

By: Edward Pawlowski EP

Date: June 14, 1983

Subject: Somerville, MBTA Fill Project at Davis Square

On Wednesday, June 1, 1983, the writer inspected the MBTA's Redline Extension tunnel construction project near Davis Square in Somerville. The inspection was made in response to a complaint received from Joyce Kelly, 37 Kingston St., Somerville, on May 31, 1983. Mrs. Kelly complained of "sewer-like" odor emanating from soil being used by the MBTA to back fill a portion of the new Redline tunnel near her house and Davis Square.

The writer met with John Carey, MBTA, and discussed the odor problems with him. Mr. Carey stated that the filling operation near Davis Square had commenced on the previous day, May 31, with the fill originating from a stockpile adjacent to Russel Field in Cambridge. The stockpiled fill had originally been excavated during tunnel construction adjacent to WR Grace and Company. The fill, predominantly clay, was mixed with sandy soil to improve its handling characterstics and stockpiled for future use as tunnel backfill. This process was performed with the approval of DEQE. The MBTA attempted to use this soil as backfill over the new tunnel in the vicinity of WR Grace this past spring. The wet spring weather, however, rendered the clayey soil viturally unworkable and other soils had to be used. With dryer (relatively) weather in May, the clayey stockpile became workable and was scheduled to be used as backfill in the vicinity of Davis Square. This is the activity that commenced on May 31.

The area of active backfilling near Davis Square was inspected by the writer and Mr. Carey. The writer carried an H-NU photoionization analyzer which is a portable instrument used in the field to detect the presence of organic chemicals in air. The instrument was first used on a walkway that crosses the tunnel at a point just down-wind of the active backfill area. The instrument reading was at background levels at this location. A very faint odor of naphthalene was noticeable on occasion. Naphthalene odor is discernable to most people at concentrations as low as 1 part per billion in air. The H-NU will not register the presence of chemicals in air until the chemical concentration exceeds roughly 200 parts per billion. As such, the presence of naphthalene in air can be detected by an observer long before it will be detected by the H-NU. The current standard for naphthalene in air in the workplace is 10,000 parts per billion (10 parts per million). This standard, known as the Threshold Limit Value, is the average concentration of naphthalene allowable in the workplace for persons working eight hours a day, five days a week, for their working lifetime.

The writer next went down into the area being backfilled and walked along side freshly deposited clay and sand fill with the H-NU operating. Again, the H-NU read at background levels while a faint naphthalene odor was detectable on occasion. At numerous locations, the soil was examined directly by breaking up pieces of clay to expose previously unexposed soil surfaces to the air. An exact tabulation of results was not made in the field. At the time, however, it was the writers opinion that soil samples exhibiting no odor roughly equalled in number those that exhibited a slight naphthalene odor. No soil samples exhibited a strong odor of naphthalene.

After inspecting the tunnel, the writer called at Mrs. Kelly's house to inform her that the inspection had been made. There was nobody home at the time so a note was left for her to contact the writer by telephone. The writer spoke to Mrs. Kelly and her husband at length on June 2, 1983, explaining the results of the inspection.

The soil stockpile next to Russell Field was examined by the writer on June 1 to verify that this was the source of soil being used to backfill the tunnel near Davis Square. The writer found a shovel-dozer in operation, loading trucks that then went directly to the tunnel location in question. No naphthalene odor was evident adjacent to, or on top of this stockpile. The writer was not able to get closer than 100 feet away from the working face due to muddy conditions and danger of collapse of steep slopes which resulted from digging into the side of the stockpile.

The naphthalene odor noticeable in some of the soil being used as tunnel backfill is due to low concentrations of that chemical that have been found in soils adjacent to the WR Grace Company in Cambrige. The concentrations are not considered hazardous. Readings on portable test equipment indicate that, even in close proximity to the soil, concentrations of naphthalene in air are far below the Threshold Limit Value for naphthalene in air in the workplace. The odor itself while not hazardous can be a nuisance to persons subjected to it in their homes or public areas. As such, the backfill project utilizing this soil should be completed as soon as possible. According to Mr. Carey, the MBTA plans to use approximately 6 feet of clean fill to complete the tunnel backfilling job. This clean gravel will be used to allow for the planting of vegetation, trees, etc. (clayey soil, such as that coming from Russell Field, is not suitable for planting). Experience at the Cambridge construction site has shown that as little as 6 inches of clean cover placed over naphthalene containing soil is enough to completely eliminate any odor of naphthalene in the air. As such, it is the writers opinion that once this project is complete, any odor associated with the Russell Field soil will be completely contained by the blanket of gravel fill to be placed over it and will not constitute a hazard or a nuisance to area residents or the environment.

EP/rm

Refers to soils that did not exhibit any contamination and were allowed to be taken to area landfills.

(Volume D soils)

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
323 New Boston Street, Woburn, MA 01801

File
11/5/82

November 1, 1982

Mr. Ralph Spade
R & R Trucking
Bates Road
So. Merrimack, NH 03054

RE: CAMBRIDGE, MBTA
Redline Extension,
Approved Use of Clay
Fill

Dear Mr. Spade:

This Office has received your correspondence dated October 23, 1982 in which you request that the Department provide you with an opinion as to acceptable uses for clay and sandy clay being excavated from the MBTA Redline Extension tunnel construction project in Cambridge

The Department has been closely involved with this project since early 1979 due to a soil contamination problem detected during preliminary engineering studies of soils in the right-of-way of the proposed tunnel immediately to the east of Alewife Brook Parkway. During the past four years, contaminated soils were identified and removed from the site to an approved disposal facility. Contiguous soils were analyzed extensively to determine the extent and degree of any contamination that may have migrated from contaminated soils. Only low levels of contamination were observed in the contiguous soils; any soil exhibiting such low levels of contamination were excavated and stockpiled on site for future use as backfill on top of the completed tunnel.

Soils to the west of Alewife Brook Parkway (Alewife Station and garage) and those generally deeper than twenty feet below original grade to the east of Alewife Brook Parkway have been found to be free of unusual levels of chemical contamination. These soils, predominantly clay and sandy clay, have been hauled during the past few years to sanitary landfills for use as daily cover. This operation has been done with the knowledge and approval of the Department. These soils are not hazardous in nature and provide good quality [redacted] cover for sanitary landfill operations.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours

William J. St. Hilaire

EP
EHill

William J. St. Hilaire, P.E.
Regional Environmental Engineer

WJSH/EP/lmm
cc: DEQE, DHW, One Winter Street-8th Floor, Boston, Mass. 02108
John Powers, MBTA, 58 Day Street, Somerville, Mass. 02144

Volume C was soil found to contain low concentrations of naphthalene. It was excavated + stockpiled for use as tunnel backfill.

The term "special waste" was used by the MBTA engineer. It was <u>NOT</u> classified as such by DEQE.

Report on Solidified Sludge & Special Waste - 4/20/82

Contracts 091.601 - 091.508A

1 - Solidified Sludge - Hauled to Kingston, MA

As of 4/16/82 approximately 19,525 cubic yards have been hauled to Kingston. If hauling continues this week the estimated 2,000 yards remaining should be completed.

2 - Special Waste Being Stockpiled at Russell Field

As of 4/16/82 all of the material designated by S&P Plan SK-1782 Volume C has been excavated and hauled to Russell Field. Volume B has been removed off site by the contractor to landfills in Peabody and Tewksbury, MA Volume A has been removed and stockpiled at Russell Field.

Howard M. Haywood
James J. Dyer
Resident Engineers

CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 498-9011

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

August 8, 1983

To the Honorable, the City Council:

Enclosed please find a copy of a variety of reports from both the Conservation Commission and the Commonwealth of Massachusetts Department of Environmental Quality Engineering relating to the removal of both acid sludge and additional soil from the W. R. Grace site.

Essentially all D.E.Q.E. requirements were complied with. The acid sludge was treated, solidified and removed to an approved sanitary landfill outside the City.

The remaining soil, which did contain napthalene in amounts not considered harmful by D.E.Q.E. was approved for use as backfill by D.E.Q.E.

Very truly yours,

Robert W. Healy
City Manager

RWH/b

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

July 15, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: Description of the Conservation Commission's involvement with the W.R. Grace site and Russell Field

Background

The MBTA tunnel right of way runs through property owned by the Grace Company. Portions of the property have been used for disposal of process wastes resulting from the manufacture of Daxad. During the subsurface investigation phase for tunnel design, contamination was found within the proposed tunnel construction limits where wastes had been dumped in the mid 1960's and covered with soil. It was this acidic situation which had to be remedied to allow construction of the concrete subway tunnel. Grace and the MBTA split the cost of neutralizing the sludge and contaminated soil in the path of the tunnel and transport to the sanitary landfill at Kingston, MA.

The state D.E.Q.E. performed fairly extensive analysis of the remaining soil on Grace property within the tunnel construction limits as the basis for determining suitability as fill. This was because the material to be removed was otherwise desirable and not all of it was needed for tunnel backfill. Most was used as daily cover for landfill operations.

The D.E.Q.E. did require that excavated soil which had been most contiguous to the acid sludge area was to be stockpiled on site and that the stockpiled soil was to be used as backfill over the tunnel. Some napthalene is present in this soil which accounts for the odor problem but D.E.Q.E. does not consider the amount toxic or hazardous.

Consultants to the MBTA, Goldberg, Zoino Associates, defined the limits of contamination during the design period in 1978, and Grace Company employed the firm of Haley & Aldrich, Inc. to provide additional data with respect to the extent of contaminated sludges disposed of on site. The two firms were in general agreement about areas of sludge disposal. The map submitted to the Conservation Commission by the MBTA in August, 1980 which showed the areas of acid sludge, was based on the work of Goldberg, Zoino.

Conservation Commission

East of the parkway, there have been two filings with the Conservation Commission by the MBTA under the Wetlands Protection Act because of construction impacts to wetland areas located beside the parkway and adjacent to Jerry's Pond, as well as Jerry's Pond. Designated floodplain areas are also a factor.

1. File #123-19 MBTA Construction Contract 091-508A
   Notice of Intent, November 13, 1979
   Superceding Orders of Condition issued by D.E.Q.E., March 28, 1980
   Second D.E.Q.E. permit extension, April 23, 1982

This was a request to construct the tunnel segment east of the parkway and to use Russell Field for storage of backfill. The Russell Field area was to serve as the major depository of backfill material (that excavated material judged suitable) for the adjacent tunnel section as well as the other cut and cover tunnel segments. Stripped top soil from Russell Field was also to be stored there. As can be seen from the attached page of Superceding Orders from D.E.Q.E. the concern focused on management of the stockpiled materials from an erosion and sedimentation point of view. During operations the backfill storage area did extend to outside of the area designated in the Orders and it was not covered or seeded as requested (see attached highlighted note).

2. File #123-24 MBTA Acid Sludge Solidification
   Notice of Intent, August 29, 1980
   Second Extension Permit, October 5, 1982
   Amended Orders of Condition, issued July 8, 1983

The Orders of Condition issued October, 1981 for the acid sludge solidification and removal project included a requirement for

subsequent monitoring of test wells over an 18 month period in order to evaluate effectiveness of the removal operation. All but one of the 12 wells that were included in the monitoring program were destroyed during the removal of the acid sludge and construction of the tunnel, and the monitoring program was never carried out. The T did put in three new wells this spring to begin to pick up where they left off. The parameters to be tested in the original groundwater monitoring plan were limited to ph, sulfates and conductivity, which reflected the construction related concerns of the MBTA. To direct implementation of a groundwater monitoring program at this point the Commission has had prepared Amended Orders of Condition which call for new test wells and broadens the scope of parameters to be tested to include napthalene. These Amended Orders were issued July 8, 1983; a copy is attached with a map of new well locations.

The Amended Orders were worked out with representatives of the MBTA and there is no reason to believe they will not comply this time. A final filing is expected sometime this summer relative to the Red Line Extension which will cover mainly compensatory flood storage provisions.

The Commission is aware that there are concerns regarding the extent and type of possible soil and groundwater contamination at the W.R. Grace site. A fair amount of testing has already occured since 1978, by the MBTA, Grace Company and D.E.Q.E. In addition, the development firm now planning for the site apparently intends to do a complete site analysis. The Commission would be happy to participate in any overall review to be undertaken by City officials.

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

January 17, 1983

Report on site visit to subway construction site at Alewife Brook by DEQE on January 13, 1983

Present: Sterling Wall, DEQE, John Carey, MBTA, Don Kidston, MBTA, Elsie Fiore, Arlington Conservation Commission, Ted Coughlin, Cambridge DPW, Janet Burns, Cambridge Conservation Commission

A site visit was conducted by Sterling Wall of the DEQE Northeast Regional Office relative to Superceding Orders of Conditions for projects #123-19 and #123-20. Because work on these two projects is expected to continue beyond the expiration date of the Orders, the MBTA has requested extensions of the Orders.

Mr. Wall reviewed the project boundaries, elements and status of the different MBTA contracts presently under construction. Items in both Orders were discussed point by point. Issues discussed included flood storage, turbidity in Yates Pond and management of backfill storage at Russell Field. Backfill at Russell Field is expected to be removed by spring of 1983. Mr. Kidston reported that the engineering consultants of the MBTA have not yet determined the cause of turbidity in Yates Pond.

Condition 13 in #123-20 will require later review. This calls for construction of a new wetland east of the station entrance to compensate for the loss of an existing wetland adjacent to Jerry's Pond. Mr. Kidston said the final Red Line Notice of Intent will probably be filed before the effective date of the new wetland protection regulations, April 1. It was suggested to him that a design review with the Cambridge Conservation Commission would be helpful before the submission. The reconstructed wetland will not be part of the new submission.

The group walked the area around Yates Pond and Alewife Brook, and the area around Jerry's Pond and Russell Field. Mr. Wall observed turbidity in Yates Pond and thought it was due to a combination of overland flow off of the haul road and airborne material. At Russell Field Mr. Wall noted that the area of backfill was outside of the area designated in the Orders and quite close to Jerry's Pond. In view of the removal schedule of this spring, he does not recommend moving the backfill at this time. He did ask for the berm and diversion swale to be improved. Jerry's Pond appeared to be very clear and free of turbidity. MR. Wall suggested periodic checks of the site and if there was evidence of an erosion problem, to call him and he would recommend partial removal of the backfill, or placement of hay bales or fibrous material.

D.E.Q.E.'s Superceding Orders

CONDITIONS CONTINUED: PAGE 2A FILE NUMBER: 123-19

12. No material shall be stored on the westerly portion of the "Backfill Storage Area" which is designated as wetlands on Plan 11 (b) above.

13. All runoff from the Backfill Storage Area shall be directed to sediment trapping basins, which shall be maintained in good working condition. Plans for such basins shall be submitted to the Department for approval prior to construction.

14. The stored backfill material shall be protected from erosion by placement of impervious membrane cover, or by temporary loaming and seeding, and the working area of placement and removal shall be kept to as small a size as practical.

15. "Russell Field shall be restored to the ground elevation existing at the time of filing of the notice of intent not later than the completion date as established in Contract No. 091-002 between the City of Cambridge and the MBTA."

16. During excavation of the westerly 150 feet of tunnel, representative soil samples shall be taken every 50 feet along the base line at 10' increments of depth. Said samples shall be speedily analyzed for pH an $SO_4^=$; and all materials having $SO_4^=$ >500 p.p.m., (dry weight basis) or pH<4.0 when 10 grams of dried soil is mixed with 100 milliliters of distilled water shall be separately stored under cover, and shall be subject to such additional testing and special handling as shall be required by the Department. Immediately upon receipt of results of the "routine" analyses required above, the Department's Northeast Regional Office shall be notified of the results by telephone.

A final Environmental Impact Report (EIR) for this project has been filed on September 15, 1977 with the Secretary of Environmental Affairs (EOEA #02082). Said EIR describes the environmental impact of this project and sets forth those measures necessary to minimize and prevent any potential significant adverse impact to the environment. Said measures are reflected in the conditions of this action. On October 24, 1977, the Secretary issued a statement that said adequately and properly complies with G.L. C.30, S. 62 to 62H, inclusive.

CITY OF CAMBRIDGE

57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

June 27, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: W.R. Grace Site

Presumably you have by now a statement from Ed Pawlowski of DEQE on the acid sludge removal story, although I understand writing assignments are not his strong suit.

The Conservation Commission is holding a Hearing Tuesday, June 28, and expects to issue Amended Orders of Condition with respect to groundwater monitoring in the tunnel area. The Hearing may be "continued" since it was recently learned that W.R. Grace has received a letter from EPQ notifying them that EPA will conduct a survey. The Commission may wait to find out more about this before proceeding with its own Amended Orders.

Also, while DEQE data and that submitted to the Conservation Commission by the T, is confined to the immediate tunnel area, the Commission has also recently learned that Hines Industries will undertake an analysis of the entire site. The consulting firm of Haley and Aldrich is preparing a proposal for Hines of a testing program reported to cost about $250,000. And, according to Todd Mansfield of Hines Industries, W.R. Grace has commited to mitigation of site conditions if test results indicate such a need.

Finally, as the backfill containing napthelene is being moved around right now odor complaints might occur.

Volume A – Top 1' of soil at Grace/MBTA site.
→ Used as tunnel backfill

Volume B. clean soils brought in to bring site back to original grade after sludge was dug out
→ Removed to area sanitary landfill

Volume C- contained low ~~concentrations~~ concentrations of naphthalene that leached out of sludge over the years
→ used as tunnel backfill

Volume D - Those soil
deep enough or far
enough away from
sludge deposits that they
were not impacted
→ Removal to area
Sanitary landfills

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

Red Line Extension – Northwest
58 Day Street, W. Somerville, MA 02144

January 8, 1982

RECEIVED
JAN 11 19

Perini Corporation
P.O. Box 200
Cambridge, MA 02140

Attention: Mr. J. W. Bertonazzi
Project Manager

Gentlemen:

Re: MBTA Contract #091-601 -
Alewife Station/Garage/Tunnel
Excavation East of Alewife Brook Parkway

Several meetings have been held with Mr. E. Pawlowski of DEQE regarding disposal of the excavation material from the construction site east of Alewife Brook Parkway.

The following guidelines are to be used during this excavation process. These guidelines cover the area from station 310+00 on the 091-508A contract to station 317+00 on the 091-601 contract. These areas are more generally outlined on the following plans:

Plan #54433 - Construction Staging Plan, Contract #091-508A
Plan #SK1782 Soil Profile dated December 1981.

1. Volume "A" -

Removal of 1 foot of surface material

Excavate the top one foot (1') of material within the tunnel construction limits as indicated in red on Plan #54433 and place in a stockpile area for use as backfill on the Red Line Project.

Contract #091-508A - From Sta. 310+00 to 313+23
Excavation between slurry walls

Contract #091-601 - From Sta. 313+23 to 317+00
Excavation between slurry walls and from 50' relief section outside the slurry walls both north and south side

2. Volume "B" -

Removal of material down to elev. 104±

The next layer of material can be excavated to approx. two feet below the top level of bracing (elev. 104±) within the slurry walls and down to elev. 108 in the relief area (50' north and south) outside the walls from sta. 313+23 to sta. 317.

This material can be removed to any landfill area as it consists mostly of backfill material brought onto the site or of original earth outside the original sludge deposits.

3. Volume "C" -

Removal of material below elev. 104 between sta. 314 and 317 as outlined in green on the plan of soil profile

Excavate this material and place in a stockpile area for use as backfill on the Red Line Project.

4. Volume "D" -

Removal of clay and stratified clays and sands below and outside of area indicated in green

Excavate this material in accordance with Section -02200 of the contract documents.

Very truly yours,

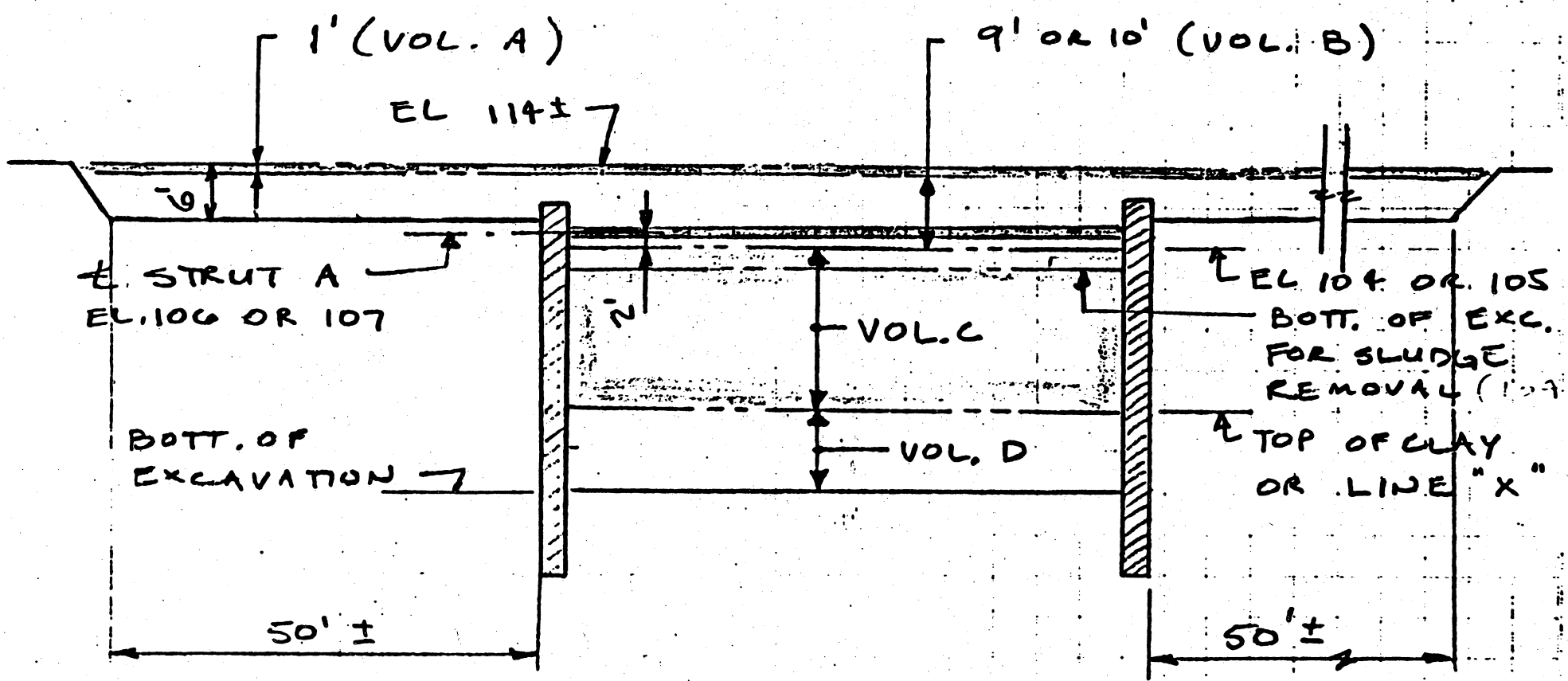
John A. Carey

John A. Carey
Project Manager - Construction

JAC/rh

Attachments

cc: [redacted] - DEQE
F. Keville
H. Haywood
J. Dyer
G. Perko, S&P
L. Moore, WFEM



60' STATION / TUNNEL CROSS SECTION

SVERDRUP & PARCEL

JOB _____

COMPUTATIONS FOR _____

SHEET NO. _____ OF _____

DATE _____

BY _____ CHKD _____

Disposal was never allowed or properly approved by N.H. officials.

Disposal actually took place in Kingston, MA

Refers to sludge spread on ground over the years.

ASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

50 High Street, Boston, MA 02110

Ed P
file
WS44

4/22/81

April 14, 1981

Mr. William J. St. Hilaire
Regional Environmental Engineer
Dept. of Environmental Quality Engineering
323 New Boston Road
Woburn, Massachusetts 01801

Dear Mr. St. Hilaire:

DEQE No. 123-24
<u>Sludge Solidification-Cambridge</u>

In accordance with the Notice of Intent and your letter to W. R. Grace dated April 23, 1980, we advise you of the following:

- Solidification of the processed waste started on April 10, 1981.

- The solidified material is being transported to Salem, N. H., per the enclosed letter.

If you have any questions, please contact me at 617-722-3152.

Sincerely,

Charles B. Steward

Charles B. Steward
Environmental Coordinator

Enc.
CBS/ab

cc: L. Hines (W.R.Grace & Co.) (W/Enc.)
Cambridge Conservation Commission "
J. A. Carey (MBTA) "

Refers to sludge that was in the process lagoon.

GRACE

Organic Chemicals Division

W.R. Grace & Co.
Poisson Avenue
Nashua, N.H. 03061

(603) 888-2320

Ed
WSH

November 18, 1980

cf File
11/24

Mr. William St. Hilaire
Regional Environmental Engineer
Department of Environmental
Quality Engineering
323 New Boston Street
Woburn, Mass. 01801

NOV

Subject: Cambridge Waste Lagoon

Dear Mr. St. Hilaire:

This letter will confirm my phone conversation yesterday, November 17, with Ed Pawlowski regarding solidification of the wastes accumulated in the Building #27 process lagoon. Solid Tek Inc. will begin solidifying these wastes the end of this week and expects to be completed by Thanksgiving. As I discussed with Ed, I will notify him when Solid Tek's equipment is operational, so that he can observe the solidification process.

A landfill site has not been selected at this time. We are planning to use the same site to be selected by the MBTA for the remaining process wastes.

If you have any questions on this project or need any additional information, please contact me at the above address and phone number.

Very truly yours,

Lauchlin V. Hines
Project Engineer

LVH/sd

cc: D.H. Chapman
A.R. Campbell

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
205 Van Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

August 1, 1980

WSHA

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

Dear Mr. Steward:

On July 17, 1980, a meeting attended by representatives of the MBTA, W.R. Grace and Company, Sverdrup and Parcel, Solidtek, SCA Services, Cambridge Conservation Commission, and the Department of Environmental Quality Engineering, was held to discuss alternatives for the disposal of solidified acid sludge wastes which will be generated by the treatment of acid sludge waste now located on the property of W.R. Grace and Company, in Cambridge. Acceptable disposal practices for a particular waste are derived, in part, from the classification of that waste. This letter will serve to notify you as to how this Department is classifying the waste in question.

It is proposed to treat the Grace acid sludge by a solidification process which is designed to stabilize wastes to the point that contaminants will be bound within the resulting solid and prevented from leaching out, even under acidic conditions. Although Solidtek has tested solidified samples of the Grace waste more rigorously than required by the US EPA toxicant extraction procedure, questions remain as to the stability of the solidified waste in a landfill environment. The severe and variable conditions that exist within a landfill, i.e. little or no oxygen, variable heat and pressure, complex chemical and biochemical reactions, and the presence of metals and organics in high concentration, can not be duplicated in a laboratory test. As such, the fate of pollutants that are bound in a solidified waste can not be predicted in cases where these wastes are buried with refuse in a landfill. Based on this conclusion, the Department is [redacted] to 310 CMR 19.16: (1) due to the handling that will be required for the disposal of this waste. This solidified waste can be safely disposed of at a landfill facility, provided that it is not mixed with biodegradeable refuse. As such, it must be isolated in a separate area of the landfill, or on top of closed sections, and covered.

You are reminded that before any waste designated as special can be disposed of at a landfill facility, approval of the local Board of Health must be obtained in

August 1, 1980

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

conformance with the above regulation, 310 CMR 19:16 (1).

If you have any further questions, please contact Mr. William St. Hilaire, P.E., at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Eep/law

CC: Cambridge Board of Health
Cambridge Conservation Commission
W.R. Grace, Allan Campbell, Assistant Counsel
DHW

GHR
ENGINEERING CORPORATION

RECEIVED
OCT 1 ~ RECD

CL-8991

September 28, 1981
Job #2458

Mass. Department of Environmental
Quality Engineering
Southeast Region
Lakeville Hospital
Lakeville, MA 02346

Attention: Mr. Robert Fagan, Chief Land Use Section

Gentlemen:

This is to confirm our conversation of today concerning the disposal of the W.R. Grace solidified acid-sludge within the Kingston Sanitary Landfill. It was agreed that the sludge could be placed in a 2- to 3-foot layer and that this material would be placed on a clay base and capped with a 12-inch layer of clay (permeability 10^{-7} or 10^{-8} cm/sec.).

If you have any questions concerning this confirmation, please feel free to contact me.

Very truly yours,

GHR ENGINEERING CORPORATION

Phillip H. Spath, P.E.
Manager, Kingston Office

PHS:mc

cc: Kingston Board of Health
Dept. of the Attorney General, Maxine Lipellis
Board of Selectmen, Town of Kingston
William St. Hilaire, DEQE, Northeast Region
Robert Donovan, Hazardous Waste Coordinator
Governors Office, Kevin Donovan
Thomas F. McLoughlin

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
One Winn Boston Street, Woburn, Mass. 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

WSH
BKM

April 23, 1980

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, Massachusetts 02110

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

Dear Mr. Steward:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Quality Engineering has received your letter of April 7, 1980 relative to the treatment and disposal of sludge, contaminated water, and contaminated soil currently in the path of the proposed MBTA Red Line Extension on W.R. Grace & Company property in Cambridge. Should the MBTA be required to handle the above noted disposal, the following procedures are proposed:

1. Sludge will be removed, solidified in an approved manner and disposed of in an approved sanitary landfill.

2. Any water required for the solidification process will be pumped from contaminated groundwater in the area of the sludge piles. Should further dewatering be required during tunnel construction, it is proposed to adjust the pH of this water with lime and inject it back into the ground in the area of contaminated groundwater.

3. Contaminated soil (as determined by existing EPA leachability tests and classification criteria) will be mixed with clean fill until it can pass the leachability test. It is then proposed to use this material as clean fill.

The Department has recently approved solidification as a means for W.R. Grace to neutralize the sludge that currently exists in their lined lagoon. Conceptual approval was also given for the use of that method in neutralizing the sludge and filter cake process waste that has been disposed of adjacent to the lined lagoon. In view of this, the Department conceptually approves of the solidification scheme proposed by the MBTA subject to the same conditions imposed in the W.R. Grace approval, a copy

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

of which is enclosed.

Your proposal to inject neutralized water back into the ground is not a preferred alternative at this time. At the very least, this proposal would require further chemical analyses and groundwater flow data, and probably a discharge permit through the Division of Water Pollution Control. Neutralization and discharge to the MDC sewage system would not require such a discharge permit. Also, the treatment of contaminated soil by dilution, mixing with clean fill, would not result in the classification of the diluted product as a clean fill by this Department. It is the Department's understanding that further chemical analyses of the excavated soil in question is planned in any case. Discussion of further disposal alternatives for this material should be done when all pertinent test results are available. The Department would be willing to consider interim storage as a temporary solution until such time as all test results are available and a suitable disposal plan can be designed and approved.

If you have any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Ewsth/lkw

CC: Cambridge Board of Health
City Hall
Cambridge, Massachusetts 02140

Conservation Commission
City Hall
Cambridge, Massachusetts 02140

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

CC's Continued:

Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp, Dresser & McKee, Inc.
One Center Plaza
Boston, Massachusetts 02108
ATTENTION: Mr. John Splendore

Mr. William Cass, Director
D.H.M.
Room 320 - 600 Washington Street
Boston, Massachusetts 02111

Sabin Lord, Water Pollution Control

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Co.
62 Whittmore Avenue
Cambridge, Massachusetts 02140

Environmental Quality Div.
MDC
20 Somerset Street, 8th Floor
Boston, Massachusetts

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

file

April 23, 1980

WSA

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Company
62 Whittmore Avenue
Cambridge, Massachusetts 02140

RE: CAMBRIDGE-Solid Wastes
W.R. Grace, Proposed Disposal
of On-Site Process Waste

Dear Mr. Campbell,

The Metropolitan Boston-Northeast Regional Office of the Department of Environmental Quality Engineering has reviewed disposal alternatives for the sludge and filter cake process wastes that have been disposed of on-site at the W.R. Grace manufacturing facility in Cambridge. One alternative addresses solidification of the wastes which are presently contained in the existing process lagoon and, the other, a preliminary proposal for on-site encapsulation for the remaining wastes. Regarding the 1st alternative, the effectiveness of solidification in preventing the formation of toxic leachate was demonstrated by Solid Tek-Solidification Technology Systems, Inc., of Morrow, Georgia. The sludge was solidified and leachate from the product, prepared according to procedures presented in the December 28, 1978 Federal Register, was analyzed for toxic parameters by Recra Research, Inc. of Tonawanda, New York. The results received by this office on January 30, 1980, indicate that all parameters identified as toxic are not present in amounts above the limits currently proposed by the Environmental Protection Agency. These limits are set at ten times the interim primary drinking water standards. Based on these results, it is concluded that solidification of the sludge followed by burial in a sanitary landfill is a viable disposal method that would have no adverse environmental impacts.

The Department is of the opinion that the proposed solidification process is in conformance with modern sanitary engineering standards and hereby approves of this proposal subject to the following conditions.

1. The Department be notified when the solidification process begins.

2. Disposal of the product solid waste be at an approved sanitary landfill site.

3. The name and location of the landfill be provided to the Department prior to the commencement of the proposed work.

4. Quality Control of the solidification and disposal process be

provided again prior to the commencement of work.

The Department may require specific testing to assure such quality control.

The other alternative involves sludge from the lined lagoon and filter cake from the manufacturing process that has been disposed of on the ground in two separate areas adjacent to the sludge lagoon. In one of the areas, the waste is in direct contact with groundwater, which has lead to degradation of groundwater quality in the area. It is through this area that the MBTA proposes to dig a tunnel for the extension of its Red Line. The Department has required that the sources of contamination be removed or contained. Proper disposal could be accomplished by utilizing any of the following methods.

1. All waste could be removed from the site and disposed of out of state at an approved hazardous waste disposal facility. This removal would have to be conducted by a firm that is licensed to transport hazardous waste.

2. All waste could be solidified in the manner approved for the sludge in the lined lagoon. The solidified waste could then be disposed of at an approved sanitary landfill.

3. The waste could be encapsulated on-site. Such on-site disposal would have to meet all provisions of Section 150 A of Chapter 111 of the General Laws, the "Regulations for the Disposal of Solid Waste by Sanitary Landfill", and the Wetlands Protection Act, General Laws Chapter 131, Section 40.

On March 13, 1980, a meeting was held between officials of W.R. Grace and engineers from this Department to discuss the proposed waste encapsulation alternative as a means of disposal. A preliminary plan was submitted indicating the proposed location and method of on-site disposal. The Department understands that the plan is preliminary, and offers these comments for your consideration:

1. A clear site preparation plan must be submitted showing (a) 1½ foot clay liner topped by 1 foot of sand or gravel to ensure liner intergrity during construction and operation, (b) 1½ foot thick clay final cover over the waste, (c) enough top soil over the clay cover that will support vegetation, (d) side slopes no steeper than 3 to 1, (e) a minimum of 4 feet vertical between the base of waste and seasonal high groundwater elevation, and (f) protection against inundation by the 100 year flood.

2. Volume calculations for loss of 100 year flood storage capacity and possible compensatory storage alternatives must be

included as part of the entire proposal, and submitted to the Conservation Commission as a Notice of Intent.

3. Specifications for soils to be used as liner material and final cover must be provided.

4. Due to the high organic content of the waste, adequate provisions must be made for the venting of gas.

5. A detailed schedule of operations must be submitted as part of the engineering plan.

6. An "assignment"pursuant to M.G.L. S. 150 A of C. 111 is not required for this clean up operation, and

7. On-Site encapsulation may require the filing of an Environmental Notification Form with the MEPA unit of the Executive Office of Environmental Affairs.

Also, please be advised that the above preliminary disposal site lies within 60 ft. of Jerry's Pond in violation of Regulation 11.5 of 310 CMR 19.00, the Regulations for the Disposal of Solid Wastes by Sanitary Landfill.

If there are any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

by Bruce H. Maillet

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston-Northeast Region

TFM/Eejp/jb

CC: Cambridge Board of Health
City Hall
Cambridge, MA

Cambridge Conservation Commissione
City Hall
Cambridge, MA

CC: Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp Dresser & McKee, Inc.
One Center Plaza
Boston, MA 02108

Attention: Mr. John Splendore

Mr. William Cass, Director
DHW
Room 320
600 Washington St.
Boston, MA

Charles B. Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

Sabin Lord, W.P.C.

Mr. Sam Mygatt, Director
MEPA Unit, EOEA
20th Floor
100 Cambridge Street
Boston, MA

Refers to soils currently stockpiled on Grace property next to former Russell Field.

Comprised of Volume A and Volume C soils.

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

June 22, 1983

Mr. Paul Murphy, Director
Health Department
City Hall
Somerville, Massachusetts 02143

Re: Somerville, MBTA Fill Project at Davis Square

Dear Mr. Murphy:

This office has received your correspondence dated June 6, 1983 in which you ask for an assessment of the quality of soil being used to backfill part of the MBTA's Redline Extension near Davis Square in Somerville. This site was inspected by an engineer from this office on June 1, 1983. The inspection was made at the request of a resident of Somerville who's property abuts the tunnel at the area in question. Enclosed, please find a copy of a memorandum which describes the aforementioned inspection and conclusions drawn.

As stated in this memorandum, it is the Department's position that this soil will not pose a health threat or nuisance to residents of the area once work is completed. While the soil from Russell Field in Cambridge is being transported to and spread out over the tunnel there may be some odor noticeable. Observations made at the site indicate that this odor is faint, and only noticeable when one is very close to the backfilling operation. Experience has shown that minimal amounts of clean cover will prevent any further release of odor. With an average of six feet of gravel proposed for the final layer of cover over the tunnel, future release of nuisance odor to the atmosphere will be eliminated.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours,

EP RJC

Richard J. Chalpin, Deputy
Regional Environmental Engineer

RJC/Eep/rm
cc: DEQE, Division of Hazardous Waste, One Winter St., 8th Floor, Boston
Mr. John A. Carey, Redline Extension N.W., 58 Day Street, W. Somerville, MA
Mrs. Joyce Kelly, 37 Kingston Street, Somerville, MA 02144
Mr. Tom Pelham, Director of Community Development, City Hall, 93 Highland Ave., Somerville, MA

Memorandum for the Record

By: Edward Pawlowski EP

Date: June 14, 1983

Subject: Somerville, MBTA Fill Project at Davis Square

On Wednesday, June 1, 1983, the writer inspected the MBTA's Redline Extension tunnel construction project near Davis Square in Somerville. The inspection was made in response to a complaint received from Joyce Kelly, 37 Kingston St., Somerville, on May 31, 1983. Mrs. Kelly complained of "sewer-like" odor emanating from soil being used by the MBTA to back fill a portion of the new Redline tunnel near her house and Davis Square.

The writer met with John Carey, MBTA, and discussed the odor problems with him. Mr. Carey stated that the filling operation near Davis Square had commenced on the previous day, May 31, with the fill originating from a stockpile adjacent to Russel Field in Cambridge. The stockpiled fill had originally been excavated during tunnel construction adjacent to WR Grace and Company. The fill, predominantly clay, was mixed with sandy soil to improve its handling characterstics and stockpiled for future use as tunnel backfill. This process was performed with the approval of DEQE. The MBTA attempted to use this soil as backfill over the new tunnel in the vicinity of WR Grace this past spring. The wet spring weather, however, rendered the clayey soil viturally unworkable and other soils had to be used. With dryer (relatively) weather in May, the clayey stockpile became workable and was scheduled to be used as backfill in the vicinity of Davis Square. This is the activity that commenced on May 31.

The area of active backfilling near Davis Square was inspected by the writer and Mr. Carey. The writer carried an H-NU photoionization analyzer which is a portable instrument used in the field to detect the presence of organic chemicals in air. The instrument was first used on a walkway that crosses the tunnel at a point just down-wind of the active backfill area. The instrument reading was at background levels at this location. A very faint odor of naphthalene was noticeable on occasion. Naphthalene odor is discernable to most people at concentrations as low as 1 part per billion in air. The H-NU will not register the presence of chemicals in air until the chemical concentration exceeds roughly 200 parts per billion. As such, the presence of naphthalene in air can be detected by an observer long before it will be detected by the H-NU. The current standard for naphthalene in air in the workplace is 10,000 parts per billion (10 parts per million). This standard, known as the Threshold Limit Value, is the average concentration of naphthalene allowable in the workplace for persons working eight hours a day, five days a week, for their working lifetime.

The writer next went down into the area being backfilled and walked along side freshly deposited clay and sand fill with the H-NU operating. Again, the H-NU read at background levels while a faint naphthalene odor was detectable on occasion. At numerous locations, the soil was examined directly by breaking up pieces of clay to expose previously unexposed soil surfaces to the air. An exact tabulation of results was not made in the field. At the time, however, it was the writers opinion that soil samples exhibiting no odor roughly equalled in number those that exhibited a slight naphthalene odor. No soil samples exhibited a strong odor of naphthalene.

After inspecting the tunnel, the writer called at Mrs. Kelly's house to inform her that the inspection had been made. There was nobody home at the time so a note was left for her to contact the writer by telephone. The writer spoke to Mrs. Kelly and her husband at length on June 2, 1983, explaining the results of the inspection.

The soil stockpile next to Russell Field was examined by the writer on June 1 to verify that this was the source of soil being used to backfill the tunnel near Davis Square. The writer found a shovel-dozer in operation, loading trucks that then went directly to the tunnel location in question. No naphthalene odor was evident adjacent to, or on top of this stockpile. The writer was not able to get closer than 100 feet away from the working face due to muddy conditions and danger of collapse of steep slopes which resulted from digging into the side of the stockpile.

The naphthalene odor noticeable in some of the soil being used as tunnel backfill is due to low concentrations of that chemical that have been found in soils adjacent to the WR Grace Company in Cambrige. The concentrations are not considered hazardous. Readings on portable test equipment indicate that, even in close proximity to the soil, concentrations of naphthalene in air are far below the Threshold Limit Value for naphthalene in air in the workplace. The odor itself while not hazardous can be a nuisance to persons subjected to it in their homes or public areas. As such, the backfill project utilizing this soil should be completed as soon as possible. According to Mr. Carey, the MBTA plans to use approximately 6 feet of clean fill to complete the tunnel backfilling job. This clean gravel will be used to allow for the planting of vegetation, trees, etc. (clayey soil, such as that coming from Russell Field, is not suitable for planting). Experience at the Cambridge construction site has shown that as little as 6 inches of clean cover placed over naphthalene containing soil is enough to completely eliminate any odor of naphthalene in the air. As such, it is the writers opinion that once this project is complete, any odor associated with the Russell Field soil will be completely contained by the blanket of gravel fill to be placed over it and will not constitute a hazard or a nuisance to area residents or the environment.

EP/rm

Refers to soils that did not exhibit any contamination and were allowed to be taken to area landfills.

(Volume D soils)

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
323 New Boston Street, Woburn, MA 01801

File
11/5/82

November 1, 1982

Mr. Ralph Spade
R & R Trucking
Bates Road
So. Merrimack, NH 03054

RE: CAMBRIDGE, MBTA
Redline Extension,
Approved Use of Clay
Fill

Dear Mr. Spade:

This Office has received your correspondence dated October 23, 1982 in which you request that the Department provide you with an opinion as to acceptable uses for clay and sandy clay being excavated from the MBTA Redline Extension tunnel construction project in Cambridge

The Department has been closely involved with this project since early 1979 due to a soil contamination problem detected during preliminary engineering studies of soils in the right-of-way of the proposed tunnel immediately to the east of Alewife Brook Parkway. During the past four years, contaminated soils were identified and removed from the site to an approved disposal facility. Contiguous soils were analyzed extensively to determine the extent and degree of any contamination that may have migrated from contaminated soils. Only low levels of contamination were observed in the contiguous soils; any soil exhibiting such low levels of contamination were excavated and stockpiled on site for future use as backfill on top of the completed tunnel.

Soils to the west of Alewife Brook Parkway (Alewife Station and garage) and those generally deeper than twenty feet below original grade to the east of Alewife Brook Parkway have been found to be free of unusual levels of chemical contamination. These soils, predominantly clay and sandy clay, have been hauled during the past few years to sanitary landfills for use as daily cover. This operation has been done with the knowledge and approval of the Department. These soils are not hazardous in nature and provide good quality [redacted] cover for sanitary landfill operations.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours

William J. St. Hilaire

EP
EHll

William J. St. Hilaire, P.E.
Regional Environmental Engineer

WJSH/EP/lmm
cc: DEQE, DHW, One Winter Street-8th Floor, Boston, Mass. 02108
John Powers, MBTA, 58 Day Street, Somerville, Mass. 02144

Volume C was soil found to contain low concentrations of naphthalene. It was excavated + stockpiled for use as tunnel backfill.

The term "special waste" was used by the MBTA engineer. It was <u>NOT</u> classified as such by DEQE.

Report on Solidified Sludge & Special Waste - 4/20/82

Contracts 091.601 - 091.508A

1 - Solidified Sludge - Hauled to Kingston, MA

As of 4/16/82 approximately 19,525 cubic yards have been hauled to Kingston. If hauling continues this week the estimated 2,000 yards remaining should be completed.

2 - Special Waste Being Stockpiled at Russell Field

As of 4/16/82 all of the material designated by S&P Plan SK-1782 Volume C has been excavated and hauled to Russell Field. Volume B has been removed off site by the contractor to landfills in Peabody and Tewksbury, MA Volume A has been removed and stockpiled at Russell Field.

Howard M. Haywood
James J. Dyer
Resident Engineers

CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 498-9011

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

August 8, 1983

To the Honorable, the City Council:

Enclosed please find a copy of a variety of reports from both the Conservation Commission and the Commonwealth of Massachusetts Department of Environmental Quality Engineering relating to the removal of both acid sludge and additional soil from the W. R. Grace site.

Essentially all D.E.Q.E. requirements were complied with. The acid sludge was treated, solidified and removed to an approved sanitary landfill outside the City.

The remaining soil, which did contain napthalene in amounts not considered harmful by D.E.Q.E. was approved for use as backfill by D.E.Q.E.

Very truly yours,

Robert W. Healy
City Manager

RWH/b

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

July 15; 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: Description of the Conservation Commission's involvement with the W.R. Grace site and Russell Field

Background

The MBTA tunnel right of way runs through property owned by the Grace Company. Portions of the property have been used for disposal of process wastes resulting from the manufacture of Daxad. During the subsurface investigation phase for tunnel design, contamination was found within the proposed tunnel construction limits where wastes had been dumped in the mid 1960's and covered with soil. It was this acidic situation which had to be remedied to allow construction of the concrete subway tunnel. Grace and the MBTA split the cost of neutralizing the sludge and contaminated soil in the path of the tunnel and transport to the sanitary landfill at Kingston, MA.

The state D.E.Q.E. performed fairly extensive analysis of the remaining soil on Grace property within the tunnel construction limits as the basis for determining suitability as fill. This was because the material to be removed was otherwise desirable and not all of it was needed for tunnel backfill. Most was used as daily cover for landfill operations.

The D.E.Q.E. did require that excavated soil which had been most contiguous to the acid sludge area was to be stockpiled on site and that the stockpiled soil was to be used as backfill over the tunnel. Some napthalene is present in this soil which accounts for the odor problem but D.E.Q.E. does not consider the amount toxic or hazardous.

Consultants to the MBTA, Goldberg, Zoino Associates, defined the limits of contamination during the design period in 1978, and Grace Company employed the firm of Haley & Aldrich, Inc. to provide additional data with respect to the extent of contaminated sludges disposed of on site. The two firms were in general agreement about areas of sludge disposal. The map submitted to the Conservation Commission by the MBTA in August, 1980 which showed the areas of acid sludge, was based on the work of Goldberg, Zoino.

Conservation Commission

East of the parkway, there have been two filings with the Conservation Commission by the MBTA under the Wetlands Protection Act because of construction impacts to wetland areas located beside the parkway and adjacent to Jerry's Pond, as well as Jerry's Pond. Designated floodplain areas are also a factor.

1. File #123-19 MBTA Construction Contract 091-508A
   Notice of Intent, November 13, 1979
   Superceding Orders of Condition issued by D.E.Q.E., March 28, 1980
   Second D.E.Q.E. permit extension, April 23, 1982

This was a request to construct the tunnel segment east of the parkway and to use Russell Field for storage of backfill. The Russell Field area was to serve as the major depository of backfill material (that excavated material judged suitable) for the adjacent tunnel section as well as the other cut and cover tunnel segments. Stripped top soil from Russell Field was also to be stored there. As can be seen from the attached page of Superceding Orders from D.E.Q.E. the concern focused on management of the stockpiled materials from an erosion and sedimentation point of view. During operations the backfill storage area did extend to outside of the area designated in the Orders and it was not covered or seeded as requested (see attached highlighted note).

2. File #123-24 MBTA Acid Sludge Solidification
   Notice of Intent, August 29, 1980
   Second Extension Permit, October 5, 1982
   Amended Orders of Condition, issued July 8, 1983

The Orders of Condition issued October, 1981 for the acid sludge solidification and removal project included a requirement for

subsequent monitoring of test wells over an 18 month period in order to evaluate effectiveness of the removal operation. All but one of the 12 wells that were included in the monitoring program were destroyed during the removal of the acid sludge and construction of the tunnel, and the monitoring program was never carried out. The T did put in three new wells this spring to begin to pick up where they left off. The parameters to be tested in the original groundwater monitoring plan were limited to ph, sulfates and conductivity, which reflected the construction related concerns of the MBTA. To direct implementation of a groundwater monitoring program at this point the Commission has had prepared Amended Orders of Condition which call for new test wells and broadens the scope of parameters to be tested to include napthalene. These Amended Orders were issued July 8, 1983; a copy is attached with a map of new well locations.

The Amended Orders were worked out with representatives of the MBTA and there is no reason to believe they will not comply this time. A final filing is expected sometime this summer relative to the Red Line Extension which will cover mainly compensatory flood storage provisions.

The Commission is aware that there are concerns regarding the extent and type of possible soil and groundwater contamination at the W.R. Grace site. A fair amount of testing has already occured since 1978, by the MBTA, Grace Company and D.E.Q.E. In addition, the development firm now planning for the site apparently intends to do a complete site analysis. The Commission would be happy to participate in any overall review to be undertaken by City officials.

CITY OF CAMBRIDGE
57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

January 17, 1983

Report on site visit to subway construction site at Alewife Brook by DEQE on January 13, 1983

Present: Sterling Wall, DEQE, John Carey, MBTA, Don Kidston, MBTA, Elsie Fiore, Arlington Conservation Commission, Ted Coughlin, Cambridge DPW, Janet Burns, Cambridge Conservation Commission

A site visit was conducted by Sterling Wall of the DEQE Northeast Regional Office relative to Superceding Orders of Conditions for projects #123-19 and #123-20. Because work on these two projects is expected to continue beyond the expiration date of the Orders, the MBTA has requested extensions of the Orders.

Mr. Wall reviewed the project boundaries, elements and status of the different MBTA contracts presently under construction. Items in both Orders were discussed point by point. Issues discussed included flood storage, turbidity in Yates Pond and management of backfill storage at Russell Field. Backfill at Russell Field is expected to be removed by spring of 1983. Mr. Kidston reported that the engineering consultants of the MBTA have not yet determined the cause of turbidity in Yates Pond.

Condition 13 in #123-20 will require later review. This calls for construction of a new wetland east of the station entrance to compensate for the loss of an existing wetland adjacent to Jerry's Pond. Mr. Kidston said the final Red Line Notice of Intent will probably be filed before the effective date of the new wetland protection regulations, April 1. It was suggested to him that a design review with the Cambridge Conservation Commission would be helpful before the submission. The reconstructed wetland will not be part of the new submission.

The group walked the area around Yates Pond and Alewife Brook, and the area around Jerry's Pond and Russell Field. Mr. Wall observed turbidity in Yates Pond and thought it was due to a combination of overland flow off of the haul road and airborne material. At Russell Field Mr. Wall noted that the area of backfill was outside of the area designated in the Orders and quite close to Jerry's Pond. In view of the removal schedule of this spring, he does not recommend moving the backfill at this time. He did ask for the berm and diversion swale to be improved. Jerry's Pond appeared to be very clear and free of turbidity. MR. Wall suggested periodic checks of the site and if there was evidence of an erosion problem, to call him and he would recommend partial removal of the backfill, or placement of hay bales or fibrous material.

D.E.Q.E.'s Superceding Orders

12. No material shall be stored on the westerly portion of the "Backfill Storage Area" which is designated as wetlands on Plan 11 (b) above.

13. All runoff from the Backfill Storage Area shall be directed to sediment trapping basins, which shall be maintained in good working condition. Plans for such basins shall be submitted to the Department for approval prior to construction.

14. The stored backfill material shall be protected from erosion by placement of impervious membrane cover, or by temporary loaming and seeding, and the working area of placement and removal shall be kept to as small a size as practical.

15. "Russell Field shall be restored to the ground elevation existing at the time of filing of the notice of intent not later than the completion date as established in Contract No. 091-002 between the City of Cambridge and the MBTA."

16. During excavation of the westerly 150 feet of tunnel, representative soil samples shall be taken every 50 feet along the base line at 10' increments of depth. Said samples shall be speedily analyzed for pH an $SO_4^=$; and all materials having $SO_4^= > 500$ p.p.m., (dry weight basis) or $pH < 4.0$ when 10 grams of dried soil is mixed with 100 milliliters of distilled water shall be separately stored under cover, and shall be subject to such additional testing and special handling as shall be required by the Department. Immediately upon receipt of results of the "routine" analyses required above, the Department's Northeast Regional Office shall be notified of the results by telephone.

A final Environmental Impact Report (EIR) for this project has been filed on September 15, 1977 with the Secretary of Environmental Affairs (EOEA #02082). Said EIR describes the environmental impact of this project and sets forth those measures necessary to minimize and prevent any potential significant adverse impact to the environment. Said measures are reflected in the conditions of this action. On October 24, 1977, the Secretary issued a statement that said adequately and properly complies with G.L. C.30, S. 62 to 62H, inclusive.

CITY OF CAMBRIDGE

57 INMAN STREET, CAMBRIDGE, MASSACHUSETTS 02139 • TEL. 498-9048

CONSERVATION COMMISSION

June 27, 1983

TO: Robert Healy

FROM: Janet Burns, Secretary to the Conservation Commission

RE: W.R. Grace Site

Presumably you have by now a statement from Ed Pawlowski of DEQE on the acid sludge removal story, although I understand writing assignments are not his strong suit.

The Conservation Commission is holding a Hearing Tuesday, June 28, and expects to issue Amended Orders of Condition with respect to groundwater monitoring in the tunnel area. The Hearing may be "continued" since it was recently learned that W.R. Grace has received a letter from EPQ notifying them that EPA will conduct a survey. The Commission may wait to find out more about this before proceeding with its own Amended Orders.

Also, while DEQE data and that submitted to the Conservation Commission by the T, is confined to the immediate tunnel area, the Commission has also recently learned that Hines Industries will undertake an analysis of the <u>entire</u> site. The consulting firm of Haley and Aldrich is preparing a proposal for Hines of a testing program reported to cost about $250,000. And, according to Todd Mansfield of Hines Industries, W.R. Grace has commited to mitigation of site conditions if test results indicate such a need.

Finally, as the backfill containing napthelene is being moved around right now odor complaints might occur.

Volume A – Top 1' of soil at Grace/MBTA site.
→ Used as tunnel backfill

Volume B - clean soils brought in to bring site back to original grade after sludge was dug out
→ Removed to area sanitary landfill

Volume C - contained low ~~conc~~ concentrations of naphthalene that leached out of sludge over the years
→ used as tunnel backfill

Volume D - Those soi
deep enough or far
enough away from
sludge deposits that they
were not impacted
→ Removed to area
Sanitary landfills

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

Red Line Extension – Northwest
58 Day Street, W. Somerville, MA 02144

January 8, 1982

RECEIVED
JAN 11 19

Perini Corporation
P.O. Box 200
Cambridge, MA 02140

Attention: Mr. J. W. Bertonazzi
Project Manager

Gentlemen:

Re: MBTA Contract #091-601 -
Alewife Station/Garage/Tunnel
Excavation East of Alewife Brook Parkway

Several meetings have been held with Mr. E. Pawlowski of DEQE regarding disposal of the excavation material from the construction site east of Alewife Brook Parkway.

The following guidelines are to be used during this excavation process. These guidelines cover the area from station 310+00 on the 091-508A contract to station 317+00 on the 091-601 contract. These areas are more generally outlined on the following plans:

Plan #54433 - Construction Staging Plan, Contract #091-508A
Plan #SK1782 Soil Profile dated December 1981.

1. Volume "A" -

Removal of 1 foot of surface material

Excavate the top one foot (1') of material within the tunnel construction limits as indicated in red on Plan #54433 and place in a stockpile area for use as backfill on the Red Line Project.

Contract #091-508A - From Sta. 310+00 to 313+23
Excavation between slurry walls

Contract #091-601 - From Sta. 313+23 to 317+00
Excavation between slurry walls and from 50' relief section outside the slurry walls both north and south side

2. Volume "B" -

Removal of material down to elev. 104±

The next layer of material can be excavated to approx. two feet below the top level of bracing (elev. 104±) within the slurry walls and down to elev. 108 in the relief area (50' north and south) outside the walls from sta. 313+23 to sta. 317.

This material can be removed to any landfill area as it consists mostly of backfill material brought onto the site or of original earth outside the original sludge deposits.

3. Volume "C" -

Removal of material below elev. 104 between sta. 314 and 317 as outlined in green on the plan of soil profile

Excavate this material and place in a stockpile area for use as backfill on the Red Line Project.

4. Volume "D" -

Removal of clay and stratified clays and sands below and outside of area indicated in green

Excavate this material in accordance with Section -02200 of the contract documents.

Very truly yours,

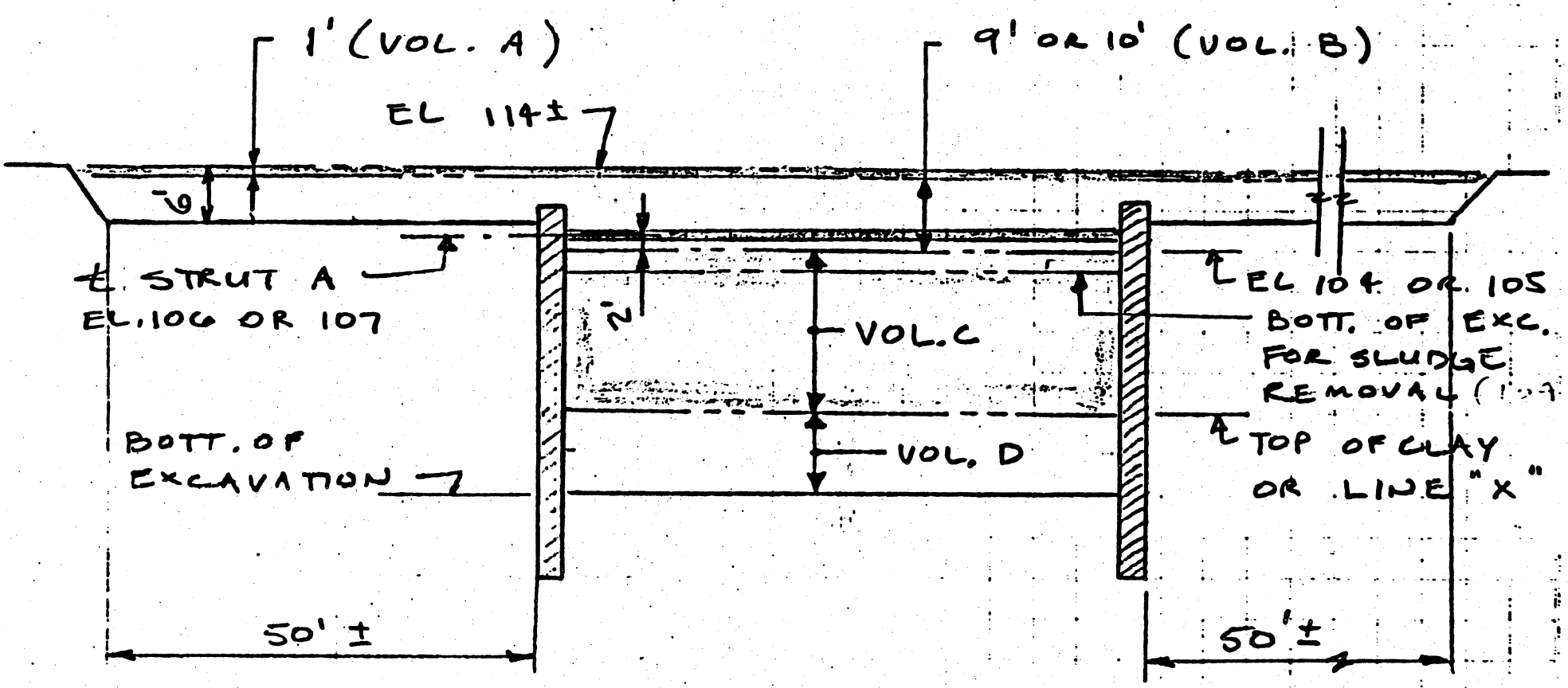
John A. Carey

John A. Carey
Project Manager - Construction

JAC/rh

Attachments

cc: [redacted] - DEQE
F. Keville
H. Haywood
J. Dyer
G. Perko, S&P
L. Moore, WFEM



60' STATION / TUNNEL CROSS SECTION

SVERDRUP & PARCEL

JOB _____ SHEET NO. _____ OF _____

COMPUTATIONS FOR _____ DATE _____

BY _____ CHKD _____

Disposal was never allowed or properly approved by N.H. officials.

Disposal actually took place in Kingston, MA.

Refers to sludge spread on ground over the years.

ASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

50 High Street, Boston, MA 02110

Ed Pace
WSHA

zp
4/22/81

April 14, 1981

Mr. William J. St. Hilaire
Regional Environmental Engineer
Dept. of Environmental Quality Engineering
323 New Boston Road
Woburn, Massachusetts 01801

Dear Mr. St. Hilaire:

DEQE No. 123-24
Sludge Solidification-Cambridge

In accordance with the Notice of Intent and your letter to W. R. Grace dated April 23, 1980, we advise you of the following:

- Solidification of the processed waste started on April 10, 1981.
- The solidified material is being transported to Salem, N. H., per the enclosed letter.

If you have any questions, please contact me at 617-722-3152.

Sincerely,

Charles B. Steward
Environmental Coordinator

Enc.
CBS/ab

cc: L. Hines (W.R.Grace & Co.) (W/Enc.)
Cambridge Conservation Commission "
J. A. Carey (MBTA) "

Refers to sludge that was in the process lagoon.

GRACE

Organic Chemicals Division

W.R. Grace & Co.
Poisson Avenue
Nashua, N.H. 03061

(603) 888-2320

Ed
WSH

November 18, 1980

cf
File
11/24

Mr. William St. Hilaire
Regional Environmental Engineer
Department of Environmental
Quality Engineering
323 New Boston Street
Woburn, Mass. 01801

NOV

Subject: Cambridge Waste Lagoon

Dear Mr. St. Hilaire:

This letter will confirm my phone conversation yesterday, November 17, with Ed Pawlowski regarding solidification of the wastes accumulated in the Building #27 process lagoon. Solid Tek Inc. will begin solidifying these wastes the end of this week and expects to be completed by Thanksgiving. As I discussed with Ed, I will notify him when Solid Tek's equipment is operational, so that he can observe the solidification process.

A landfill site has not been selected at this time. We are planning to use the same site to be selected by the MBTA for the remaining process wastes.

If you have any questions on this project or need any additional information, please contact me at the above address and phone number.

Very truly yours,

Lauchlin V. Hines
Project Engineer

LVH/sd

cc: D.H. Chapman
A.R. Campbell

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 Vw. Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

August 1, 1980

WSHA

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

Dear Mr. Steward:

On July 17, 1980, a meeting attended by representatives of the MBTA, W.R. Grace and Company, Sverdrup and Parcel, Solidtek, SCA Services, Cambridge Conservation Commission, and the Department of Environmental Quality Engineering, was held to discuss alternatives for the disposal of solidified acid sludge wastes which will be generated by the treatment of acid sludge waste now located on the property of W.R. Grace and Company, in Cambridge. Acceptable disposal practices for a particular waste are derived, in part, from the classification of that waste. This letter will serve to notify you as to how this Department is classifying the waste in question.

It is proposed to treat the Grace acid sludge by a solidification process which is designed to stabilize wastes to the point that contaminants will be bound within the resulting solid and prevented from leaching out, even under acidic conditions. Although Solidtek has tested solidified samples of the Grace waste more rigorously than required by the US EPA toxicant extraction procedure, questions remain as to the stability of the solidified waste in a landfill environment. The severe and variable conditions that exist within a landfill, i.e. little or no oxygen, variable heat and pressure, complex chemical and biochemical reactions, and the presence of metals and organics in high concentration, can not be duplicated in a laboratory test. As such, the fate of pollutants that are bound in a solidified waste can not be predicted in cases where these wastes are buried with refuse in a landfill. Based on this conclusion, the Department is [redacted] to 310 CMR 19.16: (1) due to the handling that will be required for the disposal of this waste. This solidified waste can be safely disposed of at a landfill facility, provided that it is not mixed with biodegradeable refuse. As such, it must be isolated in a separate area of the landfill, or on top of closed sections, and covered.

You are reminded that before any waste designated as special can be disposed of at a landfill facility, approval of the local Board of Health must be obtained in

August 1, 1980

RE: Cambridge, W.R. Grace
Classification of Solidified
acid sludge

conformance with the above regulation, 310 CMR 19:16 (1).

If you have any further questions, please contact Mr. William St. Hilaire, P.E., at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Eep/law

CC: Cambridge Board of Health
Cambridge Conservation Commission
W.R. Grace, Allan Campbell, Assistant Counsel
DHW

GHR
ENGINEERING CORPORATION

RECEIVED
OCT 1 Reco

CL-8991

September 28, 1981
Job #2458

Mass. Department of Environmental
Quality Engineering
Southeast Region
Lakeville Hospital
Lakeville, MA 02346

Attention: Mr. Robert Fagan, Chief Land Use Section

Gentlemen:

This is to confirm our conversation of today concerning the disposal of the W.R. Grace solidified acid-sludge within the Kingston Sanitary Landfill. It was agreed that the sludge could be placed in a 2- to 3-foot layer and that this material would be placed on a clay base and capped with a 12-inch layer of clay (permeability 10^{-7} or 10^{-8} cm/sec.).

If you have any questions concerning this confirmation, please feel free to contact me.

Very truly yours,

GHR ENGINEERING CORPORATION

Phillip H. Spath, P.E.
Manager, Kingston Office

PHS:mc

cc: Kingston Board of Health
Dept. of the Attorney General, Maxine Lipellis
Board of Selectmen, Town of Kingston
William St. Hilaire, DEQE, Northeast Region
Robert Donovan, Hazardous Waste Coordinator
Governors Office, Kevin Donovan
Thomas F. McLoughlin

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
205 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

WSHA
BKM

April 23, 1980

Mr. Charles Steward
Environmental Coordinator
MBTA
50 High Street
Boston, Massachusetts 02110

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated Soil at Alewife

Dear Mr. Steward:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Quality Engineering has received your letter of April 7, 1980 relative to the treatment and disposal of sludge, contaminated water, and contaminated soil currently in the path of the proposed MBTA Red Line Extension on W.R. Grace & Company property in Cambridge. Should the MBTA be required to handle the above noted disposal, the following procedures are proposed:

1. Sludge will be removed, solidified in an approved manner and disposed of in an approved sanitary landfill.

2. Any water required for the solidification process will be pumped from contaminated groundwater in the area of the sludge piles. Should further dewatering be required during tunnel construction, it is proposed to adjust the pH of this water with lime and inject it back into the ground in the area of contaminated groundwater.

3. Contaminated soil (as determined by existing EPA leachability tests and classification criteria) will be mixed with clean fill until it can pass the leachability test. It is then proposed to use this material as clean fill.

The Department has recently approved solidification as a means for W.R. Grace to neutralize the sludge that currently exists in their lined lagoon. Conceptual approval was also given for the use of that method in neutralizing the sludge and filter cake process waste that has been disposed of adjacent to the lined lagoon. In view of this, the Department conceptually approves of the solidification scheme proposed by the MBTA subject to the same conditions imposed in the W.R. Grace approval, a copy

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

of which is enclosed.

Your proposal to inject neutralized water back into the ground is not a preferred alternative at this time. At the very least, this proposal would require further chemical analyses and groundwater flow data, and probably a discharge permit through the Division of Water Pollution Control. Neutralization and discharge to the MDC sewage system would not require such a discharge permit. Also, the treatment of contaminated soil by dilution, mixing with clean fill, would not result in the classification of the diluted product as a clean fill by this Department. It is the Department's understanding that further chemical analyses of the excavated soil in question is planned in any case. Discussion of further disposal alternatives for this material should be done when all pertinent test results are available. The Department would be willing to consider interim storage as a temporary solution until such time as all test results are available and a suitable disposal plan can be designed and approved.

If you have any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston/Northeast Region

TFM/Ewsth/lkw

CC: Cambridge Board of Health
City Hall
Cambridge, Massachusetts 02140

Conservation Commission
City Hall
Cambridge, Massachusetts 02140

RE: CAMBRIDGE - Solid Waste
Proposed Handling of Contaminated
Soil at Alewife

April 23, 1980

CC's Continued:

Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp, Dresser & McKee, Inc.
One Center Plaza
Boston, Massachusetts 02108
ATTENTION: Mr. John Splendore

Mr. William Cass, Director
D.H.M.
Room 320 - 600 Washington Street
Boston, Massachusetts 02111

Sabin Lord, Water Pollution Control

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Co.
62 Whittmore Avenue
Cambridge, Massachusetts 02140

Environmental Quality Div.
MDC
20 Somerset Street, 8th Floor
Boston, Massachusetts

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

file

WSM

April 23, 1980

Mr. Allen R. Campbell
Assistant Counsel
W.R. Grace & Company
62 Whittmore Avenue
Cambridge, Massachusetts 02140

RE: CAMBRIDGE-Solid Wastes
W.R. Grace, Proposed Disposal
of On-Site Process Waste

Dear Mr. Campbell,

The Metropolitan Boston-Northeast Regional Office of the Department of Environmental Quality Engineering has reviewed disposal alternatives for the sludge and filter cake process wastes that have been disposed of on-site at the W.R. Grace manufacturing facility in Cambridge. One alternative addresses solidification of the wastes which are presently contained in the existing process lagoon and, the other, a preliminary proposal for on-site encapsulation for the remaining wastes. Regarding the 1st alternative, the effectiveness of solidification in preventing the formation of toxic leachate was demonstrated by Solid Tek-Solidification Technology Systems, Inc., of Morrow, Georgia. The sludge was solidified and leachate from the product, prepared according to procedures presented in the December 28, 1978 Federal Register, was analyzed for toxic parameters by Recra Research, Inc. of Tonawanda, New York. The results received by this office on January 30, 1980, indicate that all parameters identified as toxic are not present in amounts above the limits currently proposed by the Environmental Protection Agency. These limits are set at ten times the interim primary drinking water standards. Based on these results, it is concluded that solidification of the sludge followed by burial in a sanitary landfill is a viable disposal method that would have no adverse environmental impacts.

The Department is of the opinion that the proposed solidification process is in conformance with modern sanitary engineering standards and hereby approves of this proposal subject to the following conditions.

1. The Department be notified when the solidification process begins.

2. Disposal of the product solid waste be at an approved sanitary landfill site.

3. The name and location of the landfill be provided to the Department prior to the commencement of the proposed work.

4. Quality Control of the solidification and disposal process be

provided again prior to the commencement of work.

The Department may require specific testing to assure such quality control.

The other alternative involves sludge from the lined lagoon and filter cake from the manufacturing process that has been disposed of on the ground in two separate areas adjacent to the sludge lagoon. In one of the areas, the waste is in direct contact with groundwater, which has lead to degradation of groundwater quality in the area. It is through this area that the MBTA proposes to dig a tunnel for the extension of its Red Line. The Department has required that the sources of contamination be removed or contained. Proper disposal could be accomplished by utilizing any of the following methods.

1. All waste could be removed from the site and disposed of out of state at an approved hazardous waste disposal facility. This removal would have to be conducted by a firm that is licensed to transport hazardous waste.

2. All waste could be solidified in the manner approved for the sludge in the lined lagoon. The solidified waste could then be disposed of at an approved sanitary landfill.

3. The waste could be encapsulated on-site. Such on-site disposal would have to meet all provisions of Section 150 A of Chapter 111 of the General Laws, the "Regulations for the Disposal of Solid Waste by Sanitary Landfill", and the Wetlands Protection Act, General Laws Chapter 131, Section 40.

On March 13, 1980, a meeting was held between officials of W.R. Grace and engineers from this Department to discuss the proposed waste encapsulation alternative as a means of disposal. A preliminary plan was submitted indicating the proposed location and method of on-site disposal. The Department understands that the plan is preliminary, and offers these comments for your consideration:

1. A clear site preparation plan must be submitted showing (a) 1½ foot clay liner topped by 1 foot of sand or gravel to ensure liner intergrity during construction and operation, (b) 1½ foot thick clay final cover over the waste, (c) enough top soil over the clay cover that will support vegetation, (d) side slopes no steeper than 3 to 1, (e) a minimum of 4 feet vertical between the base of waste and seasonal high groundwater elevation, and (f) protection against inundation by the 100 year flood.

2. Volume calculations for loss of 100 year flood storage capacity and possible compensatory storage alternatives must be

included as part of the entire proposal, and submitted to the Conservation Commission as a Notice of Intent.

3. Specifications for soils to be used as liner material and final cover must be provided.

4. Due to the high organic content of the waste, adequate provisions must be made for the venting of gas.

5. A detailed schedule of operations must be submitted as part of the engineering plan.

6. An "assignment"pursuant to M.G.L. S. 150 A of C. 111 is not required for this clean up operation, and

7. On-Site encapsulation may require the filing of an Environmental Notification Form with the MEPA unit of the Executive Office of Environmental Affairs.

Also, please be advised that the above preliminary disposal site lies within 60 ft. of Jerry's Pond in violation of Regulation 11.5 of 310 CMR 19.00, the Regulations for the Disposal of Solid Wastes by Sanitary Landfill.

If there are any questions, please contact Mr. William St. Hilaire, P.E. at the above address or telephone number.

Very truly yours,

For the Commissioner,

by Bruce H. Maillet

Thomas F. McLoughlin
Regional Environmental Engineer
Metropolitan Boston-Northeast Region

TFM/Eejp/jb

CC: Cambridge Board of Health
City Hall
Cambridge, MA

Cambridge Conservation Commissione
City Hall
Cambridge, MA

CC: Mr. Lauch Hines
W.R. Grace and Co.
Poisson Avenue
Nashua, N.H. 03060

Camp Dresser & McKee, Inc.
One Center Plaza
Boston, MA 02108

Attention: Mr. John Splendore

Mr. William Cass, Director
DHW
Room 320
600 Washington St.
Boston, MA

Charles B. Steward
Environmental Coordinator
MBTA
50 High Street
Boston, MA 02110

Sabin Lord, W.P.C.

Mr. Sam Mygatt, Director
MEPA Unit, EOEA
20th Floor
100 Cambridge Street
Boston, MA

Refers to soils currently stockpiled on Grace property next to former Russell Field.

Comprised of Volume A and Volume C soils.

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
323 New Boston Street, Woburn, MA 01801

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

June 22, 1983

Mr. Paul Murphy, Director
Health Department
City Hall
Somerville, Massachusetts 02143

Re: Somerville, MBTA Fill Project at Davis Square

Dear Mr. Murphy:

This office has received your correspondence dated June 6, 1983 in which you ask for an assessment of the quality of soil being used to backfill part of the MBTA's Redline Extension near Davis Square in Somerville. This site was inspected by an engineer from this office on June 1, 1983. The inspection was made at the request of a resident of Somerville who's property abuts the tunnel at the area in question. Enclosed, please find a copy of a memorandum which describes the aforementioned inspection and conclusions drawn.

As stated in this memorandum, it is the Department's position that this soil will not pose a health threat or nuisance to residents of the area once work is completed. While the soil from Russell Field in Cambridge is being transported to and spread out over the tunnel there may be some odor noticeable. Observations made at the site indicate that this odor is faint, and only noticeable when one is very close to the backfilling operation. Experience has shown that minimal amounts of clean cover will prevent any further release of odor. With an average of six feet of gravel proposed for the final layer of cover over the tunnel, future release of nuisance odor to the atmosphere will be eliminated.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours,

EP RJC

Richard J. Chalpin, Deputy
Regional Environmental Engineer

RJC/Eep/rm
cc: DEQE, Division of Hazardous Waste, One Winter St., 8th Floor, Boston
Mr. John A. Carey, Redline Extension N.W., 58 Day Street, W. Somerville, MA
Mrs. Joyce Kelly, 37 Kingston Street, Somerville, MA 02144
Mr. Tom Pelham, Director of Community Development, City Hall, 93 Highland Ave., Somerville, MA

Memorandum for the Record

By: Edward Pawlowski EP

Date: June 14, 1983

Subject: Somerville, MBTA Fill Project at Davis Square

On Wednesday, June 1, 1983, the writer inspected the MBTA's Redline Extension tunnel construction project near Davis Square in Somerville. The inspection was made in response to a complaint received from Joyce Kelly, 37 Kingston St., Somerville, on May 31, 1983. Mrs. Kelly complained of "sewer-like" odor emanating from soil being used by the MBTA to back fill a portion of the new Redline tunnel near her house and Davis Square.

The writer met with John Carey, MBTA, and discussed the odor problems with him. Mr. Carey stated that the filling operation near Davis Square had commenced on the previous day, May 31, with the fill originating from a stockpile adjacent to Russel Field in Cambridge. The stockpiled fill had originally been excavated during tunnel construction adjacent to WR Grace and Company. The fill, predominantly clay, was mixed with sandy soil to improve its handling characterstics and stockpiled for future use as tunnel backfill. This process was performed with the approval of DEQE. The MBTA attempted to use this soil as backfill over the new tunnel in the vicinity of WR Grace this past spring. The wet spring weather, however, rendered the clayey soil viturally unworkable and other soils had to be used. With dryer (relatively) weather in May, the clayey stockpile became workable and was scheduled to be used as backfill in the vicinity of Davis Square. This is the activity that commenced on May 31.

The area of active backfilling near Davis Square was inspected by the writer and Mr. Carey. The writer carried an H-NU photoionization analyzer which is a portable instrument used in the field to detect the presence of organic chemicals in air. The instrument was first used on a walkway that crosses the tunnel at a point just down-wind of the active backfill area. The instrument reading was at background levels at this location. A very faint odor of naphthalene was noticeable on occasion. Naphthalene odor is discernable to most people at concentrations as low as 1 part per billion in air. The H-NU will not register the presence of chemicals in air until the chemical concentration exceeds roughly 200 parts per billion. As such, the presence of naphthalene in air can be detected by an observer long before it will be detected by the H-NU. The current standard for naphthalene in air in the workplace is 10,000 parts per billion (10 parts per million). This standard, known as the Threshold Limit Value, is the average concentration of naphthalene allowable in the workplace for persons working eight hours a day, five days a week, for their working lifetime.

The writer next went down into the area being backfilled and walked along side freshly deposited clay and sand fill with the H-NU operating. Again, the H-NU read at background levels while a faint naphthalene odor was detectable on occasion. At numerous locations, the soil was examined directly by breaking up pieces of clay to expose previously unexposed soil surfaces to the air. An exact tabulation of results was not made in the field. At the time, however, it was the writers opinion that soil samples exhibiting no odor roughly equalled in number those that exhibited a slight naphthalene odor. No soil samples exhibited a strong odor of naphthalene.

After inspecting the tunnel, the writer called at Mrs. Kelly's house to inform her that the inspection had been made. There was nobody home at the time so a note was left for her to contact the writer by telephone. The writer spoke to Mrs. Kelly and her husband at length on June 2, 1983, explaining the results of the inspection.

The soil stockpile next to Russell Field was examined by the writer on June 1 to verify that this was the source of soil being used to backfill the tunnel near Davis Square. The writer found a shovel-dozer in operation, loading trucks that then went directly to the tunnel location in question. No naphthalene odor was evident adjacent to, or on top of this stockpile. The writer was not able to get closer than 100 feet away from the working face due to muddy conditions and danger of collapse of steep slopes which resulted from digging into the side of the stockpile.

The naphthalene odor noticeable in some of the soil being used as tunnel backfill is due to low concentrations of that chemical that have been found in soils adjacent to the WR Grace Company in Cambrige. The concentrations are not considered hazardous. Readings on portable test equipment indicate that, even in close proximity to the soil, concentrations of naphthalene in air are far below the Threshold Limit Value for naphthalene in air in the workplace. The odor itself while not hazardous can be a nuisance to persons subjected to it in their homes or public areas. As such, the backfill project utilizing this soil should be completed as soon as possible. According to Mr. Carey, the MBTA plans to use approximately 6 feet of clean fill to complete the tunnel backfilling job. This clean gravel will be used to allow for the planting of vegetation, trees, etc. (clayey soil, such as that coming from Russell Field, is not suitable for planting). Experience at the Cambridge construction site has shown that as little as 6 inches of clean cover placed over naphthalene containing soil is enough to completely eliminate any odor of naphthalene in the air. As such, it is the writers opinion that once this project is complete, any odor associated with the Russell Field soil will be completely contained by the blanket of gravel fill to be placed over it and will not constitute a hazard or a nuisance to area residents or the environment.

EP/rm

Refers to soils that did not exhibit any contamination and were allowed to be taken to area landfills.

(Volume D soils)

ANTHONY D. CORTESE, Sc.D.
Commissioner
727-5194

Department of Environmental Quality Engineering
Metropolitan Boston Northeast Region
323 New Boston Street, Woburn, MA 01801

File
11/5/82

November 1, 1982

Mr. Ralph Spade
R & R Trucking
Bates Road
So. Merrimack, NH 03054

RE: CAMBRIDGE, MBTA
Redline Extension,
Approved Use of Clay
Fill

Dear Mr. Spade:

This Office has received your correspondence dated October 23, 1982 in which you request that the Department provide you with an opinion as to acceptable uses for clay and sandy clay being excavated from the MBTA Redline Extension tunnel construction project in Cambridge

The Department has been closely involved with this project since early 1979 due to a soil contamination problem detected during preliminary engineering studies of soils in the right-of-way of the proposed tunnel immediately to the east of Alewife Brook Parkway. During the past four years, contaminated soils were identified and removed from the site to an approved disposal facility. Contiguous soils were analyzed extensively to determine the extent and degree of any contamination that may have migrated from contaminated soils. Only low levels of contamination were observed in the contiguous soils; any soil exhibiting such low levels of contamination were excavated and stockpiled on site for future use as backfill on top of the completed tunnel.

Soils to the west of Alewife Brook Parkway (Alewife Station and garage) and those generally deeper than twenty feet below original grade to the east of Alewife Brook Parkway have been found to be free of unusual levels of chemical contamination. These soils, predominantly clay and sandy clay, have been hauled during the past few years to sanitary landfills for use as daily cover. This operation has been done with the knowledge and approval of the Department. These soils are not hazardous in nature and provide good quality [redacted] cover for sanitary landfill operations.

If you have any questions, please contact Mr. Edward Pawlowski at the letterhead address or by calling 935-2160.

Very truly yours

William J. St. Hilaire

EP
EHW

William J. St. Hilaire, P.E.
Regional Environmental Engineer

WJSH/EP/lmm
cc: DEQE, DHW, One Winter Street-8th Floor, Boston, Mass. 02108
John Powers, MBTA, 58 Day Street, Somerville, Mass. 02144

Volume C was soil found to contain low concentrations of naphthalene. It was excavated + stockpiled for use as tunnel backfill.

The term "special waste" was used by the MBTA engineer. It was NOT classified as such by DEQE.

Report on Solidified Sludge & Special Waste - 4/20/82

Contracts 091.601 - 091.508A

1 - Solidified Sludge - Hauled to Kingston, MA

As of 4/16/82 approximately 19,525 cubic yards have been hauled to Kingston. If hauling continues this week the estimated 2,000 yards remaining should be completed.

2 - Special Waste Being Stockpiled at Russell Field

As of 4/16/82 all of the material designated by S&P Plan SK-1782 Volume C has been excavated and hauled to Russell Field. Volume B has been removed off site by the contractor to land-fills in Peabody and Tewksbury, MA Volume A has been removed and stockpiled at Russell Field.

Howard M. Haywood
James J. Dyer
Resident Engineers

CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 498-9011

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

August 8, 1983

To the Honorable, the City Council:

Enclosed please find a copy of a variety of reports from both the Conservation Commission and the Commonwealth of Massachusetts Department of Environmental Quality Engineering relating to the removal of both acid sludge and additional soil from the W. R. Grace site.

Essentially all D.E.Q.E. requirements were complied with. The acid sludge was treated, solidified and removed to an approved sanitary landfill outside the City.

The remaining soil, which did contain napthalene in amounts not considered harmful by D.E.Q.E. was approved for use as backfill by D.E.Q.E.

Very truly yours,

Robert W. Healy
City Manager

RWH/b

Agenda Item Number Twenty-Four

#225-48

Re: enclosing a variety of reports from the Conservation Commission & Mass. Dept. of Environmental Quality Engineering Re: removal of acid sludge & soil from the W.R. Grace site.

9/12/83
No Action Taken
on Charter Right
Removed from Calendar
under
Rule 19 of City Council

In City Council,

August 8, 1983

8/8/1983
Charter
Right
By
Councillor
Danehy