

GROUNDWATER INVESTIGATION,
RAMAPO HELICOPTER,
SPRING VALLEY, NEW YORK

Prepared for:
Ramapo Helicopter



INTERNATIONAL EXPLORATION
212 N. MAIN STREET
DOYLESTOWN, PA 18901
(215) 345-5586 FAX (215) 345-7106

July, 1991

Background

This investigation is the result of soil contamination discovered during the excavation of three underground storage tanks located adjacent to the helicopter pad at Ramapo Helicopter, in the Spring Valley Airport, Spring Valley, New York (Figure 1). Excavation of the tanks from a single excavation, which took place in December, 1990, revealed the presence of elevated levels of petroleum hydrocarbon in samples collected from the soil removed from around the tanks. In addition, water in the excavation (presumably the water table) revealed the presence of a petroleum-like sheen on its surface. As a result, the NY Department of Environmental Conservation required that a groundwater investigation associated with the excavation be conducted.

Well Locations

Groundwater monitoring wells locations were based on results of a soil gas survey conducted at the site in February, 1991. Results of this survey were outlined in a report dated March, 1991, and revealed the presence of volatile organics in the soil gas extending south and east from the excavation. Three monitoring wells were installed with the intent of intercepting a potential contaminant plume associated with the elevated volatiles. The well locations also corresponded with the presumed hydraulically downgradient direction, which is assumed to be either toward wetlands (east), or toward the railroad cut (south). MW-2 is

located immediately south of the excavation; wells MW-1 and MW-4 are farther south and east of it, respectively.

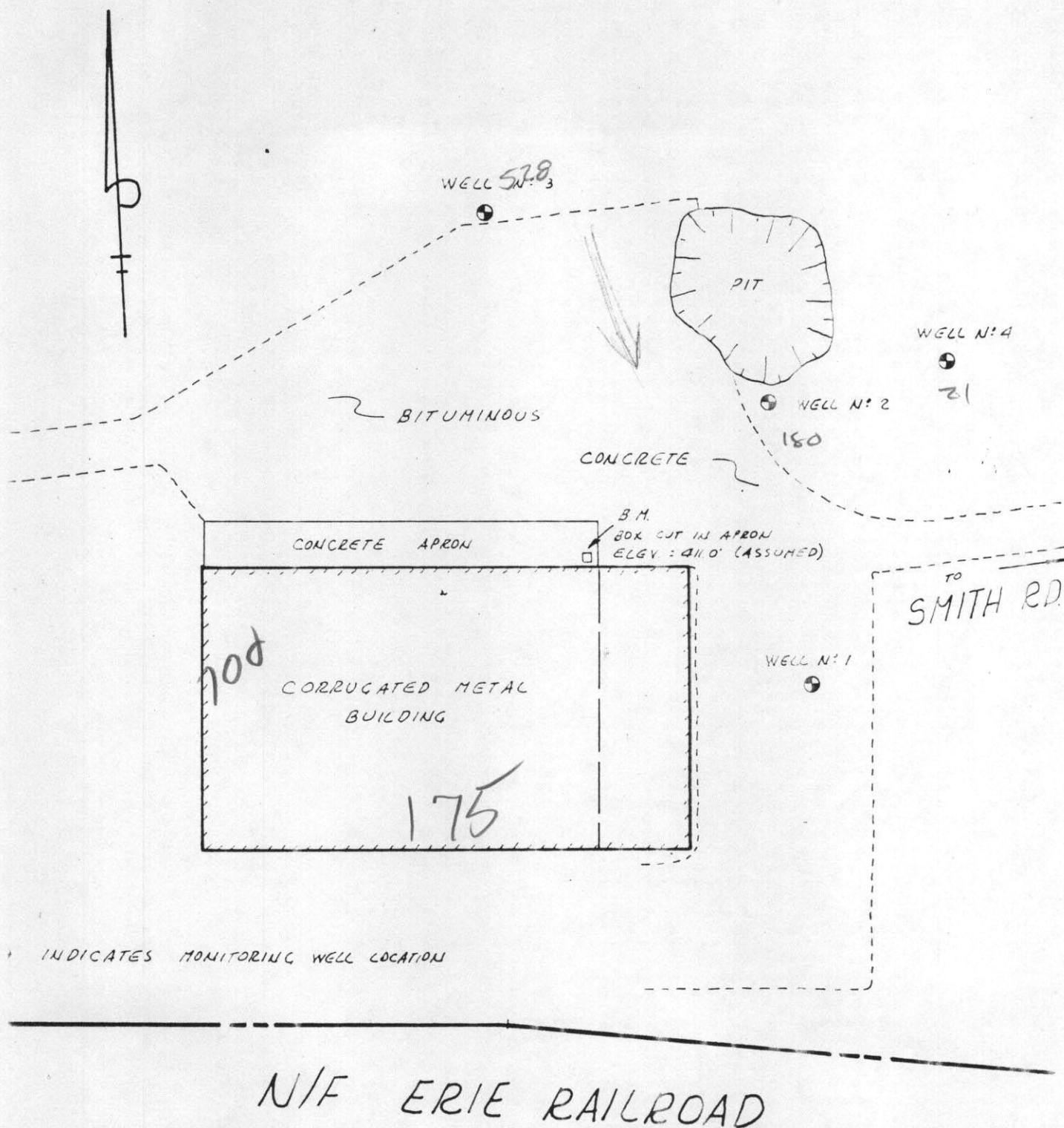
Due to concern over potential upgradient contamination from the Spring Valley Airport, an additional well was installed in the upgradient direction (northwest) from the excavation. The soil gas survey revealed only very low concentrations of volatiles in the area in which this well (MW-3) was installed.

Monitoring well locations are shown in Figure 2.

Well Construction

Wells were drilled using a hollow stem auger. Split spoon samples were collected at five foot intervals for the purpose of classification. The subsurface in all three wells consisted of brown to grey silt, with some fine to coarse gravel and sand.

Monitoring wells were constructed using 4" diameter PVC. They are screened between depths of 3.5 feet to 15.5 feet, and sealed above the top of the screen using bentonite. In monitoring wells MW-2 through MW-4, water was encountered during drilling at a depth of 4 feet, and in MW-1 at a depth of 7.5 feet. The four wells vary in total depth between 13.5 and 16 feet. MW-1, which was 16 feet deep, encountered auger refusal at that depth. However, because of the glacial nature of the overburden, it is not possible to ascertain whether the auger hit bedrock or a large boulder. The obstruction was described as a highly weathered basaltic rock.



INDICATES MONITORING WELL LOCATION

FIGURE 2

MONITORING WELL LOCATIONS
RAMAPO HELICOPTER

LOCATIONS SHOWN HEREON BASED ON FIELD
SURVEYMENTS AND INFORMATION PROVIDED
INTEX, INC.

Keller & Kirkpatrick

A Division of
K & A Limited Inc.

900 LANIDEX PLAZA, PARSIPPANY, N.J. 07054

CONSULTING ENGINEERS
LAND SURVEYORS

LANDSCAPE ARCHITECTS
PLANNERS

MATTHEW L. MARTINI, Land Surveyor LIC. 30088

ROBERT C. KIRKPATRICK JR., Prof. Engineer & Land Surveyor LIC. 11359

JOB NO. 910703

DATE JULY 16, 1991

SCALE 1"=50'

CHK'D

BOOK 116

Monitoring well construction diagrams are contained in Appendix 1.

After development, the yields of the wells were all estimated to be less than one gpm (driller's estimate). Development water was containerized in drums pending disposal.

Well Sampling

Prior to collecting groundwater samples from the wells, three well volumes of water were removed from each well bore using a dedicated, decontaminated bailer. Each sample was collected using a stainless steel bailer, and contained in laboratory prepared bottleware. A field rinsate blank was collected by pouring laboratory prepared distilled water through a decontaminated bailer, and collecting the rinse water. A trip blank accompanied the samples to and from the site. Samples were kept in a cooler until delivery to the laboratory (Laboratory Resources Inc., Westwood, NJ, EPA ID # 45-116). The monitoring well samples and the rinsate blank were analyzed for volatile and semivolatile organic compounds (EPA methods 624 + 15 and 625 + 15). The trip blank was analyzed for volatile organics only.

Monitoring well sampling data sheets are included in Appendix 1.

Analytical Results

The results of the laboratory analysis of the samples are listed in Table 1. Laboratory analysis data is contained in Appendix 2.

Table 1
Analytical Results, Ramapo Helicopter

| | MW-1 | MW-2 | MW-3 | MW-4 | FR | TB |
|--------------------------------|------|-------|------|------|------|------|
| Volatile Organics | | | | | | |
| <u>in ug/l</u> | | | | | | |
| Acetone | 38 | | | | | |
| Methylene Chloride | 3 JB | | 1 JB | 1 JB | 1 JB | 1 JB |
| 1,1,1 TCE | 1 J | | | | | |
| Benzene | | 7 | | | | |
| 4-Methyl-2-Pentanone | | 19 | | | | |
| Chloroform | | | | | | 1 J |
| 1,2-Dichloroethane | | | | | | |
| Trichloroethene | | | | | | 3 J |
| TIC, total* | 6 | 1,069 | | | | |
| Base Neutrals | | | | | | |
| <u>in ug/l</u> | | | | | | |
| Bis-2-Ethylhexyl- Phthalate | | 7 J | 4 J | 2 J | 6 J | |
| TIC, total* | 38 | 197 | 42 | 13 | 143 | |

FR = Field rinsate blank
TB = Trip blank
J = detected below MDL
B = compound present in method blank
*TIC = library search for tentatively
identified compounds. Concentrations
are estimated

The results indicate that MW-2 contains 7 ug/l of benzene, which is slightly higher than the EPA drinking water standard of 5 ug/l. This well also contained 19 ug/l of 4-Methyl-2-Pentanone, an estimated 1,069 ppb of tentatively identified volatile organic compounds, and an estimated 197 ppb of tentatively identified semivolatile compounds. Monitoring well #1 contained 38 ppb of acetone. Acetone is a common laboratory contaminant, and although there is no evidence that the acetone in this sample is due to laboratory contamination, none of the other samples contained

acetone. Currently, no drinking water standard has been established for acetone. Monitoring wells #1, #3, and #4 all contained low concentrations of tentatively identified semivolatile organic compounds.

Groundwater Flow Direction

The four monitoring well elevations were surveyed by a licensed New York surveyor. Because only relative water level elevations were needed, the surveyors assumed an elevation for one monitoring well and surveyed the other three wells relative to that elevation. Water level measurements were collected on two separate occasions, and the hydraulic gradient and flow direction was calculated from these elevations by triangulation. The relative elevations of the wells, and the resultant water level elevations are listed in Table 2. Water level contour maps based on the two water level measurement dates are shown in Figures 3 and 4.

Table 2

Monitoring Well and Water Level Elevations*

| Well # | Well Elevation | Water Level Measurements | | Water Level Elev. | |
|--------|----------------|--------------------------|---------|-------------------|---------|
| | | 6/11/91 | 7/15/91 | 6/11/91 | 7/15/91 |
| 1 | 409.57 | 9.05 | 10.01 | 400.52 | 399.56 |
| 2 | 412.07 | 7.41 | 9.52 | 404.66 | 402.55 |
| 3 | 414.55 | 7.71 | 9.86 | 406.84 | 404.69 |
| 4 | 410.82 | 8.10 | 9.92 | 402.72 | 400.90 |

*Elevations of wells relative to assumed elevation of MW-4 outer casing (cap) of 411.10 feet.

The resultant groundwater flow direction estimated from the four triangles formed by the four wells produced directions ranging from

almost due east to due south. Measurements for the dates listed above resulted in average flow directions of S38°E (7/15/91) and S41°E (6/11/91). The water level contour maps also indicate a southeast direction of flow. It should be noted that the calculated range of flow directions extended across more than a 90° angle, and as a result, the average flow direction may not represent actual conditions. In any case, regardless of a southern, eastern or southeastern flow direction, the three intended downgradient wells (MW-1, MW-2, and MW-4) are all in the general downgradient direction from the excavation.

Discussion

Although neither of the two monitoring wells MW-1 and MW-4 may be directly downgradient from the excavation, they are both close enough to the excavation, and sufficiently downgradient from it to have intercepted some of the organics from the excavation, if they were present in high concentrations. However, the laboratory analysis from MW-2 demonstrates that the levels of contaminants are not excessive even immediately adjacent to the excavation. Benzene, which slightly exceeded EPA drinking water standards, was not detected in the other two wells. In addition, there are no known water supply wells directly downgradient from the excavation, which would eventually outlet into the railroad track swale.

The proximity of the water table to the ground surface also allows significant dilution effect from infiltrating rain. This factor, combined with the area over which the potential plume can disperse,

suggests that the levels of organics detected in these wells do not represent a hazard.

Conclusions

1. Monitoring well #2, located closest to the excavation, was found to contain the highest concentrations of volatile and semivolatile compounds. Benzene, in particular, was in excess of EPA drinking water standards, and the total number of volatile organic compounds exceeded 1,000 ppb. However, neither of the wells located within 100 feet of MW-2 contained benzene, and MW-1 contained only 6 ppb of TIC volatile organics.

2. The upgradient well, MW-3, contained the lowest concentrations of volatile and semivolatile organics, and it can be concluded that the groundwater in the downgradient wells at the site have not been adversely affected by contamination from an upgradient source.

3. The mean direction of groundwater flow calculated using triangulation of water level elevations from the four wells on two separate dates indicated a direction of approximately S40°E. If correct, the groundwater would eventually outlet toward the railroad swale.

Recommendations

The wells should be resampled within three months to insure that levels of organics have not increased with time. Because the primary compounds detected in the groundwater consisted of volatile organics (benzene and TIC), we recommend that only volatile organics be analyzed. Assuming that the concentrations of organics have not increased after three months, we would recommend that the excavation be closed, and that no additional cleanup work associated with the excavation be initiated.

REPORT
IN SPILLS

SOIL GAS SURVEY,
RAMAPO HELICOPTER FACILITY,
SPRING VALLEY,
NEW YORK

Spill # 90-09457
Rockland Co.

Prepared for:

Ramapo Helicopter



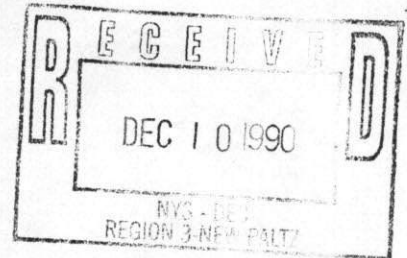
INTERNATIONAL EXPLORATION
212 N. MAIN STREET
DOYLESTOWN, PA 16901
(215) 345-5586 FAX (215) 345-7108

March, 1991



ROCKLAND COUNTY DEPARTMENT OF HEALTH

MEMORANDUM



TO: KARL WEED
NYSDEC, Region III,
Division of Oil Spills, Spill Remediation Group

FROM: Carl Dornbush
Rockland County Health Dept., PBS Program

SUBJECT: REFERRAL FOR SITE REMEDIATION
RCHD/DEC SPILL # 90-137 90-06526 Date 6 DEC 90
PBS # 26-509-0-1
Location of Spill RAMAPO HELICOPTERS
SMITH ROAD SPRING VALLEY NY 10977

As per Mr. George O'Keefe's December 7, 1988 letter to Mr. Paul Keller, this Department is hereby referring this case to D.E.C. for approval of and supervision of the remediation work. This Department may be able to review proposals or site visit the location at the request of D.E.C.

PRP: Name MR RICHARD EIMERT PRES.
Address RAMAPO HELICOPTERS INC
SMITH ROAD SPRING VALLEY, NY 10977
Phone 914 352 8600

Origin of Spill ☒ Tank Removal
☐ Other

Information ☒ Contamination of soil too extensive to be removed
☒ Free floating product witnessed by staff
☒ Other 55 GAL DRUMS ON SITE LEAKING.

JWE/ipb * → SOLVENT DISCHARGE FROM DEGREASING OPERATION - 90-09451

ATTACHMENTS

☒ PBS Certificate
☒ RCHD Spill Report Form -(2)
☐ RCHD Tank Removal Checklist
☒ RCHD Inspection Report (McBee)
☐ Other Notes to File

Comments: COPY ALL CORR. TO : DONALD S TRACY
TRACY BERTOLINO AND EDWARDS
ATTORNEYS AT LAW
317 LITTLE TOR RD SOUTH
NEW CITY, NY 10956

FORM 10-21
REV. 3/90

1 CC PBS file

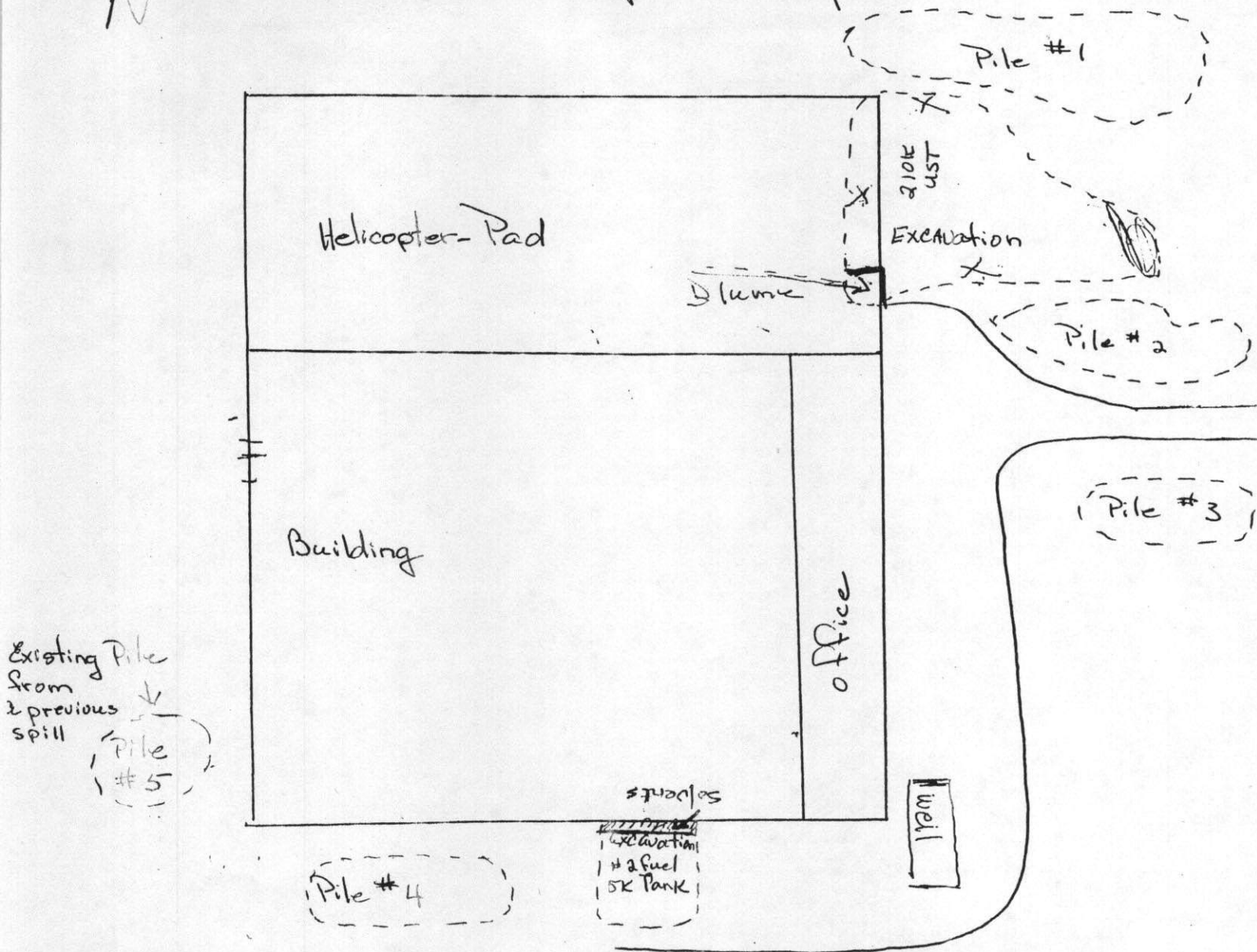
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Ramapo Helicopter



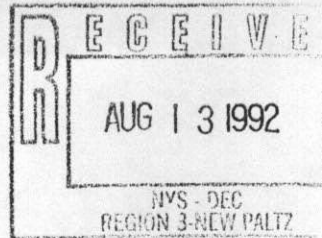
Pile #2+3 Subtitle I
Pile #5+6 Non Subtitle I
Pile #4 " "
Pit Uoa 8240
(Bldg against)

#6 ← Solvent Pile from against Bldg.

344038

bcc: E. Barcomb
R. Piaggione, DEE
A. Carlson, DOH
L. Concra, DRA
R. Dana, DEE
A. McCarthy
R. Pergadia, R/3
A. Klauss, R/3
S. Ervolina
J. Swartwout
R. Marino
W. Bayer
L. Beagle
E. Zuk

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233



AUG 4 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

LB/srh

This letter was sent to the people/company on the attached list.

Dear Ladies/Gentlemen:

As mandated by Section 27-1305.4.a. of the Environmental Conservation Law (ECL), copy enclosed, the New York State Department of Environmental Conservation (NYSDEC) must investigate all inactive disposal sites suspected or known to contain hazardous wastes. We have received information which leads us to suspect that hazardous waste has been disposed of at the following location:

DEC Site No.:

Site Name:

Site Address:

Tax Map No.:

RAMAPO HELICOPTER

Therefore, this letter constitutes notification of the NYSDEC's intention to investigate the validity of this suspicion. Should this study confirm that hazardous waste disposal has occurred, this site will be entered into the Registry of Inactive Hazardous Waste Disposal Sites in New York State.

A summary of the information we presently have on the site is included. If you should have information that may be relevant to our investigation, please forward it within fifteen days of receipt of this letter, to Mr. John Swartwout, Chief of the Eastern Investigation Section in the Bureau of Hazardous Site Control, Room 220, 50 Wolf Road, Albany, New York 12233-7010.

Sincerely,

RS KB DB EO'D

HA MM JS

Enclosure

*Make separate for each of
your sites & file*

Robert L. Marino

Robert L. Marino
Chief
Site Control Section
Bureau of Hazardous Site Control
Division of Hazardous Waste Remediation

8/17



INTERNATIONAL EXPLORATION

212 N. MAIN STREET
DOYLESTOWN, PA 18901
TELEPHONE: 215-345-5586
TELEFAX: 215-345-7108

BRANCH OFFICES:

NEWARK, NEW JERSEY
201-589-3850
SYRACUSE, NEW YORK
315-697-3979

Via Federal Express

Mr. Karl Weed
New York State Department of
Environmental Conservation
21 S. Putt Corners Rd.
New Paltz, NY 12561

RE: Groundwater Investigation Report
Ramapo Helicopter, Spring Valley, NY

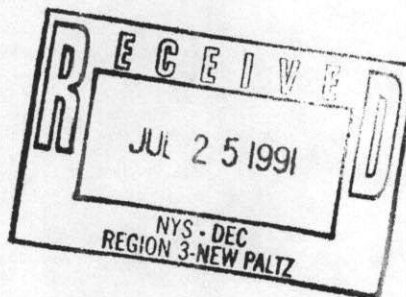
Dear Mr. Weed:

Enclosed are two copies of the results of the groundwater investigation at Ramapo Helicopter site. Thank you for your patience in granting extensions for this report. If you have any questions concerning the results, please call me.

Sincerely,
INTEX, Inc.

Gay Deamer
Project Manager

cc: Mr. Bob Hagan (w/ report)



Spill # 90-09451
Rockland Co.



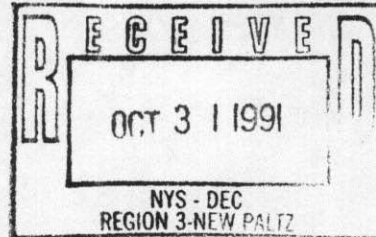
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BRANCH OFFICES:
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SYRACUSE, NEW YORK
315-697-3979

October 29, 1991

Mr. Karl Weed
NYSDEC
21 S. Putt Corners Rd.
New Paltz, NY 12561



**RE: Groundwater Sampling Results
Ramapo Helicopter, Spring Valley, NY
Spill #90-09451**

Dear Karl;

Enclosed please find a copy of our report outlining the results of the second round of samples collected from monitoring wells at Ramapo Helicopter. If you have any questions concerning the report, please call me.

Sincerely,
INTEX, Inc.

Gay Deamer
Project Manager

GD:cnh
cc: Mr. Bob Hagan