HYDROGEOLOGICAL SITE STUDY

MOTTOLO SITE, RAYMOND, NH AUGUST 1985

Hydrogeological Investigation Unit
N.H. Water Supply and Pollution Control Commission

Commission Report #149

HYDROGEOLOGICAL INVESTIGATION
OF THE
MOTTOLO HAZARDOUS WASTE SITE
RAYMOND, NEW HAMPSHIRE

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August 1986

EXECUTIVE SUMMARY

The Mottolo Hazardous Waste Site is located in a rural section of the Town of Raymond, New Hampshire. Over 1,600 pails and drums of various hazardous wastes were disposed of in a quarter of an acre open face dump from approximately 1975 thru 1979. The pails, drums and some contaminated soil were excavated and secured in an emergency removal action by the United States Environmental Protection Agency in 1980 and 1981 and were removed from the site in 1981 and 1982.

The NHWS&PCC Hydrogeological Investigation Unit began a hydrogeological investigation of the Mottolo Site in March 1985 to update the previous site information and to better define the area of contamination and the potential receptors at risk. The Unit's hydrogeological investigation included a fracture fabric analysis of the bedrock geology of the area, selected geophysical surveys, a hydrochemical reconnaissance of the site, the installation of ten additional monitoring wells, the measurement of groundwater and surface water elevations and the sampling of monitoring wells, residential wells and nearby surface waters.

The investigation indicated that there are no additional areas of buried metal containers at the site, but that residual contamination emanating from the former drum disposal area is continuing to adversely impact the groundwater and surface waters near the site. A main plume of groundwater contaminated with measurable levels of volatile organic chemicals is emanating from the former drum disposal area and has migrated towards an unnamed tributary of the Exeter River, referred to as Brook A in this report. Volatile organic chemicals have been detected in the overburden and bedrock aquifers and along a reach of Brook A. No

impact has been detected to date in nearby residential bedrock and overburden wells or in Brook A at the Randy Lane Culvert approximately 1,800 feet downstream of the site. However, volatile organic chemicals were also detected at a bedrock/overburden monitoring well couplet approximately 230 feet downstream of the main plume of contaminated groundwater, which may be the result of transmission in the bedrock aquifer and subsequent discharge to the overburden aquifer.

Groundwater elevation data indicate that the upland area near the former drum disposal area is a local recharge area and groundwater flow is northeasterly towards Brook A where the overburden and bedrock aquifers discharge to the surface water drainage system of Brook A. Although no impact has been detected to date in any of the residential water supply wells, it should be noted that the water supply wells in the area will be at risk until soil and groundwater contamination at the site is mitigated.

Future studies and remedial cleanup actions at the site should be performed in accordance with the National Contingency Plan.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 SITE BACKGROUND INFORMATION

The Mottolo Site is located on Blueberry Hill Road in the Town of Raymond, New Hampshire, approximately 3.2 miles south of the center of Raymond (Figure 1). The site is located in a rural area characterized by undeveloped wooded land and single family residences.

The site was discovered in April 1979 in response to a complaint from a local official. Initial site reconnaissance revealed a small open face dump, approximately one quarter of an acre in area, being operated for the disposal of drums and pails containing various hazardous wastes. At that time the site consisted of an access road, three buildings used as part of a former piggery operation which was not active at the time of site discovery, a pile of manure and miscellaneous wastes produced from the former piggery operation, two abandoned trucks and the drum disposal area. A leachate seep was observed emanating from the toe of the drum disposal area and flowing northeasterly towards an unnamed brook (1). Surface water was also observed contacting the toe of the dump. The former piggery operation/drum disposal area was located in approximately two acres of open land in the southwest portion of a fifty acre parcel of property owned by Richard Mottolo. In 1979 the primary concerns were the water supply wells of several single family homes located on Blueberry Hill Road to the north and northwest of the site and the potential contamination of the Exeter River which was used to supply drinking water to the Town of Exeter.

More than 1,600 drums and pails were disposed of in the dump area just north of the main piggery building. The wastes were believed to

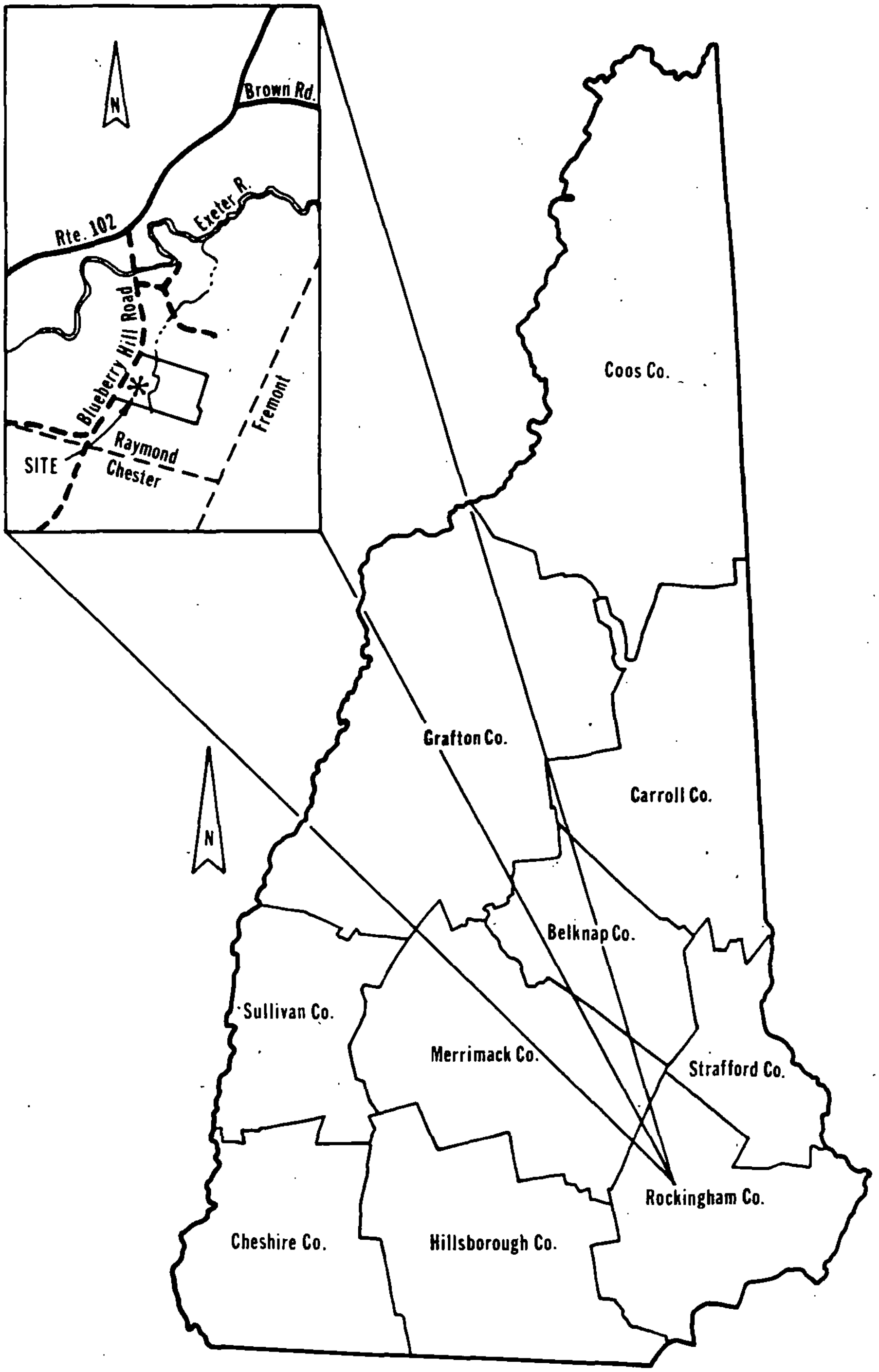


FIGURE 1

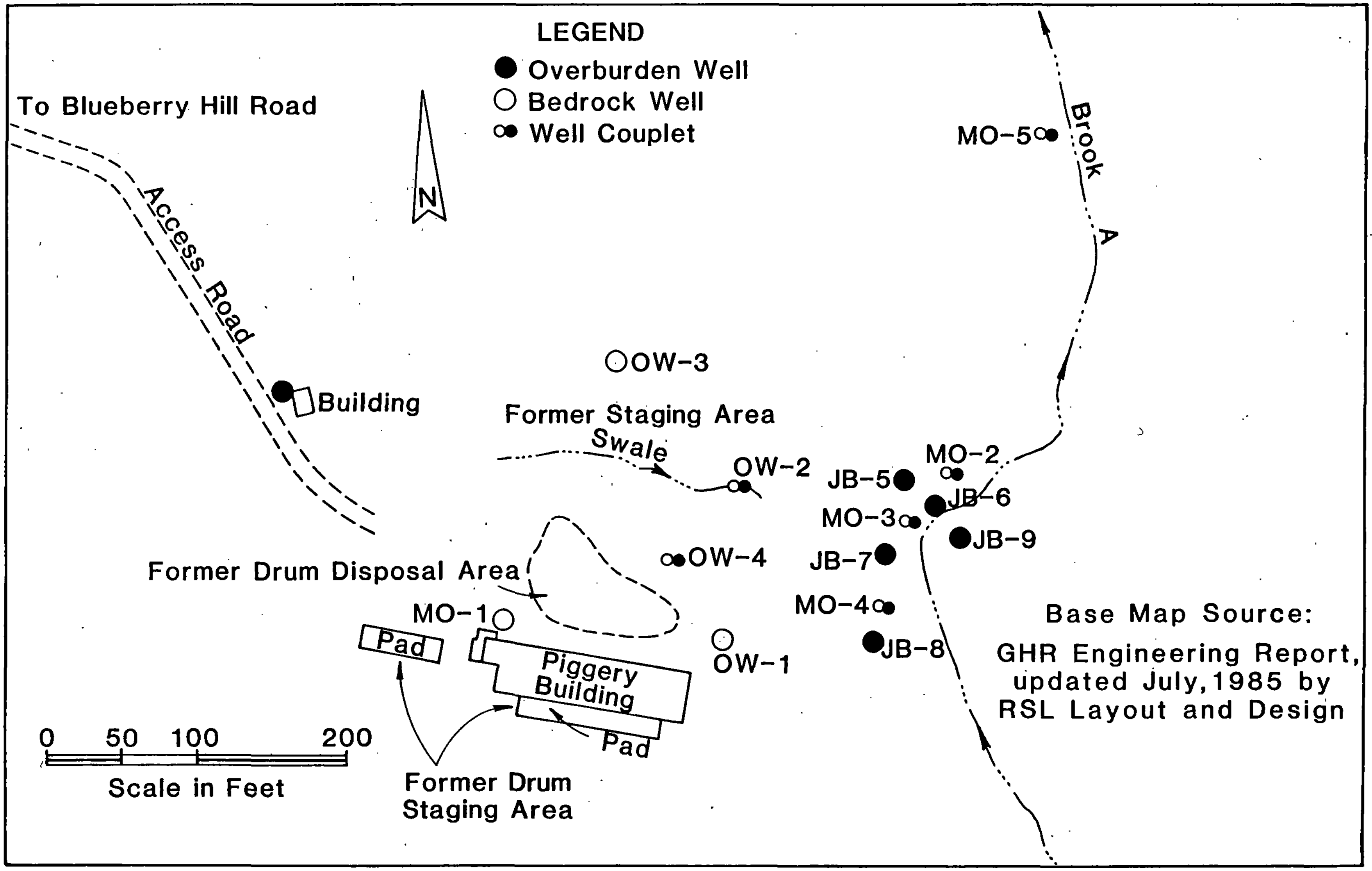
LOCATION MAP - MOTTOLO SITE

RAYMOND, N.H.

have been disposed of during a 4-5 year period prior to 1979, when the disposal operation ceased. The apparent method of disposal was to dump the drums and pails and apply a top layer of soil cover to allow access for subsequent waste disposal at the open face of the dump. In 1980 the United States Environmental Protection Agency (USEPA), Environmental Services Division initiated site activity to excavate and remove the buried wastes. Prior to the excavation of waste the following site preparation actions were taken: 1) surface water was diverted away from the toe of the dump by constructing a diversion swale and a soil berm, 2) an area north of the disposal area was cleared and graded for the temporary staging of excavated materials and 3) a temporary access road was constructed to that staging area. The drums were excavated from the disposal area by USEPA over the time period from September to December 1980. The drums/pails were temporarily staged at three locations at the site for waste characterization and storage prior to final removal for disposal. The wastes and approximately 160 cubic yards of contaminated soil were removed from the site in December 1981 and January 1982. After the drums were removed the excavated area was filled with soil, roughly graded and seeded to establish vegetative growth. Existing site conditions have changed little since the completion of the drum removal process with the exception that one wooden building located just west of the piggery building was razed and only its concrete floor pad remains (Figure 2).

Sampling results indicate that groundwater and surface water at the site has been adversely affected by contaminants emanating from the for-

FIGURE 2
SITE MAP
MOTTOLO SITE, RAYMOND, N.H.



Base Map Source:
GHR Engineering Report,
updated July, 1985 by
RSL Layout and Design

mer drum disposal area, but nearby private water supply wells and the Exeter River have apparently not yet been impacted. Preliminary results obtained from a hydrogeological investigation conducted concurrently with USEPA's drum removal project indicated at that time both surface water and groundwater flow was generally in a northeast direction from the site towards a small unnamed tributary of the Exeter River hereinafter referred to as Brook A. Several orange-brown stained leachate seeps are evident adjacent to the main channel of Brook A.

In April 1985 the New Hampshire Water Supply and Pollution Control Commission (NHWS&PCC) Hydrogeological Investigation Unit was charged with updating the hydrogeological investigation of the site to provide a better assessment of contaminant migration from the site. Field work began in March 1985 and was completed in November 1985.

1.2 NATURE AND EXTENT OF PROBLEM

Residual contamination from the former drum disposal area continues to adversely affect groundwater and surface water at the site. The site area is underlain by a relatively thin layer, less than 20 feet, of a variety of soils ranging from glacial till to stratified sands. The overburden (soil) aquifer is recharging the bedrock aquifer in the upland portion of the site. Groundwater flow is northeasterly toward Brook A. The relationship between the hydraulic gradient in the overburden and bedrock aquifers reverses in the valley of Brook A and groundwater discharges from the bedrock aquifer to the overburden aquifer and subsequently to the surface drainage system of Brook A.

The majority of affected groundwaters and surface waters is in the immediate area of the former drum disposal and the area of visible leachate seeps adjacent to Brook A. However, monitoring wells MO-5S and MO-5D, which were installed approximately 230 feet north in the floodplain of Brook A, indicate that contamination is migrating in the bedrock flow system beyond the area of leachate seeps and is discharging into the overburden aquifer and eventually to Brook A. Sampling of Brook A has indicated that as yet there has been no detectable contamination at Brook A at the Randy Lane culvert, approximately 1,800 feet north of the site.

Regular sampling of the nearby residential wells has indicated that to date there apparently has been no impact on private water supplies near the site.

1.3 HYDROGEOLOGICAL INVESTIGATION

The purpose of the Mottolo Site hydrogeological investigation designed and implemented by NHWS&PCC Hydrogeological Investigation Unit was to provide an update and expand upon the previous assessment of contamination emanating from the site. The scope of work was designed to provide additional information on the hydrogeological setting of the site and identify the potential receptors of the migrating contamination. The following study elements were included as part of the field investigation:

1) Fracture fabric analysis: The fracture fabric analysis was done by BCI Geonetics, Inc. of Laconia, New Hampshire under contract with NHWS&PCC. It was comprised of a comprehensive review of the structural geology of the region, stereoscopic examination of aerial photos, on-site field mapping of jointing trends, computer evaluation of joint data and correlation of significant photolineaments with structural field data. Four sets of photographs were studied and

overlays prepared showing significant lineaments in the area. The imagery analyzed included high altitude color infrared photos (scale 1:127,000), high altitude black and white photos (scale 1:60,000), medium altitude black and white photos (scale 1:24,000) and low altitude large scale black and white photos (scale 1:12,000). Additional information on the photographs, exposure dates and frame numbers, is provided in Appendix B.

2) Geophysical surveys: The following geophysical surveys were completed at the site by Dr. J. F. Kick, a consulting geophysicist from Dunstable, Massachusetts under contract with the NHWS&PCC, and the NHWS&PCC staff; electromagnetic lines, total field magnetic profile surveys, seismic refraction profiles and electrical resistivity soundings and sections. A description of each survey follows:

   A) Proton precession magnetometer profile survey: magnetometer readings were taken with a Geometrics Uni Mag proton precession magnetometer by NHWS&PCC staff. The magnetometer sensing head was on a staff and had a survey accuracy of 1 gamma. The area surveyed included the open area near the piggery building and the valley of Brook A north and northeast of the site. Fifteen lines with readings at 30 foot intervals were completed. A total of 4,740 feet of magnetic profile lines were completed at the site.

   B) Electromagnetic lines: Seven electromagnetic lines totaling approximately 1,250 feet were run using the Geonics EM-31 unit accurate to +5% at 20 millimhos per meter. The design of the survey was to include readings every 20 to 30 feet. Large regions of the site exhibited no positive readings so the readings were more widely spaced along these traverse lines. In areas of positive readings, the original survey design was followed.

C) Seismic refraction surveys: Approximately 620 feet of seismic refraction profiles were conducted utilizing a 12 channel S.I.E. Model RS-4 seismic system with small explosive sources. Geophone spacings ranged from 10 to 20 feet.

D) Electrical resistivity soundings: Five electrical resistivity soundings utilizing the Schlumberger array were taken in the site area with a Bison 2350B battery powered earth resistivity system. Steel stakes were used for both potential and current electrodes at spacings up to separations of 300 feet.

E) Electrical resistivity double dipole section. One electrical resistivity double dipole cross section was conducted across the leachate seep area adjacent to Brook A. The section length was 90 feet.

3) Monitoring well drilling: Nine monitoring wells were drilled on-site using a truck mounted Acker drilling rig and Mobile drilling rig mounted on a bombardier (Soils Engineering, Inc., Charlestown). One deep bedrock well was installed off-site with a percussion air rotary rig (Tasker's Well Company, Northwood). Six wells were completed in bedrock ranging in depths from 17 to 130 feet and four wells were completed in the overburden materials.

4) Hydraulic testing: Slug tests were conducted on seven wells using an Insitu, Inc. SE1000 data collection system to record water level data

over time. The data were analyzed to estimate the hydraulic conducivity of the overburden and bedrock materials. Top of casing elevations were established for all monitoring wells, including the previously installed wells, and several water level measurements were made during the study period to establish groundwater flow directions and gradients.

5) Hydrochemical Reconnaissance. A hydrochemical and soil gas reconnaissance of the site was performed by Pine & Swallow Associates (PSA) of Acton, Massachusetts. The reconnaissance work included the analysis of 24 soil gas atmosphere samples and 22 groundwater and surface water samples for selected volatile organic compounds using a Photovac 10A10 gas chromatograph. As part of this field program eleven micropiezometers, one half inch in diameter, were installed along Brook A. Water elevation data were recorded from the micropiezometers in addition to the collection of water quality samples.

6) Sampling: Water samples were collected from on-site monitoring wells, selected micropiezometers, surface water locations and residential supply wells for volatile organic chemical analysis and selected inorganic analysis using the NHWS&PCC laboratory facilities.

1.4 OVERVIEW OF REPORT

The remainder of this report describes general and specific characteristics of the Mottolo Site area.

Chapter 2 focuses on general demographic, land use, natural resources and climatology of the area. Available historical information was used for these topics.

Chapter 3 summarizes the available information on the waste types that were present at the site. The information includes 1) chemical analyses compiled as part of the waste characterization efforts conducted during the drum removal and 2) environmental chemistry data.

Chapter 4 describes the hydrogeologic investigation of the NHWS&PCC. This chapter is organized into geologic investigations and groundwater investigations. Design criteria for the field studies are described and raw data appended to this report.

Chapter 5 summarizes the surface water investigations done in conjunction with the hydrogeological study. These investigations are confined to water quality sampling of nearby surface water in Brook A and the seasonally flowing swale located on the upland portion of the site. A discussion of the topographic setting of the site is also included to indicate the primary drainage patterns.

Chapter 6 discusses the air monitoring conducted during this investigation and Chapter 7 summarizes the impact to potential receptors of the defined contamination.

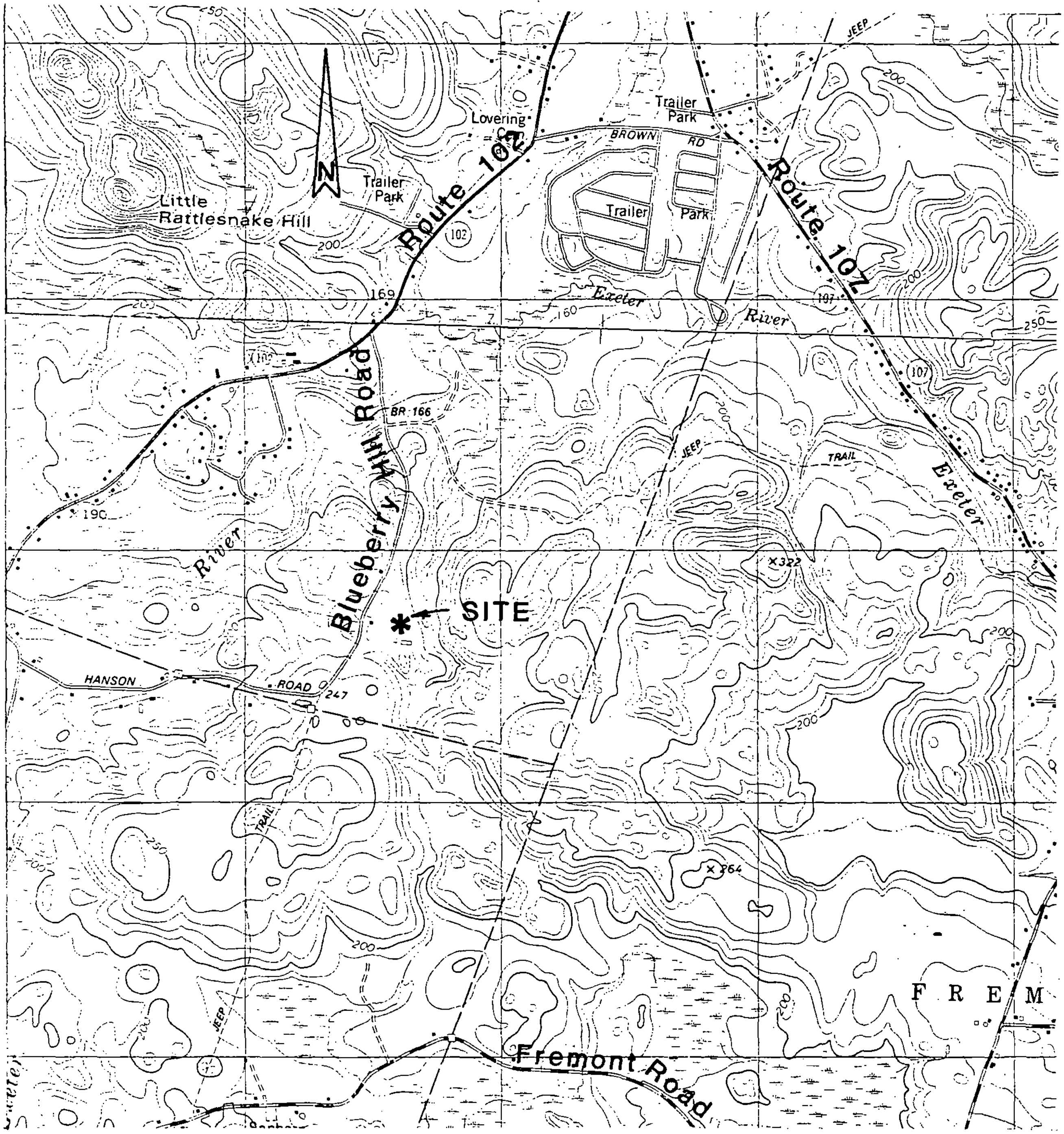
2.0 SITE FEATURES INVESTIGATION

2.1 DEMOGRAPHY

The Town of Raymond is located in Rockingham County in southeastern New Hampshire approximately 15 miles east of the City of Manchester and 11 miles west of the Town of Exeter. The Mottolo Site is situated in the southeast corner of Raymond near the Town's boundary with the Towns of Chester and Fremont. The Town of Raymond, as is most of Rockingham County, is experiencing rapid population growth. The population of Raymond has grown from 3,003 in 1970 to 6,383 in 1983, a 113% increase (2). Raymond is primarily a rural bedroom community with a limited amount of commercial and industrial development. Due to its proximity to the industrial/commercial employment centers of southeastern New Hampshire and northern Massachusetts a significant portion of the community commute to these areas for employment.

2.2 LAND USE

The Mottolo Site is located in a rural portion of Raymond which is largely undeveloped woodland with some recent single family home development. Within the last three years approximately 35 homes have been developed off of Blueberry Hill Road to the north and south of the site. There are plans to continue the development of single family homes on large tracts of the currently undeveloped land immediately abutting the site to the north, east and south of the site. There is no commercial or industrial development in the immediate vicinity of the site. A copy of the U.S.G.S. topographic quadrangle map of the area is presented in Figure 3.



Source:

7.5′ U.S.G.S. Quadrangle Maps –
Sandown, N.H. and
Mt. Pawtuckaway, N.H.

Scale 1:24,000

FIGURE 3
Area Map – Mottolo Site
Raymond, N.H.

2.3 NATURAL RESOURCES

The Mottolo Site is located in the watershed of a small unnamed tributary to the Exeter River referred to as Brook A in this report. Brook A flows in a northerly direction towards its confluence with the Exeter River approximately 4,000 feet north of the site. Brook A is situated in a well defined valley for most of its course and large wetland areas border Brook A along several reaches downstream of the site. Along those reaches streamflow is sluggish and the main stream channel is not well defined. Along other sections of Brook A upstream and downstream of the site the gradient is greater and flow is more rapid in well defined channels. The drainage area of Brook A is approximately 0.38 square miles at its confluence with the Exeter River and approximately 0.15 square miles as it flows by the site area.

During the site investigation there was evidence of the presence of a variety of wildlife in the area. No specific wildlife survey was conducted for this study.

Approximately 45 homes in the area rely on groundwater for their water supplies. According to information obtained from a survey of the residential wells and site reconnaissance in the area all but one home derive their water supply from the bedrock aquifer. The remaining home derives its water from a dug overburden (soil) well.

2.4 CLIMATOLOGY

The climate of the region is typical of the climate of New England in that it exhibits four distinct seasonal variations. The climate of the region can vary over a wide range of climatic conditions from hot and humid during the summer months to cold with a significant accumulation of snowfall during the winter. Generally, the temperature ranges from below $0^{o}F$ to above $90^{o}F$ during the course of a year, but these temperature extremes do not last for protracted periods of time. There are two long-term, over thirty years of data, National Oceanic and Atmospheric Administration (NOAA) weather reporting stations in the region; one in Durham, about 15 miles northeast of the site, and the other in Nashua, about 23 miles southwest of the site. The average monthly temperature for the two stations ranges from about $23^{o}F$ in January to about $70^{o}F$ in July with an average annual temperature of about $46.5^{o}F$ (3).

The area receives a moderate amount of precipitation distributed relatively evenly during the year. Monthly precipitation averages range from 3.0 inches in June to 4.7 inches in November using the Durham station data, although significant deviations from the average value can occur in any given month. Average annual precipitation is about 43 inches (3). Precipitation occurs in the form of rain, sleet and snow during different times of the year. Snow may be expected to occur in the period from November to early April and typically the ground is snow covered from December thru March.

Climatic conditions are of importance to the site because the infiltration of precipitation through the contaminated soil at the former drum disposal area is the likely source of continuing groundwater contamination. Although the amount of monthly precipitation is relatively evenly distributed throughout the year, the amount of infiltration or recharge can be expected to undergo greater monthly fluctuations because infiltration will occur only during the months when the precipitation input exceeds the losses due to evapotranspiration, runoff and changes in soil moisture content. Generally, the amount of infiltration will be minimal during the summer months when water losses will exceed the input from precipitation and a majority of the infiltration will occur during the spring, fall and winter months. Therefore, infiltration of water through the residual contaminated soil at the site will occur at varying rates throughout the year depending on the water budget analysis of inputs versus losses. A rough approximation of the amount of annual infiltration through the former waste disposal area may be made by subtracting the average annual evaporation value (26 inches), using annual lake evaporation data from the Lake Massabesic weather station located in Manchester, from the average annual precipitation value (3). Based on this analysis the estimate of average annual infiltration is approximately 18 inches at the site. Assuming that leachate is generated when this infiltration flows thru the contaminated soil in the 1/4 acre former drum disposal area, then approximately 123,000 gallons of contaminated water are expected to be generated yearly from the site, or about 335 gallons per day. This value represents only an approximate estimate of annual leachate generation. Actual amounts depend on the given time period using actual water input and output variables based on site specific characteristics, such as topography, runoff and soil moisture.

3.0 HAZARDOUS SUBSTANCES INVESTIGATION

3.1 WASTE TYPES

Over 1,600 55-gallon drums and 5-gallon pails containing a variety of liquid, semi-solid and solid wastes were disposed in approximately 1/4 acre dumping area adjacent to the main piggery building. The containers were disposed of in an open face dump with soil fill added to the top as a working surface in order to extend the dumping area. Initial concerns were that the operational method may have damaged the drums and pails, causing a substantial release of their contents, however, the majority of the drums were found to contain a majority of their contents. During the removal some drums were discovered to be leaking and soils were visibly contaminated. USEPA found that 83 55-gallon drums and 7 5-gallon pails were empty at the time of removal. A small unquantified amount of leakage was believed to have occurred through small openings and loose covers.

Analyses of the drum contents were accomplished by USEPA in 1980 during drum excavation and staging operations and again in 1981 and 1982 as part of the off-site removal operation.

The waste characterization results indicated that at least the following types of waste materials were present in the drums and pails removed from the site; toluene, methyl ethyl ketone, alcohols, acetates, chromates, lead, zinc, lacquers, turpentine, animal fats, chlorinated compounds and packaged laboratory chemicals. No evidence of pesticides, herbicides, polychlorinated biphenyls (PCBs) or oils was detected (4).

In addition, detailed GC/MS organic analyses and selected inorganic analyses of the groundwater and surface water samples collected at the site detected a number of the chemicals identified in the waste materials and other compounds which may not be specifically identified within the broad categories of the waste characterization studies performed during the removal operations. With the removal of the containerized waste the remaining source of contamination at the site is residual soil contamination. Contaminants have been detected in the groundwater near the site and in a reach of Brook A as it flows by the site area.

4.0 HYDROGEOLOGICAL INVESTIGATION

Since site discovery in 1979 numerous water quality samples have been collected from the nearby residential wells, surface waters and on-site monitoring wells.

The NHWS&PCC installed three monitoring wells at the site in July 1979 and in 1980 hired GHR Engineering Corporation and Goldberg-Zoino & Associates, Inc. (GHR/GZA) to conduct a site investigation. GHR/GZA installed eight additional monitoring wells as part of their investigation (4). In early 1985 the NHWS&PCC's Hydrogeological Investigation Unit began its hydrogeological investigation and update of the site. The purpose of the hydrogeological investigation was to further evaluate the hydrogeological setting of the Mottolo Site, to better define the extent of contamination emanating from the site and to assess possible pathways and the potential impact on environmental receptors. The scope of work included a fracture fabric analysis of the regional bedrock system, geophysical surveys, a hydrochemical reconnaissance investigation, the installation of bedrock and overburden monitoring wells, the geophysical logging of selected monitoring wells, the measurement of groundwater and surface water elevations, the hydraulic testing of monitoring wells and the chemical analysis of water samples from surface water, the overburden and bedrock aquifers.

4.1 GEOLOGY

4.1.1 Previous Investigations

Previous investigations of the area included state wide geo-

geologic mapping of the bedrock and surficial geology published by the New Hampshire Department of Resources and Economic Development (5, 6), an evaluation of the availability of groundwater in the coastal river basins prepared by the United States Geological Survey (7) and the earlier site investigation conducted by GHR/GZA in 1981 (4). The GHR/GZA report contained site specific information and the other reports were useful to view the site within a regional context. Additionally, a limited site hydrogeological investigation was performed as part of the closure plans for the Raymond Municipal Landfill located approximately 9,500 feet north of the Mottolo Site (8).

Concurrent with the drum removal process the NHWS&PCC hired GHR/GZA to conduct a limited site hydrogeological investigation to characterize the extent of groundwater contamination on a preliminary basis. The site investigation included the installation of eight additional monitoring wells and the excavation of twelve test pits to characterize subsurface conditions. The location of the wells are shown on Figure 2. Two of the eight wells were drilled to replace one of the then three existing wells, OW-1, OW-2 and OW-3, installed by NHWS&PCC in July 1979. The existing bedrock well at OW-2 was replaced by a monitoring well couplet comprised of a Barcad sampling device installed in the bedrock and a companion steel well installed in the overburden soils. A similar monitoring well couplet consisting of a Barcad sampler and steel well was installed at OW-4.

Five shallow monitoring wells, JB-5 to JB-9, were installed adjacent to the valley of Brook A in the area of several visible leachate seeps. The "JB" series of wells were installed using jet boring methods and penetrated to refusal depths ranging from 4.0 feet to 6.8 feet. Bedrock depths were not confirmed. Geologic conditions at the JB wells were assessed based on the wash water from the jet borings. Water quality analyses and water elevation measurements data were collected during the investigation to make a preliminary assessment of the extent of contamination at the site. The Hydrogeological Investigation Unit made extensive use of the information generated in the GHR/GZA report to design field investigations for this study. The monitoring wells and surface water stations were sampled at the outset of this hydrogeological investigation.

4.1.2 Surficial and Bedrock Geology

As noted in the GHR/GZA report the surficial geologic deposits (overburden material) in the area of the site consisted of two main types, unstratified glacial till and stratified sediments ranging from silty fine sand to medium to coarse sand. In general, the glacial till was located in the higher elevations of the site near the former disposal area. Stratified sands were located in two areas: 1) along the upper swale located between the toe of the former disposal area and an open area used for staging operations during drum excavation and removal and 2) along the valley of Brook A (see Figure 2).

The surficial deposits are shallow across the site area ranging from zero at some locations where the bedrock outcrops to less than 20 feet at its maximum thickness. All surficial deposits were glacially derived although the deposits along the Brook A may have been reworked by alluvial processes.

The bedrock underlying the Mottolo Site is comprised of deformed meta sediments, primarily biotite-quartz schist, quartz and granite of the Berwick and Merrimack Formations. The site is situated on the southeastern flank of the Massabesic Anticlinorium. The trace of the axial surface of the anticlinorium is approximately seven miles northwest of the site and strikes about 48-52°E through that area. The Flint Hill Fault, which is located less than three miles north-northwest of the site, has a significant influence on the fracture fabric of the area. The region's fracture patterns are of importance to the site because the majority of existing residential water supply wells derive their water from the bedrock aquifer.

4.1.2.1 Fracture Fabric Analysis

A bedrock fracture fabric analysis of the Mottolo Site area was performed by BCI Geonetics, Inc. of Laconia, New Hampshire. The purpose of the analysis was to assess the structural fabric of the bedrock geology in order to evaluate potential fracture systems which could serve as significant contaminant pathways.

4.1.2.2 Introduction

The fracture fabric analysis of the Mottolo Site included a review of the region's structural geologic history, the stereoscopic examination of four sets of aerial photos, field investigation and mapping of joints at several outcrop stations and correlation of field data with the results of the photointerpretation. The aerial photography examined included black and white and color infrared imagery and ranged from low altitude photos (scale 1:12,000) to high altitude photos (scale 1:127,000).

Five bedrock outcrop locations were selected in the region and used for the field measurement of joint patterns. A total of 135 separate measurements were made. The measurements were statistically processed to produce a digitally filtered computer generated histogram which exhibits four prominent peaks; 38-44°, 86°, 130° and 174° (Appendix B).

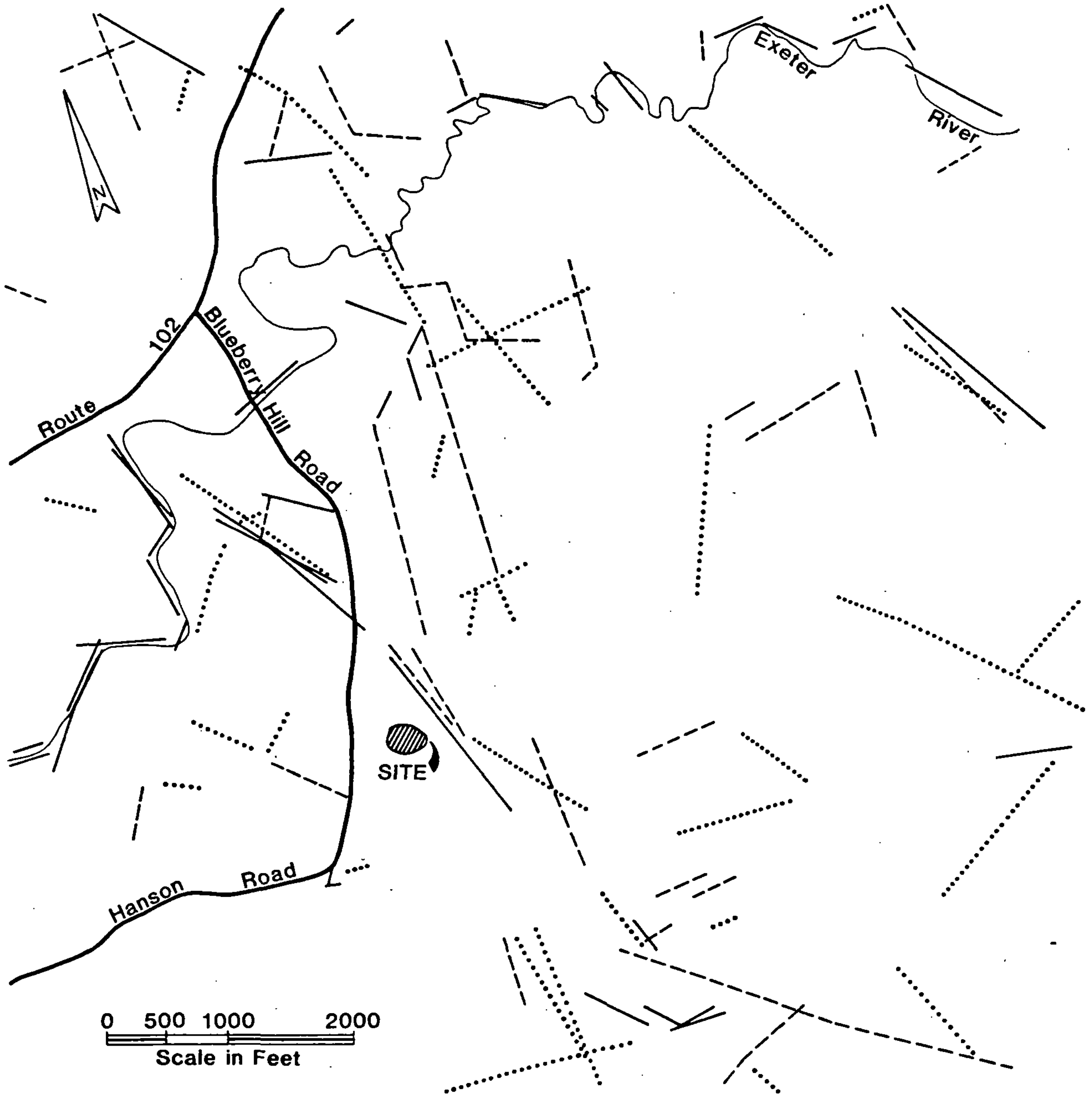
4.1.2.3 Conclusions from the Fracture Fabric Analysis

The results of the field joint mapping correlated well with the occurrence of photolineaments in the area, which was expected considering the shallow depth of overburden. The four major trends in fracture fabric were indicated along the following azimuths: 1) 38-44°, 2) 86°, 3) 130° and 4) 174°. Each grouping of fracture trends was evident in the photoanalysis and the joint mapping and may be of significance for flow in the bedrock aquifer.

No lineaments were identified passing through the site but several were observed near the site. Figure 4 illustrates the composite map for photolineament identification and the lineaments were coded according to their strength of expression. A topographic lineament corresponding to the valley of Brook A was observed east of the site trending approximately 160-170°. A second group of topographic photo-

FIGURE 4

PHOTOLINEAMENTS COMPOSITE MAP
MOTTOLO SITE, RAYMOND, N.H.



LEGEND

··········	Subtle Expression
-----	Moderate Expression
———	Strong Expression

lineaments are located approximately 1,000-1,500 feet northwest of the site. The projection of this group photolineaments intersects an area just north of the site and is colinear with the 160-170° fracture fabric trend. Two other lineament groups correlated well with the joint measurement peaks observed throughout the area; 1) one group at 23° to 48° and 2) a second group trending 76° to 100°. Although no lineaments of either group pass directly throughout the site as seen in Figure 4, the photolineaments and associated fractures may be permeable and highly transmissive for groundwater flow.

4.1.3 Geophysical Surveys

Geophysical techniques and field surveys were selected and designed for the Mottolo Site to: 1) provide additional information on subsurface conditions at the site, 2) evaluate structural geological features which may be associated with the findings of the fracture fabric analysis, and 3) guide the location of additional groundwater monitoring wells..

All geophysical surveys were conducted at the site by the Commission's Hydrogeological Investigation Unit and John F. Kick, Ph.D., geophysicist under contract with NHWS&PCC. Field work began in March 1985 and was completed in May 1985. Geophysical surveys performed at the site included proton precession magnetometer profiles, seismic refraction survey, electrical resistivity survey, and electromagnetic survey.

4.1.4 Proton Precession Magnetometer Profiles

4.1.4.1 Introduction and Survey Design

Magnetic methods involve the detection and measurement of the earth's magnetic field caused by the presence of materials with contrasting magnetic susceptibility. The survey may be used to locate buried metallic objects or to identify geological discontinuities such as fracture zones which may be manifested as magnetic anomalies. For the Mottolo Site the technique was used to survey the area near the former piggery building for any areas that may contain substantial quantities of buried metallic objects. Profiles were also run to evaluate the geologic structure near the site, particularly along the lineaments which were identified northeast of the site coincident with the Brook A topographic feature.

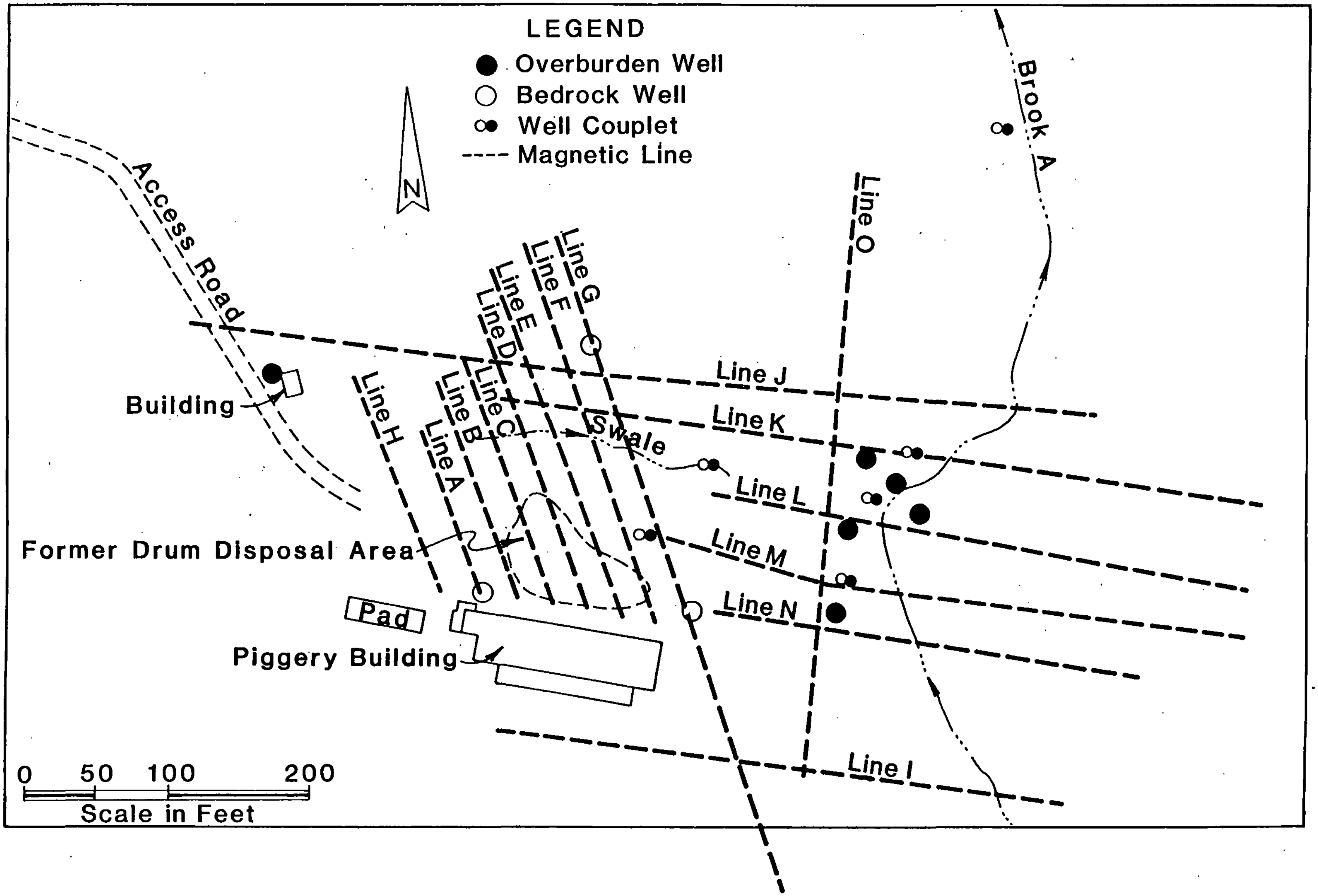
The NHWS&PCC conducted the surveys using an EG&G Geometrics Uni-Mag G-846 proton precession magnetometer with a resolution of 1.0 gamma. Fifteen profile lines totaling 4,740 feet were completed at the site over two days. Readings were generally taken at thirty foot intervals. Figure 5 shows the location of the lines. Consistent with the survey objectives most of the lines were concentrated in the open areas near the former drum disposal area and perpendicular to the identified photolineament northeast of the site.

4.1.4.2 Presentation of Data and Analysis

The field data were corrected for the diurnal variations measured at the temporary base station located at the site.

Figure 5

LOCATION MAP MAGNETIC LINES
MOTTOLO SITE, RAYMOND, N.H.



The field measurements, the base station drift curves, and the profiles of the corrected values are presented in Appendix A. Figures 6 and 7 show the contoured data for the surveys completed on March 8, 1985 and April 16, 1985 respectively.

Significant conclusions from the magnetic survey were 1) there were no large magnetic anomalies in the open area near the former piggery building indicating that no areas contain significant buried metallic objects, 2) there are several surface metallic objects which produced localized anomalies, and 3) there was no indication of a structural geologic feature exhibiting a significant magnetic signature in the valley east of the site.

4.1.5 Seismic Refraction Survey

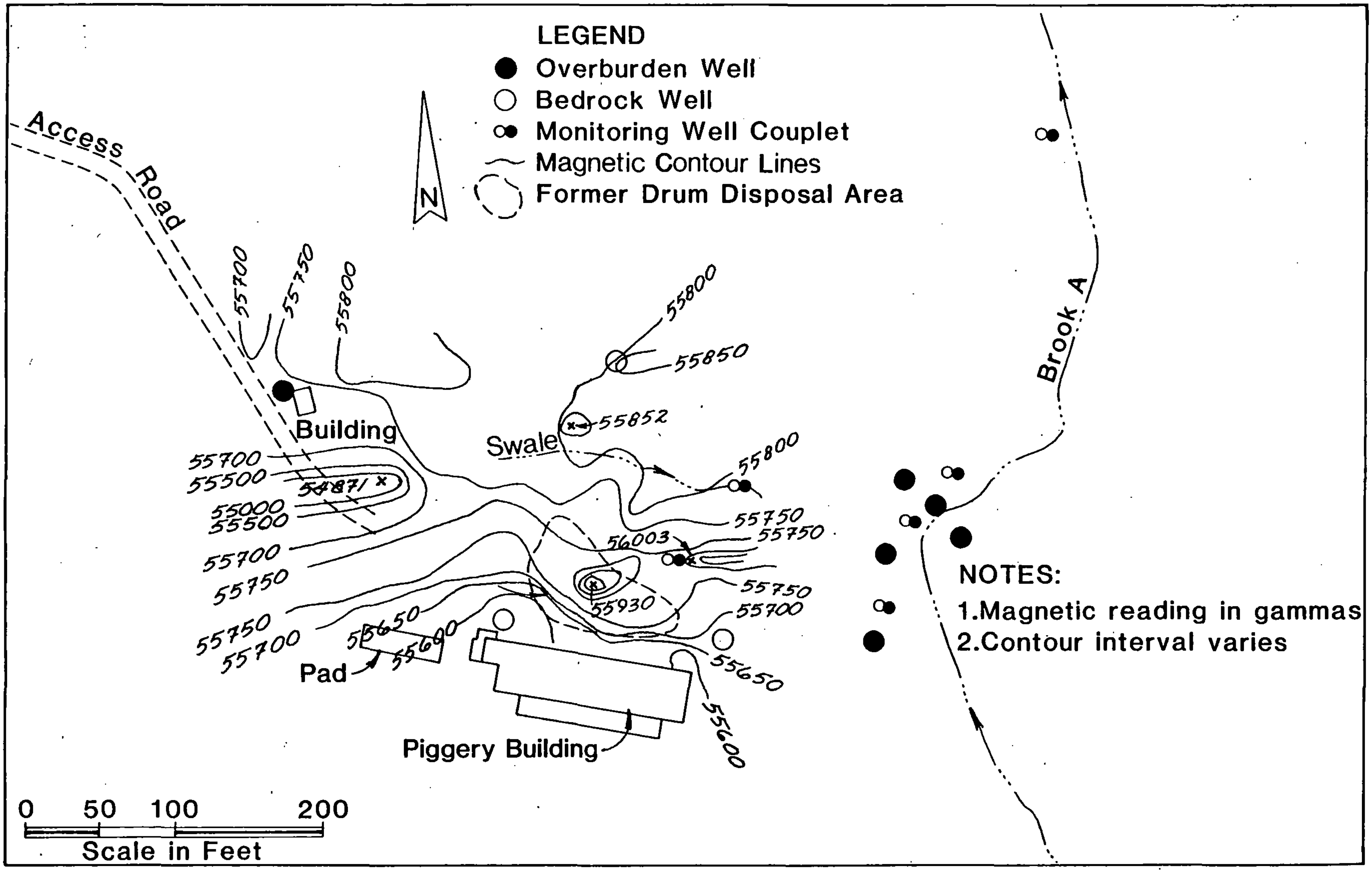
4.1.5.1 Introduction and Survey Design

The seismic refraction method is based upon the fact that seismic waves travel at different velocities in materials that have different elastic properties. In general, the velocity of seismic wave transmission increases as the compactness of the medium increases. The refraction method is only effective in areas where the deeper materials have higher velocities.

The equipment used was an S.I.E. Model RS-4 12 channel seismic system owned by the Commission's consulting geophysicist, Dr. J. F. Kick. Seismic waves generated by the use of small explosive charges were detected by a string of geophones buried in the ground.

FIGURE 6

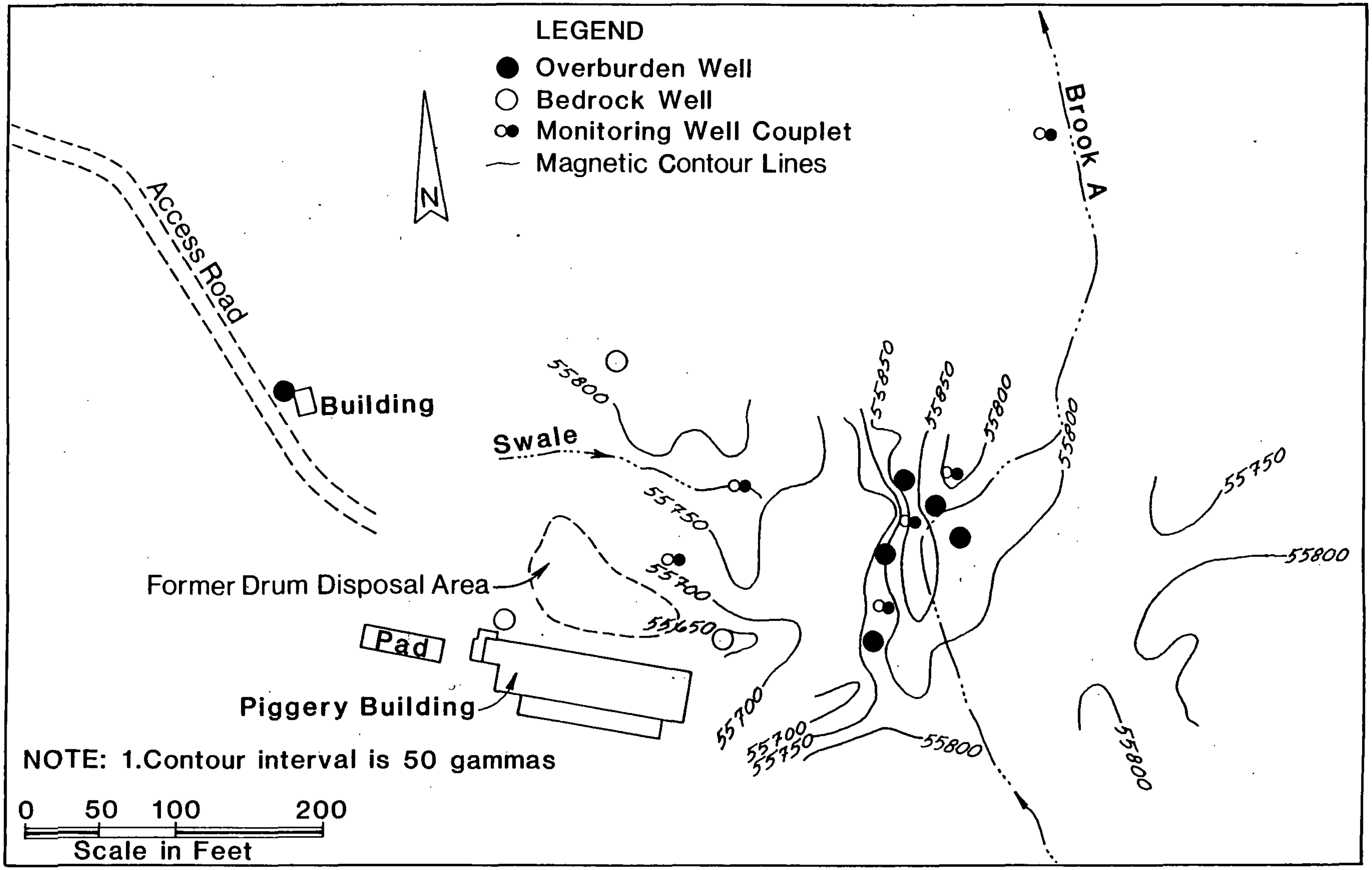
MAGNETIC SURVEY RESULTS - MARCH 8, 1985
MOTTOLO SITE, RAYMOND, N.H.



NOTES:
1.Magnetic reading in gammas
2.Contour interval varies

FIGURE 7

MAGNETIC SURVEY RESULTS - APRIL 16, 1985
MOTTOLO SITE, RAYMOND, N.H.



NOTE: 1.Contour interval is 50 gammas

A total of three lines covering approximately 620 feet of linear traverse were run in the Mottolo Site area. The line locations are shown on Figure 8. The survey was designed to further evaluate the thickness and type of overburden materials, and to provide additional information regarding bedrock topography and condition in order to guide the location of additional monitoring wells. Geophone spacings ranged from 10 to 20 feet.

4.1.5.2 Presentation of Data and Analysis

Data interpretation was accomplished using the critical distance method which is based on the analysis of travel time versus distance in combination with formulae based on refraction theory. In general, experience shows that the computed seismic depths at shot holes are within ten percent of the true depth. Accuracy may be somewhat less between shot points or for depths less than 15 feet which was the case at many locations at the Mottolo Site.

Figure 9 shows the interpreted seismic refraction profiles. The interpretation for the seismic refraction velocity variations are given in Table 1.

TABLE 1

INTERPRETED SEISMIC VELOCITIES
MOTTOLO SITE, RAYMOND

Material	Velocity, ft./sec.
unsaturated sands and glacial till	1,500-2,600
saturated sands	5,000
bedrock	14,400-15,000

Figure 8

GEOPHYSICAL SURVEY LOCATION MAP
MOTTOLO SITE, RAYMOND, N.H.

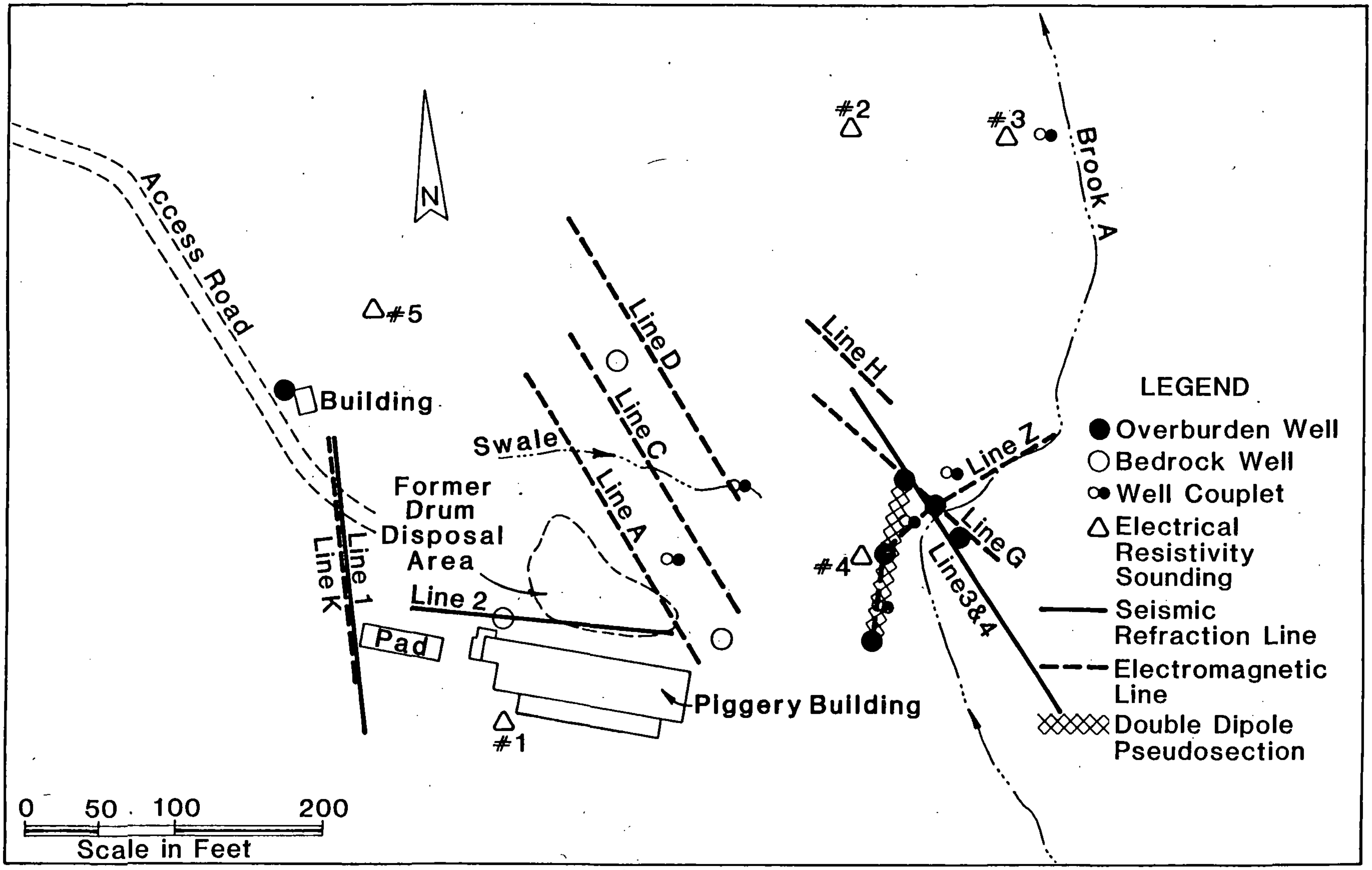
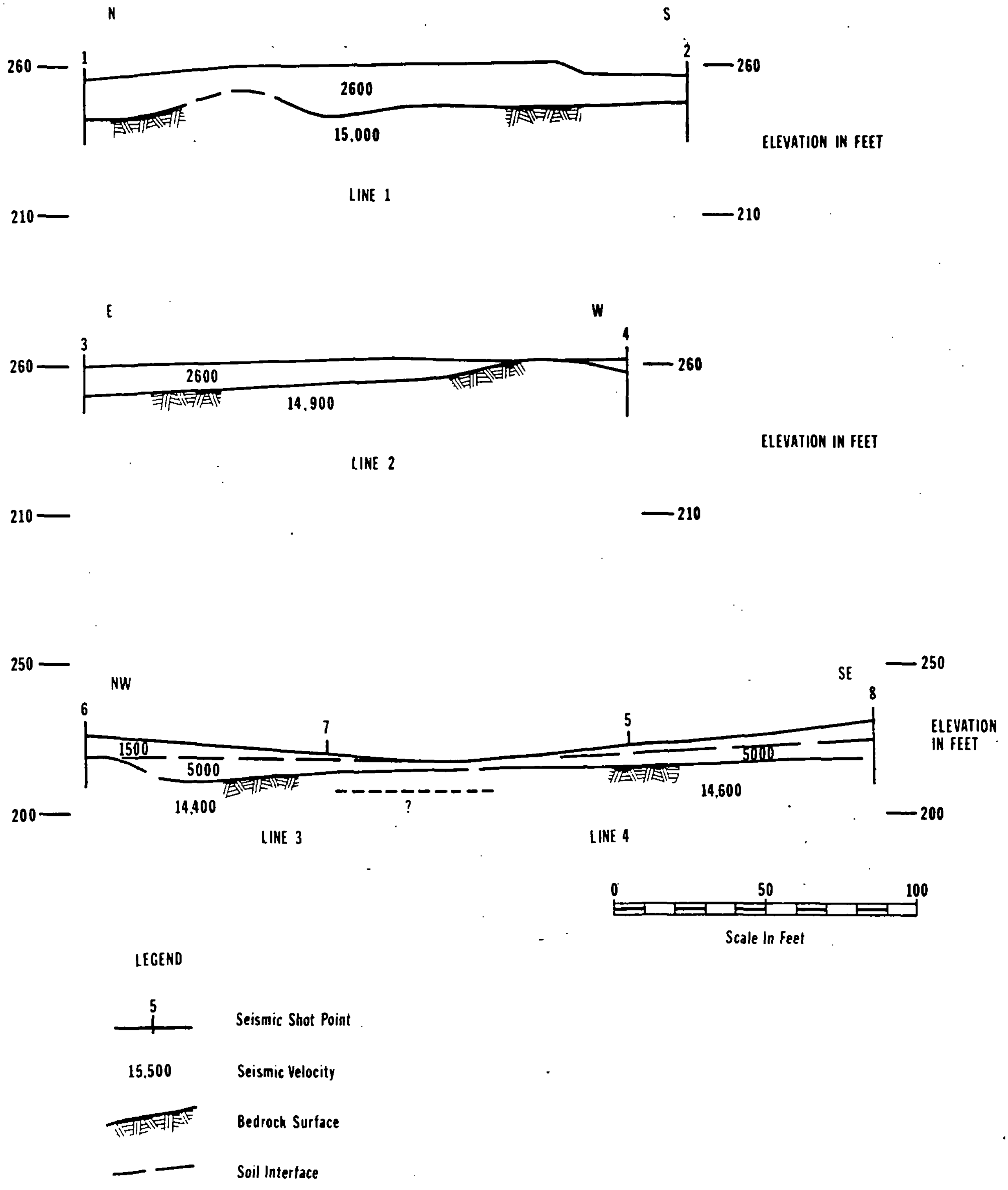


FIGURE 9

INTERPRETED SEISMIC REFRACTION LINES
MOTTOLO SITE
RAYMOND, NEW HAMPSHIRE



The results of the seismic refraction survey indicate that the area in the vicinity of the former disposal area and piggery building is comprised of a relatively thin layer, less than 20 feet, of overburden soil overlying the bedrock surface. A divide in the bedrock topography is indicated near the northwest corner of the former piggery building where bedrock outcrops. The results also indicate the overburden soil along the valley of Brook A is of relatively shallow depths, less than 20 feet. The seismic data were used with additional geophysical information and data from the well installations and previous test pits to estimate the topography of the bedrock surface. Further discussion of the bedrock topography occurs in Section 4.2.4.3.

4.1.6 Electrical Resistivity Surveys

4.1.6.1 Introduction and Survey Design

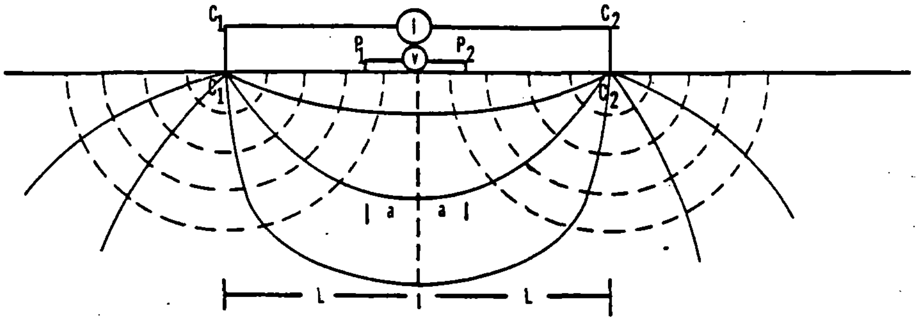
Electrical resistivity survey techniques involve applying an electric current to the ground through electrodes placed in strategic locations and measuring the returning current at potential electrodes. The resistivity of the soils or rock can then be calculated. Differences in the texture of the subsurface materials, their degree of saturation and the quality of water with which they are saturated all affect the resistance to the applied current. Based upon background knowledge of a site and the configuration of the survey, interpretations may be made concerning local stratigraphy and water quality variations. Clay and other compact, fine grained sediments have low resistivities whereas coarse grained materials saturated with clean groundwater and most bedrock types common in New England have high resistivity. Generally, the groundwater quality has a much more pronounced effect on the resistivity than grain size alone.

Electrical resistivity surveys were conducted by Dr. Kick at the Mottolo Site using a Bison 2350B battery powered earth resistivity system. Steel stakes were used for both potential and current electrodes. The surveys were conducted using two different electrode configurations, the Schlumberger and double dipole section. The Schlumberger sounding configuration used various electrode spacings to obtain electrical resistivity data for different depths at a given sounding location. Figure 10 illustrates a schematic of the Schlumberger sounding technique versus the double dipole technique. Five Schlumberger soundings were completed at the site.

The double dipole survey was also used to help identify areas of contaminated groundwater. This technique generates a resistivity sounding that provides a detailed section of apparent resistivity values versus distance and depth. As shown on Figure 10 the current electrodes are maintained at a constant separation (A) and the potential electrodes, which are also kept a constant distance apart, are situated outside the current electrode spread. The potential electrodes are used to measure the ground surface potential at distance intervals (NA) along a straight line passing through all four electrodes. The apparent resistivity (a) is plotted at a

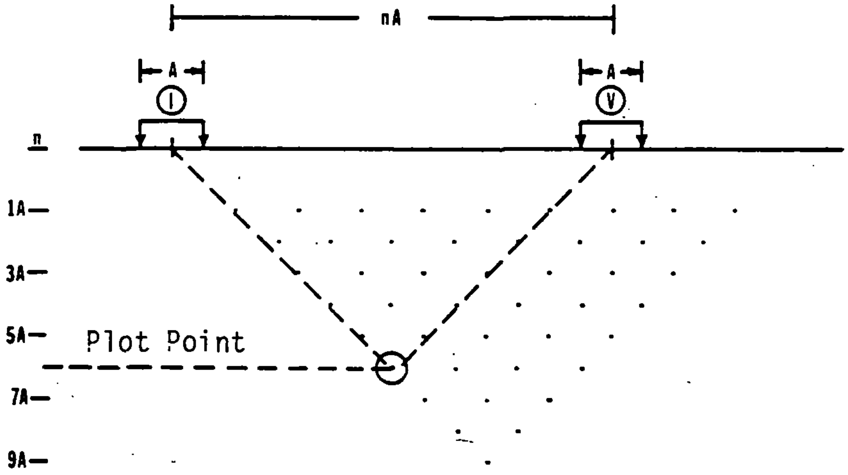
FIGURE 10

Comparison of Electrical Resistivity Configuration
Mottolo Site, Raymond



Schlumberger Configuration

- - - - Current
——— Voltage
where L $\geq$ 5a



Double Dipole Configuration and Pseudo Section

Ⓘ Current Electrode
Ⓥ Potential Electrode
• Plot Point on Psuedosection

relative position representing depth as shown in the representative diagram on Figure 10. The diagram is called a pseudo section because the vertical dimension is not easily determined. The actual depth penetrated would have to be determined by further detailed interpretation and modeling.

The main objectives of the survey were to 1) further investigate the nature of the overburden materials, 2) evaluate the bedrock surface, and 3) assess possible water quality variations and assist in plume identification. These results were used with the other geophysical information and previous hydrogeological data to provide the rationale for selecting the locations of the additional monitoring wells.

Figure 8 shows the locations of the soundings and double dipole section. Spread distances were designed to provide electrical penetration to bedrock. All field data are presented in Appendix A.

Soundings 1 and 5 were selected to provide information representative of the "background" geoelectrical responses of the area. Sounding 4 and the double dipole section were located in the area of several leachate seeps adjacent to Brook A. Soundings 2 and 3 were selected to provide data on areas that may be potentially downgradient of the site along the valley of Brook A.

4.1.6.2 Presentation of Data and Analysis

Field data obtained from the Schlumberger soundings were tabulated and plotted as curves of apparent resistivity versus electrode spacing on logarithmic graph paper. The curves are presented in Appendix A along with the interpreted layered models. A USGS computer program was used to model the soundings for up to 10 horizontal layers. The model results are generated in an iterative fashion. An initial theoretical sounding curve is calculated by assuming a model made up of a sequence of layers and corresponding resistivities. The initial assumptions are derived from field curve values, well logs and knowledge of the geology of the area. The calculated curve is compared to the observed curve and differences are noted. A second theoretical curve is then calculated using model parameters that are likely to minimize the differences. The process is repeated until the calculated curve is sufficiently close to the observed sounding curve. The resulting model is interpreted in terms of the local geologic structure, materials and water quality.

Table 2 shows the ranges of resistivities encountered at the Mottolo Site and representative stratigraphic interpretations.

TABLE 2

RESISTIVITY VALUE INTERPRETATIONS
MOTTOLO SITE, RAYMOND

Resistivity (ohm ft.)	Interpretation
<1,000	saturated stratified sands, containing high conductivity leachate
1,800-4,000	saturated stratified sands
10,000-17,000	unsaturated sands/glacial till
>3,500	bedrock

A 100 foot double dipole pseudo section was completed in the leachate seep area adjacent to Brook A. The results are shown in Figure 11. Significant findings were that 1) resistivity values were lower with depth in the area between JB-5 and JB-7 suggesting the presence of contaminated groundwater which would contribute to reduced resistivity values and 2) there were lower resistivity values close to the ground surface near JB-7 which may be due to contaminated runoff draining from the upper swale of the site. These findings were used with other geophysical and chemical data to finalize the location and construction of additional monitoring wells.

4.2 GROUNDWATER

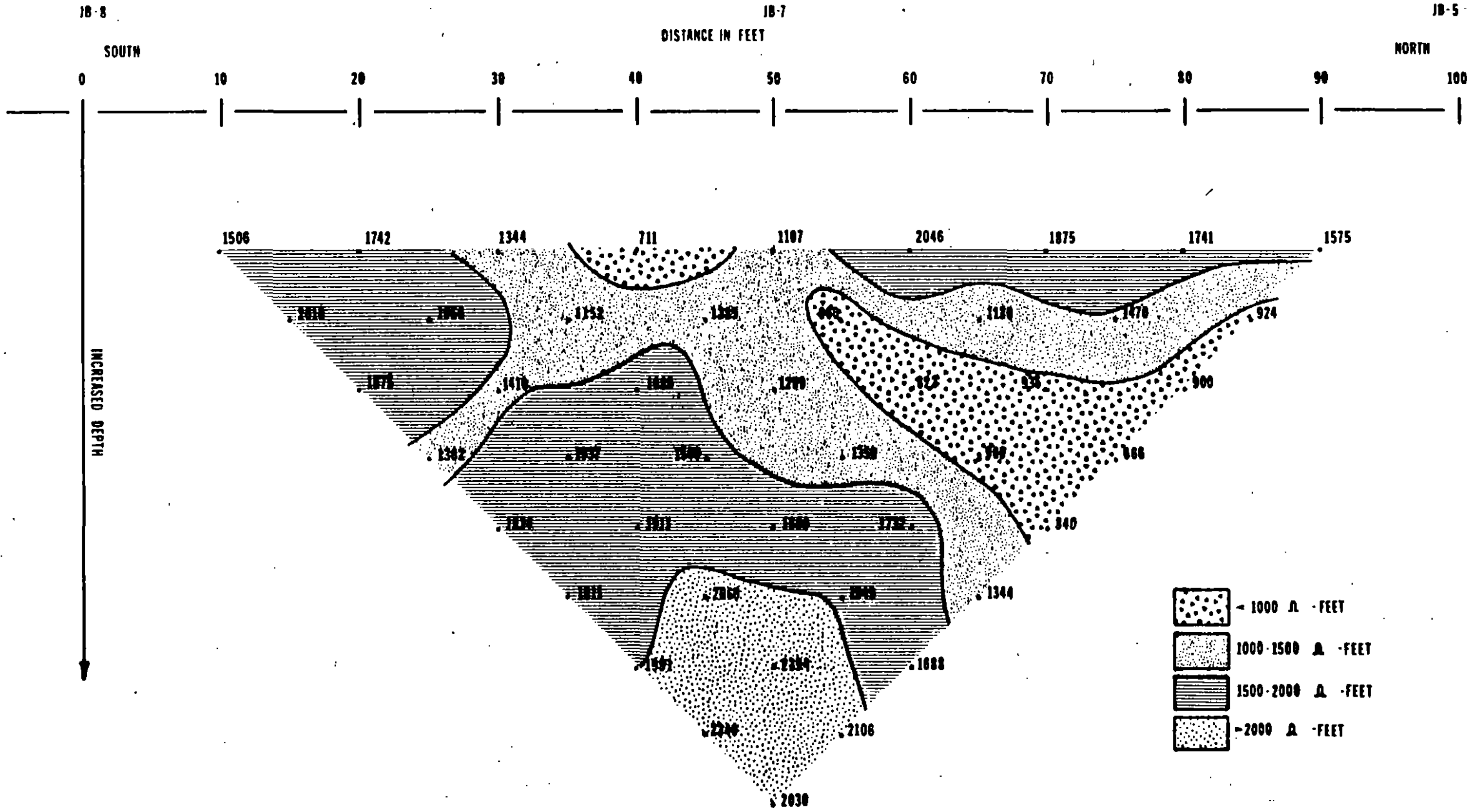
4.2.1 Previous Investigations

Previous investigations of the groundwater in the vicinity of the Mottolo Site have been conducted by the NHWS&PCC and GHR Engineering Corporation (GHR) in cooperation with Goldberg-Zoino & Associates, Inc. (GZA). The NHWS&PCC began monitoring nearby residential water supply wells in 1979. Additionally, NHWS&PCC installed three monitoring wells at the site in July 1979. The NHWS&PCC has continued to periodically sample the monitoring wells and residential wells in the area.

GHR/GZA conducted an initial hydrogeological investigation of the site for the NHWS&PCC and USEPA in 1981. The investigation included the excavation of 12 test pits, installation of 2 monitoring well couplets, the installation of five shallow wells using a jet

FIGURE 11

RESISTIVITY DOUBLE DIPOLE PSEUDO SECTION
MOTTOLO SITE, RAYMOND, N.H.



boring method, the measurement of groundwater levels and the collection of water quality samples. The data and findings of the GHR/GZA Investigation are summarized in a two volume report published in 1981 (4).

4.2.2 Electromagnetic Survey

4.2.2.1 Introduction and Survey Design

Electromagnetic Surveying (EM) is a technique used to measure the electrical conductivity of subsurface soil or rock and groundwater. Electrical conductivity is a function of the type of subsurface materials, the porosity of the subsurface strata, and the fluids that occupy the pore spaces. Often the conductivity and/or presence of the pore fluid has the dominant influence on the measured values, although stratigraphic factors may have a significant effect.

The electromagnetic instrument operates by radiating an electromagnetic field into the subsurface material which induces eddy currents in the subsurface material. The eddy currents produce a second electromagnetic field which is a function of the composition of the subsurface material and is detected on a receiver coil. Generally, the absolute values are not as critical as the patterns of relative values.

A Geonics EM-31 instrument supplied and operated by Dr. Kick was utilized to conduct the traverses. The depth of penetration was approximately 18 feet which was sufficient to evaluate and estimate near surface leachate migration in the shallow overburden materials. The upper materials of the subsurface have the greatest effect on the measured values.

The electromagnetic survey in the vicinity of the Mottolo Site was designed to examine the near surface groundwater quality variations to better define the areal extent of contamination. The data were collected in profiles to determine the conductivity variations along lines parallel with the seismic refraction surveys and into areas of unknown leachate migration.

Seven electromagnetic traverse lines totaling approximately 1,250 feet were run. Figure 8 shows the locations of the traverses.

4.2.2.2 Presentation of Data and Analysis

The electromagnetic data were plotted in profiles and illustrated on a contour map (Figure 12). Traverses were completed across the former disposal area and in the leachate seep area adjacent to Brook A. Much of the area surveyed exhibited negative or zero readings. This is believed to have resulted from the shallow depth of soil over a low conductivity bedrock. The survey did indicate relative conductivity changes by positive readings in certain areas of the site which may be associated with groundwater quality changes.

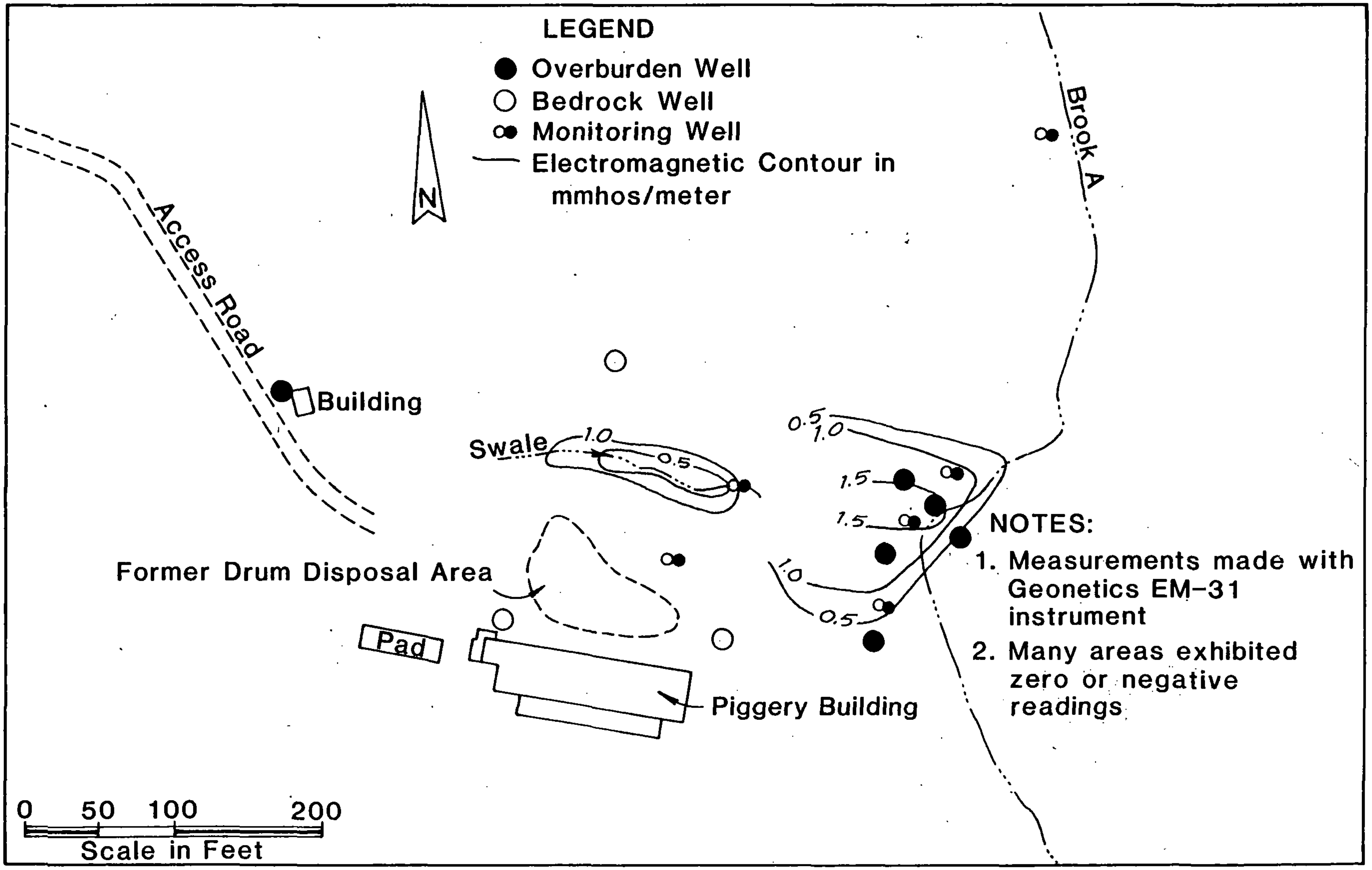
4.2.3 Hydrochemical Reconnaissance

4.2.3.1 Introduction and Survey Design

A hydrochemical reconnaissance of the Mottolo Site was performed for NHWS&PCC by Pine and Swallow Associates (PSA) in May 1985. The objective of the hydrochemical reconnaissance was to use field techniques that utilized the chemical properties of the groundwater and surface water to 1) better

Figure 12

ELECTROMAGNETIC CONTOUR MAP
MOTTOLO SITE, RAYMOND, N.H.



NOTES:

1. Measurements made with Geonetics EM-31 instrument
2. Many areas exhibited zero or negative readings

define the areas of contamination, 2) provide further justification for the location of additional groundwater monitoring wells, and 3) evaluate the area for other plumes of contaminated groundwater not previously detected. The hydrochemical reconnaissance for the Mottolo Site consisted of three phases; 1) soil gas survey, 2) surface water quality sampling program, and 3) the installation and sampling of micropiezometers.

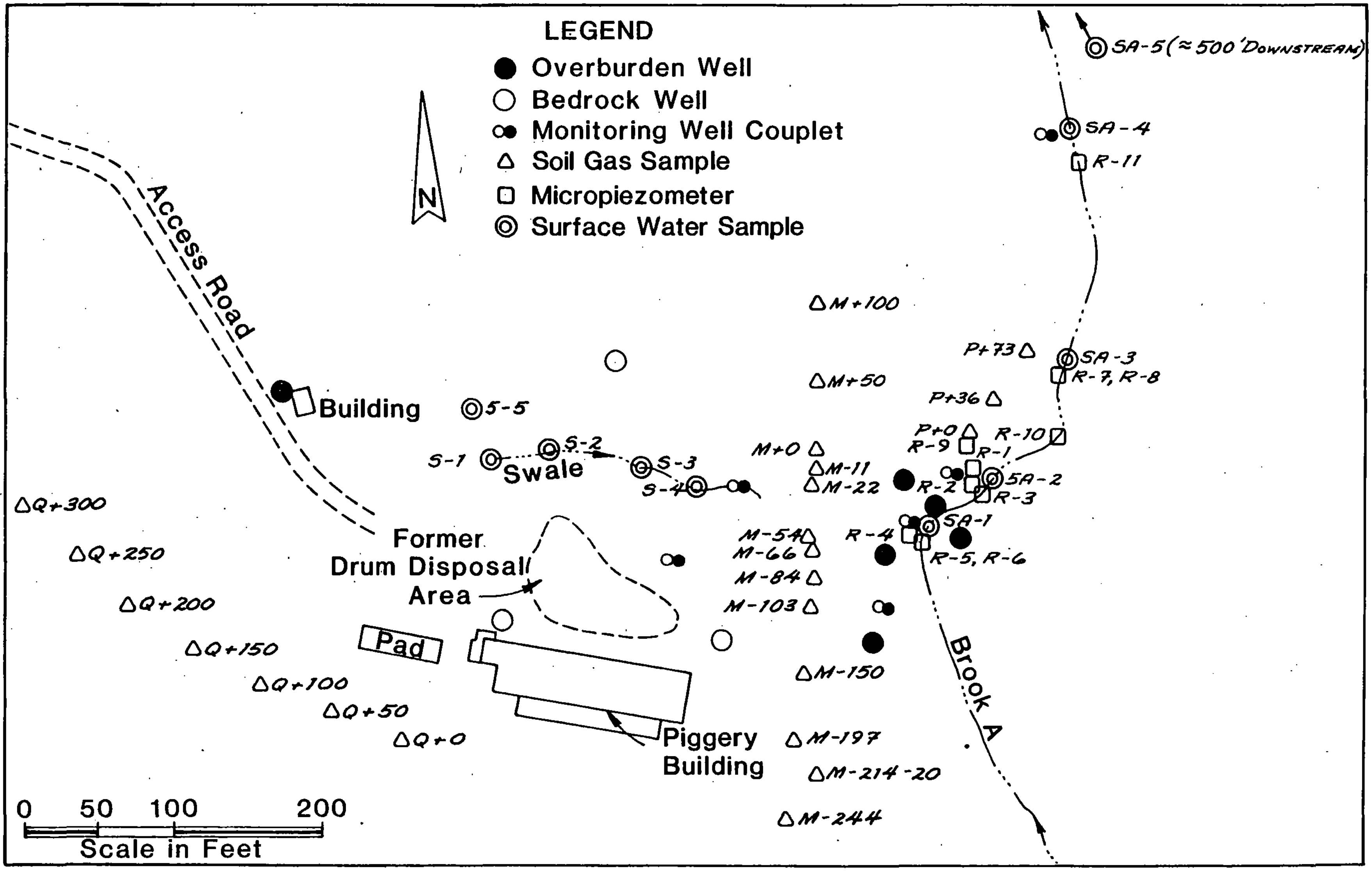
4.2.3.2 Soil Gas Sampling

Previous water quality data indicated that the groundwater and surface waters were contaminated with volatile organic chemicals (VOC). The soil gas reconnaissance technique is based on the principle that VOCs contained in a groundwater plume will diffuse from the groundwater to a vapor (gaseous) phase leaving a chemical "fingerprint" in the unsaturated soil pores above the water table. The concentration present in the soil vapor will be dependent on the types and concentrations of VOCs in the groundwater below and the interactions of the physical, chemical and biological processes operating in the soil. Generally, the absolute values of soil gas concentrations are not as significant as the relative concentrations over an areal extent which can be used to predict the dimensions of a subsurface plume.

A total of twenty-three soil gas sample locations were completed at the Mottolo Site (Figure 13). A clean chrome-steel hand auger was used to construct the test holes of approximately one inch in diameter which varied between 18 and 32 inches deep. A wooden plug equipped with a feed through

FIGURE 13

HYDROCHEMICAL RECONNAISSANCE – SAMPLING LOCATIONS
MOTTOLO SITE, RAYMOND, N.H

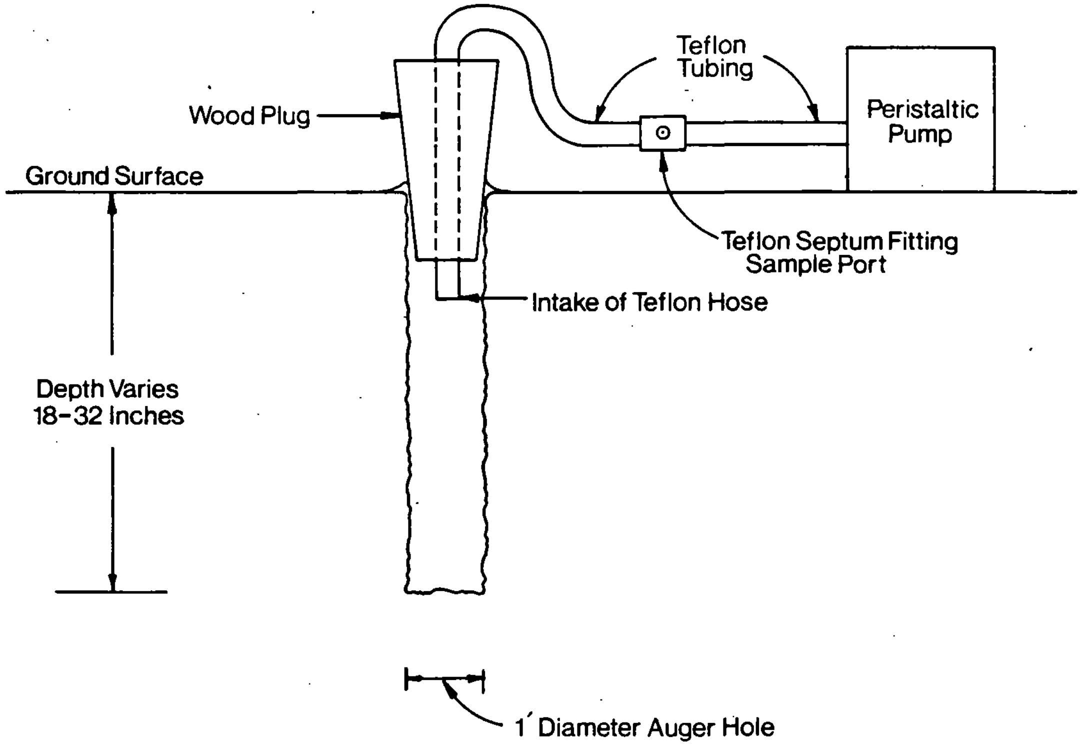


teflon tube, used as the intake, was firmly set into the hole. A peristaltic pump was used to evacuate ten to twenty auger hole air volumes prior to collecting the sample. Samples were collected with a clean hypodermic needle by inserting the needle into a teflon septum fitting located upstream of the peristaltic pump. Figure 14 is a schematic of the soil gas sampling procedure.

The sample filled syringe was immediately injected into a Photovac 10A10 GC for analysis. The soil auger and wood plug were wiped free of soil debris between each sample location. Blanks were run before each sample to ensure syringe cleanliness. Identification of the peaks in the chromatogram was made by comparison with standards made from reagent compounds of chemicals matched to known contaminants in the area. The column used for analysis was a four foot by one-eighth inch 5% SE-30 on Chromosorb G 60/80.

A total of twenty-three soil gas samples were collected along three traverse lines as shown on Figure 13. The M line was completed perpendicular to the movement of contaminated groundwater as indicated in the earlier site assessment; the P line was completed adjacent to Brook A and north of the area with leachate seeps. The Q line was conducted southwest of the bedrock divide near western extent the former disposal area to evaluate the potential for contaminant migration in the southwesterly direction. Additionally, a soil gas sample was collected from micropiezometer R-1 because there was an insufficient quantity of water within the micropiezometer to collect a water sample.

FIGURE 14
SCHEMATIC OF SOIL GAS SAMPLING METHOD
MOTTOLO SITE, RAYMOND, N.H.



4.2.3.3 Micropiezometers

The soil gas technique could not be used in areas where groundwater is close to the ground surface, particularly in the leachate seep area adjacent to Brook A. In order to evaluate this area of the site micropiezometers were installed in the overburden as part of the hydrochemical reconnaissance. Eleven micropiezometers were installed in the leachate seep area and further downstream adjacent to Brook A, see Figure 13. The piezometers were utilized to collect groundwater samples for analysis and to establish hydraulic relationships between the groundwater and Brook A.

The micropiezometer installation method was as follows:

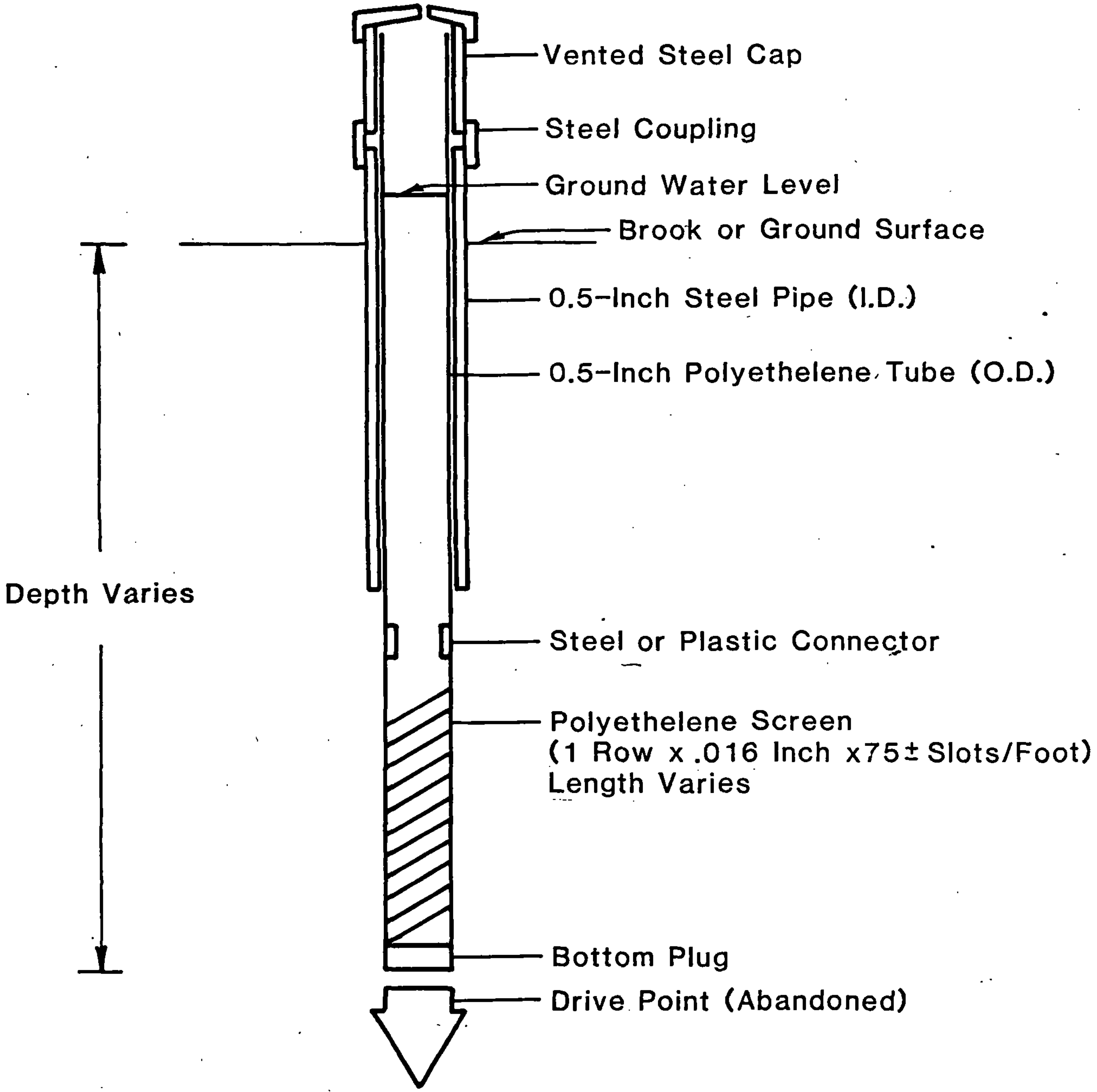
1. 0.5 inch, inside diameter, steel pipe was driven to refusal with an electric rotary hammer drill.
2. 0.5 inch, outside diameter, polyethylene tubing with a slotted polyethylene screen was inserted inside the steel casing.
3. The steel casing was pulled back out of the ground exposing the slotted polyethylene screening.
4. The micropiezometer was developed by pumping and surging with a peristaltic pump.
5. A cap was placed on the steel casing to protect the polyethylene well tubing.

Figure 15 illustrates a schematic of a typical micropiezometer installation.

The steel pipe casing was steam cleaned prior to use at the site. In most cases locations of the steel casing was

FIGURE 15

TYPICAL MICRO PIEZOMETER INSTALLATION
Mottolo Site, Raymond



advanced to refusal, however, in two locations (R-6 and R-7) a second micropiezometer was completed at a shallower depth to evaluate vertical hydraulic gradients. Micropiezometers R-5 and an unmarked piezometer near R-3 were completed without the polyethylene tubing or screen. The unmarked piezometer near R-3 was the result of an earlier unsuccessful attempt to install R-3. The well construction could not be completed, nor could the steel casing be removed so it was left in place. Micropiezometer R-5 developed a soil plug inside the steel casing as the aluminum drive point apparently became dislodged during the driving process. Although well construction for these two micropiezometers, R-5 and open micropiezometer near R-3, could not be completed to enable a water sample to be collected, they were utilized for hydraulic gradient information. A summary of the micropiezometer construction details and elevation data is presented in Table 3.

Samples were collected in 40 milliliter VOA vials from the micropiezometers using a peristaltic pump. Prior to GC analysis ten milliliters of the sample were withdrawn and replaced with ten milliliters of air drawn through an activated carbon syringe. Each water sample was shaken vigorously and allowed to equilibrate for a minimum of ten minutes at which time a sample of the head space was directly injected into the Photovac 10A10 GC for analysis. Selected reference standards were also injected at appropriate intervals for qualitative and quantitative standardization.

TABLE 3
Summary of Micropiezometer Construction and Comparative Water Level Measurements Hydrochemical Reconnaissance, Mottolo Site, Raymond
May 30, 1985

Location	Approx. Depth to Refusal (feet)	Length of Well Screen (feet)	Length of Screen and Riser (feet)	Bottom of Screen below Datum* (feet)	Well Water Level Above Stream Surface (inches)	Comment
R-1	5.9	2.0	7.5	5.5 BGL	NA	
R-2	6.5	2.0	8.3	6.0 BGL	+0.5	Located in contaminated bank seep.
R-3	4.9	2.0	NM	4.5 BSL	+0.5	Located in stream bank seep.
R-4	6.5 NR	2.0	9.5	6.5 BGL	0	Located in contaminated seep.
R-5	6.5 NR	No well screen.		5.5 BSL	+5.0	Open-ended steel pipe, adjacent to R-6.
R-6	9.3	2.0	11.6	9.3 BSL	+6.75	
R-7	6.0	1.7	8.8	5.9 BSL	+3.5	R-7 and R-8 are a dual-level pair.
R-8	---	1.0	3.5	2.8 BSL	+1.5	
R-9	6.6	2.0	NM	5.9 BGL	NA	Depth to water 4.9 ft. below top of tube.
R-10	6.7 NR	2.0	8.7	6.7 BSL	+1.25	Hand-driven.
R-11	9.7	2.0	9.8	9.5 BSL	+1.25	Only 0.5 feet of screen exposed to formation.

Notes:

NA	indicates piezometer not located in stream channel
NR	indicates no refusal of drive pipe
NM	indicates not measured
*BGL	indicates below ground level datum
*BSL	indicates below stream surface datum

4.2.3.4 Surface Water Samples

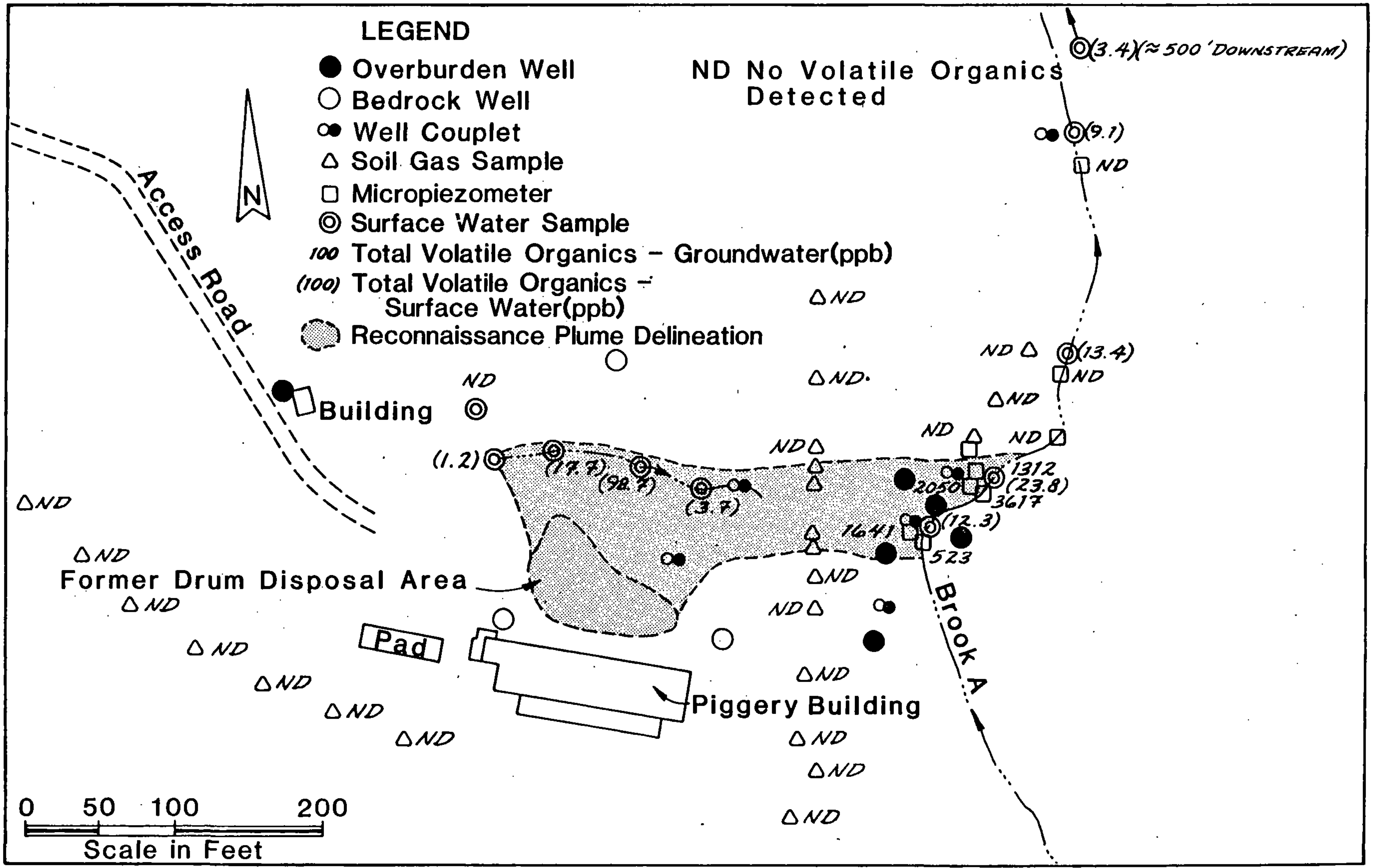
The hydrochemical reconnaissance also included the collection and analysis of water samples from the swale containing an intermittently flowing brook located at the toe of the former disposal area and from Brook A. Five locations were sampled along the upper swale and five locations were sampled along Brook A. The water samples were analyzed on the Photovac GC using the head space method as previously described.

4.2.3.5 Presentation of Data and Analysis

The results of the soil gas phase are presented in Appendix C. As noted earlier the results of the soil gas phase are presented in relative concentrations and not in standard units such as parts per billion. The results from the M transect suggested that the overburden plume of volatile organic compounds was limited to a narrow area of 75 to 100 feet in width from groundwater moving through the embankment from the upper swale and former drum disposal area towards Brook A, see Figure 16. Along the Q soil gas transect, which was located to the southwest of the former disposal area in a potential groundwater flow direction, no VOCs were detected. No VOCs were detected along the P soil gas transect although a soil gas sample at micropiezometer R-1, which was located five feet upslope of station P+0 did show levels of cis-dichloroethylene. These results suggest that at least one narrow plume exists which is confined to the immediate area of the leachate seeps.

FIGURE 16

HYDROCHEMICAL RECONNAISSANCE RESULTS
MOTTOLO SITE, RAYMOND, N.H.



As illustrated in Figure 16 analysis of water samples collected from the micropiezometers correlate well with the soil gas sampling information in that the water data corroborated the soil gas phase conclusion that a narrow plume of contaminated groundwater was discharging to Brook A. Figure 15 shows that significant levels of contamination were detected in the area from micropiezometers R-6 to R-1. Micropiezometers located downstream of the leachate seep area did not show any evidence of the VOC plume contaminants. A compilation of the micropiezometer water quality data is included in Appendix D.

Surface water sample results from the upper swale indicated the swale received VOC contaminated groundwater seepage along its length. It should be noted that the upper swale dried up and did not contain water during the summer and fall.

Surface water sampling of Brook A revealed a pattern of decreasing contamination downstream of the leachate seeps. Low concentrations of two VOCs were detected approximately 800 feet downstream of the site. A summary of the results is presented in Appendix D.

Initial hydraulic gradient information was also obtained from the micropiezometers installed in the streambed of Brook A. Measurements of the groundwater elevation in the micropiezometer were made relative to the elevation of Brook A. The measurements determined that there was an upward vertical component to the groundwater flow and consequently that groundwater was discharging into Brook A. Table 3 contains a summary of the hydraulic gradient data for May 30, 1985. The micropiezometers were tied into the site elevation datum at a later date.

Chemical and hydraulic information from the hydrochemical reconnaissance of the site was evaluated with the geophysical data and previous site data to finalize the specifications for the monitoring well drilling program.

4.2.4 Monitoring Well Program

4.2.4.1 <u>Siting, Design and Installation</u>

The ten additional monitoring wells at the Mottolo Site were sited using 1) the previous site data compiled during the GHR/GZA site investigation, 2) the geophysical data of this study and 3) the hydrochemical reconnaissance data compiled as part of this investigation. Monitoring wells were constructed in both the overburden and bedrock aquifers. The rationale for the selected well locations were as follows:

MO-1	A bedrock well constructed immediately upgradient of the former drum disposal area. No companion overburden monitoring well couplet was constructed because the bedrock was thinly covered with dry fill. The well was located near an indicated bedrock divide based on the geophysical data.
MO-2S	An overburden well constructed at the northern end of the main contamination plume suggested by previous data. The purpose of construction was to obtain information on the overburden soils, hydraulic gradient and water chemistry data.

MO-2D	A bedrock well constructed as a companion well to MO-2S to obtain water quality and hydraulic head information for the bedrock aquifer.
MO-3S and MO-3D	Two monitoring wells constructed in the middle of the main plume of contamination as indicated by previous sampling and the geophysical information. The purpose of the well couplet was to provide geologic control, determine water quality of the bedrock and overburden aquifers and evaluate the hydraulic heads of both aquifers.
MO-4S and MO-4D	Two monitoring wells constructed along the southern extent of the main plume of contamination as defined by previous sampling data. The purpose of this well couplet is similar to the purpose stated for MO-3S and MO-3D.
MO-5S and MO-5D	Two monitoring wells constructed downstream of the main contamination plume as defined by previously collected data. The purpose of the well couplet was to confirm the hydrochemical reconnaissance results, evaluate the potential for migration away from the main leachate seep area, provide hydraulic gradient and geologic information.
MO-6	A deep bedrock well located off-site in the valley of Brook A downgradient of the site and south of the housing development. The well was intended to provide geologic data and water quality at a greater depth.

The nine additional on-site wells were drilled and constructed by Soils Engineering, Inc. of Charlestown, New Hampshire under the supervision of the Commission staff. MO-1 was drilled with a truck mounted Acker drilling rig. MO-2S, MO-2D, MO-3S, MO-3D, MO-4S, MO-4D, MO-5S and MO-5D were drilled using a Mobile Drill B-47 drilling rig mounted on a tracked bombardier vehicle. The bombardier vehicle was used because of the difficulty in accessing these locations due to steep slopes, wet ground and tight maneuvering room amongst the trees and boulders. Hollow stem or solid stem auger was used to advance the borings to bedrock refusal or the selected depth. Soil samples were collected at five foot intervals with a 1 3/8 inch diameter split spoon sampler, classified and stored in glass jars which have been retained by NHWS&PCC. Grain size analyses were performed on selected samples to verify field classification. The grain size gradation curves are included in Appendix C.

A diamond bit core barrel or a tricone roller bit was used to advance the boring into bedrock. The on-site bedrock wells were advanced five to twelve feet into bedrock. The tricone roller bit was used for wells MO-2D, MO-4D and MO-5D after initial attempts to core were hindered as bedrock fragments became lodged in the tip of core barrel, thus impeding the advancement of core barrel. The bedrock core samples were retained by the NHWS&PCC and a description of the cores is included in Appendix C.

The wells were constructed of 1 1/2 inch inside diameter schedule 40 polyvinyl chloride (PVC) pipe with threaded flush joints. No solvent glues were used in the well construction. The well screens were constructed of machine slotted PVC with a 0.01 inch slot size. An Ottawa sand pack was placed around the well screens. A bentonite clay seal was constructed above the sand pack using bentonite pellets or a bentonite tremie grout seal. A steel protective casing with locking cap was set in a surface cement seal. The well construction details are shown on the boring logs contained in Appendix C.

Monitoring Well MO-6 is located on the southern boundary of a single family home development project. It is a six inch diameter bedrock well similar in construction to a typical residential bedrock well. The well was installed by Tasker Well Company of Northwood, New Hampshire using a Porta Drill percussion air rotary rig.

An 8 3/4 inch diameter tricone roller bit in conjunction with a bentonite slurry was used to drill through the overburden materials into the top surface of the bedrock. A six inch diameter steel casing was seated and sealed at least ten feet into bedrock. Bedrock chips were collected from the wash water during the drilling process and placed into plastic bags retained by NHWS&PCC. MO-6 was completed to a depth of 130 feet. It yielded approximately 20 to 30 gallons a minute and was under flowing artesian conditions. Well MO-6 was also equipped with a locking cap and the well log is presented in Appendix C.

4.2.4.2 Hydraulic Testing

Seven of the NHWS&PCC installed monitoring wells were utilized for hydraulic testing to obtain data on the hydraulic conductivity of various types of overburden materials and bedrock. The slug test method was used where water was added to the well and the changes in water level with time were recorded. An Insitu, Inc. SE1000 data collection system connected to a downhole pressure transducer was used to record the water level/time data. Analysis of the data was based on Hvorslev method of analysis for a point piezometer (9). Table 4 contains a summary of the slug test data and the slug test curves are contained in Appendix E.

TABLE 4

SLUG TEST RESULTS
MOTTOLO SITE, RAYMOND

Well #	Screen Interval	Subsurface Material	Well Diameter	Hydraulic Conductivity	
				ft/day	cm/sec
MO-1	12-17'	bedrock	1.5"	0.56	$1.98\text{x}10^{-4}$
				0.47	$1.66\text{x}10^{-4}$
MO-2S	4-9'	fine and medium	1.5"	9.1-9.3	$3.21\text{-}3.28\text{x}10^{-3}$
		sand		9.1-9.7	$3.21\text{-}3.42\text{x}10^{-3}$
MO-2D	14-19'	bedrock	1.5"	2.5	$8.82\text{x}10^{-4}$
				2.7	$9.52\text{x}10^{-4}$
MO-3D	11-13'	bedrock	1.5"	1.39	$4.90\text{x}10^{-4}$
				1.35	$4.76\text{x}10^{-4}$
MO-3S	3'-10"-8'10"	sand, some	1.5"	1.45	$5.12\text{x}10^{-4}$
		fines		1.46	$5.15\text{x}10^{-4}$
MO-4S	4'7"-9'7"	fine and medium	1.5"	3.04	$1.07\text{x}10^{-3}$
		sand		2.59	$9.14\text{x}10^{-4}$
MO-4D	16'10"-18'10"	bedrock	1.5"	0.31	$1.09\text{x}10^{-4}$
				0.30	$1.06\text{x}10^{-4}$

4.2.4.3 Overburden and Bedrock Aquifer

The overburden aquifer at the site is comprised of glacial till and stratified sands ranging from medium sand to silty sand. Glacial till occurs over most of the upland portions of the site except for the area near the former drum disposal area where sandy soil fill was deposited as part of the drum removal. A manure/miscellaneous piggery operation waste pile is located off the embankment east of the former piggery building and a narrow band of stratified sands underlies the swale.

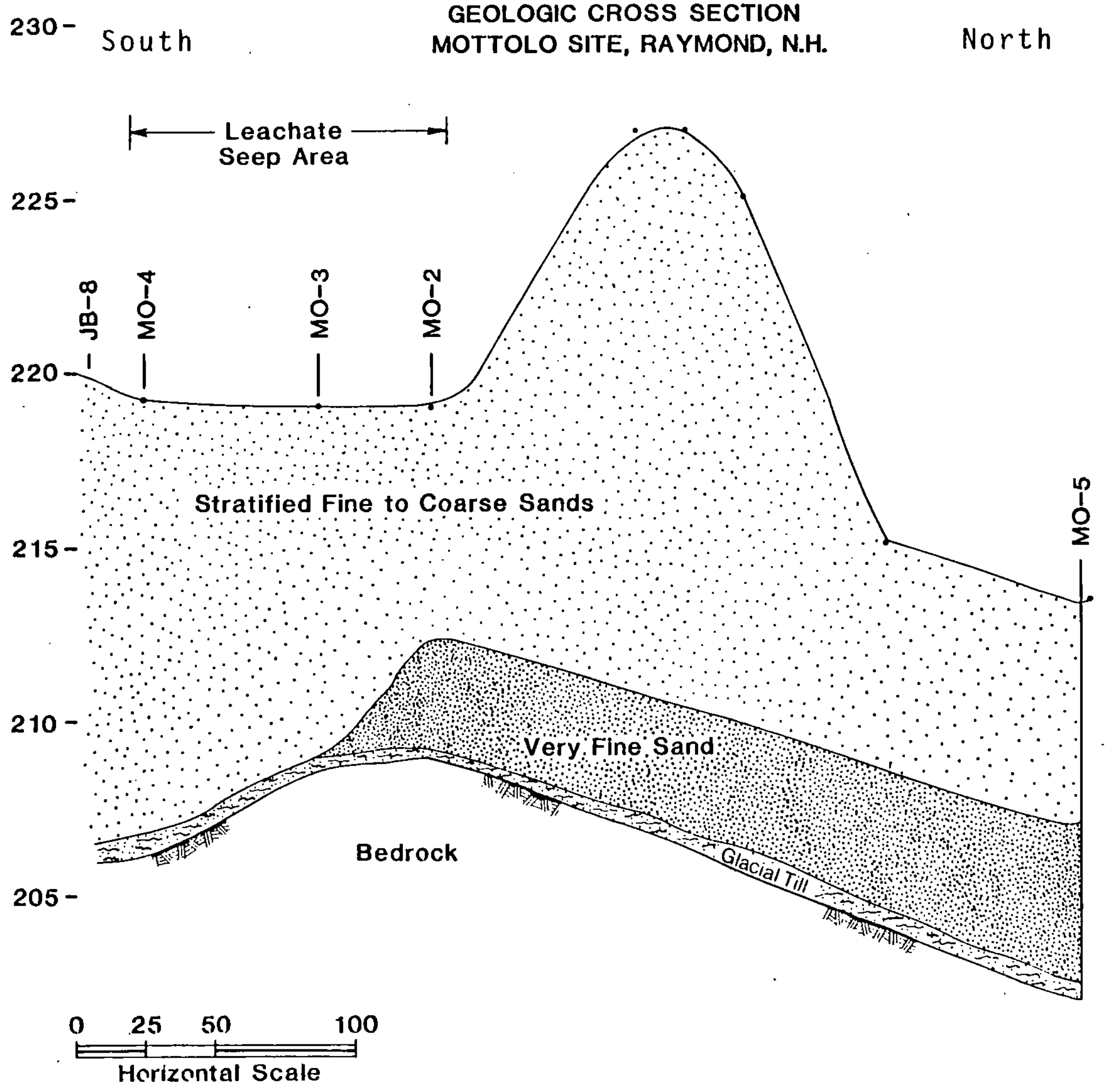
A major objective of the well installation program was to obtain better information on the subsurface material in the lower area adjacent to Brook A. Previous information for this area was based on jet boring wash water compiled from a limited extent of the vertical profile. Soil samples collected from four well couplets indicated that the subsurface materials along the valley of Brook A were comprised of stratified sands ranging from silty very fine sand to a medium to coarse sand. A thin layer of glacial till was observed in some locations between the stratified sand and bedrock. As previously mentioned gradation curves for selected samples are contained in Appendix C.

The depth to bedrock ranged from 9 feet to 13 feet in the four couplet locations. Figure 17 shows a cross sectional representation of the materials encountered. Because topography of the bedrock surface is likely to have a significant influence on flow in the overburden aquifer, Figure

FIGURE 17

GEOLOGIC CROSS SECTION

MOTTOLO SITE, RAYMOND, N.H.



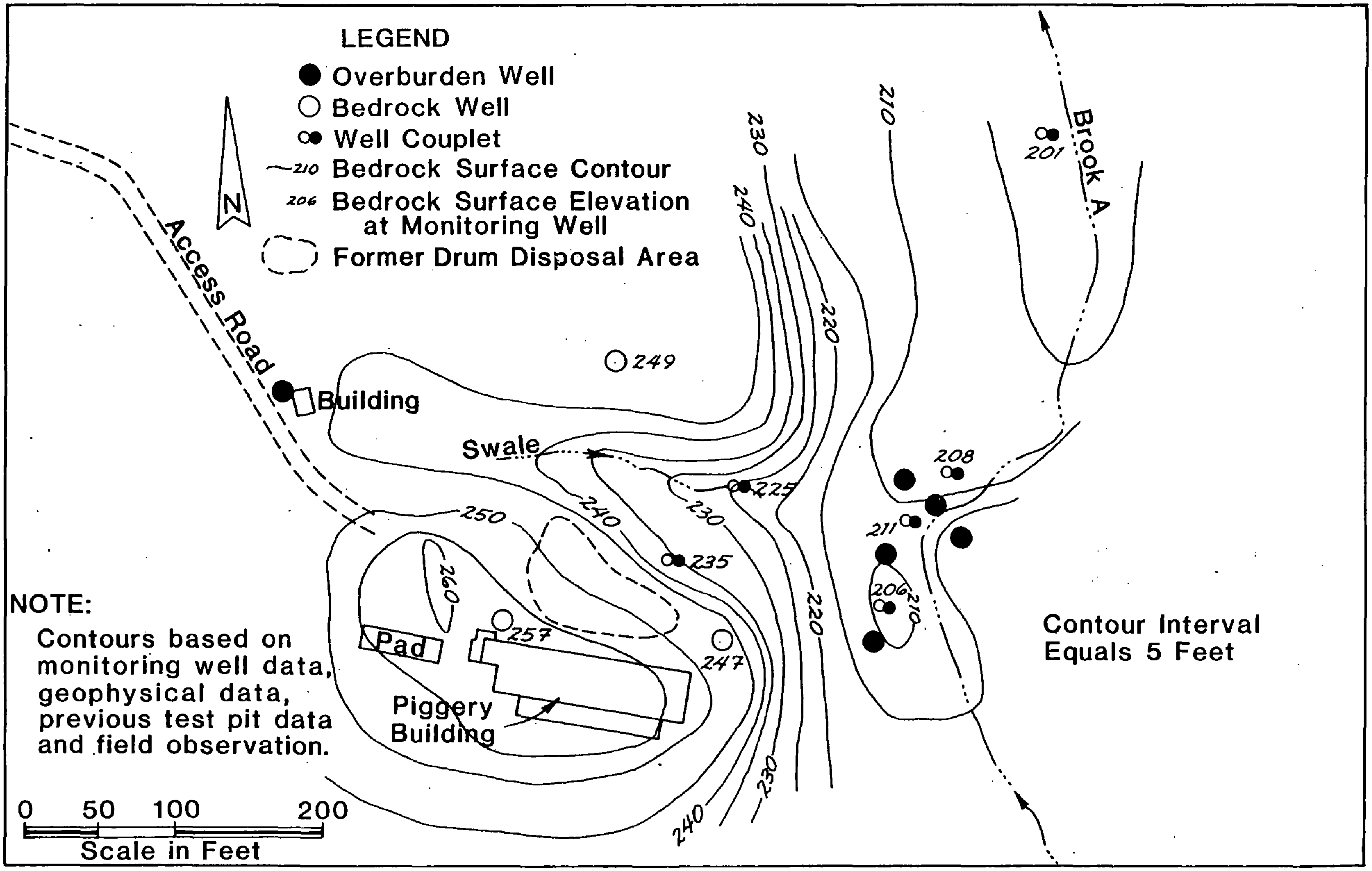
18 shows the elevation of the bedrock surface based on geophysical data, well log data, test pit data and field observations. As shown in Figure 18 the former drum disposal area is located near a bedrock divide in the vicinity of the former piggery building. The bedrock surface slopes from the former drum disposal area northeasterly towards an east-west oriented trough in the bedrock surface and then down to the valley of Brook A. The bedrock topography has a significant influence on the direction of groundwater flow in the overburden aquifer which is discussed later in Section 4.2.6. The elevations of the bedrock surface are referenced to the site vertical datum previously established during the GHR/GZA site investigation.

The bedrock underlying the site is predominantly comprised of biotite schist, quartz and granite. Bedrock samples collected during the installation of the additional groundwater monitoring wells indicated the bedrock is weathered and fractured at various depths at different locations on the site.

Monitoring well MO-6, the off-site monitoring well located off of Randy Lane, yielded approximately 20-30 gallons per minute during a blow test at depths of 124 and 130 feet. No appreciable water was encountered at shallower depths. MO-6 has been an upwardly flowing artesian well since it was drilled. Information obtained from an inventory of residential bedrock wells in the area revealed that the well depths ranged from 90 feet to 300 feet and the yields ranged from 4

FIGURE 18

BEDROCK SURFACE CONTOUR MAP
MOTTOLO SITE, RAYMOND, N.H.



NOTE:
Contours based on monitoring well data, geophysical data, previous test pit data and field observation.

Contour Interval Equals 5 Feet

gallons per minute to 50 gallons per minute. Consequently, it is evident that portions of the bedrock aquifer in the area are fractured and capable of yielding substantial quantities of water.

4.2.5 Water Quality Analysis

The NHWS&PCC has been collecting groundwater quality samples from the area since the site was discovered in 1979. A detailed site sampling program was conducted as part of the GHR/GZA site investigation (4). Since that time the NHWS&PCC has periodically collected samples from nearby residential wells and selected monitoring wells. Previously collected water quality data are summarized in Appendix D.

The NHWS&PCC Hydrogeological Investigation Unit's field sampling program began in April 1985 with a full round of samples collected from the then existing monitoring well network. Samples were analyzed for volatile organic compounds and several inorganic parameters at selected well sites.

Preliminary conclusions from the April sampling round indicated that 1) volatile organic chemicals were the primary contaminants of concern in the plume and 2) there were elevated concentrations of some metals which would be expected to change the conductivity of the groundwater suggesting that certain geophysical techniques such as EM and electrical resistivity could be useful in mapping the plume. The results from this round of samples were used in the design of subsequent field investigation program elements.

Ten additional monitoring wells were installed in June and July. Two more rounds of groundwater samples were collected on

July 25, 1985 and August 21-22, 1985 and analyzed for volatile organic chemicals.

All monitoring wells were bailed or pumped a minimum of three well water volumes prior to the collection of the samples. Samples were collected in a clean bailer or directly from the discharge line for the two Barcad samplers in OW-2 and OW-4. The bailers were either dedicated to a particular well or field cleaned between wells using a series of rinses in the following sequence: distilled water, methanol and a final distilled water rinse.

Metal samples collected during the April 1985 sample round were filtered in the field using a 0.45 micron pore filter and placed in a sampling container containing nitric acid as a preservative.

Volatile organic chemicals were collected in pre-cleaned 40 milliliter glass vials. 100 microliters of 4 milligram per milliliter solution of mercuric chloride was added to the vials to inhibit microbial activity. All samples were maintained under strict chain-of-custody procedures and documentation from procurement in the field to analysis in the NHWS&PCC laboratory. Laboratory analyses were performed following EPA protocol for each methodology, and strict quality assurance/quality control specific for each analysis was followed. Several samples collected during the July 25, 1985 round were lost due to equipment malfunction resulting from a power failure in the NHWS&PCC laboratory.

The water quality analyses from twenty-one monitoring wells and two micropiezometers indicated that there are substantial levels of volatile organic chemicals present in a relatively discrete main plume leaving the site easterly and discharging into Brook A. VOCs were detected in both the overburden and bedrock aquifers. A total of eighteen volatile organic chemicals were detected in groundwater samples collected at the site.

Previous hydrochemical reconnaissance and geophysical data on the extent of contamination were confirmed for the main plume of contaminated groundwater. However, the downstream monitoring well couplet, MO-5S and MO-5D, detected contamination in the groundwater approximately 230 feet downstream of the main plume area. Analysis of samples collected on August 21, 1985 from micropiezometers R-8 and R-11 confirmed earlier hydrochemical reconnaissance information which indicated no volatile organic chemicals were detected in the overburden groundwater at those locations between the leachate seeps and wells MO-5S and MO-5D. However, VOCs were detected in significant concentrations in the overburden and bedrock aquifers, MO-5S and MO-5D respectively, just 50 feet downstream of R-11. It appears that contamination is transmitted via fractures in the bedrock aquifer system to this location and the bedrock aquifer is discharging to the overlying overburden aquifer which in turn is discharging to Brook A. Further discussion of the vertical hydraulic gradient patterns will be discussed in Section 4.2.6.

This explanation of contamination at MO-5S and MO-5D is further supported by a comparison of the distribution of volatile organic chemicals which shows that the concentrations found in MO-5S, overburden well, to be an order of magnitude less than the concentrations found in MO-5D, a bedrock well. A discussion of the impacts to Brook A will be discussed in Section 5.1.

A summary of the VOC water quality data analyzed since December 1984 by the NHWS&PCC laboratory using gas chromatograph/mass spectrometer techniques is presented in Table 5. The range of concentrations for each compound is presented in Table 6. A total of eighteen volatile organic chemicals was found in groundwater samples collected at the site since December 1984. A total of twenty-one monitoring wells and two micropiezometers was sampled for GC/MS analysis. Volatile organic chemicals were detected in seventeen of the monitoring wells. No volatile organic chemicals were detected in four monitoring wells, the on-site dug well, JB-9, MO-4D, MO-6 and the two micropiezometers, R-8 and R-11.

Figure 19 is a map showing the area of groundwater contamination presented as total volatile organic chemicals based on sampling data collected on August 21 and August 22, 1985. Figure 19 shows two plumes of contaminated groundwater presented in total volatile organic compounds in parts per billion, emanating from the site. The main plume is relatively narrow and discrete showing the migration of contaminants from the former disposal area in both the overburden and bedrock aquifers to the ultimate discharge to Brook A. The well couplets along this reach of Brook A show higher concentrations in the overburden aquifer than in the bedrock aquifer.

The second plume was detected approximately 230 feet downstream of the first plume and is not as well defined because only one monitoring well couplet was located in that area. Micropiezometer R-11 is located approximately 50 feet upstream of MO-5S and because of the discharging conditions along Brook A would be expected to show contamination if the overburden or bedrock aquifers were contami-

Table 5
Groundwater Quality Summary - Volatile Organic Chemicals
Mottolo Site, Raymond

Results in parts per billion

Well Location and Sampling Date		Ethyl Benzene	Toluene	Xylene, Meta	Xylene, Ortho and Para	Acetone	Methyl Ethyl Ketone	1,1 Dichloroethane	Cis and Trans 1,2 Dichloroethylene	Benzene	1,1,1 Trichloroethane	Tetrahydrofuran	Methyl Isobutyl Ketone	1,2 Dichloroethane	1,1 Dichloroethylene	Tetrachloroethylene	Dichloromethane	Trichloroethylene	Chlorobenzene
Dug	4/11/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OW-1*																			
OW-2D	4/11/85	585	3059	630.8	527	38.3	15.7	731.4	1065	ND	109.3	265.5	29.6	ND	ND	ND	ND	ND	ND
OW-2S	1/7/85	ND	1590	126	138	ND	ND	194	40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1/11/85	169.3	1202	221	146	ND	ND	343	1266	ND	116.8	62.1	ND	ND	ND	ND	ND	ND	ND
	4/11/85	14.4	87.9	13.1	<5.0	ND	ND	7.7	70.5	ND	10.7	<5.0	ND	ND	ND	ND	ND	ND	ND
OW-3	12/4/84	<5.0	10.4	7.4	7.9	10.2	5.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4/11/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OW-4D	4/11/85	ND	17.6	ND	ND	26.2	ND	17.6	13.9	ND	ND	37.4	12.7	ND	ND	ND	151.5	ND	ND

*OW-1 is a damaged well and was not sampled.
Samples analyzed by NHWS&PCC Laboratory.

Table 5 (continued)

Results in parts per billion

Well Location and Sampling Date		Ethyl Benzene	Toluene	Xylene, Meta	Xylene, Ortho and Para	Acetone	Methyl Ethyl Ketone	1,1 Dichloroethane	Cis and Trans 1,2 Dichloroethylene	Benzene	1,1,1 Trichloroethane	Tetrahydrofuran	Methyl Isobutyl Ketone	1,2 Dichloroethane	1,1 Dichloroethylene	Tetrachloroethylene	Dichloromethane	Trichloroethylene	Chlorobenzene
OW-4S	1/7/85	153	203	538	360	ND	ND	285	38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1/11/85	141	174	204	212.3	22.7	ND	314	73.1	ND	24	69.3	114.5	ND	ND	ND	ND	ND	ND
	4/11/84	96.8	512.8	144.7	27.3	21.9	30.3	3338	2374	117.4	764.6	85.4	85.1	14.1	35.9	121.6	228.4	ND	ND
JB-5	1/7/85	78	267	74	87	ND	ND	176	43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1/11/85	34.53	137.4	38.6	41.1	ND	ND	190.2	100.2	ND	ND	64.5	188	ND	ND	ND	ND	ND	ND
	4/11/85	ND	7.8	ND	11.7	ND	ND	131.8	47.3	ND	12.2	6.3	ND	ND	ND	ND	ND	ND	ND
JB-6	1/7/85	121	897	199	130	ND	ND	264	130	14	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1/11/85	224	1372	345	229	326	ND	790	740	ND	ND	337	66.7	ND	ND	ND	ND	ND	ND
JB-7	4/11/85	249.3	2781	318	187.2	220	239.9	1222	1858.6	ND	122	544	309.7	ND	35.7	ND	ND	ND	ND
JB-8	4/11/85	ND	5.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5.0	<5.0
JB-9	4/11/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MO-1	7/25/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5.0	ND
	8/21/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10.3	ND
MO-2D	8/21/85	<5.0	<5.0	ND	ND	ND	ND	ND	278	ND	ND	1354	21.5	ND	72.1	ND	ND	19.8	ND
MO-2S	8/21/85	196	1366.2	224.6	168.1	ND	ND	550.6	224.1	<5.0	27.6	2389	188.1	ND	ND	ND	ND	<5.0	ND

Table 5 (continued)

Results in parts per billion

Well Location and Sampling Date		Ethyl Benzene	Toluene	Xylene, Meta	Xylene, Ortho and Para	Acetone	Methyl Ethyl Ketone	1,1 Dichloroethane	Cis and Trans 1,2 Dichloroethylene	Benzene	1,1,1 Trichloroethane	Tetrahydrofuran	Methyl Isobutyl Ketone	1,2 Dichloroethane	1,1 Dichloroethylene	Tetrachloroethylene	Dichloromethane	Trichloroethylene	Chlorobenzene
MO-3D	8/21/85	10.1	11	ND	ND	ND	ND	148.6	543	ND	ND	1070	191.8	ND	ND	ND	ND	98.8	ND
MO-3S	8/21/85	164	1290	194.9	132.7	80.4	ND	461.8	232.2	ND	ND	2267	858.7	ND	ND	ND	ND	37.5	ND
MO-4D	8/21/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MO-4S	8/21/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	ND	ND	ND	ND	ND	ND
MO-5D	7/25/85	ND	ND	ND	ND	ND	ND	66.5	241.7	ND	<5.0	341	ND	ND	229.1	ND	ND	33.3	ND
	8/21/85	ND	ND	ND	ND	ND	ND	ND	228	ND	<5.0	445	ND	ND	ND	ND	ND	29	ND
MO-5S	7/25/85	ND	ND	ND	ND	ND	ND	12	42.2	ND	ND	ND	ND	ND	40	ND	ND	10.5	ND
	8/21/85	ND	ND	ND	ND	ND	ND	ND	42	ND	ND	ND	ND	ND	ND	ND	ND	11	ND
MO-6	7/25/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	8/22/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/21/86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/15/86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
R-8	8/22/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
R-11	8/22/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6
Range of Concentration of Volatile Organic Chemicals
Groundwater Samples
Mottolo Site, Raymond
Results in parts per billion (ppb)

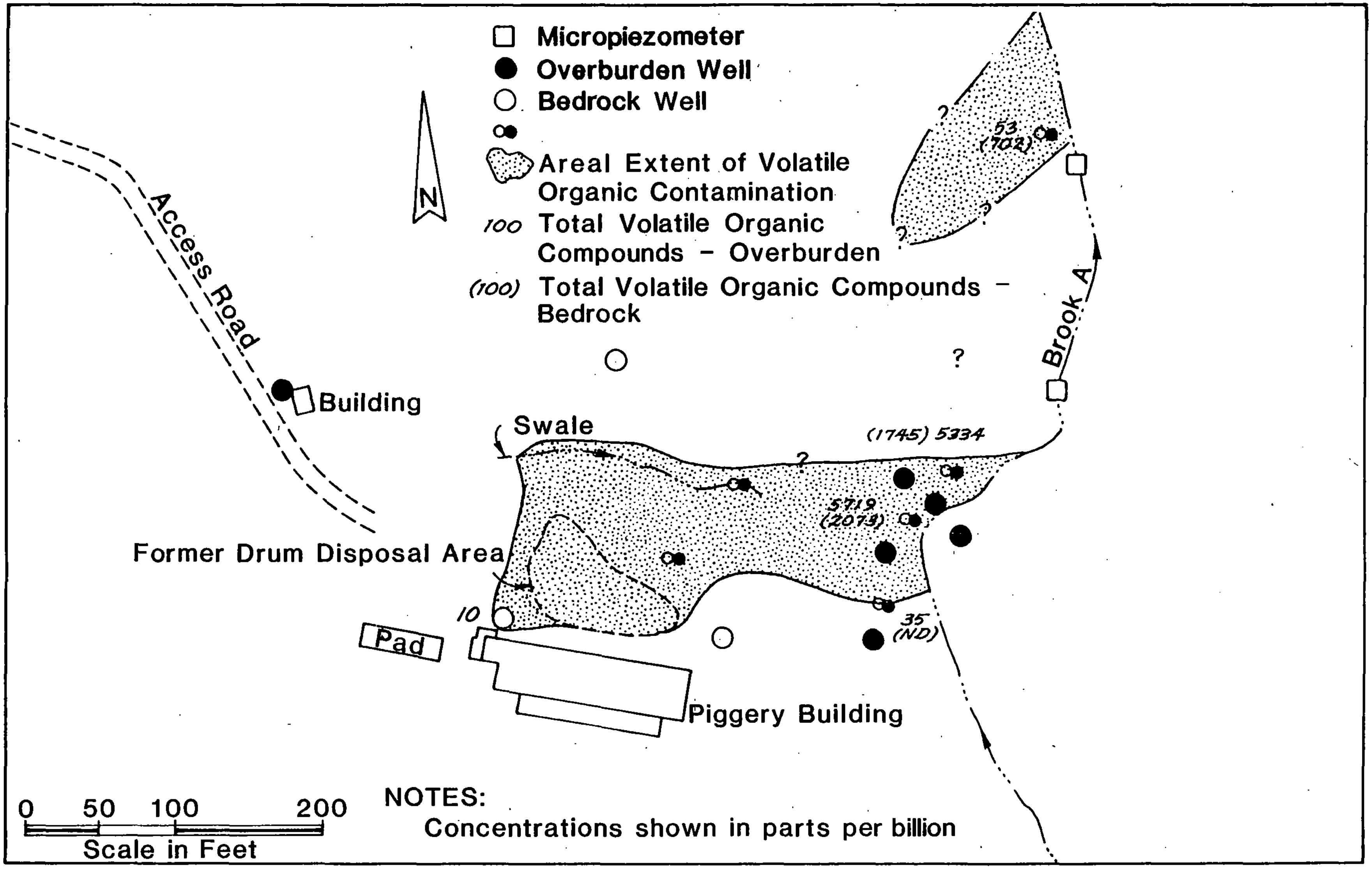
	Maximum	Minimum	No. of Wells Detected
1. ethyl benzene	585.0	<5.0	11
2. toluene	3,059.0	<5.0	13
3. xylene, meta	630.8	7.4	9
4. xylene, ortho and para	527.0	<5.0	9
5. acetone	326.0	10.2	7
6. methyl ethyl ketone	239.9	5.4	4
7. 1,1 dichloroethane	3,338.0	7.7	11
8. cis and trans-1,2-dichloroethylene	2,374.0	38.0	13
9. benzene	117.4	<5.0	2
10. 1,1,1 trichloroethane	764.6	10.9	7
11. tetrahydrofuran	2,389.0	<5.0	13
12. methyl isobutyl ketone	858.7	12.7	10
13. 1,2 dichloroethane	14.1	14.1	1
14. 1,1 dichloroethylene	229.1	35.7	5
15. tetrachloroethylene	121.6	121.6	1
16. dichloromethane	228.4	151.5	2
17. trichloroethylene	98.8	<5.0	7
18. chlorobenzene	<5.0	<5.0	1

Notes:

1. Data from 21 wells and 2 piezometers for samples collected since December 1984.
2. Minimum range does not include not detected reported values.

FIGURE 19

AREAL EXTENT OF GROUNDWATER CONTAMINATION - AUGUST 21-22,1985
MOTTOLO SITE, RAYMOND, N.H.



nated in that upstream area. This suggest that there is a separate second plume. Total volatile organic compound concentrations in this second plume show overburden concentrations of 53 parts per billion compared to 702 parts per billion in the bedrock companion well. This suggests that contamination is being transmitted in a bedrock fracture system recharged from the site and is discharging to the overburden aquifer and ultimately to Brook A. The downstream extent of this plume has not been identified at this time.

The inorganic analytical data compiled from the April 1985 sampling round are summarized in Table 7. As previously stated, the results indicated that downgradient wells, OW-2 and OW-4, showed significant increases in the concentrations of iron and manganese above the upgradient dug well. Slight increases in the concentrations of arsenic, lead and zinc were also seen, although the levels were not above drinking water standards.

Because potential impact on residential water supply wells was of paramount concern, twenty-six residential wells were sampled periodically during the extent of the investigation. Figure 20 shows the location of the residential wells and the off-site monitoring well MO-6. To date, no impact from the site has been detected in any residential wells. Monitoring well MO-6 was installed along Brook A downstream of the site and water quality samples collected from MO-6 have also indicated that no impact has been detected.

In conjunction with the water quality sampling program the NHWS&PCC conducted an inventory of the area's residential wells. Pertinent information from the inventory is summarized in Appendix D.

Table 7
Inorganic Analyses Summary
Groundwater and Surface Water
Mottolo Site, Raymond

Results in milligrams/liter

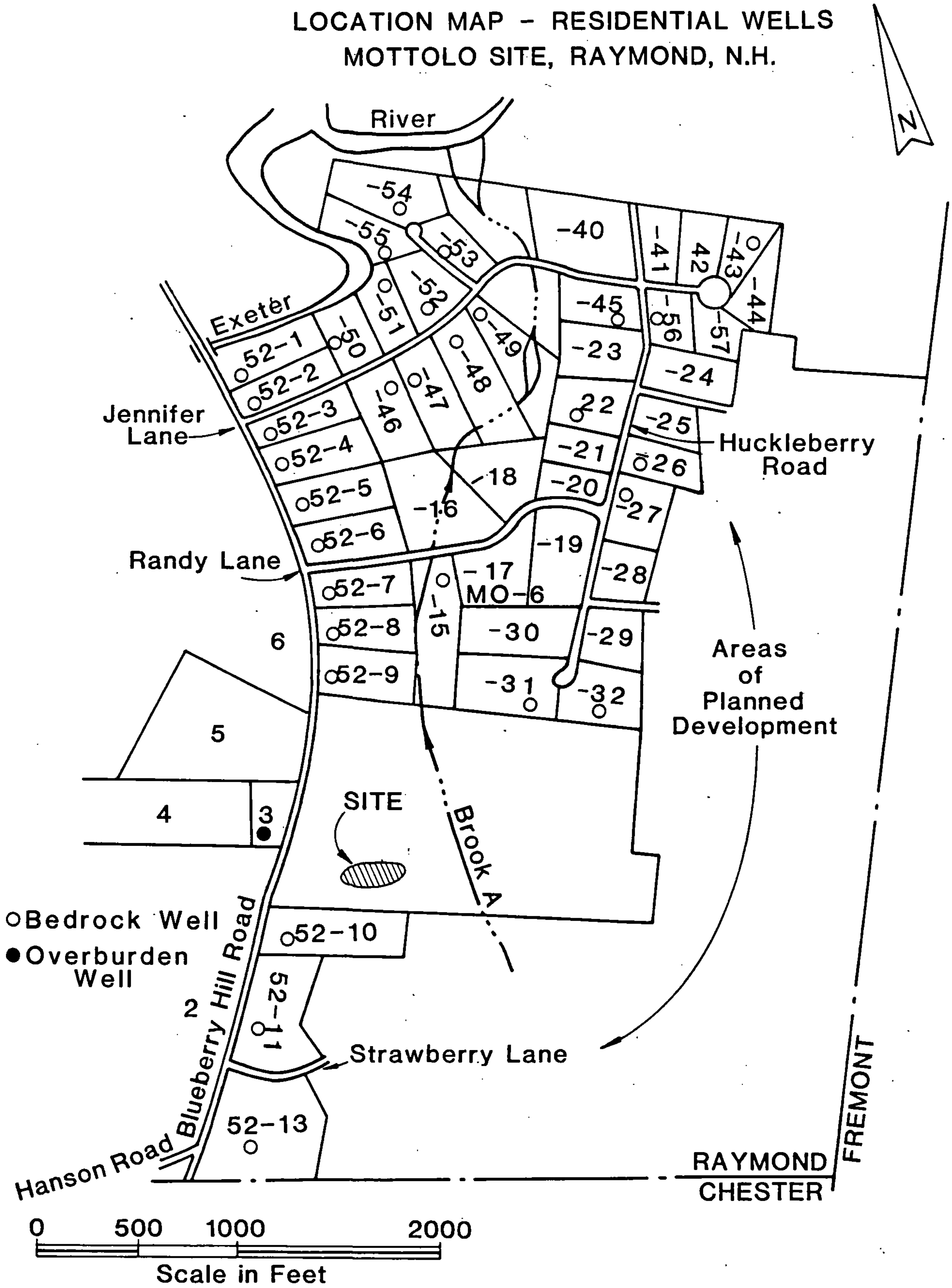
Sample Location and Date		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Zinc	Copper	Iron	Manganese	Total Organic Carbon
DUG WELL	4/11/85	<0.005	<0.5	<0.005	<0.03	<.01	<0.005	<0.001	<0.03	<0.1	0.1	0.07	11.
OW-4 - shallow	4/11/85	0.006	<0.5	<0.005	<0.03	0.03	<0.005	<0.001	2.3	<0.1	190	7.5	90.
S-3	4/11/85	<0.005	<0.5	<0.005	<0.03	<.01	<0.005	<0.001	0.03	<0.1	0.9	0.31	8.
OW-2 - shallow	4/11/85	0.009	<0.5	<0.005	<0.03	<.01	<0.005	<0.001	<.03	<0.1	10	0.63	24.
OW-2 - deep	4/11/85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	70.
OW-3	4/11/85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.
JB-5	4/11/85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	33.
JB-7	4/11/85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	140.
JB-9	4/11/85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	110.
S-1	4/11/85	<0.005	<0.5	<0.005	<0.03	<.01	<0.005	<0.001	<0.03	<0.1	0.2	0.17	9.

Samples analyzed by NHWS&PCC Laboratory.

NA - not analyzed

Figure 20

LOCATION MAP - RESIDENTIAL WELLS
MOTTOLO SITE, RAYMOND, N.H.



4.2.6 Water Level Measurements

Previous water measurement data were collected by GHR/GZA during their site investigation. Preliminary data indicated that flow from the former drum disposal was easterly towards Brook A. At that time, there was no effort to differentiate between the elevation in overburden and bedrock groundwater flow systems. One of the objectives of the additional monitoring well installation program was to better understand the relationship between the overburden and bedrock aquifers and to evaluate the vertical hydraulic gradients.

Preliminary hydraulic gradient information was collected during the installation of the micropiezometers as part of the hydrochemical reconnaissance. The relative elevation difference between the groundwater elevation in each micropiezometer was measured and compared to the water surface elevation of Brook A adjacent to each respective micropiezometer. Table 3 summarizes the data. The data showed that there was an upward vertical gradient to the groundwater flow system in the valley adjacent to Brook A and that the overburden and bedrock groundwater systems were discharging to Brook A. These findings were incorporated into the rationale for designing the monitoring well program.

Subsequent to the installation of the additional monitoring wells the site monitoring wells, micropiezometers and several locations on Brook A were surveyed into the site vertical datum. The site vertical datum was established during the GHR/GZA site investigation and is not related to mean sea level.

Groundwater and surface water levels were measured again on July 25, 1985 and August 21-22, 1985. A summary of the water elevation data collected during this investigation is included in Appendix E. Figures 21 and 22 show the groundwater elevation contour maps for the overburden and bedrock aquifers as measured on August 22, 1985. In addition, monitoring well MO-6, the monitoring well located off of Randy Lane, was under flowing artesian conditions during this time period.

Several important conclusions may be drawn from the elevation data: 1) groundwater flow in the upland portion of the site has a downward vertical component to the hydraulic gradient and the bedrock aquifer is being recharged by the overlying overburden, 2) flow in the overburden in the upland area is directed towards the bedrock trough beneath the swale and then eastward to Brook A, 3) groundwater flow in the vicinity of Brook A has an upward hydraulic gradient and consequently a component of groundwater flow is from the bedrock aquifer to the overburden aquifer with this component discharging to the Brook A drainage system, 4) groundwater flow and contamination from the site east of Brook A could not be documented although the same upward component of groundwater flow is probable, 5) groundwater flow from the former drum disposal area is migrating easterly towards Brook A, however, contamination was detected approximately 230 feet downstream of the primary plume area, the likely result of migration in a bedrock fracture system recharged from the former drum disposal area, and 6) upwardly flowing artesian conditions at MO-6 are consistent with site data indicating that a portion of the bedrock aquifer is discharging to the Brook A drainage system.

The elevation data may be used in conjunction with the hy-

FIGURE 21

OVERBURDEN GROUNDWATER ELEVATIONS - AUGUST 22, 1985
MOTTOLO SITE, RAYMOND, N.H.

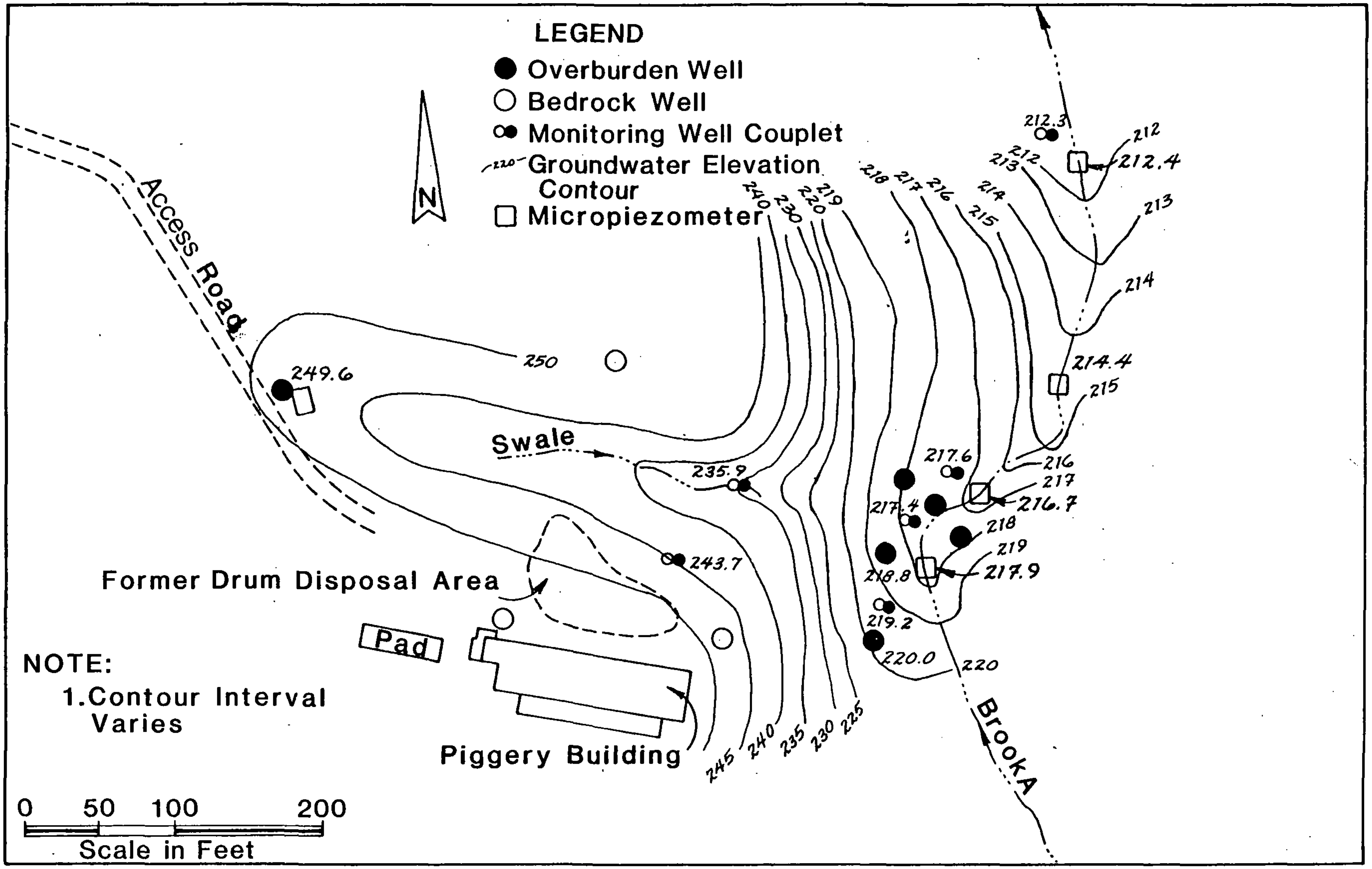
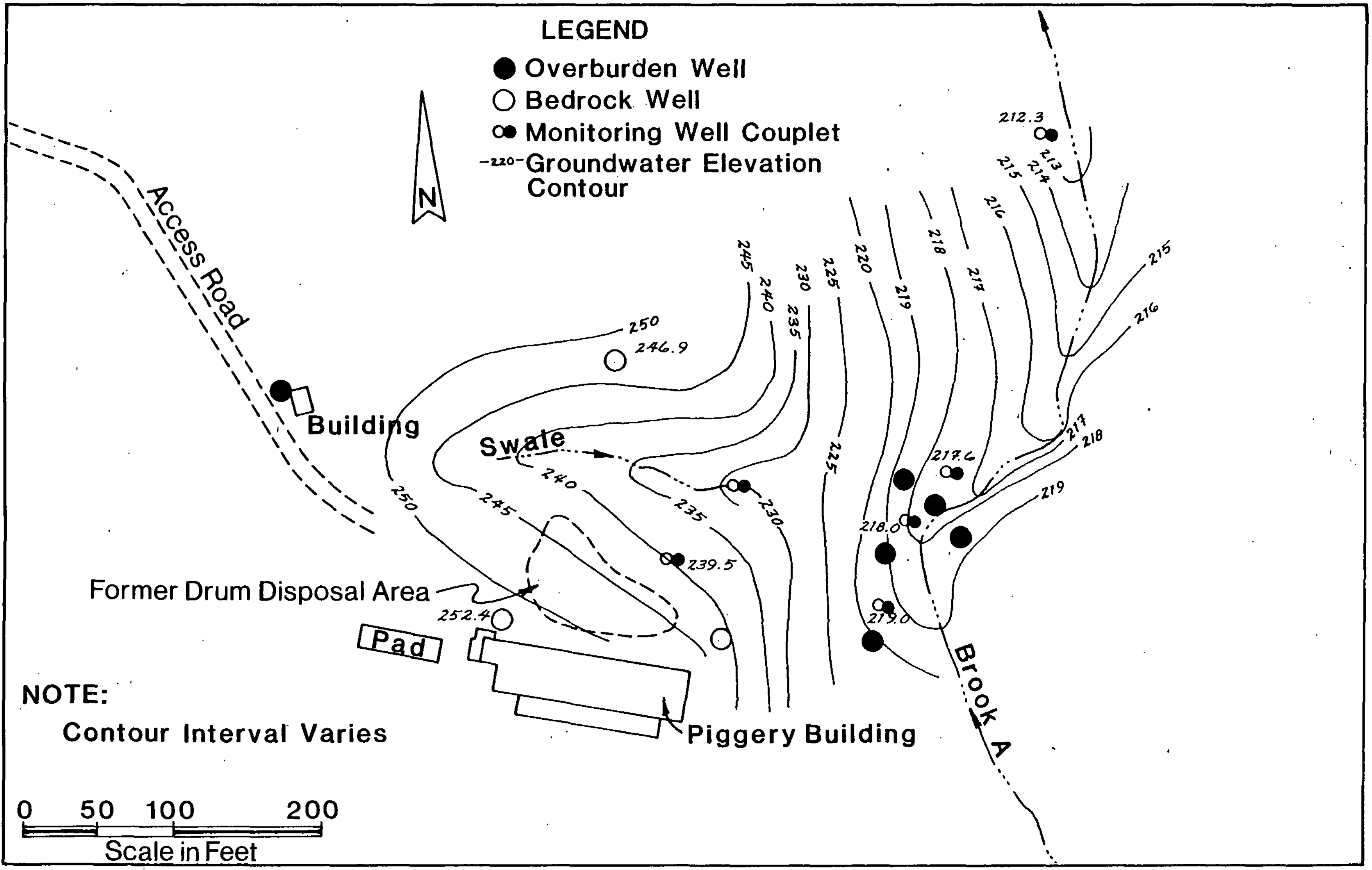


FIGURE 22

BEDROCK GROUNDWATER ELEVATIONS - AUGUST 22, 1985
MOTTOLO SITE, RAYMOND, N.H.



draulic testing data to estimate the rate of groundwater flow and the time of travel, the time required for groundwater to flow from one specific location to a second specific location, in the overburden aquifer. The velocity of groundwater flow is calculated using Darcy's Equation;

$$V = \frac{KI}{n}$$

where V = seepage velocity
K = hydraulic conductivity
n = effective porosity
I = hydraulic gradient (change in elevation divided by the length)

and the time of travel is calculated using the following formula;

$$T = \frac{L}{V}$$

T = time of travel
L = length of flow path
V = seepage velocity

Average hydraulic conductivity values for the overburden aquifer were obtained from the slug test results presented in Table 4. The selected portion of the aquifer of interest was from the former drum disposal area to Brook A. The lengths were taken from the flow paths based on groundwater contour maps presented in Figures 21 and 22 and the hydraulic gradients were calculated from the groundwater elevation data collected on August 22, 1985. Table 8 summarizes the data used for the analysis.

TABLE 8

GROUNDWATER VELOCITIES AND TIMES OF TRAVEL

Hydraulic Conductivity K (ft./day)	Hydraulic Gradient I (ft./ft.)	Length L (feet)	Velocity V (ft./day)	Time of Travel (days)
Overburden				
4.5 (average)	0.154	280	2.31	122
1.45 (minimum)	0.454	280	0.74	379
9.4 (maximum)	0.154	280	4.82	58

Using the above values the average velocity of groundwater flow in the overburden aquifer is 2.31 feet per day and the time required for groundwater to flow from the former drum disposal area to Brook A is 122 days.

5.0 SURFACE WATER INVESTIGATION

5.1 SURFACE WATER

The Mottolo Site is located in the surface water drainage system of Brook A, an unnamed tributary of the Exeter River. Surface water drainage from the former drum disposal area at the site is towards a small swale, referred to as the Swale, located north of the former drum disposal area. The Swale was constructed during site preparation for the drum excavation and removal process in order to divert runoff away from the toe of the drum disposal area. Flow in the Swale is easterly towards well OW-2 and over a steep embankment towards Brook A. Surface drainage from part of the site near the southwest corner of the former piggery building is towards the southwest for a short distance and ultimately to Brook A.

During this investigation flowing water was observed in the upland portion of the Swale during the spring runoff period of April and May, but the Swale was dry during the summer and fall months. During periods when there was significant flow in the Swale, the flow would become subsurface near the top of the embankment that leads down to Brook A, just east of OW-2.

Brook A is also an intermittently flowing brook although it contained flowing water during most of the investigative period. Brook A flows northerly in a well defined valley towards its confluence with the Exeter River. The drainage area of Brook A ranges from approximately 0.15 square miles as it flows by the site to approximately 0.38 square miles at its confluence with the Exeter River. Brook A varies several times along its course from a brook with a well defined channel and with a moderate gradient to a poorly defined stream thread bordered by significant areas of wetlands and flowing under a small gradient. The average slope of Brook A along the reach near the site is about 0.015 feet per feet.

Several prominent leachate seeps were evident adjacent to Brook A along the reach from well MO-2S to micropiezometer R-5. The seeps were characterized by brownish orange precipitate and colonies of similarly stained bacteria. Evidence of leachate staining was also observed in the stream channel bottom of Brook A. The greatest impact to the stream was noticed during periods of low flow; probably due to less surface runoff and a greater proportion of groundwater contribution.

Surface water quality sampling was conducted shortly after site discovery and during the GHR/GZA site investigation. Results from these previous investigations indicated that volatile organic chemicals were detected in the Swale and in Brook A. An initial round of surface water samples were collected for this investigation in April and May 1985 which indicated that low concentrations of VOCs were present in Brook A downstream of the leachate seeps. Additional downstream sampling at the Randy Lane culvert revealed that no VOCs were detected at that location.

The surface water quality was further evaluated during the hydrochemical reconnaissance program. Samples collected from Brook A and the Swale were analyzed using head space analysis on the Photovac GC as described in the hydrochemical sections. Figure 16 shows the results of this sampling. The results of the surface water sampling phase of the hydrochemical reconnaissance indicated that 1) seepage from the former drum disposal area was being collected by the Swale, 2) Brook A contained low levels of VOCs from the leachate seep area adjacent to Brook A to approximately 800 feet downstream of the leachate seep area with the levels in the brook showing a gradual but steady decline in the downstream direction.

Subsequent surface water samples were collected on July 25, 1985 and August 21, 1985 and analyzed by the NHWS&PCC laboratory using gas chromatograph/mass spectrometer analytical methods. Figure 23 shows the site surface water sampling locations and Figure 24 shows the off-site sampling locations. The results reflect the influence that the seasonal reduction in the stream flow of Brook A has on the water quality. The samples collected near the leachate seep area show much higher levels of VOCs in August when there was no upstream stream flow to act as dilution. Samples collected in August were more representative of leachate breakouts of contaminated groundwater. Analytical results from the Randy Lane culvert indicated no VOCs were detected. To date, the results have indicated that the surface water has been adversely affected near the site and the amount of impact is dependent on the quantity of stream flow in Brook A (seasonal effects). A downstream sample of Brook A collected in April 1985 during a period of high streamflow showed traces (less than 5 parts per billion) of toluene, 1,1 dichloroethylene, cis and trans 1,2 dichloroethylene and tetrahydrofuran. Analysis of a downstream sample, SA-1, collected in July when the streamflow in Brook A was reduced and nearly stagnant, revealed that 10 compounds were present and the concentration of total volatile organic chemicals was greater than 804 parts per billion. This is consistent with the groundwater analytical and elevation data which showed that a component of contaminated groundwater emanating from the former drum disposal area is discharging into Brook A.

FIGURE 23

SURFACE WATER SAMPLES – SITE LOCATIONS
MOTTOLO SITE, RAYMOND, N.H.

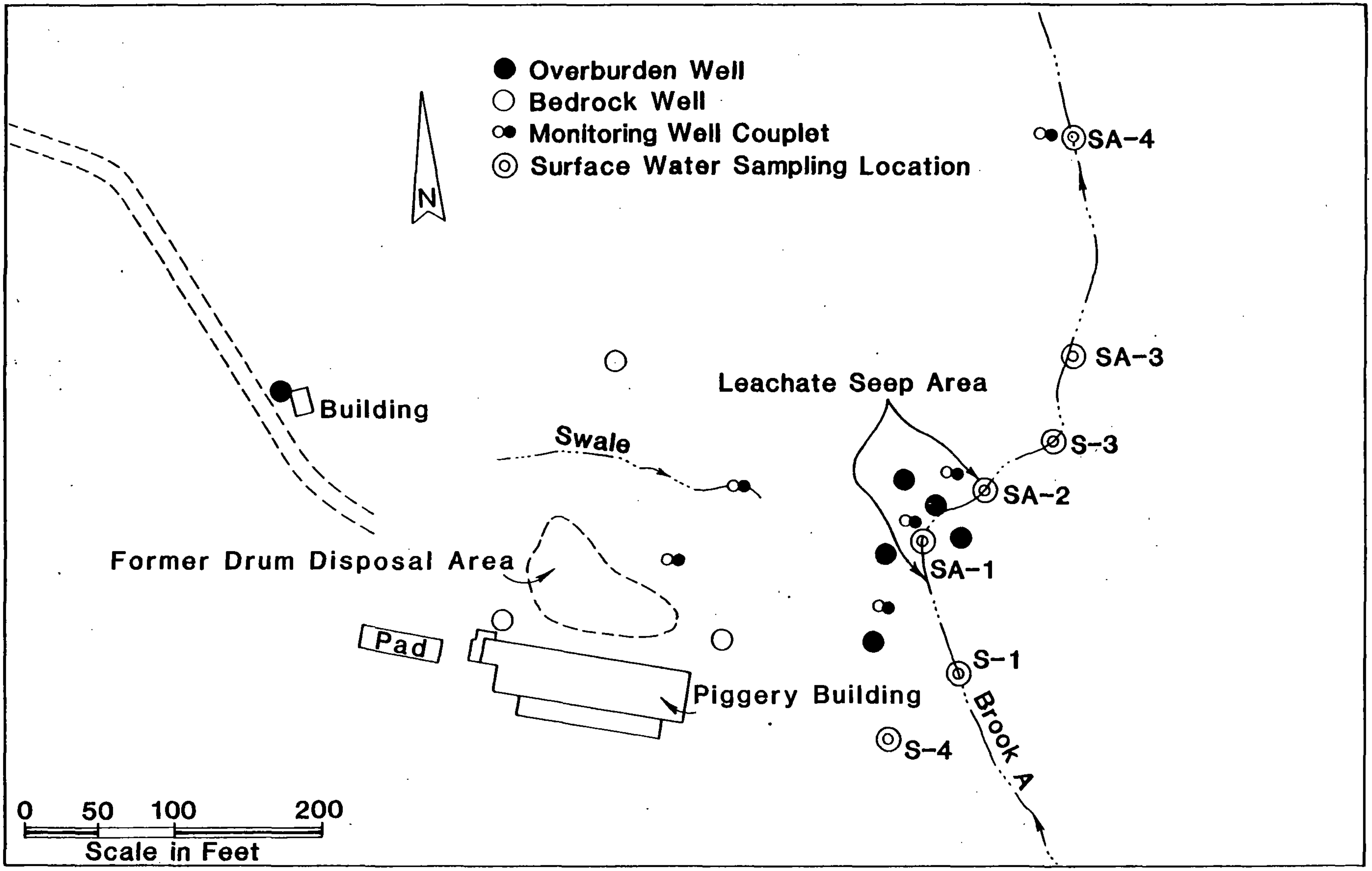
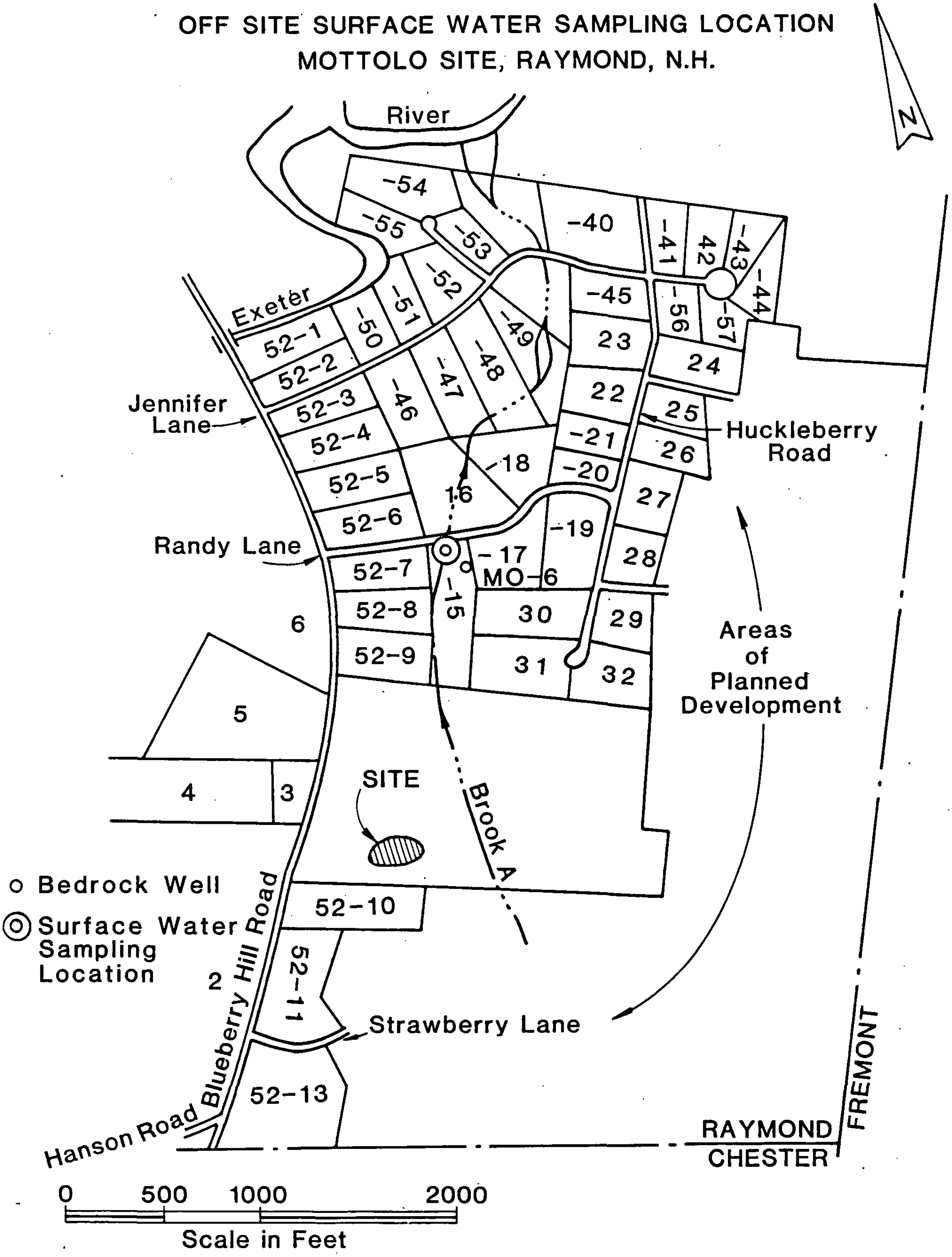


Figure 24

OFF SITE SURFACE WATER SAMPLING LOCATION MOTTOLO SITE, RAYMOND, N.H.



The sampling data to date also indicate that the levels of VOCs in Brook A are reduced below detection limits by the time Brook A reaches Randy Lane although this may be due to both dilution and volatilization of these types of compounds. Table 9 summarizes the surface water quality data.

Table 9

Summary of Surface Water Quality Data
Volatile Organic Chemicals
Mottolo Site, Raymond

Results in parts per billion

Location and Sampling Date		Ethylbenzene	Toluene	Meta, Xylene	Ortho and Para Xylene	Acetone	1,1 Dichloroethane	Cis and Trans 1,2-Dichloroethylene	1,1,1 Trichloroethane	Tetrahydrofuran	Methylisobutyl Ketone	1,1 Dichloroethylene
S-1 Brook A u/s of leachate seeps	4/11/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	8/21/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
S-4 Wet area @ toe of manure waste pile	1/7/85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1/11/85	ND	ND	ND	ND	9.6	ND	ND	ND	ND	ND	ND
SA-1 Brook A - in leachate seep area nr R-5	7/25/85	22.5	>200	15.3	29.3	ND	86.1	18.6	<5.0	304.5	10	17.7
SA-2 Brook A - in leachate seep area nr R-3	7/25/85	ND	104	12.1	22.2	ND	85.4	<5.0	ND	426.7	ND	<5.0
	8/21/85	14.1	68.5	17.4	12.1	ND	ND	ND	ND	337.2	ND	ND

Table 9 (continued)

Results in parts per billion

Location and Sampling Date		Ethylbenzene	Toluene	Meta, Xylene	Ortho and Para Xylene	Acetone	1,1 Dichloroethane	Cis and Trans 1,2-Dichloroethylene	1,1,1 Trichloroethane	Tetrahydrofuran	Methylisobutyl Ketone	1,1 Dichloroethylene
SA-3 Brook A - d/s of leachate seep area nr R-7	8/21/85	ND	ND	ND	ND	ND	ND	7	ND	36	ND	ND
S-3 Brook A - d/s of leachate seep	4/11/85	ND	<5.0	ND	ND	ND	<5.0	<5.0	ND	<5.0	ND	ND
SA-4 Brook A - d/s of leachate seep	7/25/85 8/21/85	ND ND	ND ND	ND ND	ND ND	ND ND	<5.0 ND	ND ND	10.4 ND	14.1 ND	ND ND	ND ND
Brook A @ Randy Lane Culvert	5/2/85 7/25/85 2/21/86	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND	ND ND ND

Samples analyzed by NHWS&PCC Laboratory.

ND - none detected

6.0 AIR INVESTIGATION

Air sampling conducted at the site consisted of using a portable volatile organic chemical analyzer equipped with a photoionization detector, HNU System, Inc., Model PI 101 to establish personnel safety requirements. The detector was used during the field investigations. No significant readings were detected in the ambient air at the site, as would be expected given that the drums were removed in 1981-1982 and the former drum disposal area was refilled with clean soil.

No detailed air investigations were performed during this investigation.

7.0 ENVIRONMENTAL CONCERNS

7.1 POTENTIAL RECEPTORS

Volatile organic contaminants emanating from residual contamination at the former drum disposal area were detected in surface water and groundwater at the Mottolo Site. Contamination was detected in an 850 foot reach of Brook A, an unnamed tributary of the Exeter River. Brook A flows in a northerly direction through undeveloped wooded land and first reaches developed areas at Randy Lane culvert approximately 1,800 feet north of the site. No contamination has been detected in Brook A at the Randy Lane culvert.

Groundwater, by means of individual water supply wells, is the sole source of potable water for the nearby area. The majority of homes in the area derive their water from the bedrock aquifer. Volatile organic chemical contamination of the overburden and bedrock aquifer has been detected in monitoring wells located on the site. No residential water supplies have been impacted to date. A component of groundwater flow from the site is discharging to Brook A. An off-site bedrock monitoring well, MO-6, located on the nearest downgradient building lot in the valley of Brook A has also shown no VOC contamination. Concern for possible impact on residential well receptors still remains as additional development occurs and the number of wells withdrawing water from the bedrock aquifer and possibly the overburden aquifer increases. Therefore, it is felt that until the site soil contamination is mitigated the residential water supply wells in the area will be at risk.

Additional investigations should be conducted 1) to evaluate the extent of groundwater contamination downgradient of well MO-5D and the possible transmittal of contamination in other fracture systems to the east and south of the site and 2) assess the feasibility of remedial management and cleanup alternatives which can be taken to remediate the effects of residual contamination at the site and 3) perform an environmental and health risk assessment of the site impact area. Future studies should be conducted in accordance with the requirements of the National Contingency Plan.

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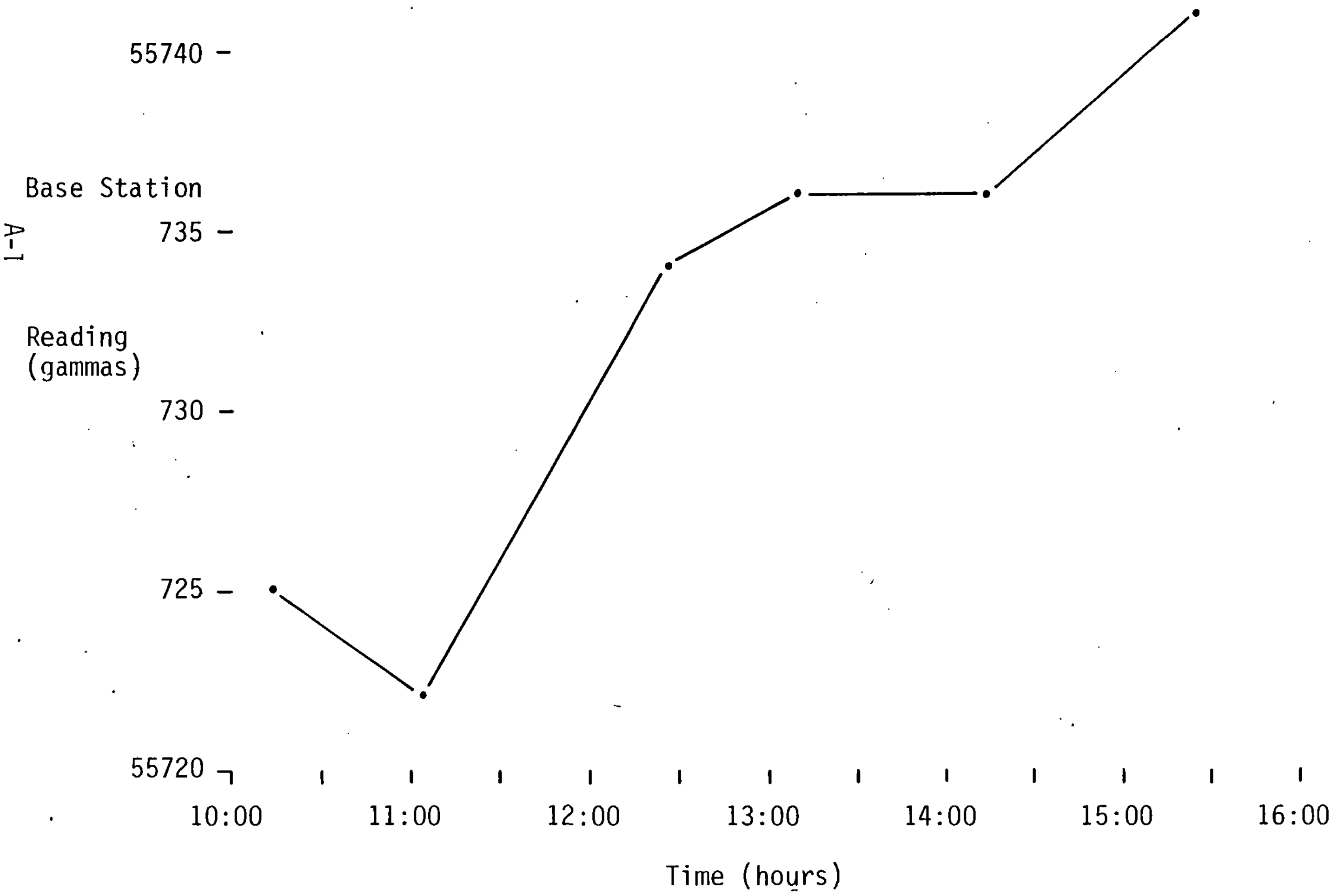
APPENDIX A

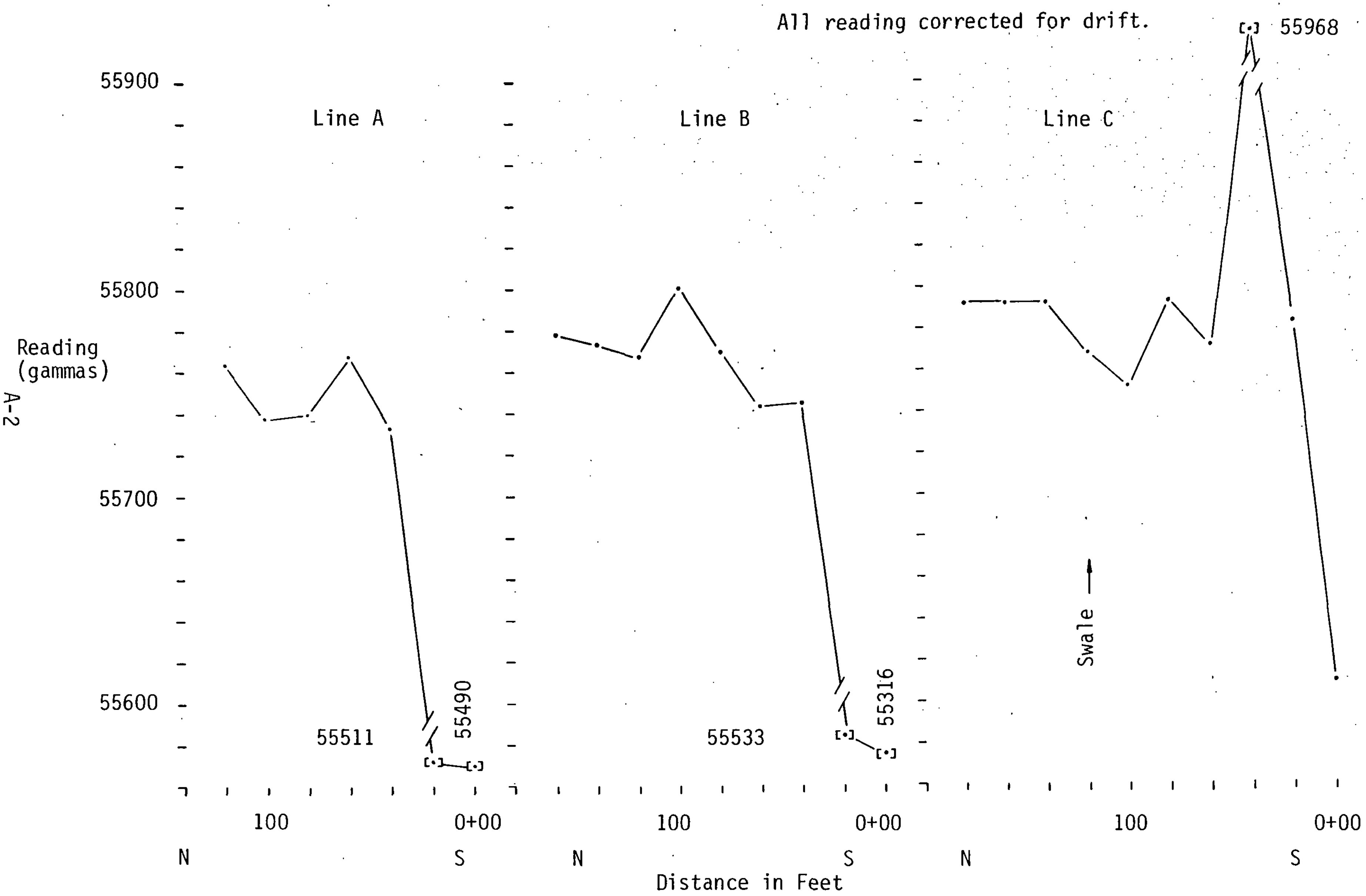
Geophysical Surveys

Base Station Drift Curve
Magnetic Survey - March 8, 1985
Mottolo Site, Raymond



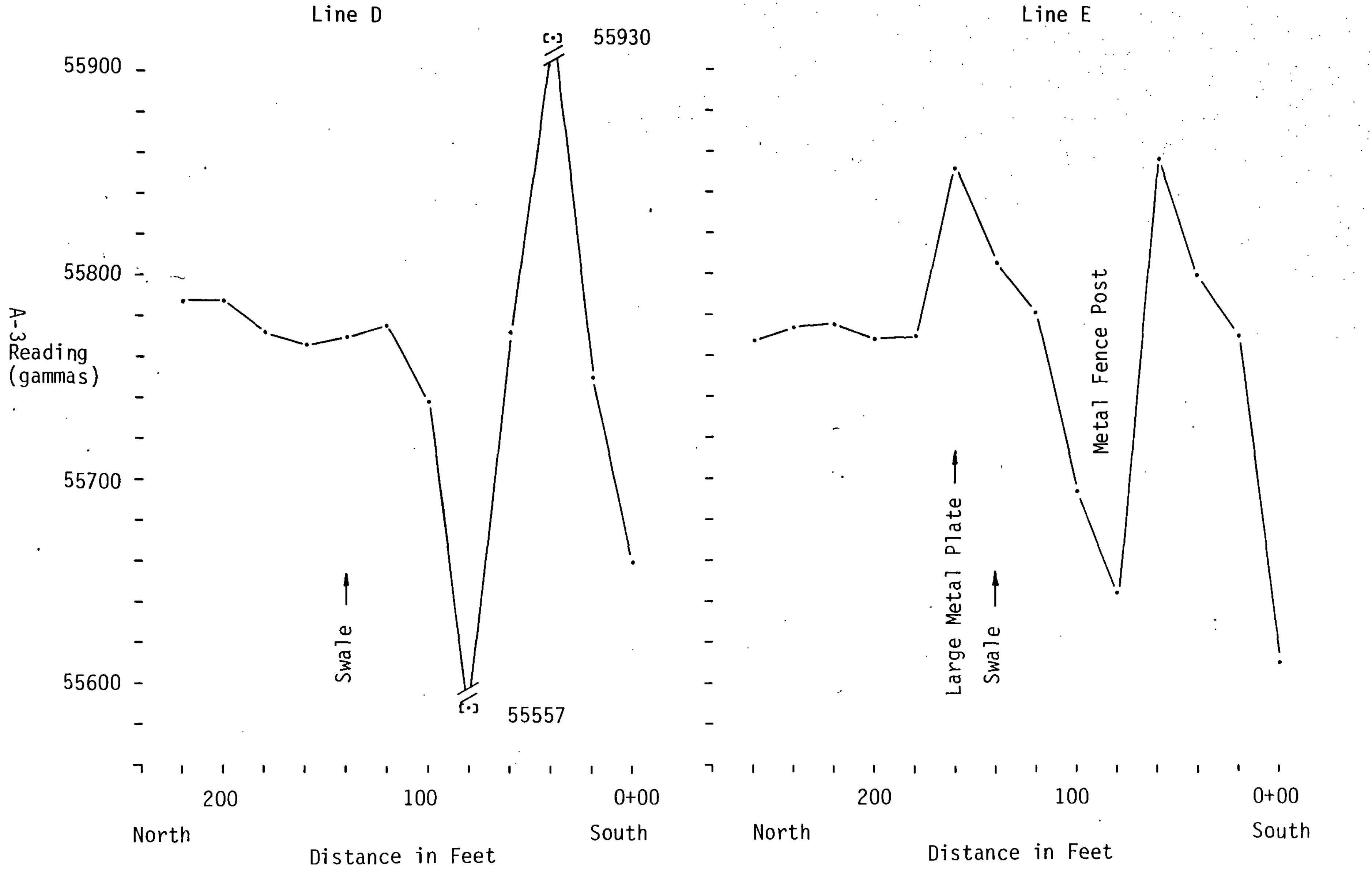
Magnetic Lines A, B and C - March 8, 1985
Mottolo Site, Raymond

All reading corrected for drift.

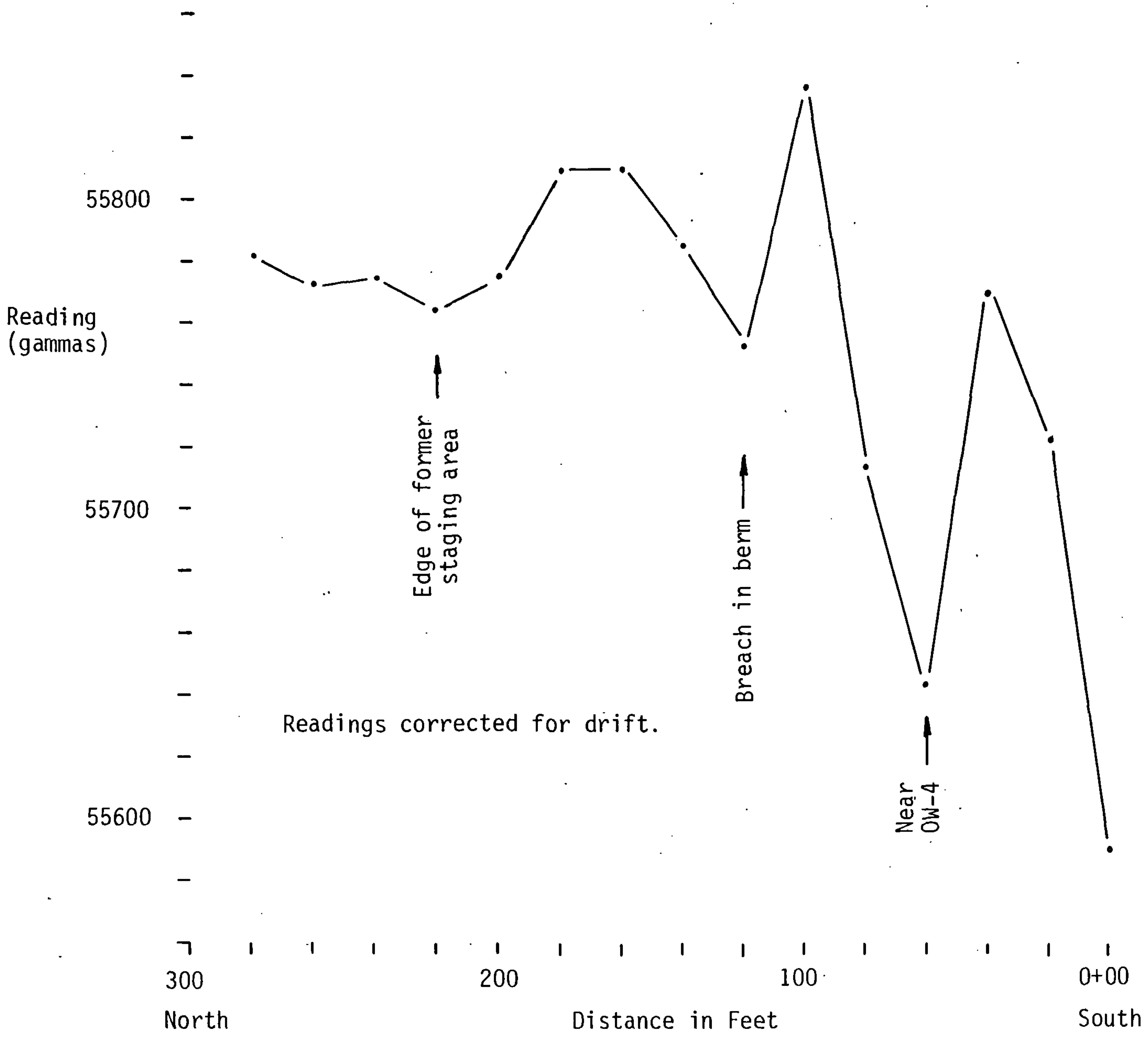


Magnetic Lines D and E - March 8, 1985
Mottolo Site, Raymond

Note: Readings corrected for drift.

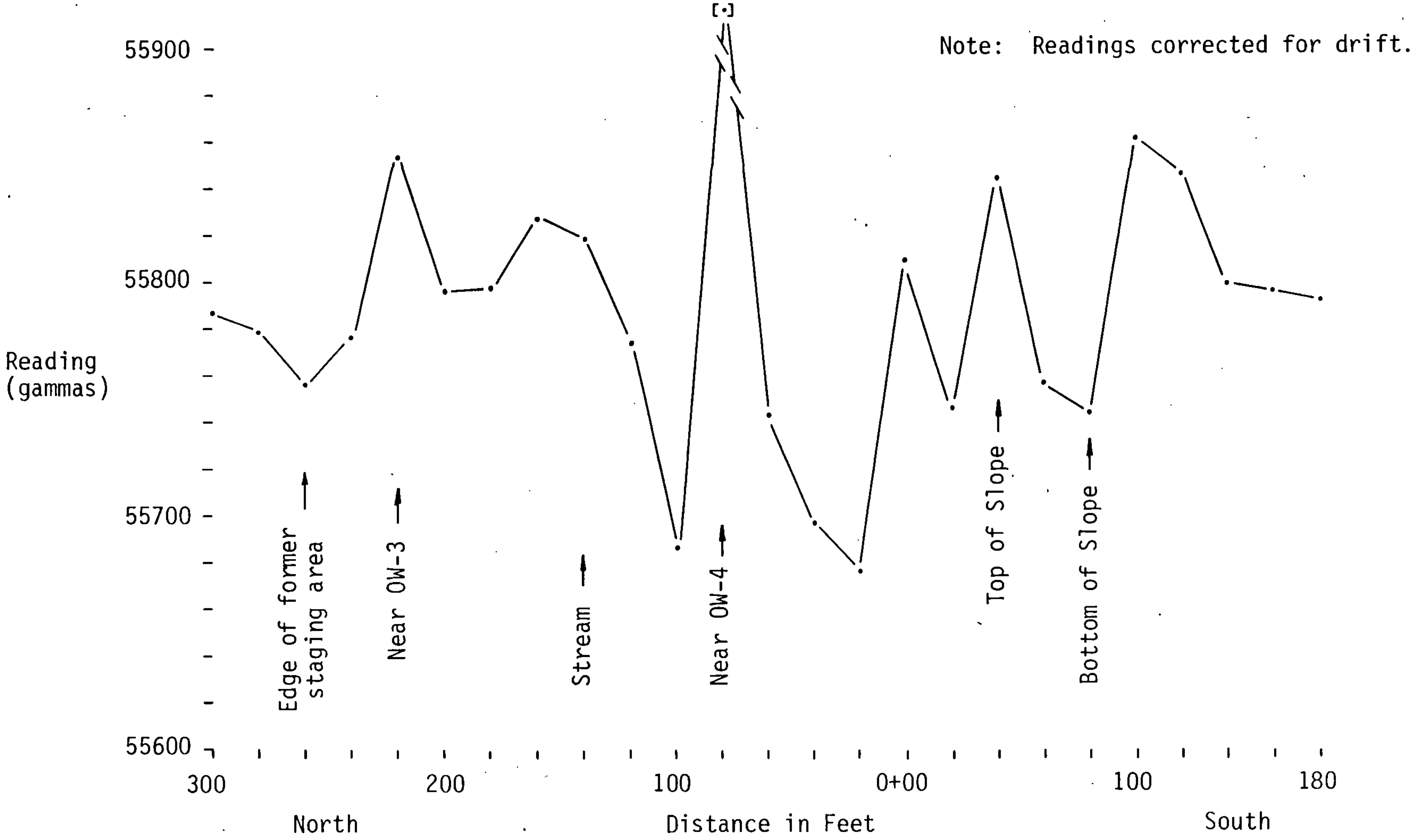


Magnetic Line F - March 8, 1985
Mottolo Site, Raymond

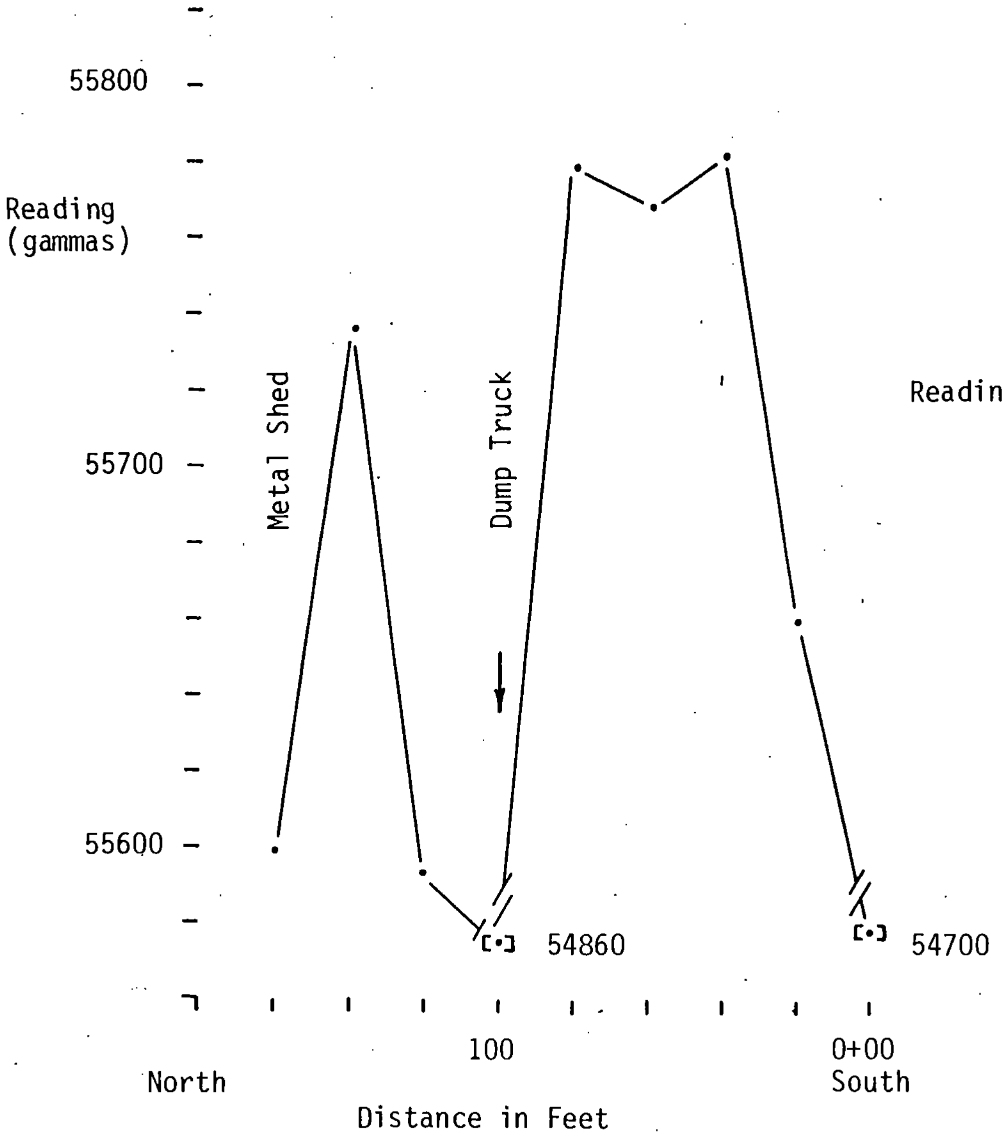


Readings corrected for drift.

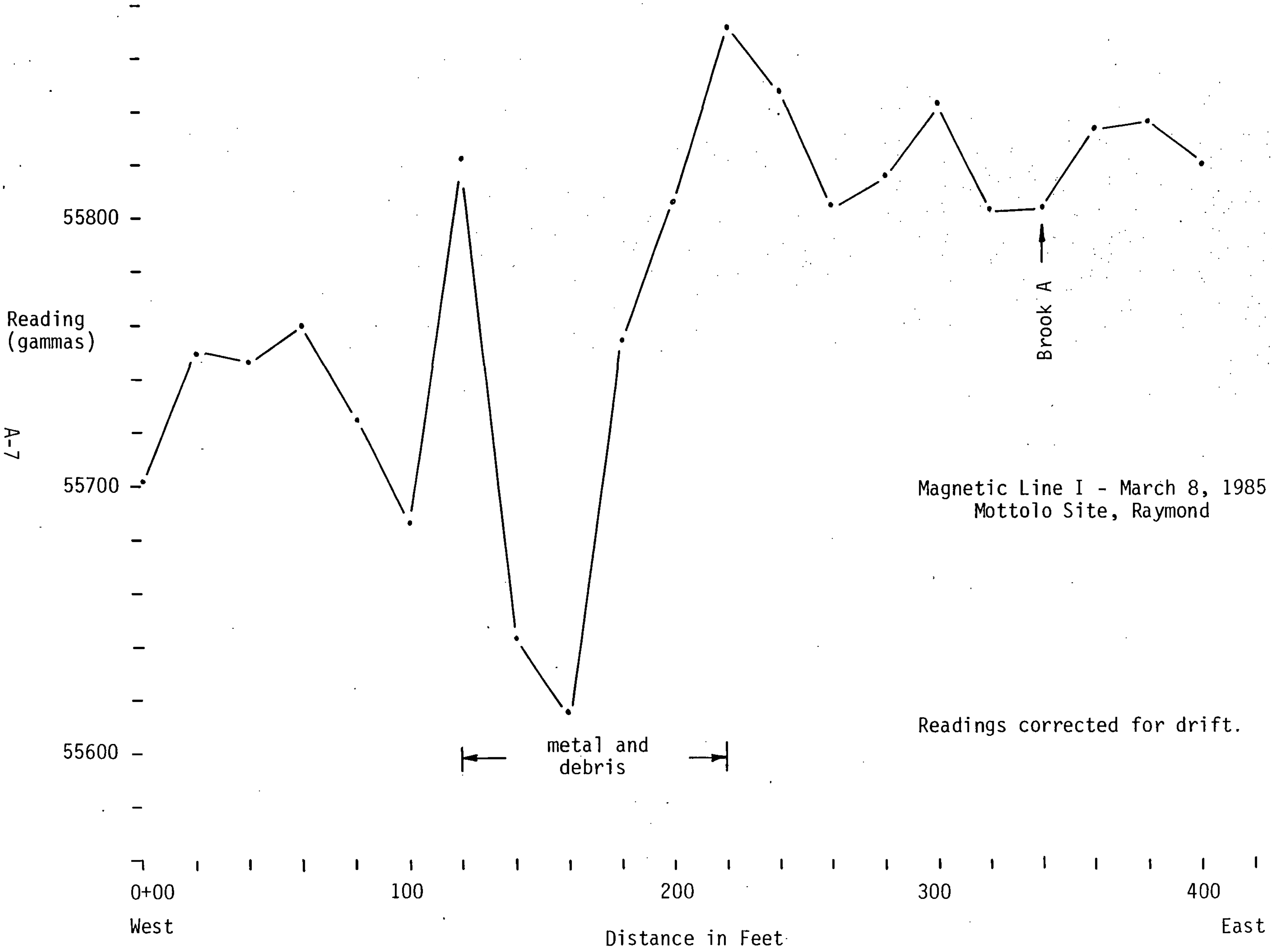
Magnetic Line G - March 8, 1985
Mottolo Site, Raymond



Magnetic Line H - March 8, 1985
Mottolo Site, Raymond



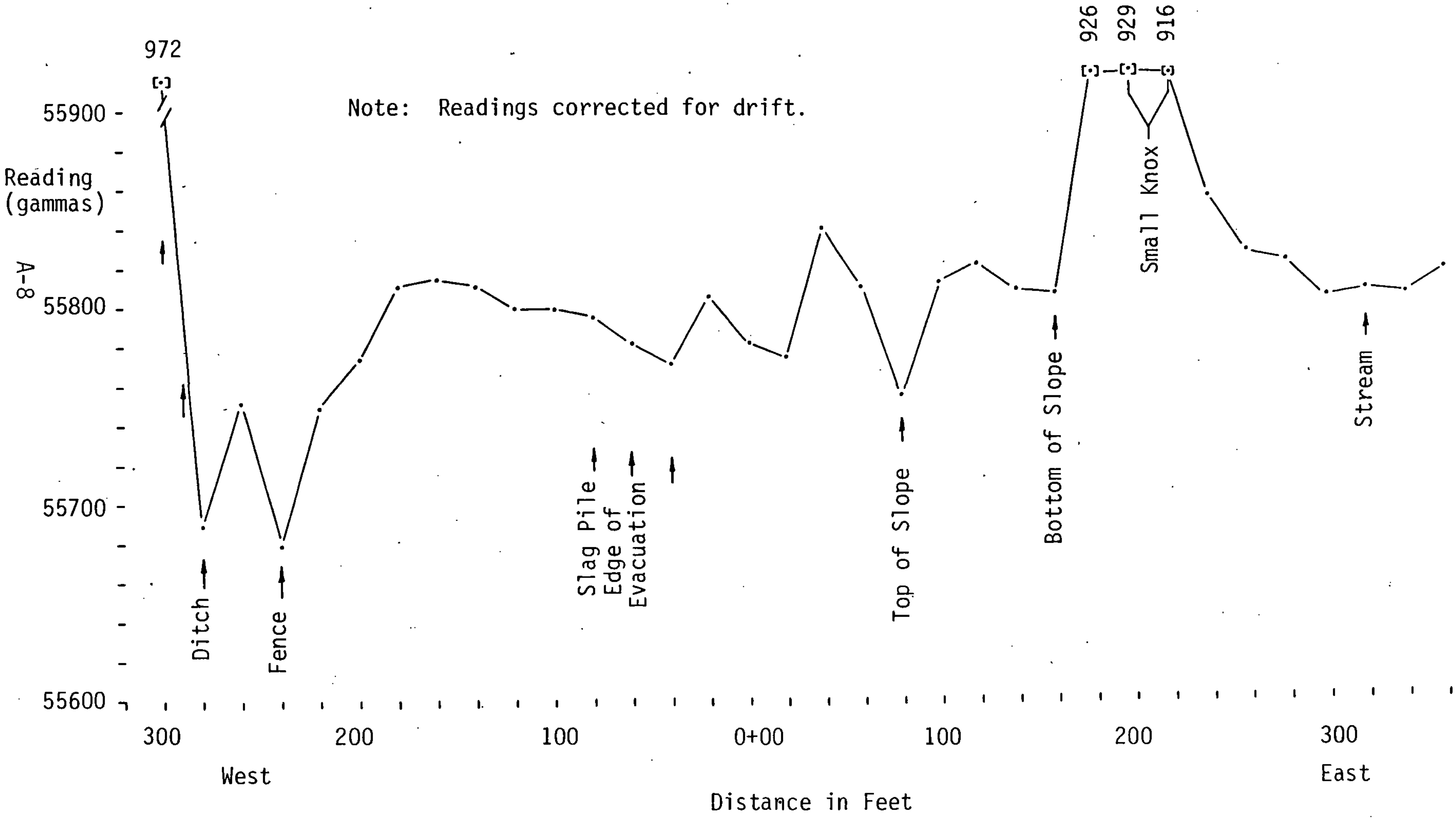
Readings corrected for drift.



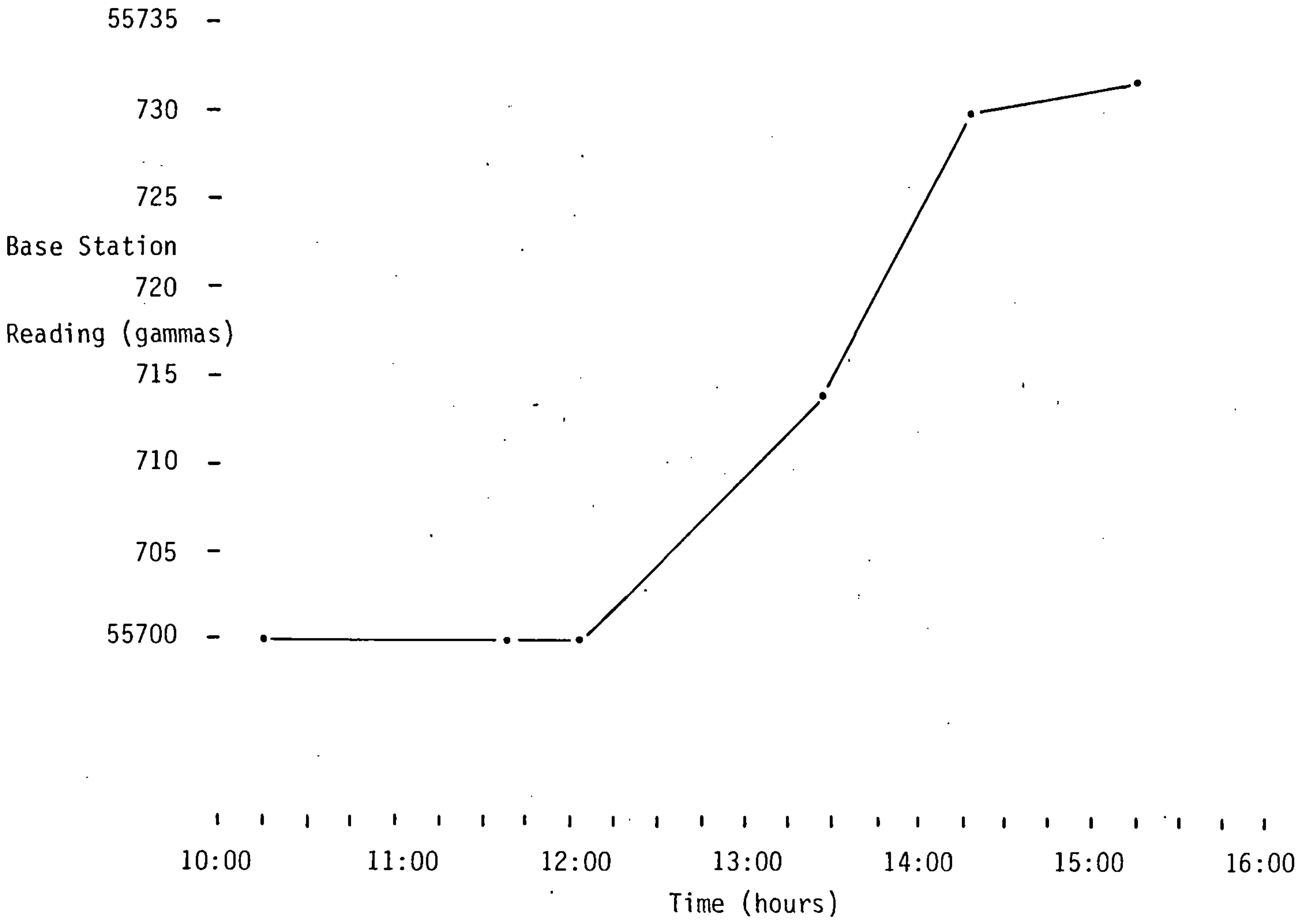
Magnetic Line I - March 8, 1985
Mottolo Site, Raymond

Readings corrected for drift.

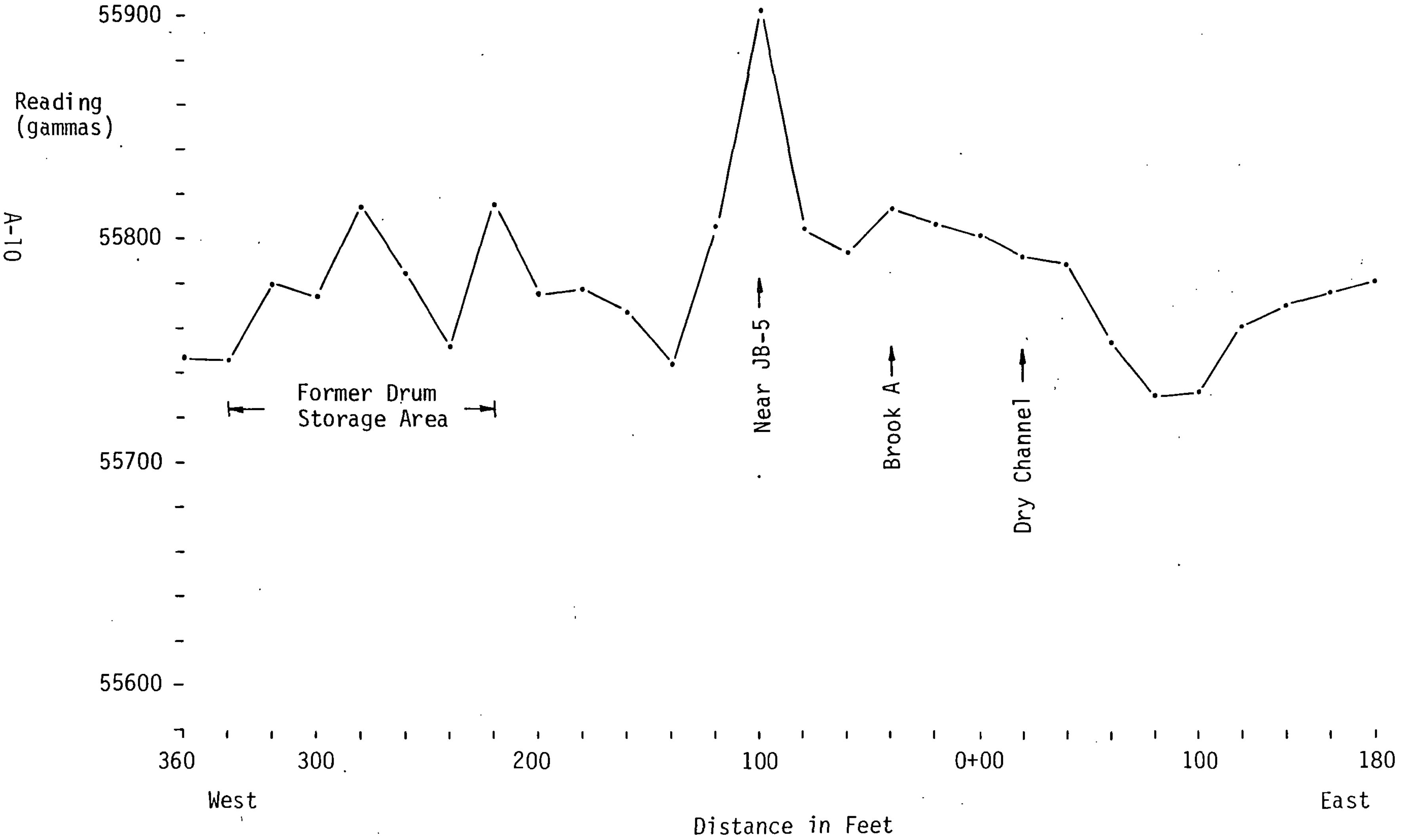
Magnetic Line J - March 8, 1985
Mottolo Site, Raymond

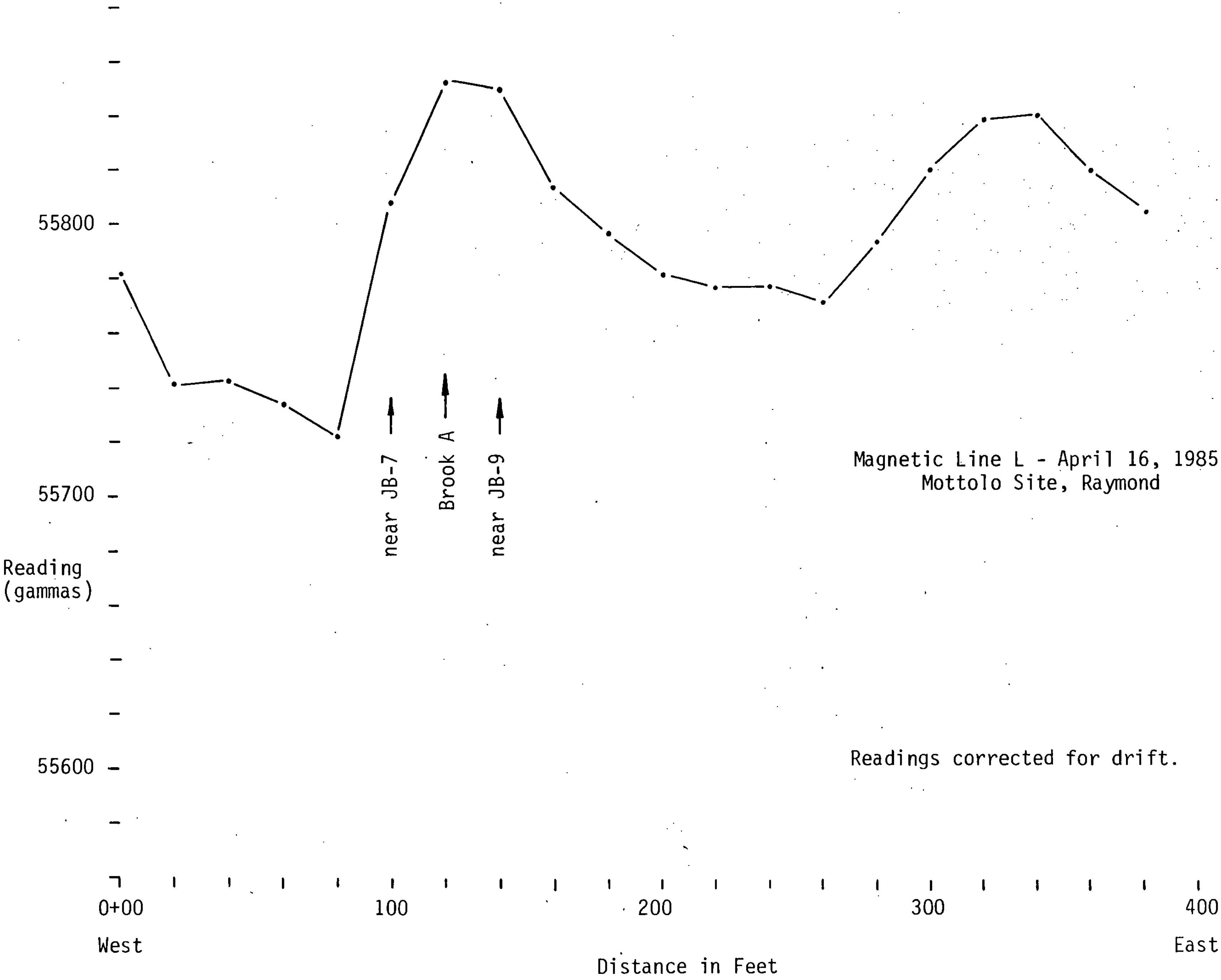


Base Station Drift Curve
Magnetic Survey - April 16, 1985
Mottolo Site, Raymond



Magnetic Line K - April 16, 1985
Mottolo Site, Raymond

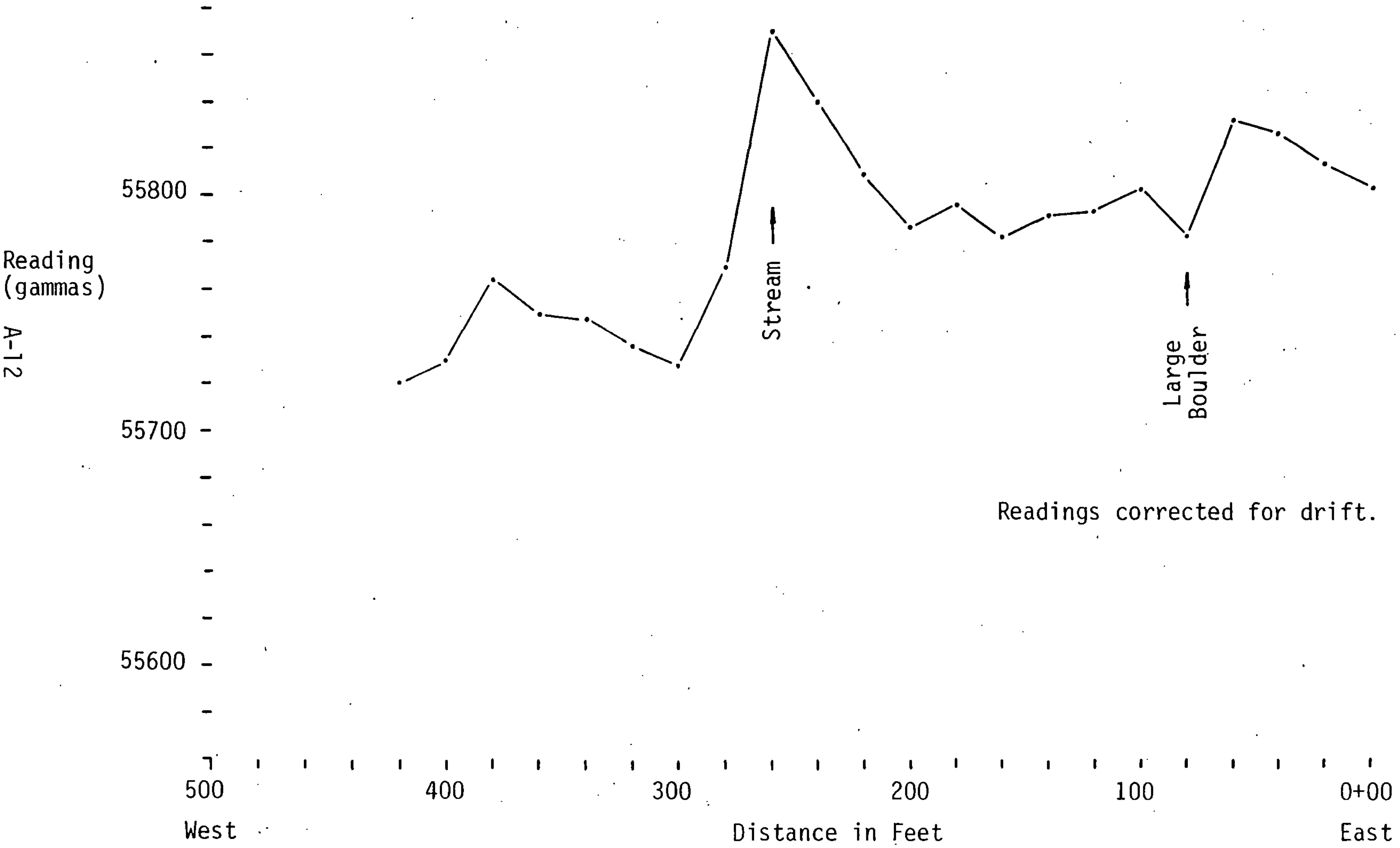




Magnetic Line L - April 16, 1985
Mottolo Site, Raymond

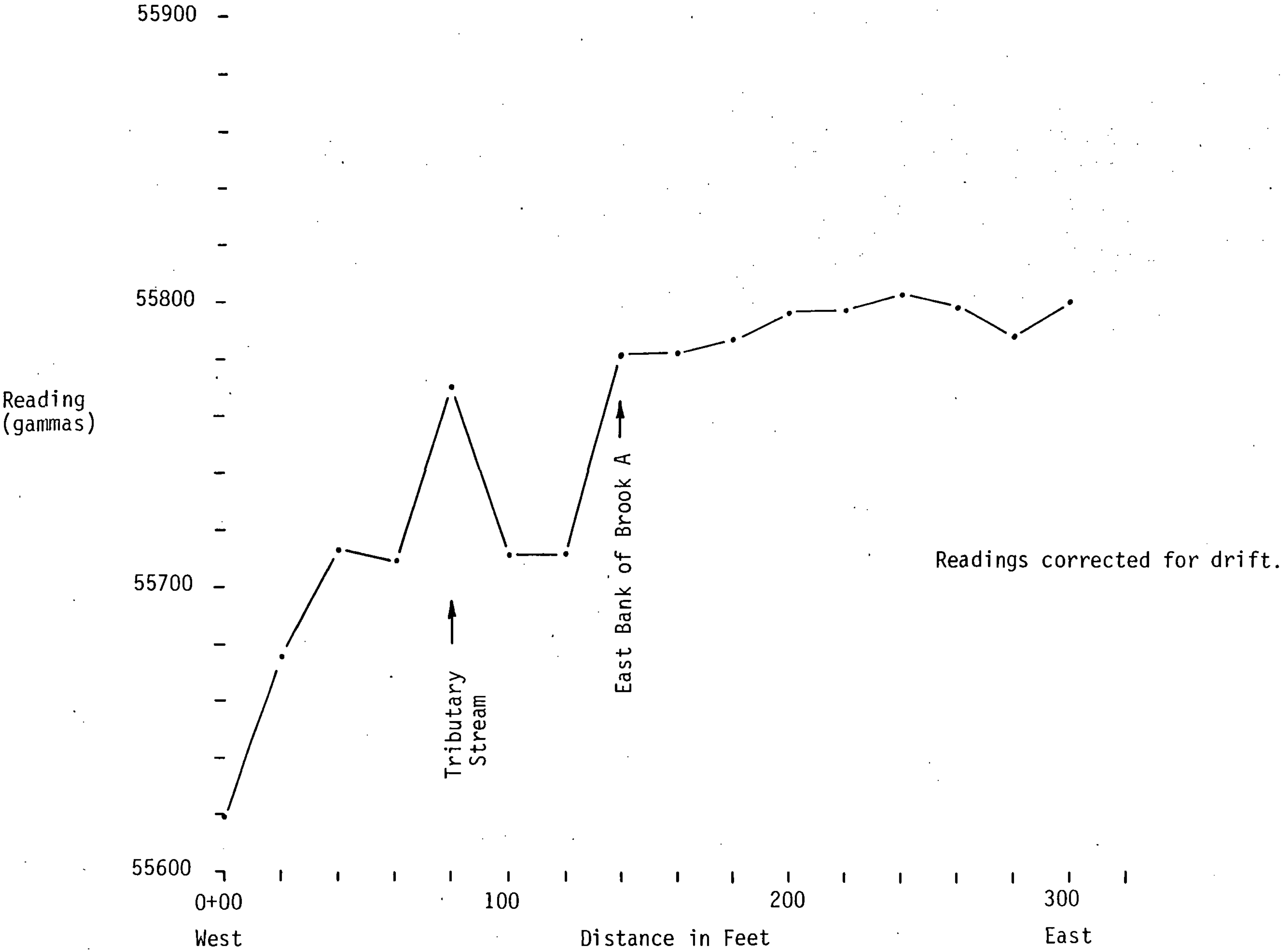
Readings corrected for drift.

Magnetic Line M - April 16, 1985
Mottolo Site, Raymond

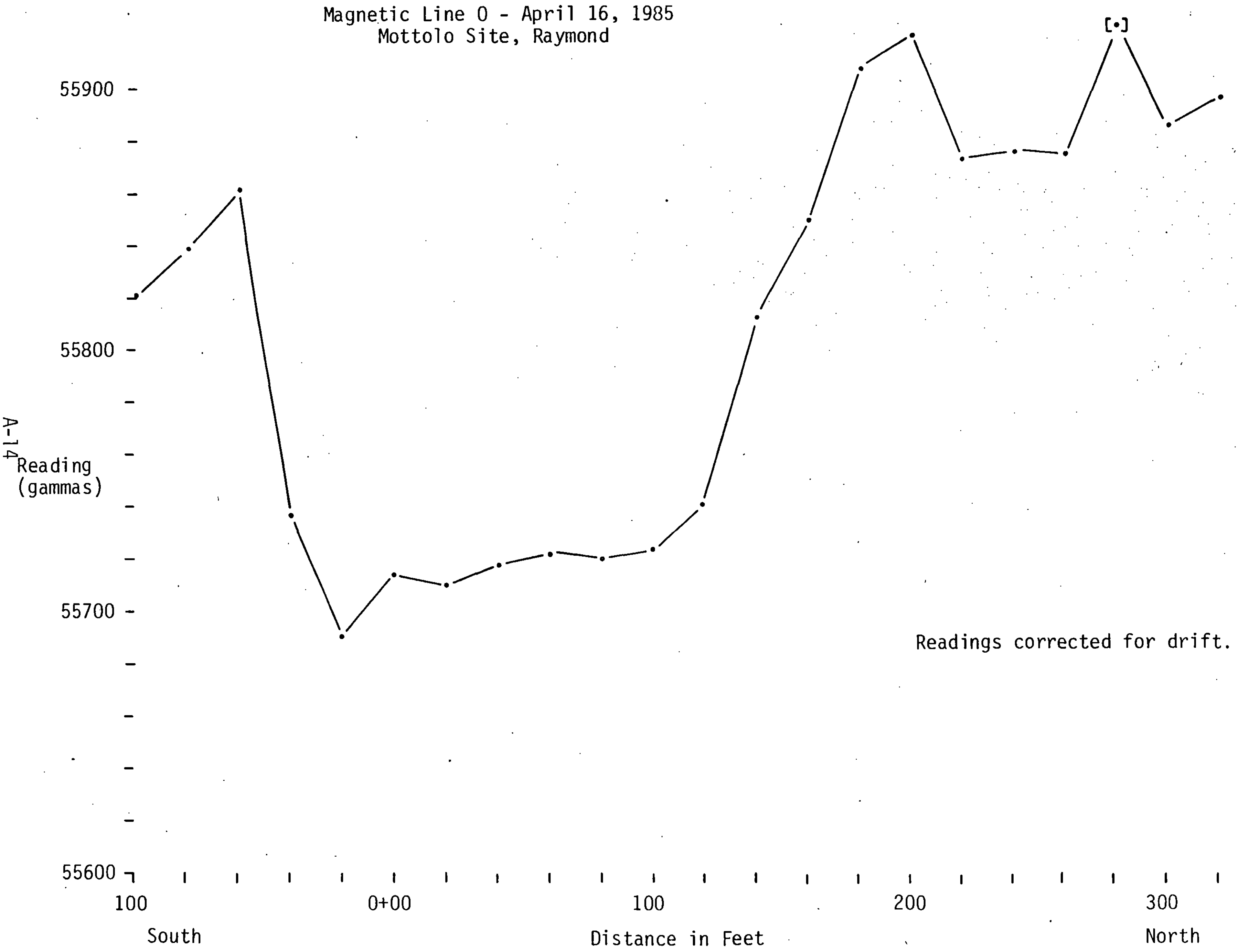


Readings corrected for drift.

Magnetic Line N - April 16, 1985
Mottolo Site, Raymond



Readings corrected for drift.


Magnetic Line 0 - April 16, 1985
Mottolo Site, Raymond

Readings corrected for drift.

Magnetic Survey
Mottolo Site, Raymond

Base Station Drift Curve - March 8, 1985

Reading (gammas)	Time	Δt (minutes)	ΔR (gammas)
55725	10:14	0	0
55722	11:04	50	3
55734	12:27	83	12
55736	13:10	43	2
55736	14:15	65	0
55741	15:25	70	5

PHASE I

March 8, 1985 - Mottolo Magnetic Survey

Distance	Reading	Correction	Time	Comments
Base Station	55725		10:14	35' west of entrance fence rock on north side of access road
Line A				
0+00	52490 ±10	0	10:21	10' north of telephone pole @ northwest corner of piggery bldg., wild fluctuation
20'N	55511	0	10:24	
40'N	55733	0	10:25	
60'N	55768	0	10:26	
80'N	55740	+1	10:27	edge of woods
100'N	55738	+1	10:28	in woods
120'N	55763	+1	10:29	in woods
Line B - 25'E along shed wall; 13' north of shed wall				
0+00	55316	+1	10:35	13' north of shed wall
20'N	55553	+1	10:36:30	
70'N	55744	+2	10:36	
60'N	55743	+2	10:36:30	
80'N	55769	+2	10:37	
100'N	55750 ±3	+2	10:38	
120'N	55765	+2	10:38:30	
140'N	55771	+2	10:39	edge of woods
160'N	55776	+2	10:40	in woods
Line C				
0+00	55605 ±0	+2	10:47	25' east of Line B, 13' north of bldg.

Line C (continued)

20'N	55780 ±4	+2	10:48	
40'N	55965	+3	10:49	
60'N	55769	+3	10:50	
80'N	55790 ±3	+3	10:50	
100'N	55749	+3	10:51	
120'N	55764	+3	10:51	swale
140'N	55790	+3	10:53	edge of woods
160'N	55789	+3	10:54	woods
180'N	55789	+3	10:55	woods
Base Station	55722	+3	11:04	

Line D - 25' east of Line C

0+00	55656	+3	11:06	13' north of bldg.
20'N	55746 ±3	+3	11:07	
40'N	55930	+3	11:08	
60'N	55770	+2	11:08:30	
80'N	55557 ±3	+2	11:09	
100'N	55736	+2	11:10	
120'N	55773	+2	11:10:30	
140'N	55768	+2	11:11	swale
160'N	55764	+2	11:11	
180'N	55771	+1	11:12	edge of woods
200'N	55786	+1	11:13	woods
220'N	55786	+1	11:14	woods

Line E - 25' east of Line D

0+00	55608 ±2	+1	11:21	13' north of bldg.
21'N	55768 ±2	+1	11:22	on top of rock
40'N	55798	+1	11:23	

Line E (continued)

60'N	55855	+1	11:23:30	
80'N	55644	+1	11:24	metal fence post @ 90'N
100'N	55694	0	11:25	
120'N	55781	0	11:26	low area south of berm
140'N	55805	0	11:26	swale
160'N	55852	-1	11:27	on top of large metal plate
180'N	55770	-1	11:29	
200'N	55770	-2	11:29	edge of excavated area
220'N	55777	-2	11:30	edge of woods
240'N	55776	-2	11:31	woods
260'N	55770	-2	11:32	woods
Base Station	55728	-3	11:36	

Line F - 25' east of Line E

0+00	55594	-3	11:40	13' north of wooden bldg.
20'N	55726	-3	11:41	
40'N	55778 ±3	-3	11:42	
60'N	55648	-3	11:42	15' west of OW-4
80'N	55716	-3	11:43	
100'N	55839	-3	11:43	
120'N	55757	-4	11:44	@ breach in berm
140'N	55789	-4	11:45	
160'N	55815	-4	11:46	
180'N	55814	-4	11:46	
200'N	55779	-4	11:47	
220'N	55770 ±3	-4	11:48	edge of excavated area
240'N	55779	-4	11:49	edge of woods

Line F (continued)

260'N	55777	-4	11:50	woods
280'N	55787	-5	11:51	woods

Line G - 25' east of Line F (past edge of bldgs.)

0+00	55816	-6	12:01	21' northeast of corner of bldgs.
20'N	55683 ±3	-6	12:02	
40'N	55703	-6	12:03	
60'N	55749	-6	12:03	
80'N	56003	-6	12:04	5' east of OW-4
100'N	55693	-6	12:05	
120'N	55780	-6	12:06	top of berm
140'N	55825	-6	12:06	edge of swale
160'N	55835	-7	12:07	
180'N	55805	-7	12:07	
200'N	55804	-7	12:08	
220'N	55861	-7	12:08	6' west of OW-3
240'N	55783	-7	12:09	
260'N	55763	-7	12:10	edge of excavated area
280'N	55786	-7	12:11	edge of woods
300'N	55794	-7	12:12	woods
Base Station	55734	-9	12:27	
Base Station	55736		1:10	

Line H - west of Line A

0+00	54711 ±3	-11	1:18	10' east of northwest corner of building pad, between piggery bldg. and building pad
20'N	55671	-11	1:19	
40'N	55794	-11	1:20	

Line H (continued)

60'N	55780	-11	1:20	
80'N	55690	-11	1:21	
100'N	54871	-11	1:22	4-5' east of dump truck
120'N	55606 ±3	-11	1:23	scattered debris-woods
140'N	55748	-11	1:24	woods
160'N	55710	-11	1:25	25' northeast of metal shed, in woods

Line G - (cont.) southern portion of line

0+00	55818	-11	1:29	
20'S	55757	-11	1:31	
40'S	55856	-11	1:32	top of slope
60'S	55767	-11	1:33	mid-slope
80'S	55755	-11	1:34	slope
100'S	55873	-11	1:34	
120'S	55857	-11	1:35	
140'S	55810	-11	1:36	woods
160'S	55808	-11	1:36	near bottom of woods slope
180'S	55803	-11	1:37	woods

Line I - parallel to long axis of building

0+00	55712	-11	1:51	near large boulder (east edge), 41' south of piggery building
20'E	55760	-11	1:52	
40'E	55756	-11	1:52	
60'E	55770	-11	1:53	
80'E	55735	-11	1:53	
100'E	55696	-11	1:54	
120'E	55833	-11	1:54	

Line I (continued)

140'E	55753	-11	1:55	break in slope
160'E	55724	-11	1:55	slope
180'E	55765	-11	1:56	slope, cross Line G
200'E	55816 ±3	-11	1:58	metal visible on ground
220'E	55882	-11	1:58	bottom of slope
240'E	55858	-11	1:59	woods
260'E	55815	-11	2:00	
280'E	55826	-11	2:01	
300'E	55853	-11	2:01	
320'E	55813	-11	2:04	
340'E	55814	-11	2:05	
360'E	55844	-11	2:05	stream
380'E	55846	-11	2:06	
400'E	55830	-11	2:07	
Base Station	55736	-11	2:15	

Line J

0+00	55795	-12	2:34	20' south of well #OW-3
20'E	55786	-12	2:38	
40'E	55832	-12	2:39	
60'E	55821	-12	2:40	
80'E	55766	-12	2:40	edge of woods/top of slope
100'E	55825	-13	2:43	
120'E	55834	-13	2:44	
140'E	55820	-13	2:45	
160'E	55818	-13	245:30	bottom of slope
180'E	55939	-13	2:47	

Line J (continued)

200'E	55942	-13	2:48	
220'E	55929	-13	2:49	top of knoll, ≃20' high
240'E	55866	-13	2:50	top of knoll, ≃20' high
260'E	55839	-13	2:51	
280'E	55834	-13	2:52	
300'E	55816	-14	2:53	stream bottom
320'E	55820	-14	2:34	in stream
340'E	55818	-14	2:55	starting upslope
360'E	55830	-14	2:56	steep slope
0+00	35795	-14	3:00	
20'W	55820	-15	3:10	
40'W	55786	-15	3:10	
60'W	55796	-15	3:11	edge of excavation
80'W	55810	-15	3:12	slash pile
100'W	55814	-15	3:13	
120'W	55814	-15	3:14	
140'W	55826	-15	3:15	swampy
160'W	55830	-15	3:16	swampy
180'W	55826	-15	3:17	swampy
200'W	55788	-15	3:18	swampy and boulders
220'W	55764	-15	3:19	30' north of shed
240'W	55684	-15	3:21	20' north of chain link fence
	55767	-15	3:21	ditch next to road
	55707	-16	3:22	north edge of access road
	55988 ±5	-16	3:23	south edge of access road
Base Station	55741	-16	3:25	

Magnetic Survey

Mottolo Site, Raymond

Base Station Drift Curve - April 16, 1985

Reading (gammas)	Time	Δt (minutes)	ΔR (gammas)
55700	10:14	0	0
55700	11:38	74	0
55700	12:06	22	0
55714	13:27	81	14
55730	14:21	54	16
55732	15:27	66	2

PHASE II

April 16, 1985 - Mottolo Magnetic Survey

Distance	Reading	Correction	Time	Comments
0+00	55700	0	10:14	Base Station, 35' west of entrance fence large rock
Line K				
0+00	55802	0	10:49	33' from S-3, 12" oak tree
20'E	55792	0	10:52	small dry channel
40'E	55789	0	10:54	slope
60'E	55754	0	10:55	slope
80'E	55730	0	10:56	slope
100'E	55731	0	10:57	slope
120'E	55761	0	10:58	
140'E	55770	0	10:59	
160'E	55776	0	11:00	
180'E	55781	0	11:01	east end station
0+00	55800	0	11:10	
20'W	55807	0	11:14	20' N75^{o}W from FT #1
40'W	55814	0	11:15	Brook A
60'W	55794	0	11:16	
80'W	55805	0	11:20	
100'W	55903	0	11:20	10'N of JB #5
120'W	55806	0	11:22	
140'W	55744	0	11:24	
160'W	55768	0	11:25	toe of slope
180'W	55778	0	11:27	mid-slope

Line K (continued)

200'W	55776	0	11:28	near top of slope, east edge of clearing
220'W	55816	0	11:29	25' north of OW-2
240'W	55752	0	11:30	clearing former drum storage
260'W	55805	0	11:31	clearing former drum storage
280'W	55815	0	11:32	clearing former drum storage area
300'W	55774	0	11:33	clearing former drum storage area
320'W	55780	0	11:33	noisy, clearing, former drum storage area
340'W	55745	0	11:34	clearing former drum storage area
360'W	55747	0	11:35	clearing, 10' from edge of woods
	55700	0	11:38	Base Station

Line L

	55700		12:06	Base Station
0+00	55784	-2	12:15	29' from OW-2, next to dead tree, top of slope
20'E	55743	-2	12:20	slope
40'E	55745	-2	12:21	slope
60'E	55736	-2	12:22	
80'E	55725	-2	12:22	slope
100'E	55813	-3	12:23	16' north of JB-7, flood plain
120'E	55856	-3	12:24	Brook A
140'E	55854	-4	12:26	@ JB-9, note: rdg. taken 13' south of actual line

Line L (continued)

140'E	55720	-4	12:27	@ JB-9, note: rdg. taken 13' north of actual line
160'E	55818	-4	12:29	flat ground
180'E	55800	-4	12:30	
200'E	55786	-4	12:31	flat slope
220'E	55781	-4	12:32	moderate slope
240'E	55783	-5	12:33	moderate slope
260'E	55777	-5	12:33	steep slope
280'E	55799	-5	12:34	steep slope
300'E	55826	-5	12:35	steep slope
320'E	55845	-6	12:37	steep slope
340'E	55847	-6	12:38	steep slope
360'E	55826	-6	12:39	steep slope
380'E	55811	-6	12:39	steep slope, ≈40' from top of hill stake driven w/flagging

Line M

0+00	55810	-7	12:51	30' N8^{o}E of end station for Line L
20'W	55820	-7	12:53	steep slope
40'W	55833	-7	12:54	
60'W	55838	-7	12:55	
80'W	55790	-8	12:56	steep slope near large boulder
100'W	55810	-8	12:57	moderate slope
120'W	55801	-8	12:58	moderate slope
140'W	55801	-9	12:59	flat
160'W	55791	-9	12:59	

Line M (continued)

180'W	55805	-9	13:01	180'
200'W	55795	-9	13:02	200'
220'W	55818	-9	13:03	top of bank of Brook A, top of rock
240'W	55850	-10	13:04	east edge of Brook A
260'W	55880	-10	13:05	near confluence of Brook A and tributary
280'W	55780	-11	13:12	edge of tributary
300'W	55738	-11	13:14	flat slope
320'W	55746	-11	13:15	slope change
340'W	55758	-11	13:16	steep slope
360'W	55761	-12	13:17	steep slope
380'W	55776	-12	13:19	top of steep slope
400'W	55742	-13	13:20	clearing, soil/rock fill
420'W	55733	-13	13:21	fill, 18' S75°E of OW-4
	55714	-14	13:21	Base Station

Line N

0+00	55636	-17	13:37	20' from OW-1, top of slope, fill
20'E	55693	-17	13:38	steep slope, fill
40'E	55730	-17	13:39	steep slope, toe of fill
60'E	55727	-18	13:40	toe of slope, flat
80'E	55788	-18	13:42	east edge of tributary
100'E	55829	-18	13:43	
120'E	55830	-19	13:45	
140'E	55800	-19	13:47	east bank of Brook A
160'E	55802 ±7	-20	13:48	flat
180'E	55807	-20	13:49	180', flat

Line N (continued)

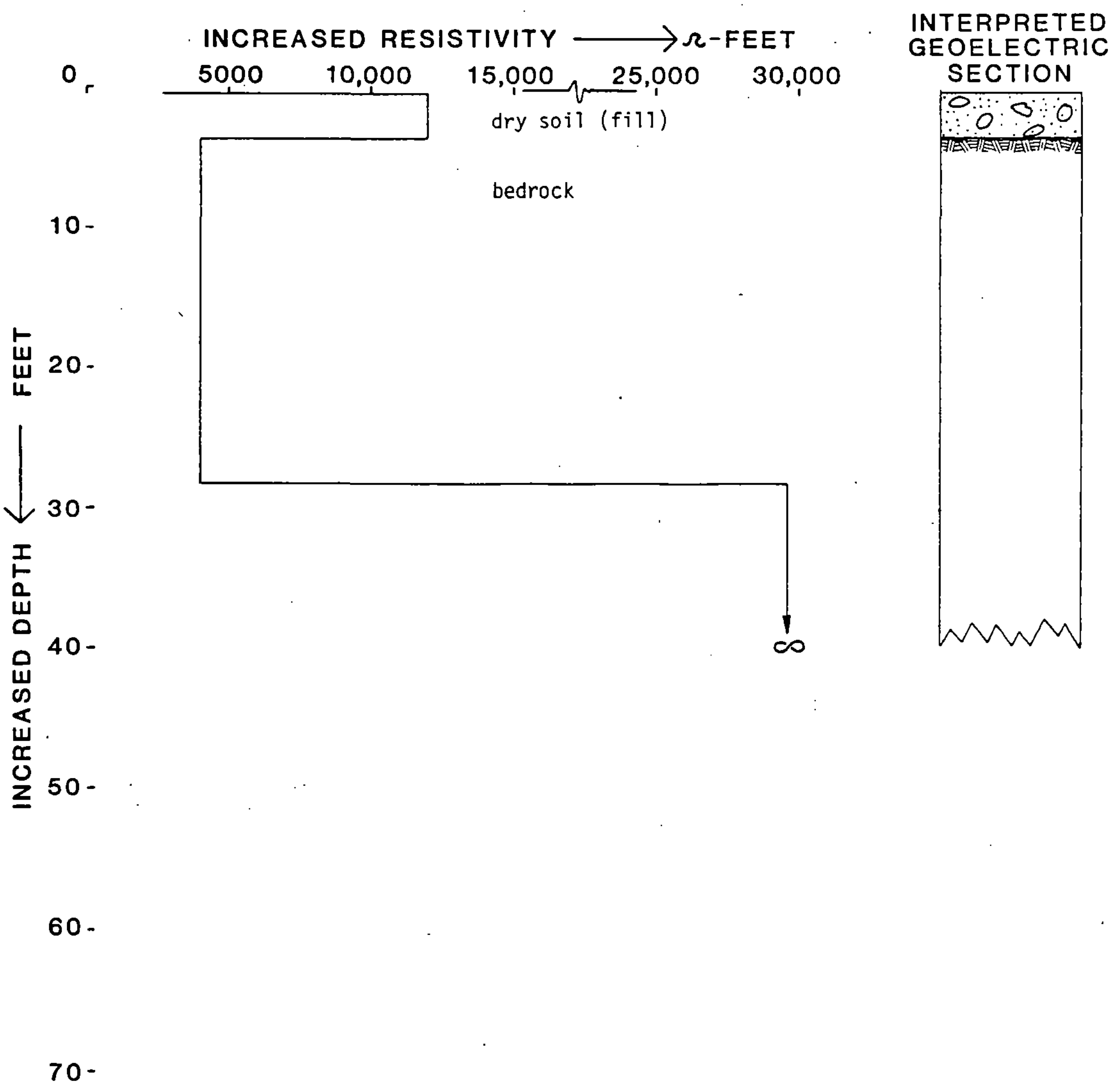
200'E	55818	-21	13:51	200'
220'E	55818	-21	13:52	
240'E	55825	-22	13:54	slope change
260'E	55820	-22	13:55	steep slope
280'E	55811	-23	13:56	
300'E	55823	-23	13:57	steep slope, stake and flagged

Line O

0+00	55740	-26	14:11	20' S15°W of JB-8
20'S	55716	-26	14:12	
40'S	55764	-27	14:13	
60'S	55890	-28	14:14	tributary channel
80'S	55867	-28	14:15	
100'S	55850	-29	14:16	marked w/flagging and stake, toe of fill from piggery building
	55730	-30	14:21	Base Station
20'N	55740	-30	14:24	
40'N	55748	-30	14:25	
60'N	55752	-30	14:26	
80'N	55750	-30	14:28	flat
100'N	55754	-30	14:30	flat, near stream
120'N	55771	-30	14:31	flat, near stream, leachate seep, 22' west of JB-5
140'N	55843	-30	14:32	southeast of toe of hill
160'N	55888	-30	14:33	beginning to climb hill
180'N	55939	-30	14:33	
200'N	55952	-30	14:34	side of hill

Line 0 (continued)

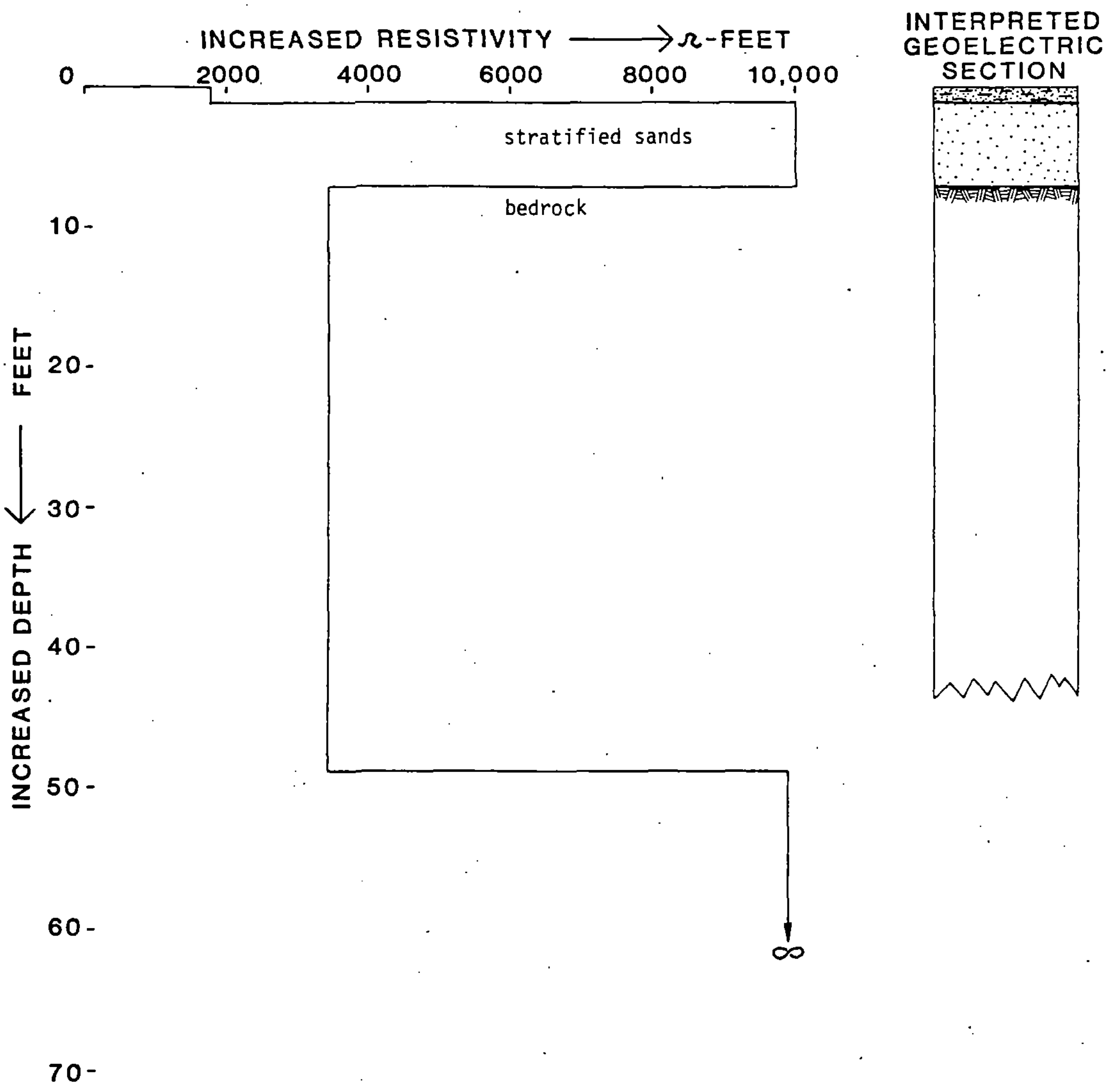
220'N	55904	-30	14:34	side of hill
240'N	55907	-30	14:35	side of hill
260'N	55906	-30	14:35	side of hill
280'N	55967	-30	14:36	side of hill
300'N	55917	-30	14:36	side of hill
320'N	55928	-30	14:37	low drainage, wet between two hills
	55732	-30	15:27	Base Station



GEOELECTRIC SOUNDING NO.1

SCHLUMBERGER CONFIGURATION

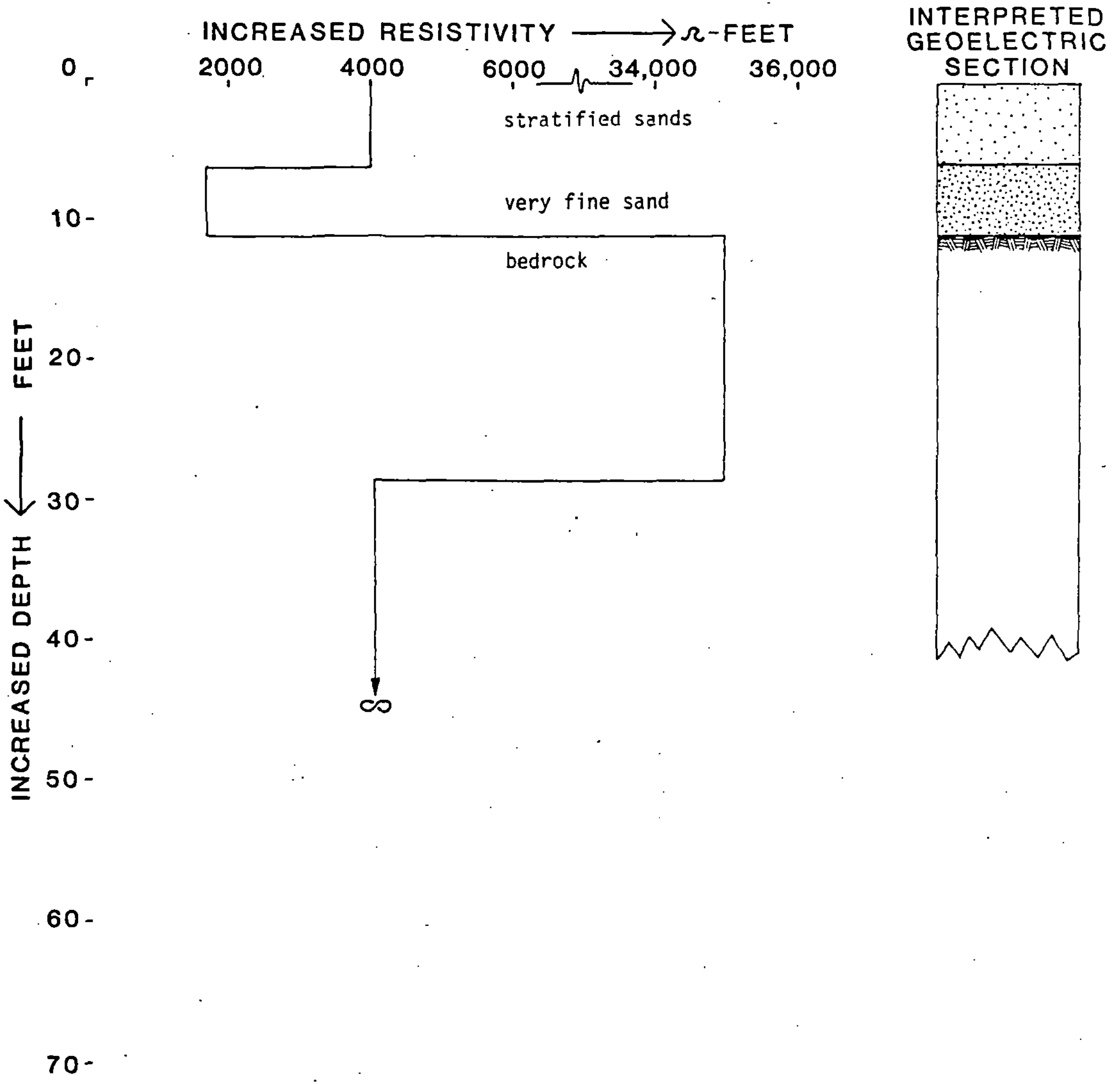
MOTTOLO SITE, RAYMOND, N.H.



GEOELECTRIC SOUNDING NO. 2

SCHLUMBERGER CONFIGURATION

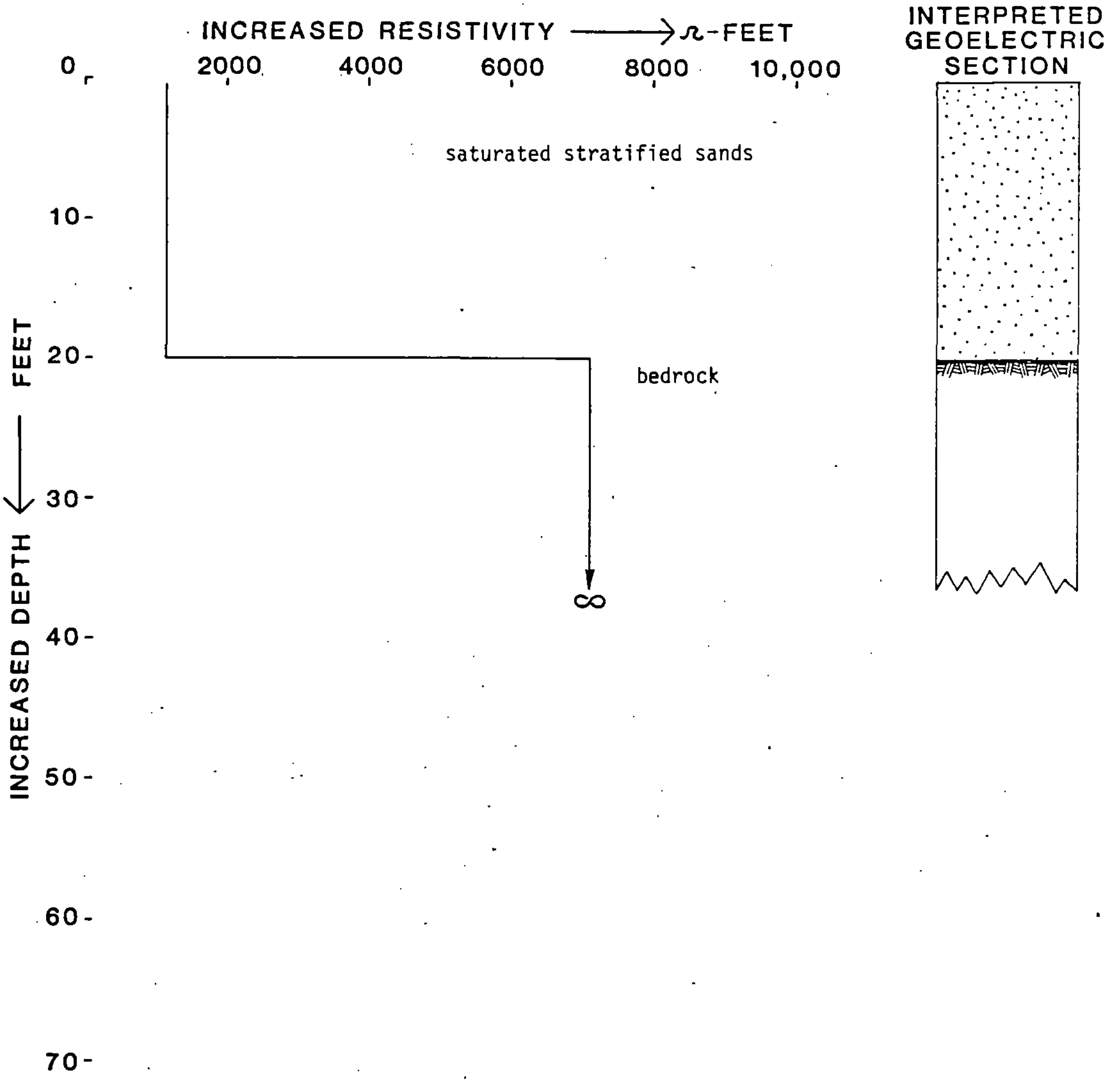
MOTTOLO SITE, RAYMOND, N.H.



GEOELECTRIC SOUNDING NO. 3

SCHLUMBERGER CONFIGURATION

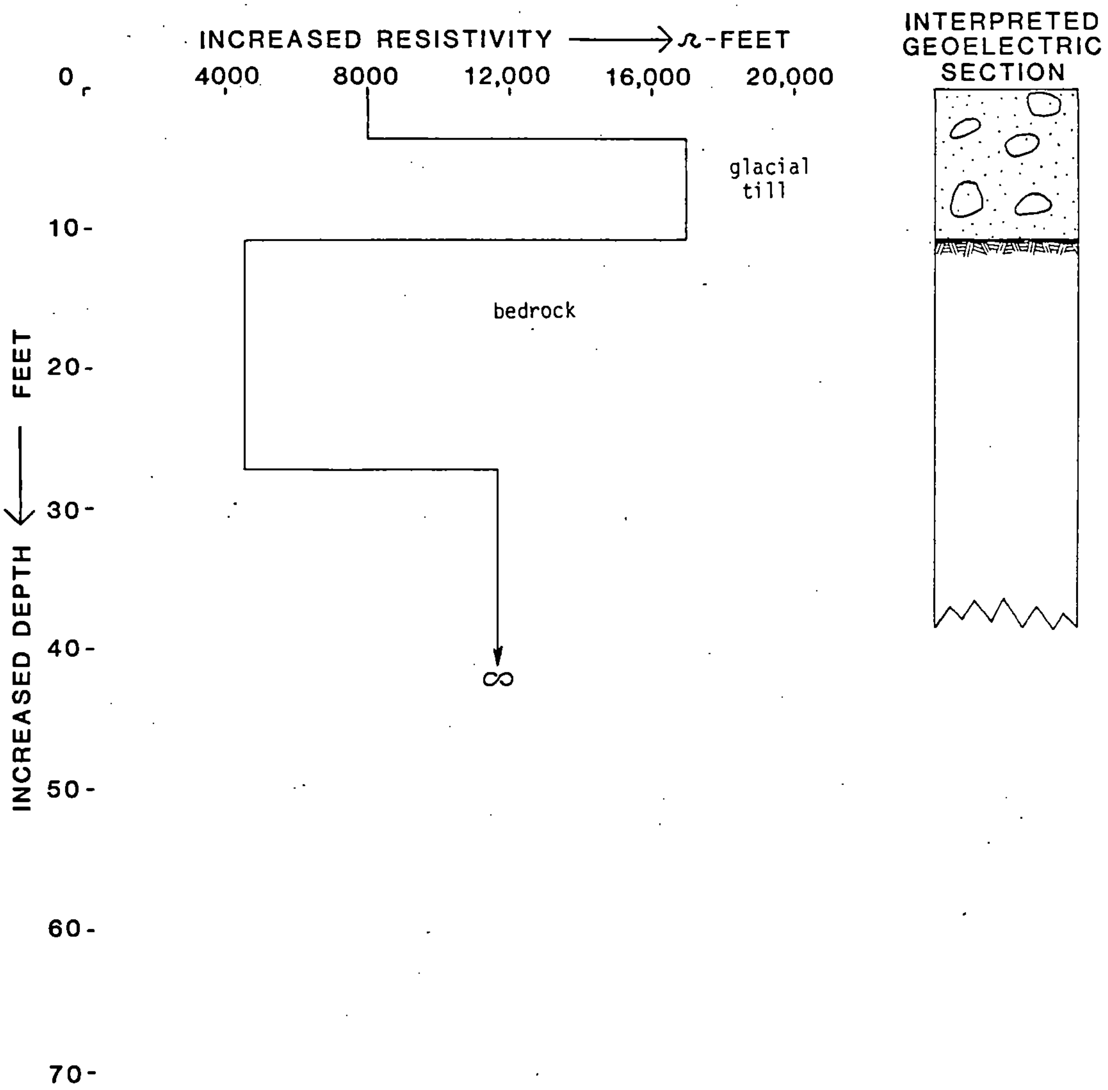
MOTTOLO SITE, RAYMOND, N.H.



GEOELECTRIC SOUNDING NO. 4

SCHLUMBERGER CONFIGURATION

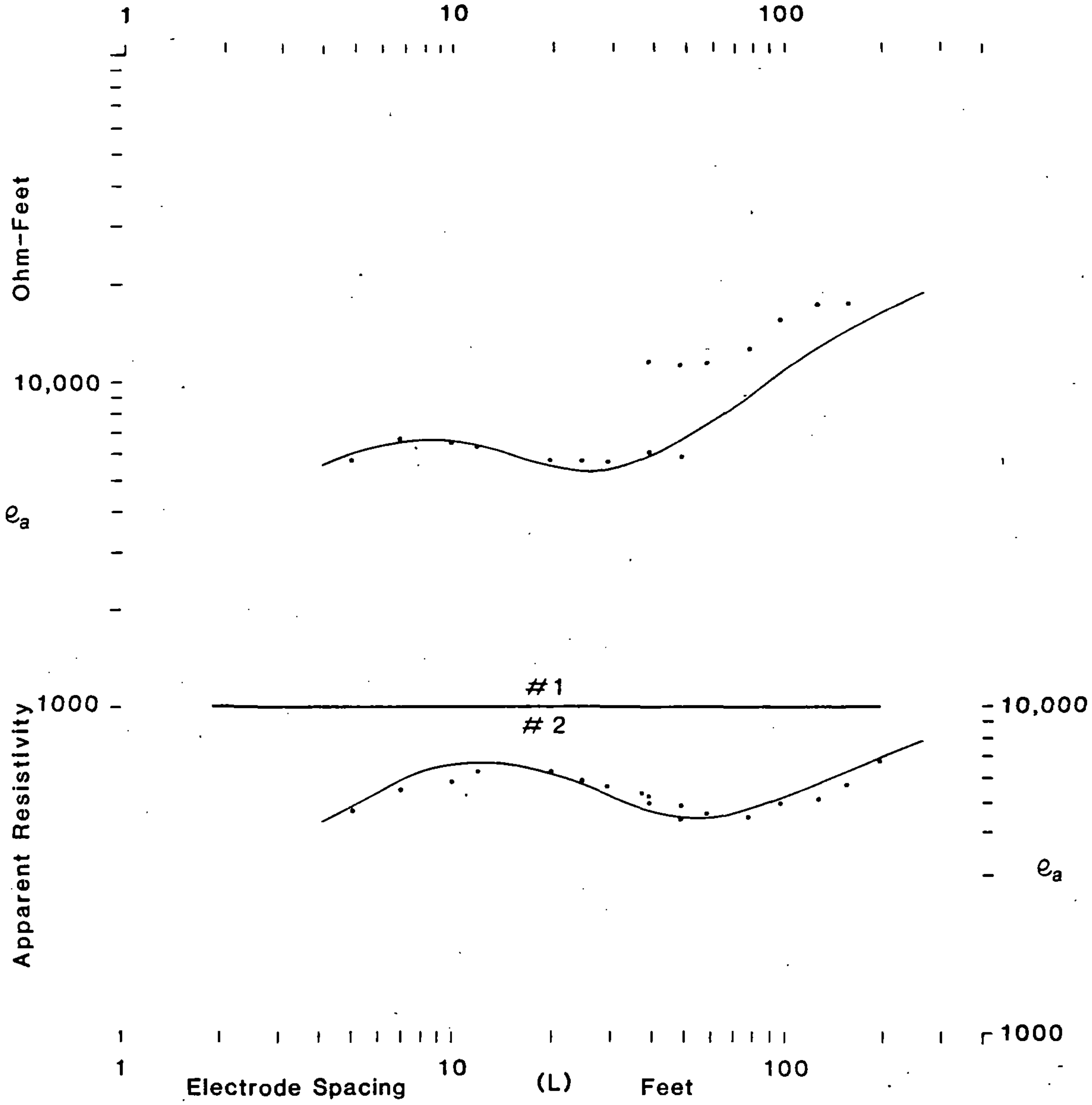
MOTTOLO SITE, RAYMOND, N.H.



GEOELECTRIC SOUNDING NO.5

SCHLUMBERGER CONFIGURATION

MOTTOLO SITE, RAYMOND, N.H.



SCHLUMBERGER CONFIGURATION

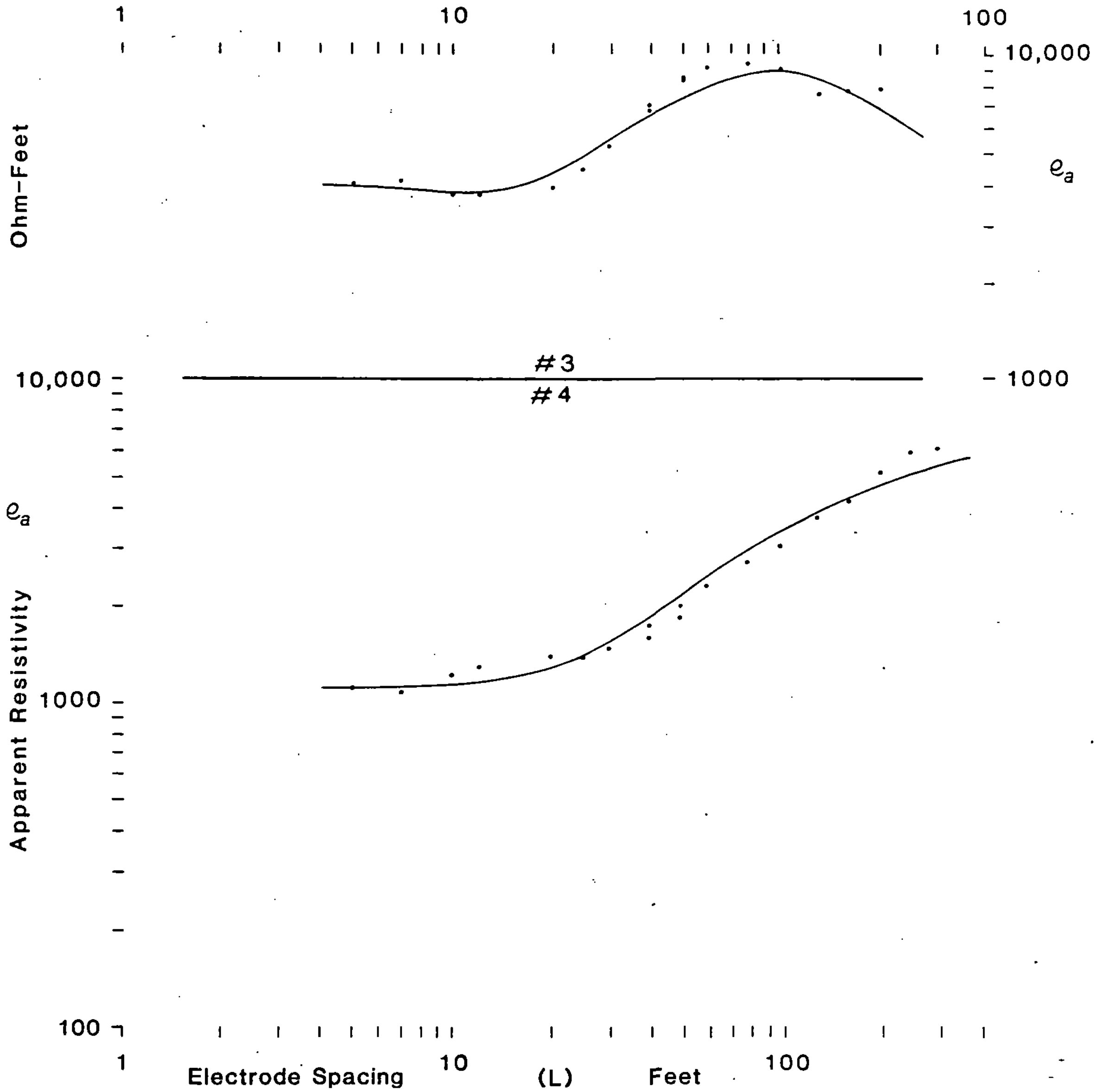
Mottolo Site
Raymond, N.H.

SO#1 & 2

LEGEND

.... Calculated Values

——— Observed Values

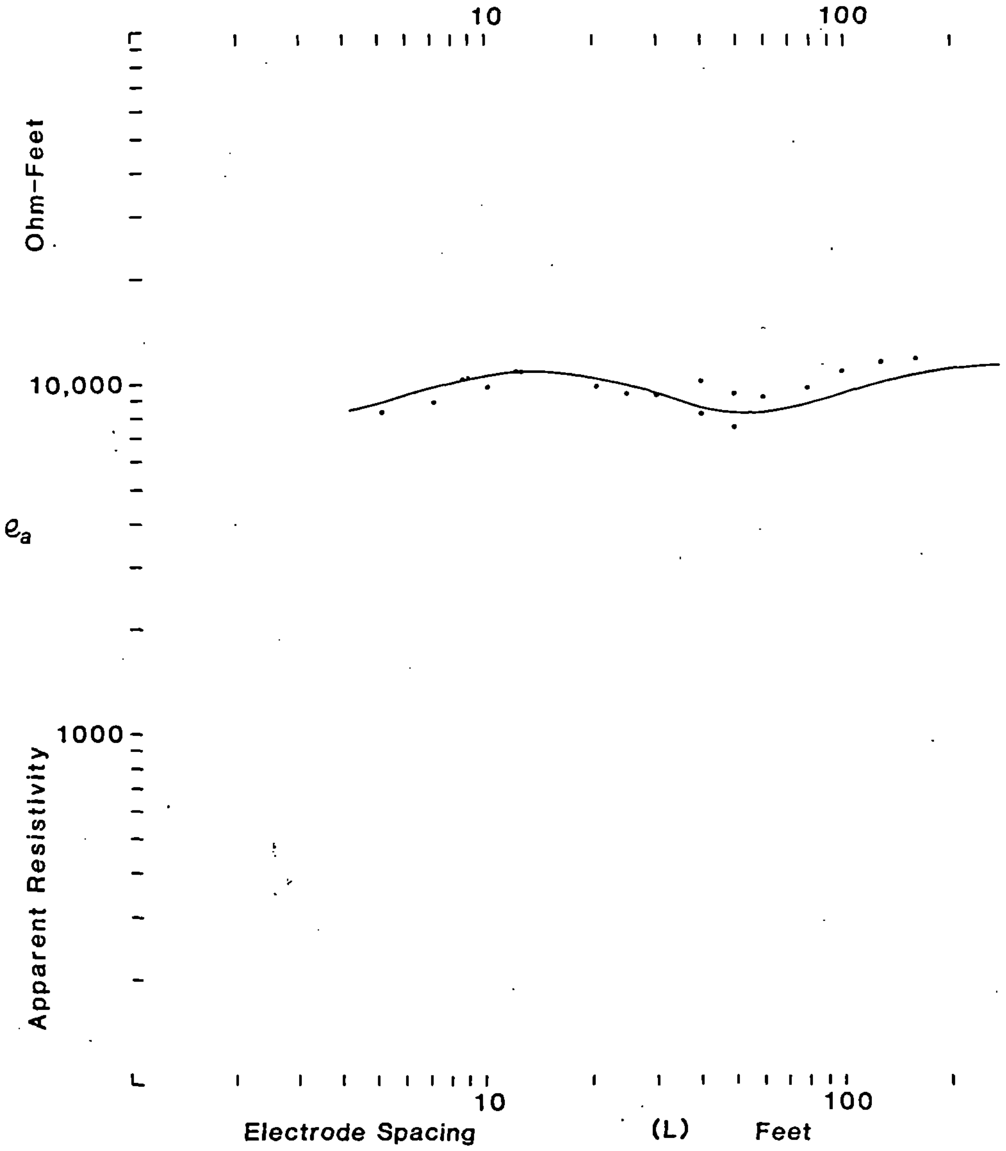


SCHLUMBERGER CONFIGURATION

Mottollo Site
Raymond, N.H.

LEGEND
.... Calculated Values
——— Observed Values

SO#3&4



SCHLUMBERGER CONFIGURATION
Mottolo Site
Raymond, N.H.

SO#5

LEGEND
·········· Calculated Values
——— Observed Values

Mottolo Site, Raymond N.H.

(4a)

So #1

A	$2\pi V/I$	L	ρ_a
2	915	5	5719
	546	7	6658.6
	260	10	6500
	176.5	12	6354
	57.4	20	5740
	36.4	25	5687.6
	25.4	30	5715.0
	15.15	40	6060
2	9.4	50	5875
10	143.0	40	11440
	90.25	50	11281.2
	63.6	60	11448
	39.7	80	12704
	31.0	100	15500
	20.9	130	17660
10	13.8	160	17664

Final Model

Model

ρ (Ω ft.)	Thickness (ft.)
2500	1
12000	3
4000	24
30000	K

calc. field curve

ρ_a (Ω ft. x10^{-3})	L (ft.)
5.6	4.0
6.4	5.9
6.7	8.6
6.3	12.6
5.7	18.6
5.3	27
5.8	40
7.3	59
9.6	86
12.5	127
15.7	186
19.0	272

So #2

A	$2\pi V/I$	L	ρ_a
2	775.5	5	4846.9
	449	7	5500
	235	10	5875
	176	12	6366
	62.6	20	6260
	37.4	25	5844
	25.1	30	5648
	12.5	40	5000
2	7.16	50	4475
10	65.1	40	5208
	39.3	50	4912
	25.9	60	4662
	14.3	80	4576
	10.0	100	5000
	6.04	130	5104
	4.46	160	5709
10	3.35	200	6700

Final Model

Model

ρ (Ω ft.)	Thickness (ft.)
1750	1
10000	7
3500	42
10000	K

calc. field curve

ρ_a (Ω ft. x10^{-3})	L (ft.)
4.4	4.0
5.4	5.9
6.2	8.6
6.6	12.6
6.4	18.6
5.6	27
4.8	40
4.5	59
4.9	86
5.7	127
6.7	186
7.7	272

Mottolo Site, Raymond N.H.

5a

	A	2πV/I	L	Ca
So # 3	2	638	5	3988
		328	7	4018
		146.5	10	3662
		100.5	12	3618
		38.0	20	3800
		28.1	25	4391
		23.0	30	5175
		16.65	40	6660
	2	12.8	50	8000
	10	85.05	40	6804
		64.95	50	8094
		49.5	60	8910
		28.15	80	9008
		17.4	100	8700
		8.73	130	7377
		5.06	160	6477
	10	3.31	200	6620

Final Model

Model

ρ (Ω ft.)	Thickness (ft.)
4000	6
1700	5
35000	17
4000	K

Calc. field curve

Ca (Ωft. x10⁻³)	L (ft.)
3.9	4.0
3.8	5.9
3.7	8.6
3.7	12.6
4.1	18.6
5.1	27
6.5	40
7.9	59
8.6	86
8.2	127
7.0	186
5.5	272

	A	2πV/I	L	Ca
So #4	2	177.5	5	1109
		87.8	7	1076
		48.3	10	1208
		35.75	12	1287
		13.9	20	1390
		8.85	25	1383
		6.53	30	1469
		3.98	40	1592
	2	2.93	50	1831
	10	21.5	40	1720
		15.8	50	1975
		12.75	60	2295
		8.51	80	2723
		6.05	100	3025
		4.37	130	3693
		3.225	160	4128
		2.54	200	5080
		1.90	250	5938
	10	1.35	300	6075

Final Model

Model

ρ (Ω ft.)	Thickness (ft.)
1100	20
7000	K

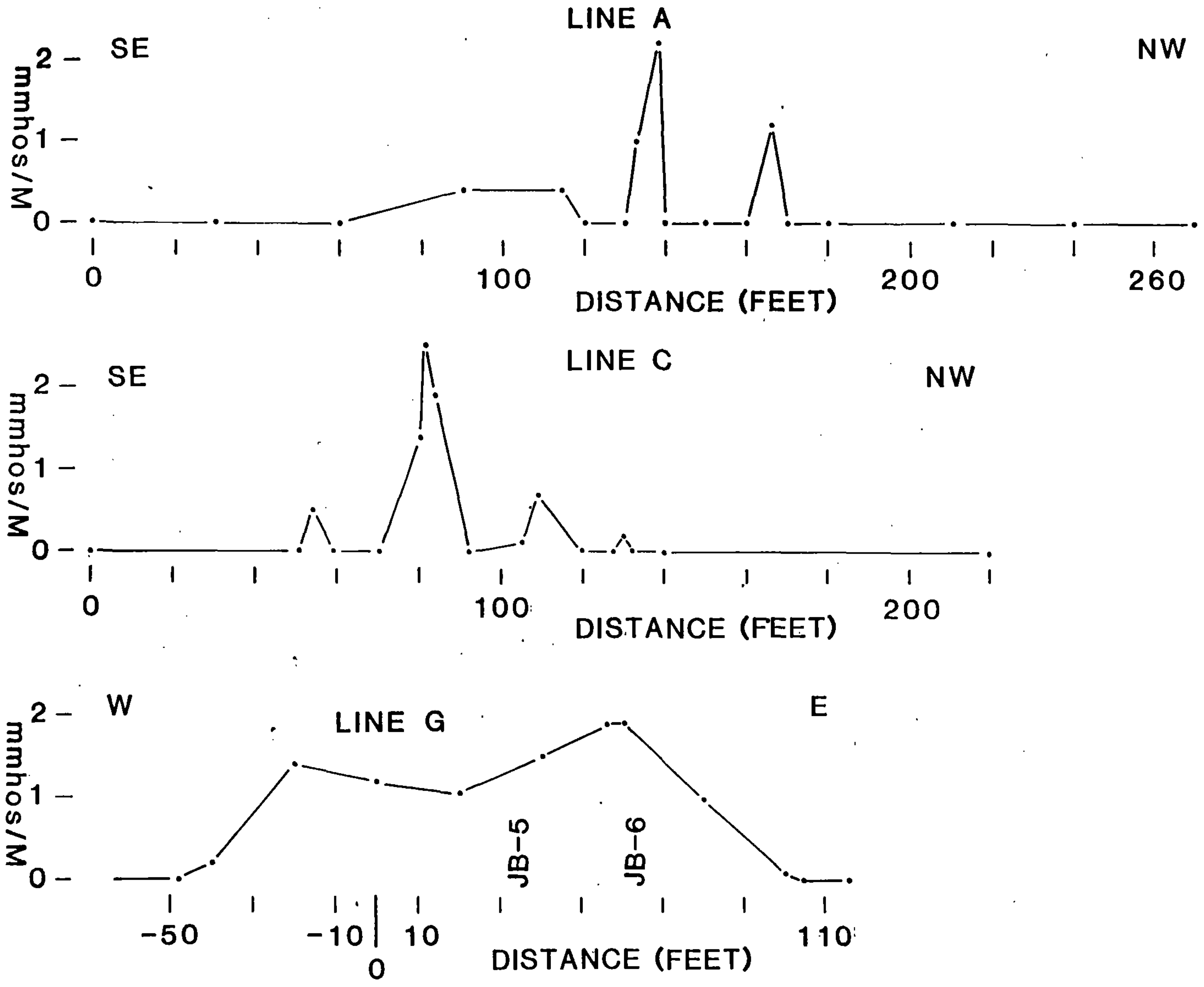
Calc. field curve

Ca (Ωft. x10⁻³)	L (ft.)
1.1	4.0
1.1	5.9
1.1	8.6
1.1	12.6
1.2	18.6
1.4	27
1.8	40
2.4	59
3.0	86
3.8	127
4.6	186
5.3	272
5.9	400

Mottolo Site, Raymond N.H

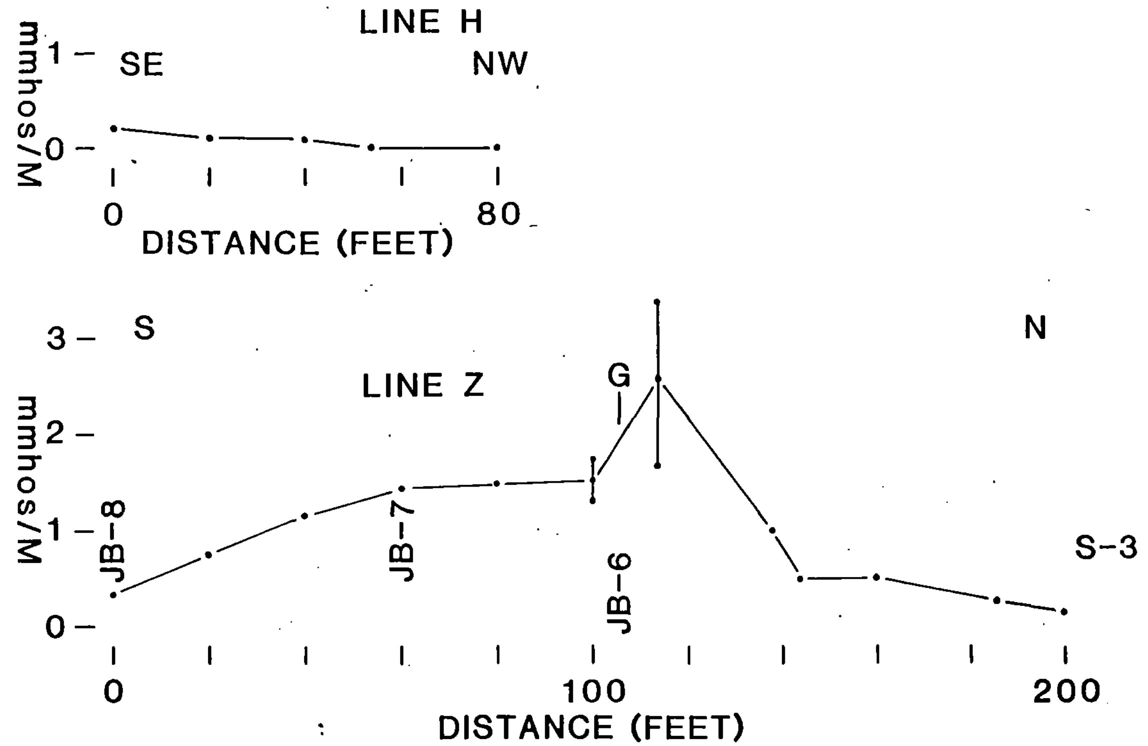
6a

	A	$2\pi V/I$	L	ρ_a						
So # 5	2	1315	5	8219			Final	Model		
		724	7	8869		Model			Calc. field curve	
		390	10	9750		ρ	Thickness		ρ_a	L
		302	12	10872		(Ω ft)	(ft.)		(Ω ft × 10^3)	(ft.)
		98	20	9800		8000	4		8.5	4.0
		60	25	9375		17000	7		9.1	5.9
		41.1	30	9248		4600	16		10.0	8.6
		20.3	40	8120		12000	K		10.7	12.6
	2	11.9	50	7438					10.7	18.6
	10	126.5	40	10120					9.6	27
		74.5	50	9312					8.5	40
		51.0	60	9180					8.2	59
		30.35	80	9712					8.9	86
		21.4	100	10700					9.8	127
		13.6	130	11492					10.6	186
	10	9.1	160	11648					11.2	272



ELECTRICAL CONDUCTIVITY
EM-31 SURVEY PROFILES

MOTTOLO SITE, RAYMOND, N.H.



ELECTRICAL CONDUCTIVITY
EM-31 SURVEY PROFILES

MOTTOLO SITE, RAYMOND, N.H.

Electrical Conductivity Readings, EM-31
Mottolo Site, Raymond
April 22, 1985

Station (Feet)	Reading (millimho/meter)	Remarks
Line A		
0	-	some fluctuation, 1.0 perpendicular to traverse
30	-	
60	-	
90	0.4	
115	0.4	
120	-	
130	-	
133	1.0	
138	2.2	
140	-	
150	-	
160	-	
166	1.2	
170	-	
180	-	
210	-	
240	-	
270	-	

All readings taken with instrument parallel to traverse line unless otherwise noted.

- Indicates that reading was less than zero.

Electrical Conductivity Readings, EM-31
Mottolo Site, Raymond
April 22, 1985

Station (Feet)	Reading (millimho/meter)	Remarks
<u>Line C</u>		
0	-	
51	0	
54	0.5	
59	0	fill
70	0	
80	1.4	
81	2.5	
83	1.9	
92	0	
105	0.1	
111	0.65	centerline of swale
120	-	
127	0	
130	0.2	
132	0	
140	-	all readings between station 140 and 222 were
222	-	negative

All readings taken with instrument parallel to traverse line unless otherwise noted.

Electrical Conductivity Readings, EM-31
Mottolo Site, Raymond
April 22, 1985

Station (Feet)	Reading (millimho/meter)	Remarks
Line D		
0	0.1	parallel to traverse line
0	0.1	perpendicular to traverse line
20	-	all readings between station 20 and 202 were
202	-	negative
Line G		
-48	0	
-40	0.2	mid slope
-20	1.4	
0	1.2	
20	1.05	leachate seeps @ 11 and 22 feet
40	1.5	offset by 3 feet to avoid interference from JB-5
56	1.9	offset by one foot to avoid interference from JB-6, perpendicular reading
60	1.9	perpendicular reading
80	1.0	
100	0.06	
105	0	
116	-	

All readings taken with instrument parallel to traverse line unless otherwise noted.

Electrical Conductivity Readings, EM-31
Mottolo Site, Raymond
April 22, 1985

Station (Feet)	Reading (millimho/meter)	Remarks
Line H		
0	0.20	
20	0.1	
40	0.1	
53	0	
60	-	
80	-	
Line K		
0	-	
30	0	
40	0.8	close to trucks
56	0	
60	-	all readings between station 60 and 163 were
163	-	negative
Line Z		
0	0.35	JB-8
20	0.75	
40	1.15	

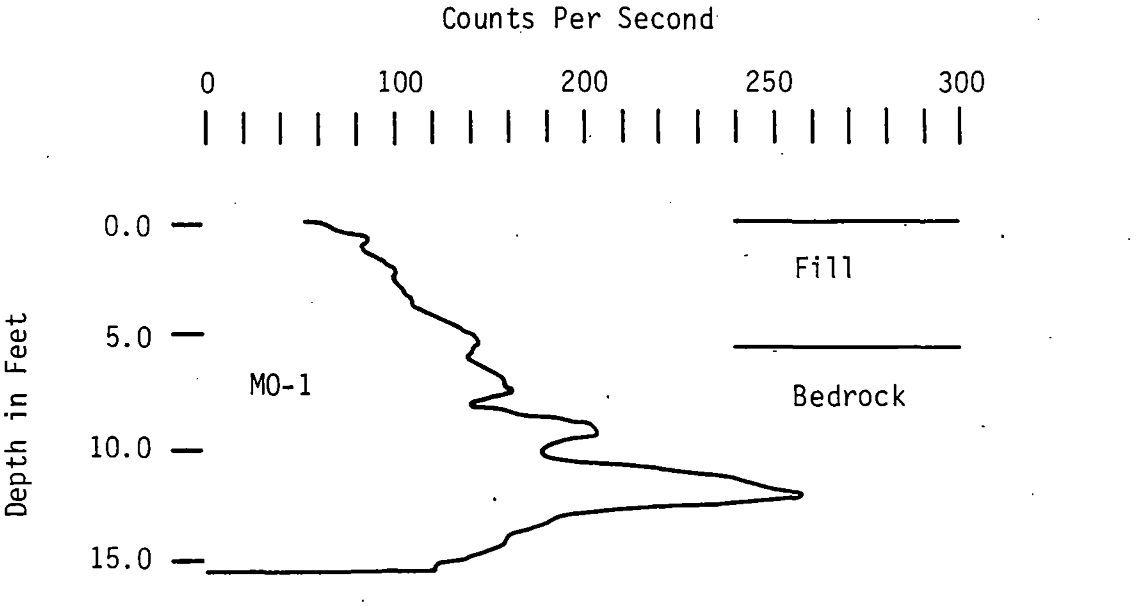
All readings taken with instrument parallel to traverse line unless otherwise noted.

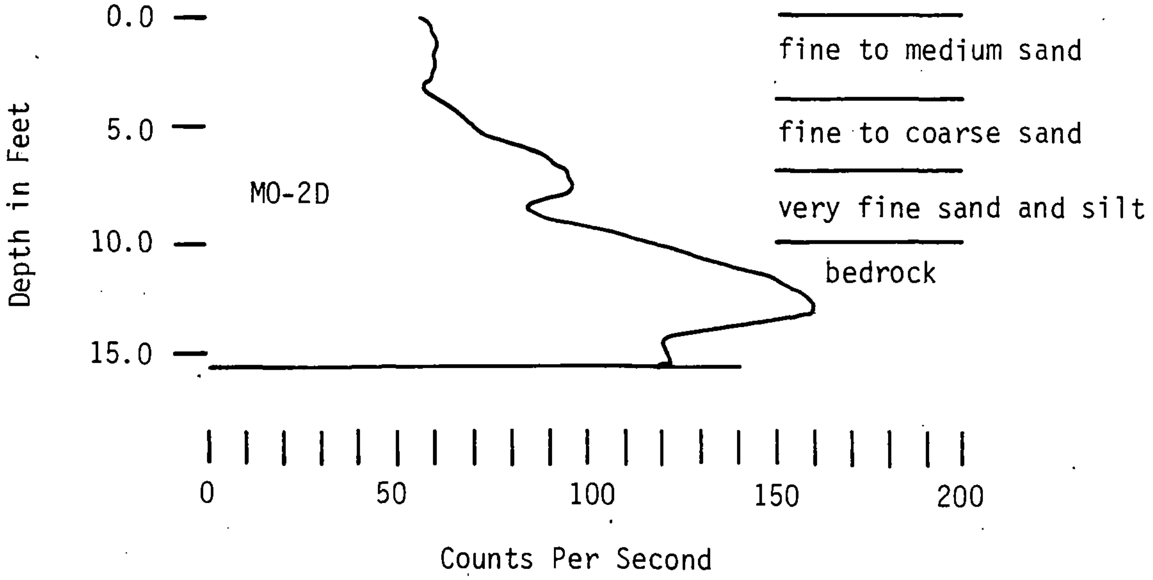
Electrical Conductivity Readings, EM-31
Mottolo Site, Raymond
April 22, 1985

Station (Feet)	Reading (millimho/meter)	Remarks
Line Z (cont.)		
60	1.45	
80	1.5	
100	1.3	perpendicular to traverse line
100	1.75	
114	3.4	leachate seep @ 115', end close to well
114	1.7	perpendicular to traverse line
138	1.0	
144	0.5	minor leachate seep
160	0.5	
186	0.25	
200	0.15	S-3

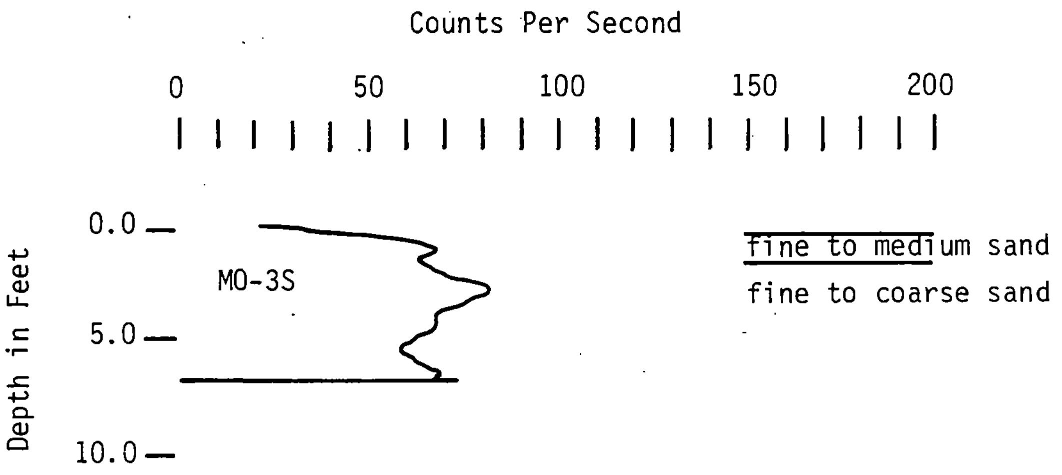
All readings taken with instrument parallel to traverse line unless otherwise noted.

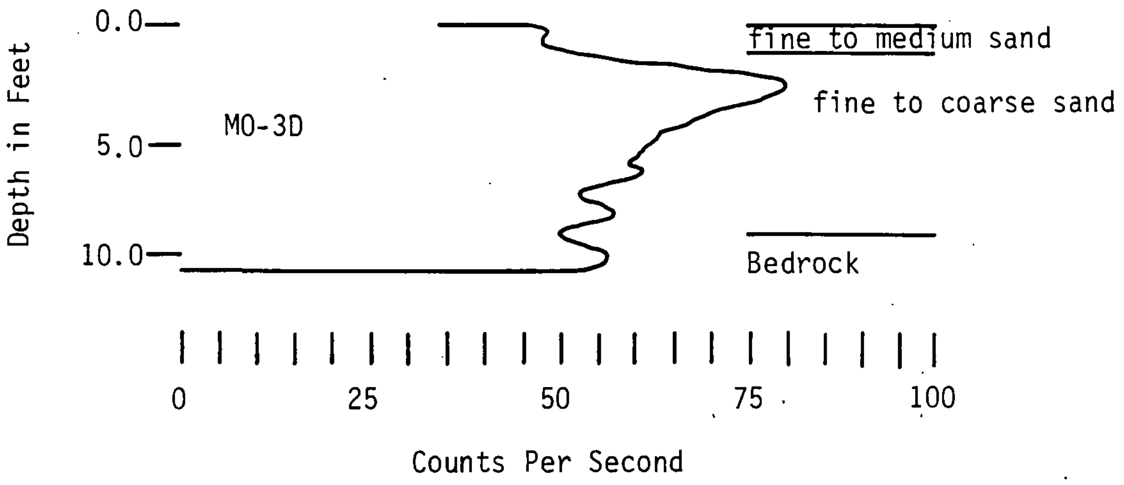
Geophysical Well Logs
Gamma Log - MO-1 and MO-2D
Mottolo Site, Raymond



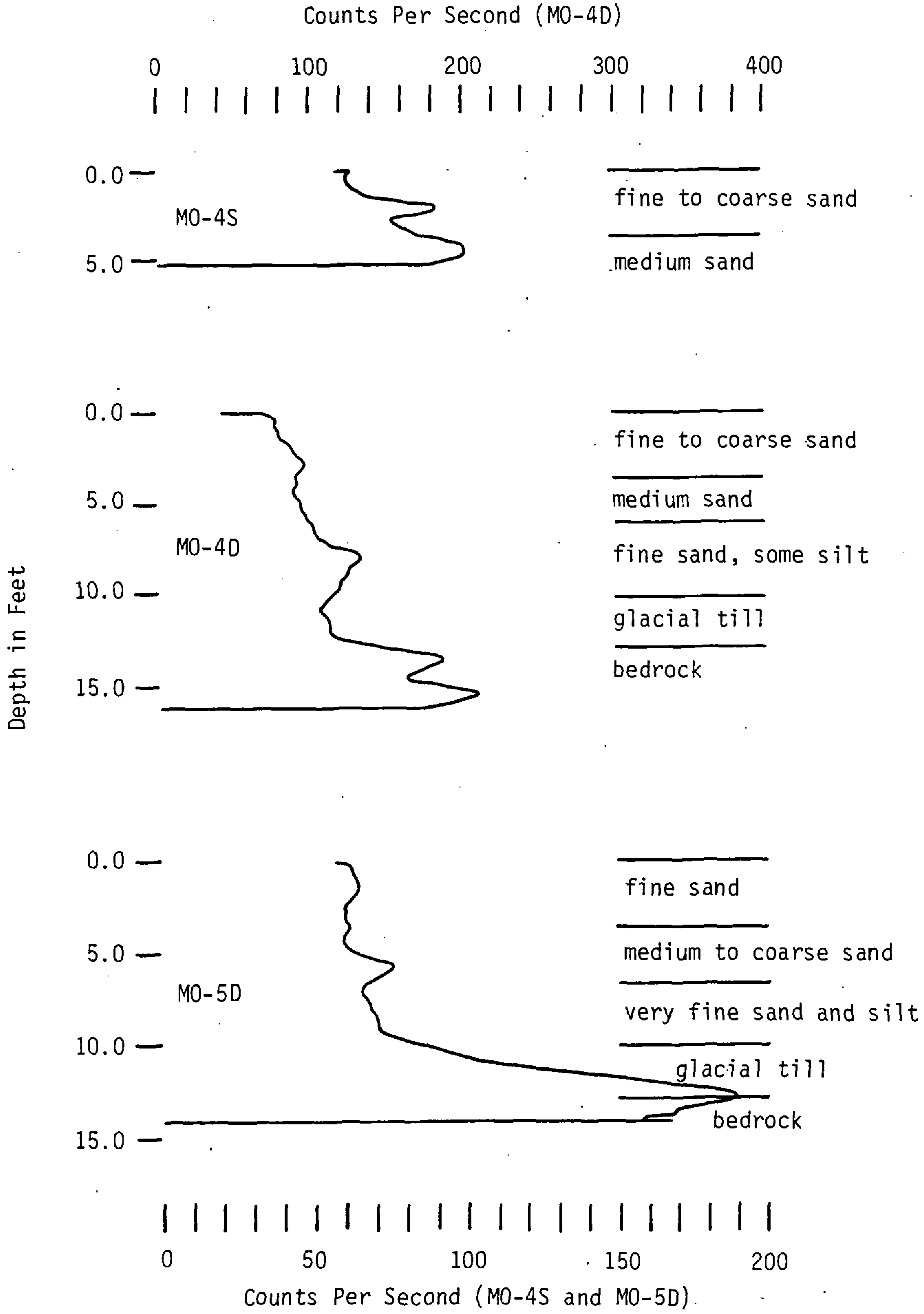


Geophysical Well Logs
Gamma Log - MO-3S and MO-3D
Mottolo Site, Raymond





Geophysical Well Logs
Gamma Logs - MO-4S, MO-4D, MO-5D
Mottolo Site - Raymond



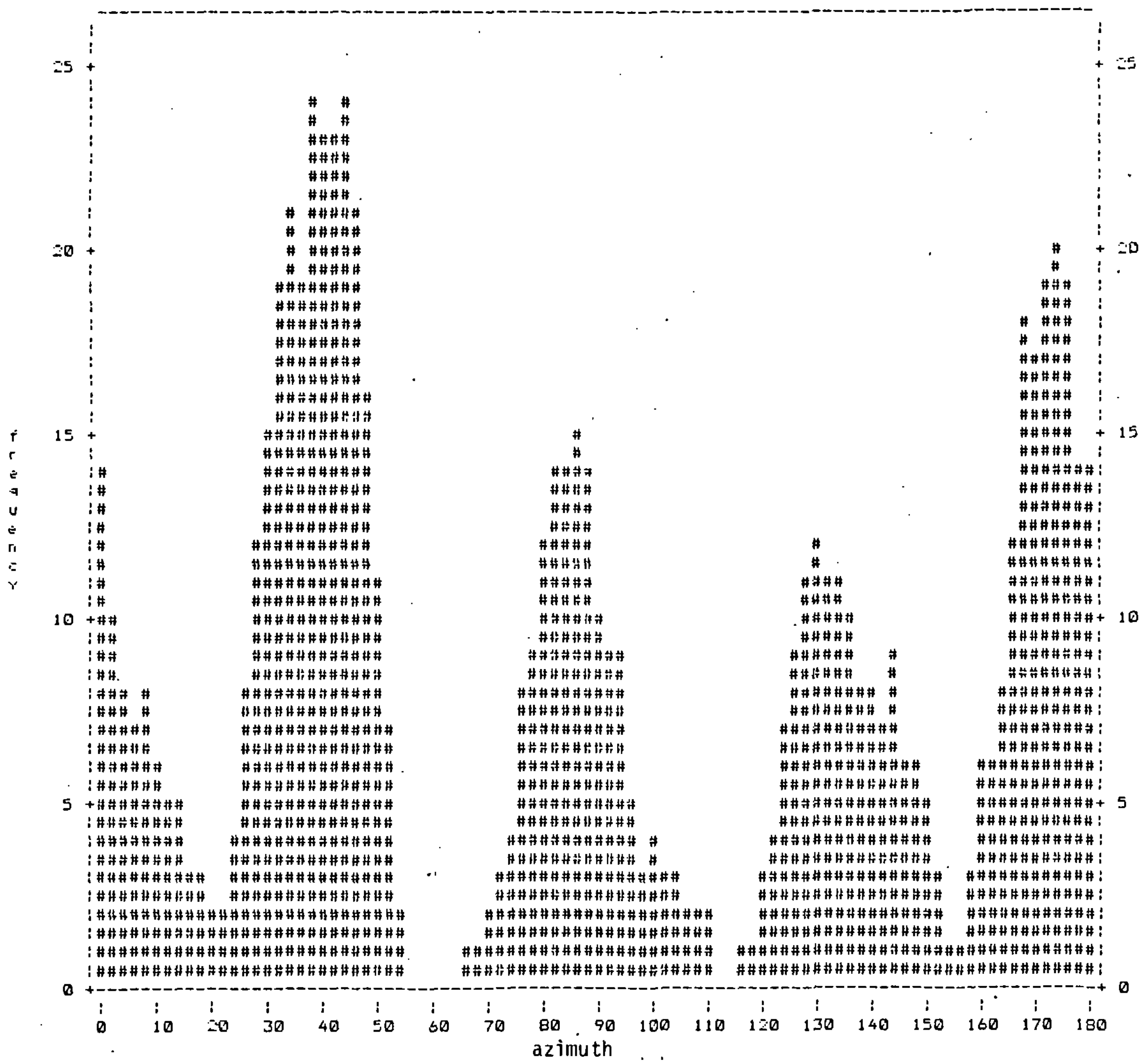
Note: The scale of the gamma reading axis varies, see axis label for appropriate scale.

APPENDIX B

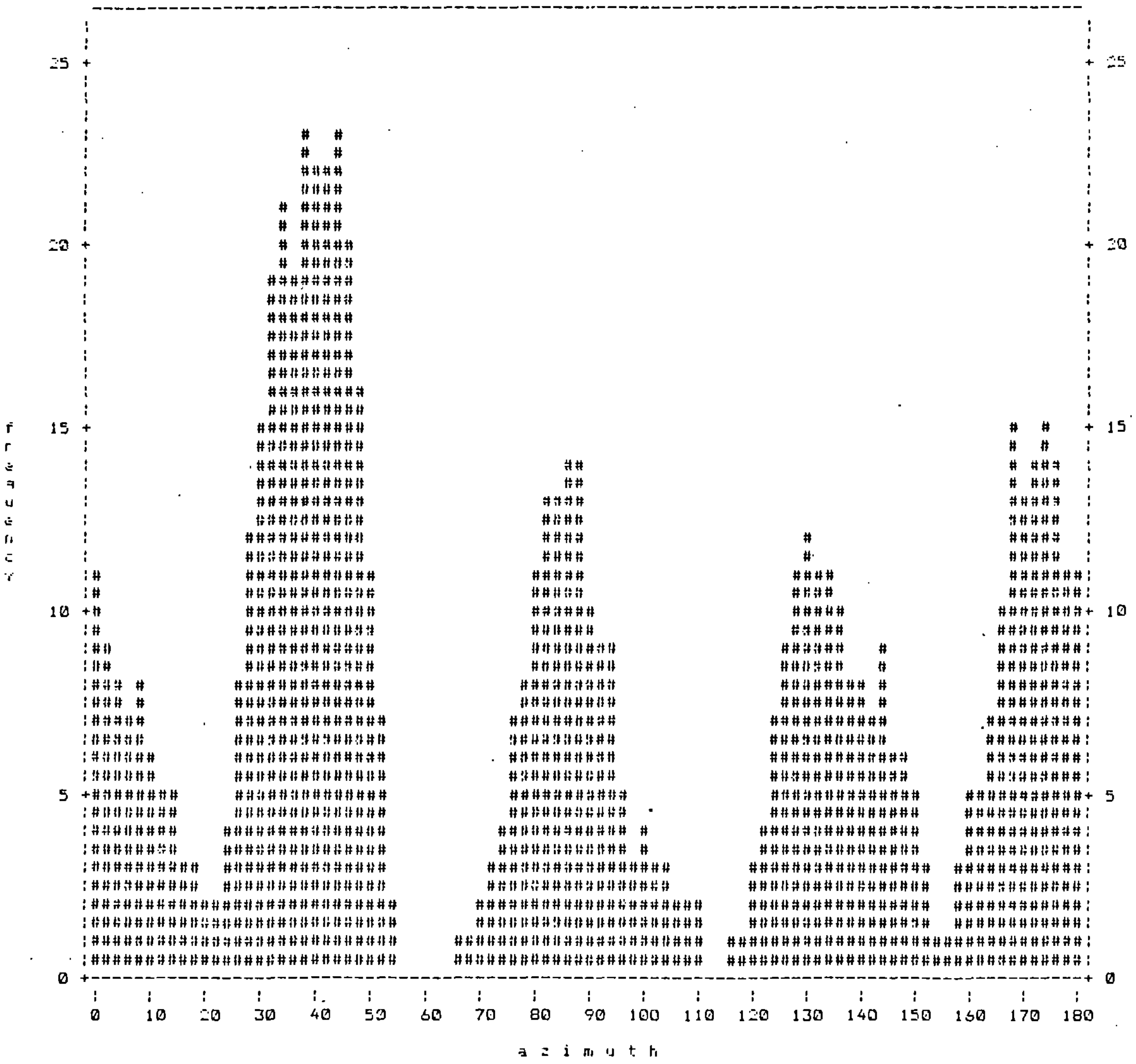
Fracture Fabric Analysis Histograms and Aerial Photographs

FRACTURE TREND HISTOGRAM FOR
JOINT STATIONS A THRU E, RAYMOND, N.H.

n = 135



FRACTURE TREND HISTOGRAM FOR
JOINT STATIONS A THRU E, RAYMOND, N.H. (E RESAMPLED TO REMOVE BIAS)
n = 127



List of Aerial Photographs Examined For The Fracture Fabric Analysis - Mottolo Site, Raymond, New Hampshire

Type of Photo	Scale	Exposure Date	Frame No.
High Altitude Color Infrared	1:127,00	12/2/73	6836
High Altitude Black and White	1:60,000	5/5/60	6948
Medium Altitude Black and White	1:24,000	11/5/75	106
Low Altitude, Large Scale Black and White	1:1200	4/23/66	3-3

APPENDIX C

Well and Test Pit Data

NHWS&PCC BORING LOG

SITE
Mottolo Site
Raymond

Boring No: MO-1
Sheet: 1 **of:** 1
Date: 6/20/85

Boring Company: Soils Engineering, Inc. **Boring Location:** NW Corner of Piggery Bldg.
Foreman: Myron Dominque **Ground/Casing Elevation:**
Geologist/Engineer: John Regan **Starting Date:** 6/20/85 **Ending Date:** 6/26/85

SAMPLER
Type NX Core Barrel
Hammer Wt. NA
Fall NA

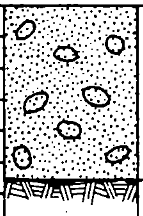
Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization
6/26	9.5'	gr sfc	7:10
6/28	9'1 1/2"	TOC	14:45

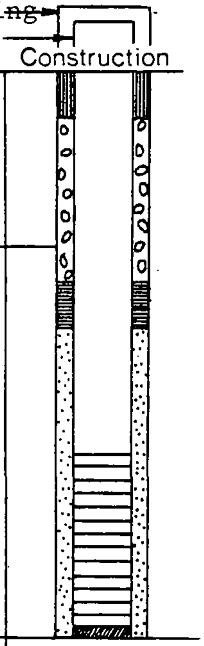
SAMPLE

Depth	Casing Bl/ft.	No.	Depth	Pen/Rcvy	Blows/6"	Description
		S-1	0-5'6"			dry brown medium sand and gravel, some cobbles, little silt (fill)
5						
	~~RUN 1~~		5'6"- 8'7"	37/34		bedrock
	RUN 2		8'7"- 9'11"	16/20		biotite schist, quartz and granite
10						
	RUN 3		9'11"- 12'4"	29/26		
	RUN 4		12'4"- 14'7"	27/25		
15						
	RUN 5		14'7"- 18'8"	49/47		
						bottom of hole
20						
25						
30						

LOG



Construction



KEY:

Granular Bls/ft	Desc.	Cohesive Bls./ft	Desc.
0–4	v. loose	<2	v. soft
4–10	loose	2–4	soft
10–30	m.dense	4–8	medium
30–50	dense	8–15	stiff
>50	v. dense	15–30	v. stiff
		>30	hard

REMARKS:

1. S-1 obtained from auger cuttings.
2. 4'11" of machine slotted well screen, 010 slot size, sch 40, 14'9" of 1 1/2" sch 40 pvc solid pipe.
3. Silica sand pack from 8'2" to 18'8".
4. Bentonite pellets from 8'2" to 6'10", cement surface seal.

NHWS&PCC BORING LOG

SITE

Mottolo Site
Raymond

Boring No: MO-2 S
Sheet: 1 of: 1
Date: 6/28/85

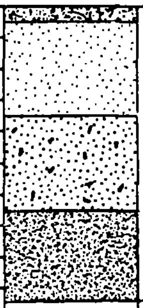
Boring Company: Soils Engineering, Inc.
Boring Location: Leachate Seep Area - North limit
Foreman: Myron Dominque
Ground/Casing Elevation:
Geologist/Engineer: John Regan
Starting Date: 6/28/85
Ending Date: 6/28/85

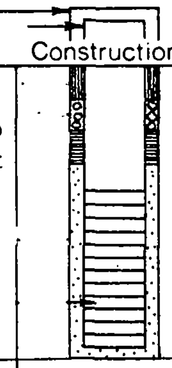
SAMPLER

Type See MO-2D
Hammer Wt.
Fall

Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization
6/28	2'6"	TOC	15:03
7/1	2'9½"	TOC	15:03





		SAMPLE						
Depth	Casing Bl/ft.	No.	Depth	Pen/Rcvy	Blows/6"	LOG	Description	Construction
							organic topsoil	
							moist dark grey fine to medium sand, trace silt	
5							wet tan medium to coarse sand	
							wet tan very fine sand	
10							bottom of hole	
15								
20								
25								
30								

KEY:

Granular

Bls/ft	Desc.
0-4	v. loose
4-10	loose
10-30	m.dense
30-50	dense
>50	v. dense

Cohesive

Bls./ft	Desc.
<2	v. soft
2-4	soft
4-8	medium
8-15	stiff
15-30	v. stiff
>30	hard

REMARKS:

1. 5' of 1½" PVC sch 40 screen, 010 machine slots, 6' of 1½" PVC solid sch 40.
2. 10 lbs of Bentonite pellets, cement sfc. seal.
3. Silica sand pack from 3'6" to 9'0".

NHWS&PCC BORING LOG

SITE

Mottolo Site
Raymond

Boring No: MO-2D
Sheet: 1 of: 1
Date: 6/26/85

Boring Company: Soils Engineering, Inc.
Boring Location: Leachate Seep Area
Foreman: Myron Dominque
Ground/Casing Elevation:
Geologist/Engineer: John Regan
Starting Date: 6/26/85
Ending Date: 6/26/85

SAMPLER

Type 1 3/8" Split Spoon
Hammer Wt. 140 lbs.
Fall 30 inches

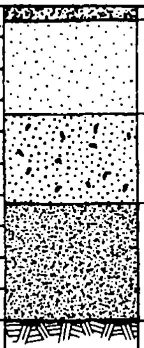
Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization
6/28	2'4"	TOC	14:55
7/1	2'6"	TOC	15:06

SAMPLE

Depth	Casing Bl/ft.	No.	Depth	Pen/Rcvy	Blows/6"
		S-1	0'-2'	24/70	2/3/5/6
5		S-2	5'-7'	24/24	9/14/14/17
10	RUN 1		10'- 12'3"	27/27	
	RUN 2		12'3"- 15'9"	30/16	
15	RUN 3		15'9"- 16'1"	4/9	
	RUN 4		16'1"- 16'9"	8/8	
20					
25					
30					

LOG



Description

moist grey fine to medium sand, trace silt

wet tan medium to coarse sand

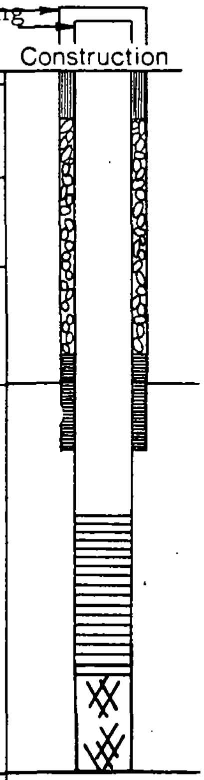
wet tan very fine sand

bedrock

biotite schist and quartz

bottom of hole

Construction



KEY:

Granular Bls/ft	Desc.	Cohesive Bls./ft	Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m.dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS:
1. NX corebarrel used to 16'9", 3" tricone rollo-bit used from 16'9" to 22'0".
2. 5' of 1½" machine slotted, 010 slots, sch 40 PVC well screen, 16' of 1½" sch 40 solid pipe.
3. Bentonite grout from 9' to 12', cement surface seal.

NHWS&PCC BORING LOG

SITE

Mottolo Site

Raymond

Boring No: MO-3S

Sheet: 1 **of:** 1

Date: 6/28/85

Boring Company: Soils Engineering, Inc. **Boring Location:** Leachate Seep Area

Foreman: Myron Dominque **Ground/Casing Elevation:**

Geologist/Engineer: John Regan **Starting Date:** 6/28/85 **Ending Date:** 6/28/85

SAMPLER

Type 1 3/8" Split Spoon

Hammer Wt. 140 lbs.

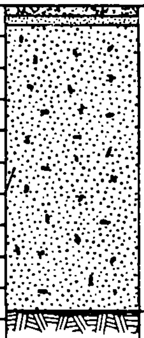
Fall 30 inches

Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization
6/28	3'3"	TOC	15:10
7/1	3'3"	TOC	15:30

Depth	Casing Bl/ft.	SAMPLE No.	SAMPLE Depth	SAMPLE Pen/Rcvy	SAMPLE Blows/6"
		S-2	0'-2'	24/18	2/3/8/8
5		S-1	5'-7'	24/24	27/90/35/ 26
10					
15					
20					
25					
30					

LOG



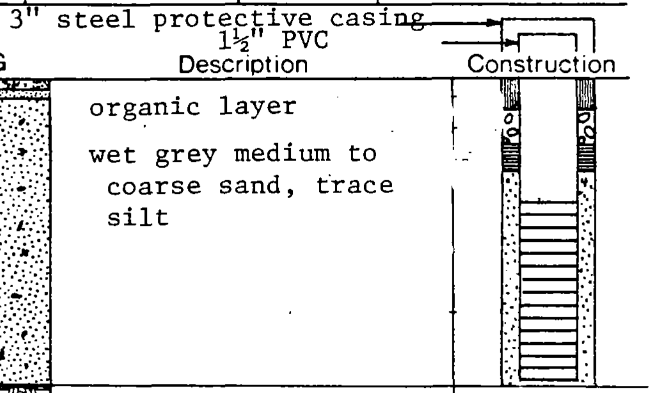
Description

organic layer

wet grey medium to coarse sand, trace silt

Bottom of hole

Construction



KEY:

Granular Bls/ft	Granular Desc.	Cohesive Bls./ft	Cohesive Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m. dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS:

1. Some stones and cobbles from 0'-4'.
2. 5' of 1½" machine slotted, 010 slots, sch 40 PVC well screen, 6' of 1½" sch 40 PVC risor pipe.
3. Bentonite pellets from 2' to 3', surface cement seal.
4. Silica sandpack 3' to 10'.

NHWS&PCC BORING LOG **SITE**

Mottolo Site
Raymond

Boring No: MO-3D
Sheet: 1 of: 1
Date: 7/1/85

Boring Company: Soils Engineering, Inc.
Boring Location: Leachate Seep Area
Foreman: Myron Dominque
Ground/Casing Elevation:
Geologist/Engineer: John Regan
Starting Date: 7/1/85 Ending Date: 7/2/85

SAMPLER

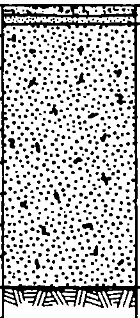
Type NX Core Barrel
Hammer Wt.
Fall

Groundwater Readings

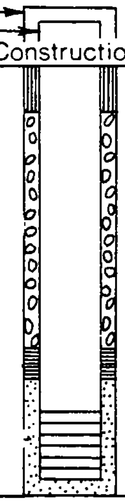
Date	Depth to Water	Ref. Pt.	Time/Stabilization

Depth	Casing Bl/ft.	SAMPLE No.	SAMPLE Depth	SAMPLE Pen/Rcvy	SAMPLE Blows/6"	Description
						organic layer
						wet grey medium to coarse sand, trace silt
5						
			9'-11'9"	33/33		bedrock
10						
			11'9"-13'	15/9		basalt
			13'-13'2½"	2½/1		
						bottom of hole
15						
			13'2½"- 13'11"	8½/10		
20						
25						
30						

LOG



Construction



KEY:

Granular Bls/ft	Granular Desc.	Cohesive Bls./ft	Cohesive Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m. dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS:

1. NX core barrel used, soil samples collected for MO-3 S.
2. 2' of 1½" machine slotted, 010 slots, sch 40 PVC well screen and 14' of 1½" sch 40 PVC solid pipe.
3. Bentonite pellets from 9' to 10', surface cement seal, silica sandpack 10' to 13'.

NHWS&PCC BORING LOG

SITE
Mottolo Site
Raymond

Boring No: MO-4S
Sheet: 1 of: 1
Date: 7/3/85

Boring Company: Soils Engineering, Inc.
Boring Location: Between JB-7 and JB-8
Foreman: Myron Dominque
Ground/Casing Elevation:
Geologist/Engineer: John Regan
Starting Date: 7/3/85
Ending Date: 7/3/85

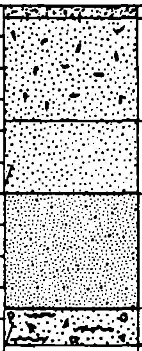
SAMPLER
Type 1 3/8" Split Spoon
Hammer Wt. 140 lbs.
Fall 30 inches

Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization

Depth	Casing Bl/ft.	SAMPLE No.	SAMPLE Depth	Pen/Rcvy	Blows/6"
		S-1	0'-2'	24/11	1/1/3/7
5		S-2a	5'-6'	24/24	11/15/31
		S-2	6'-7'		39
10		S-3	9'-11'	24/16	31/45/33
					35
15					
20					
25					
30					

LOG



Description

wet grey medium to coarse sand

wet grey medium sand

wet grey and tan fine sand

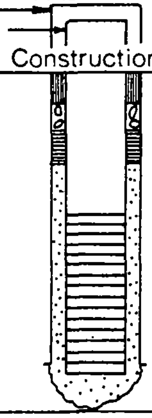
wet grey glacial till

bottom of hole

Construction

3" steel protective casing

1½" PVC



KEY:

Granular Bls/ft	Granular Desc.	Cohesive Bls./ft	Cohesive Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m.dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS:

1. 5' of 1½" machine slotted, 010 slots, sch 40 PVC well screen, and 6½" of 1½" sch 40 solid PVC pipe.
2. Bentonite pellet seal 2' to 3'. cement surface seal.
3. Silica sand pack from 3' to 10'.

NHWS&PCC BORING LOG

SITE
Mottolo Site
Raymond

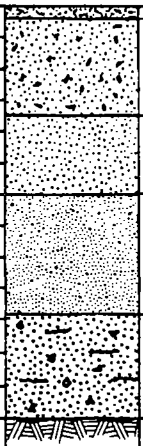
Boring No: MO-4D
Sheet: 1 **of:** 1
Date: 7/2/85

Boring Company: Soils Engineering, Inc. **Boring Location:** Between JB-7 and JB-8
Foreman: Myron Dominque **Ground/Casing Elevation:**
Geologist/Engineer: John Regan **Starting Date:** 7/2/85 **Ending Date:** 7/3/85

SAMPLER
Type NX Core Barrel
Hammer Wt.
Fall

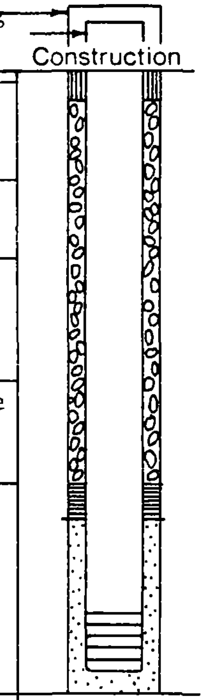
Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization



Depth	Casing Bl/ft.	SAMPLE No.	SAMPLE Depth	SAMPLE Pen/Rcvy	SAMPLE Blows/6"	Description
						wet grey medium to coarse sand
5						wet grey medium sand
						wet grey and tan fine sand
10	RUN 1		9'6"- 12'8"	38/15		wet grey fine to coarse sand, some gravel and silt (glacial till)
						bedrock quartz and biotite schist
15	RUN 2		14'6" 15'6"	12/10		
20						bottom of hole
25						
30						

Construction



KEY:

Granular Bls/ft	Granular Desc.	Cohesive Bls./ft	Cohesive Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m. dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS:

1. Soil samples collected for MO-4S.
2. Run 1 cored boulders, used auger to ground bedrock from 13' to 14'6", roller bit from 15'6" to 19'6".
3. 2' of 1½" machine slotted, 010 slots, sch 40 PVC well screen, 19' of sch 40 PVC solid pipe.
4. Bentonite pellet seal from 13' to 14'5" surface cement seal.
5. Silica sand pack from 14'5" to 18'10".

NHWS&PCC BORING LOG

SITE

Mottolo Site
Raymond

Boring No: MO-5S
Sheet: 1 **of:** 1
Date: 7/8/85

Boring Company: Soils Engineering, Inc. **Boring Location:** Downstream of seeps
Foreman: Myron Dominque **Ground/Casing Elevation:**
Geologist/Engineer: John Regan **Starting Date:** 7/8/85 **Ending Date:** 7/8/85

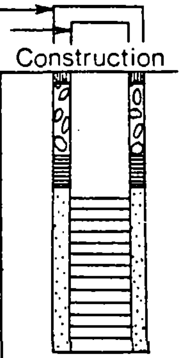
SAMPLER
Type 1 3/8" Split Spoon
Hammer Wt. 140 lbs.
Fall 30 inches

Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization

Depth	Casing Bl/ft.	SAMPLE No.	SAMPLE Depth	Pen/Rcvy	Blows/6"	LOG	Description
		S-1	0-2	24/12	0/1/2/3		moist grey fine sand, some silt
							wet brown coarse sand
5		S-2	5-6'3"	24/24	8/10/10/		
		S-2a	6'3"-7'		13		wet tan fine and very fine sand
		S-3	9'-11'	24/24	13/32/48/		
10					42		wet grey silty sand little gravel (glacial till)
15							
20							
25							
30							

Construction



KEY:

Granular Bls/ft	Granular Desc.	Cohesive Bls./ft	Cohesive Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m. dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS:

1. 4'9" of 1 1/2" machine slotted, 010 slots, sch 40 PVC well screen, 6'3" of sch 40 PVC solid pipes.
2. Bentonite pellet seal from 2'9" to 3'9", cement surface seal.
3. Silica sand pack from 3'9" to 9'.

NHWS&PCC BORING LOG

SITE

Mottolo Site

Raymond

Boring No: MO-5D

Sheet: 1 **of:** 1

Date: 7/4/85

Boring Company: Soils Engineering, Inc. **Boring Location:** Downstream of Seeps

Foreman: Myron Dominque **Ground/Casing Elevation:**

Geologist/Engineer: John Regan **Starting Date:** 7/4/85 **Ending Date:** 7/5/85

SAMPLER

Type NX Core Barrel

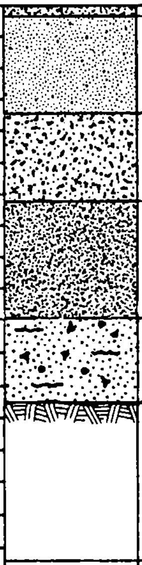
Hammer Wt.

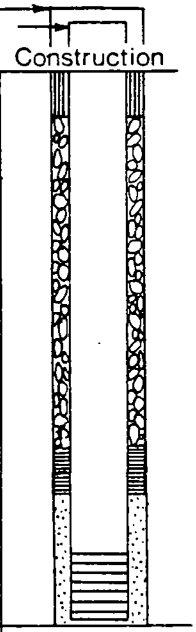
Fall

Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization
7/8	33½"	TOC	12:23

Depth	Casing Bl/ft.	SAMPLE No.	SAMPLE Depth	Pen/Rcvy	Blows/6"	Description
						moist grey fine sand, some silt
5						wet brown coarse sand
						wet tan fine and very fine sand, some silt
10						wet grey silty sand little gravel (glacial fill)
	RUN 1		12'6" - 13'1"	7/5		
						bedrock quartz
15						
						bottom of hole
20						
25						
30						





KEY:

Granular Bls/ft	Granular Desc.	Cohesive Bls./ft	Cohesive Desc.
0-4	v. loose	<2	v. soft
4-10	loose	2-4	soft
10-30	m. dense	4-8	medium
30-50	dense	8-15	stiff
>50	v. dense	15-30	v. stiff
		>30	hard

REMARKS: 1. Soil samples collected for MO-5S.
2. 2' of 1½" machine slotted, 010 slots, sch 40 PVC well screen; 17' of 1½" sch 40 PVC solid pipe.
3. NX core from 12'6" to 13'1", 3" tricone roller bit fro 13'1" to 13'6", 2" tricone roller bit from 13'6" to 17'6".
4. Bentonite pellet seal from 11'6" to 13'6" cement surface seal.
5. Silica sand pack from 13'6" to 17'3".

NHWS & PCC BEDROCK WELL LOG

SITE Mottolo Site
Raymond

Boring No: MO-6
Sheet: 2 **of:** 2
Date: 7/4/85

Drilling Company: Tasker Well Company
Boring Location: Off of Randy Lane
Foreman: Daniel Tasker
Ground/Casing Elevation:
Geologist/Engineer: John Regan
Starting Date: 7/4/85 **Ending Date:** 7/4/85

SAMPLER

Type Chips screened from drilling water

Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization
7/4	Flowing	TOC	14:30

SAMPLE

Depth	Advancement Time	No.	Depth	Fracture/Water Bearing?	LOG	Description	Construction
		S-12	121'-124'	water zone			
		S-13	124'-127'				
		S-14	128'-130'				
						bottom of hole	
120							
140							
160							
180							
200							
220							

REMARKS:

1. Picked up water at 124'
2. Blow test at 124' = 30 gpm
3. Blow test at 130' = 20 gpm

NHWS & PCC BEDROCK WELL LOG

SITE Mottolo Site

Raymond

Boring No: MO-6

Sheet: 1 **of:** 2

Date: 7/4/85

Drilling Company: Tasker Well Company

Boring Location: Off of Randy Lane

Foreman: Daniel Tasker

Ground/Casing Elevation:

Geologist/Engineer: John Regan

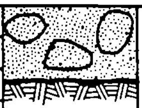
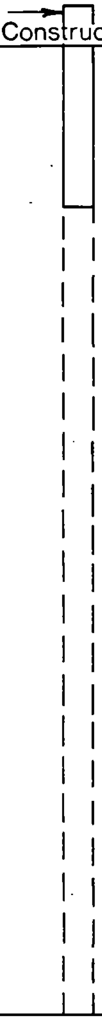
Starting Date: 7/4/85 **Ending Date:** 7/4/85

SAMPLER

Type Chips screened from drilling water

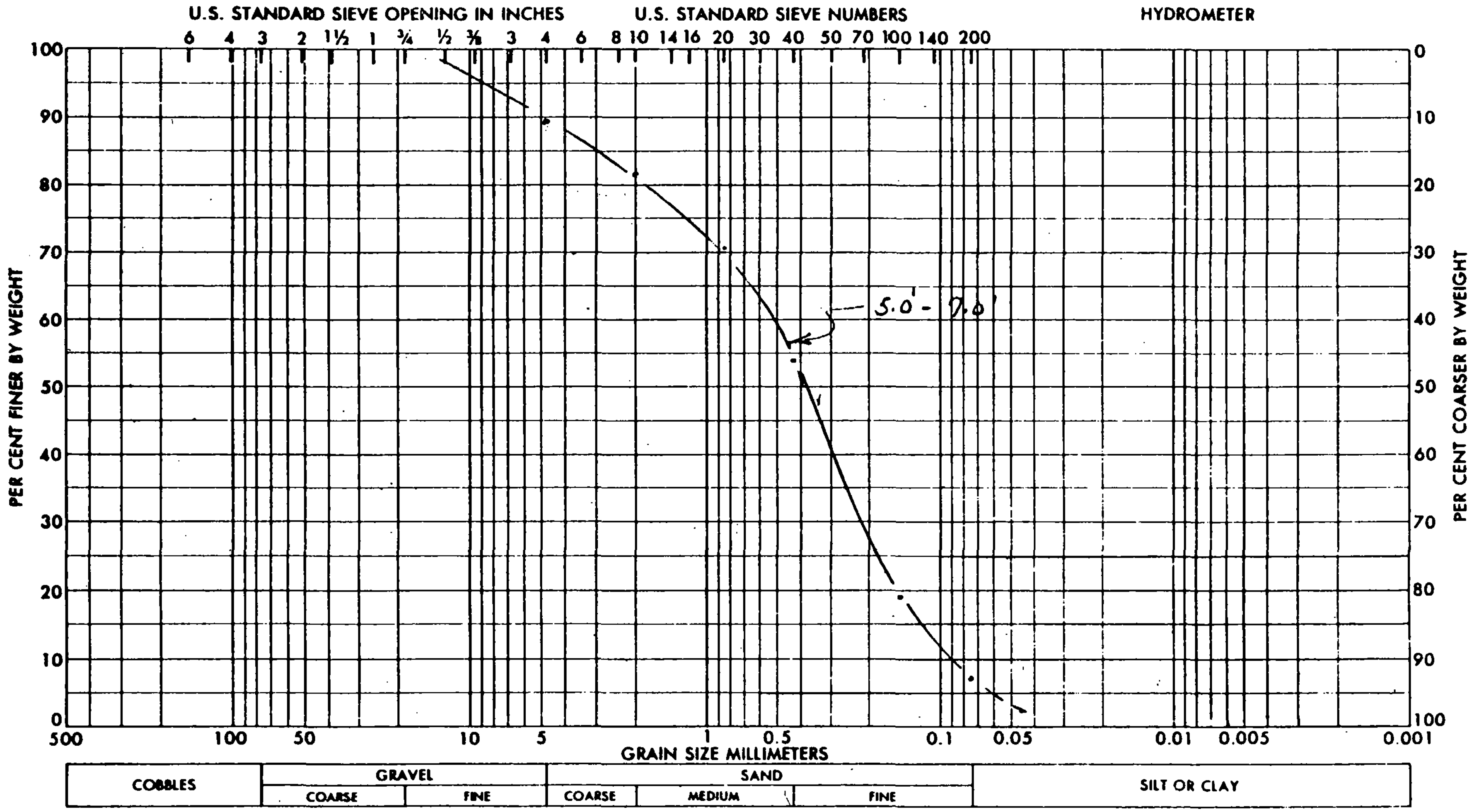
Groundwater Readings

Date	Depth to Water	Ref. Pt.	Time/Stabilization

Depth	Advancement Time	SAMPLE No.	SAMPLE Depth	Fracture/Water Bearing?	LOG	Description	Construction
		S-1	1'-3'			Fine sand and silt, some rocks (glacial till)	
						bedrock	
20		S-2	24'-27'			Biotite schist	
		S-3	33'-36'				
40							
		S-4	50'-56'				
60		S-5	64'-67'				
		S-6	70'-73'				
		S-7	75'-78'				
80		S-8	80'-82'				
		S-8a	87'-90'				
		S-8b	92'-95'				
		S-9	99'-102'				
100		S-10	104'-107'				
		S-11	107'-113'				
120		S-11a	113'-119'				

REMARKS:

1. Rock chips collected from drilling water using a screen.
2. 20'8" of six inch steel casing with drive shoe installed, 12" of stick-up.
3. Used bentonite slurry drilling through the overburden with tricone rollerbit.



SAMPLE NO.	ELEV OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
MO-3.	5.0'-7.0'	Silty Sand (27-40-35-21)				

GRADATION CURVES

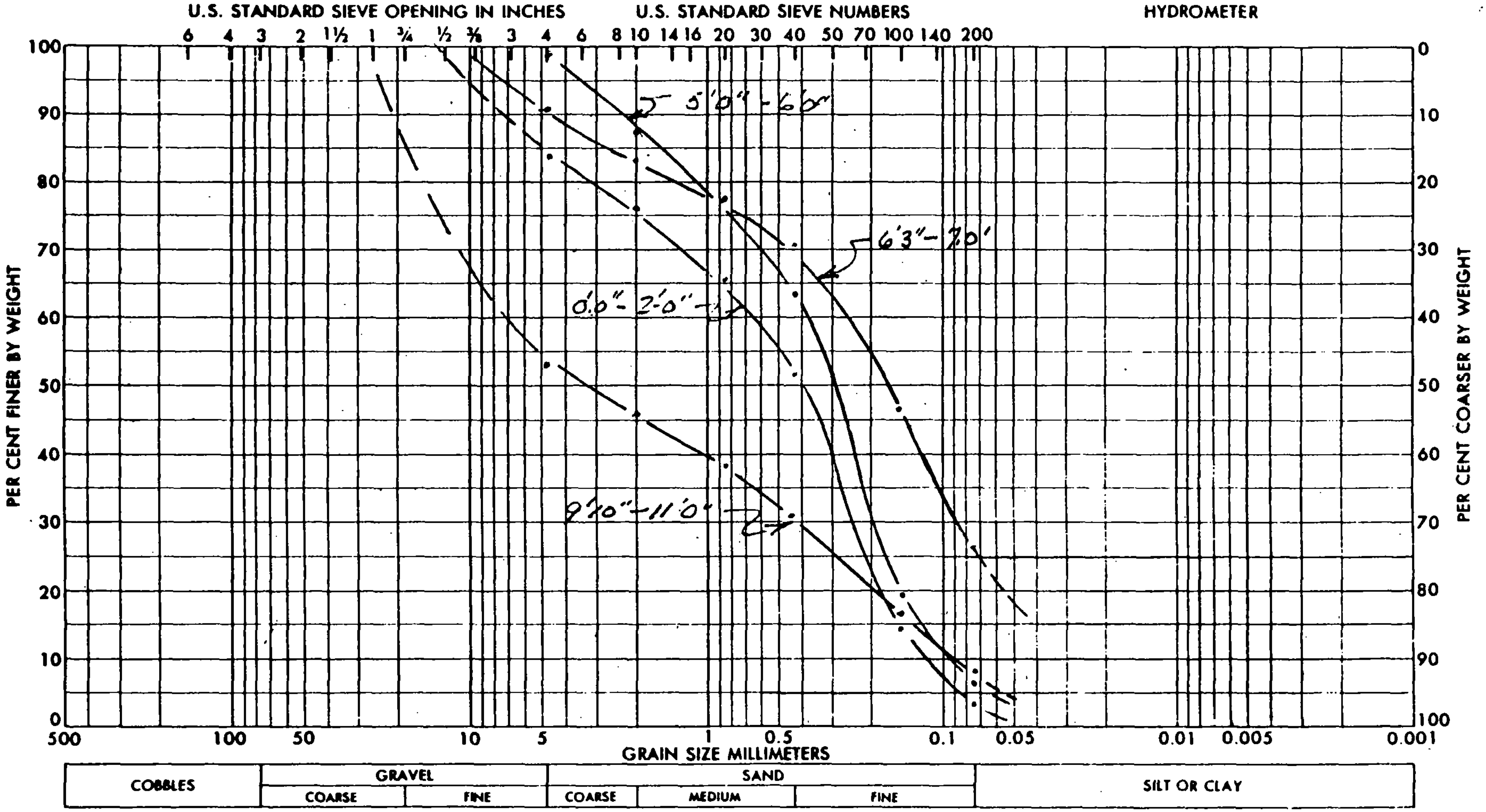
PROJECT Mottolo Site

AREA Raymond, NH

BORING NO. MO-3

DATE 6-28-85

SOILS ENGINEERING, INC.
Main Street
Charlestown, N. H. 03603
(603) 826-5873



SAMPLE NO.	ELEV OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
MO-4	0'0"-2'0"	Sand (1-1-3-7)				
	5'0"-6'0"	Sand - Tr. Silt				
	6'3"-7'0"	Fine Silty Sand(11-15-31-39)				
	9'10"-11'0"	Silty Gravel (31-45-33-35)				

GRADATION CURVES

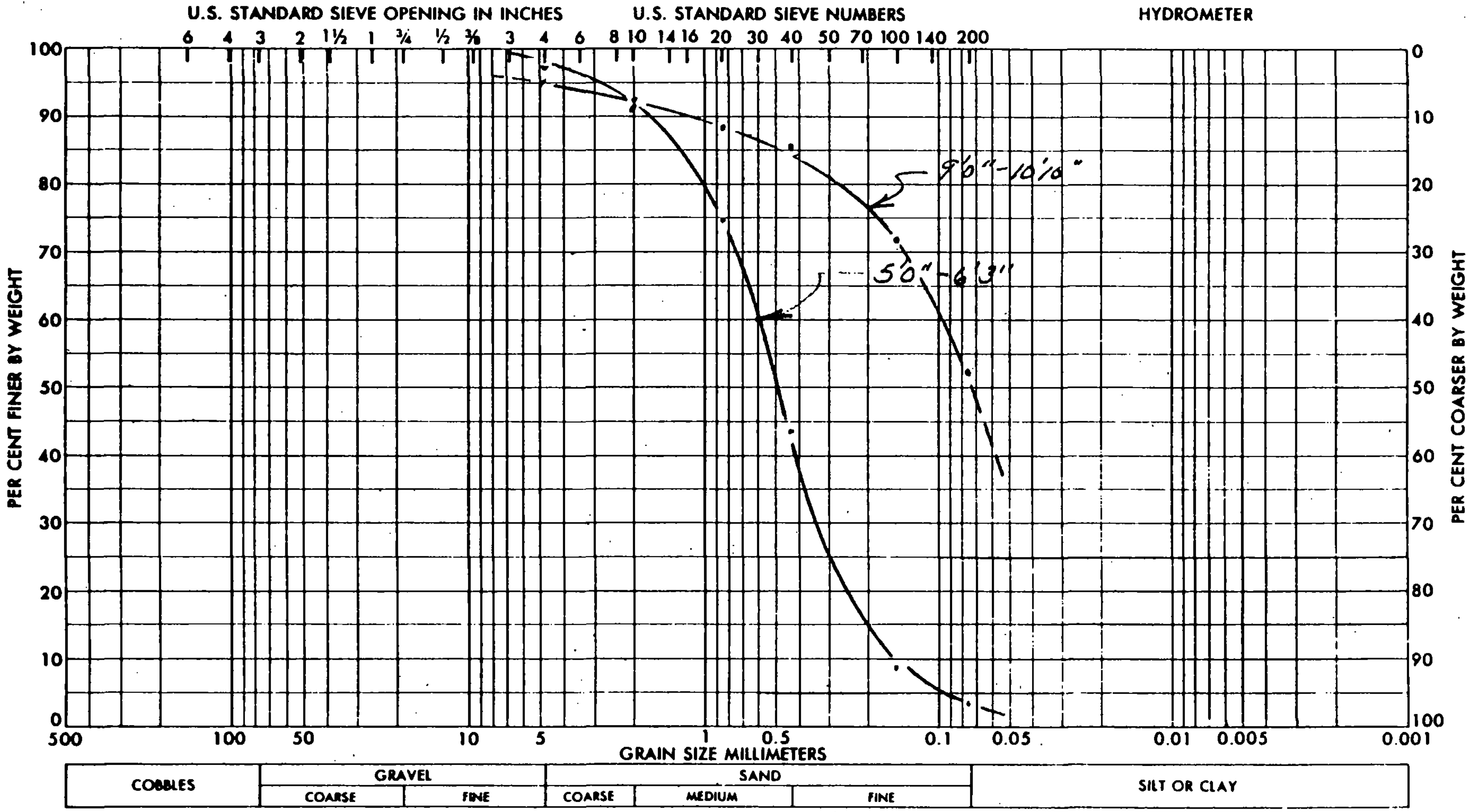
PROJECT Mottolo Site

AREA Raymond, NH

BORING NO. MO-4

DATE 7-3-85

SOILS ENGINEERING, INC.
Main Street
Charlestown, N. H. 03603
(603) 826-5873



SAMPLE NO.	ELEV OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
MO-5S	5'0"-6'3"	Sand (3a) (8-10-10-13)				
	9'0"-10'10"	Sandy Silt(2a) (13-32-48-42)				

GRADATION CURVES

PROJECT Mottolo Site

AREA Raymond, NH

BORING NO. MO-5S

DATE 7-8-85

SOILS ENGINEERING, INC.
Main Street
Charlestown, N. H. 03603
(603) 826-5873

Mottolo Site - Raymond
Detailed Description of Bedrock Samples

MO-1 NX Core

Run #1 5.5'-8.7' 34" of recovery

Fine grained granite, fractures and breakage at 6', intersection of subhorizontal and 45° fractures, both iron stained.

6.5' breakage, 45° fracture, along weathered biotite stringer, iron staining on both qtz. and biotite, biotite very weathered. Fracture orientation 50-75°, nearly perpendicular orientation to fracture at 6'.

6.75' subhorizontal break, minor iron staining.

7' subhorizontal break, minor iron staining, coarser grained qtz., vertical breakage to 7'2".

7'2" horizontal break, iron stained, vertical fracture from above continues, but unbroken and cemented to 7'3".

7'3" subhorizontal breakage, heavy iron stain smoothed face, possible slickenside, vertical fracture from above continues, less cementing and more iron-rust color from weathering of biotite.

7'4" subhorizontal break, iron stain on half of surface.

7'4"-7'7" vertical breakage, light iron stain.

7'7" horizontal breakage, no iron stain.

7'7"-7'9" 2 near vertical intersecting breakages, one stained, one not, ending at subhorizontal break, no iron stain.

7'9"-8'7" vertical iron stained, biotite weathered break along fracture ending at horizontal break - no weathering or staining.

Run #2 8'7"-9'11" 20" of recovery.

8'7"-8'8" vertical fracture continues to breakage at 8'8", iron stained but biotite not weathered, horizontal break at 8'8".

8'8"-9' vertical break continues along weathered and stained fracture to end at horizontal break - light staining, new high angle fracture starts ≈8'10", rough surface, dark staining.

9'-9'2" both fractures continue to subhorizontal dark stain and weathered break. Old vertical fracture stops new one, continues on.

9'2"-9'5" dark stain and weak fracture ends at subhorizontal break.

9'5"-9'6" core broken into 3 pieces, all with heavy iron stain and weathered biotite.

9'6"-9'11" coarse grained granite iron stain surface where pieces are missing from sides of core. Heavy, black stain on high angle fracture beginning at 9'8" continuing to end at clean break.

Run #3 9'11"-12'4" Rec 26"

9'11"-10'4" coarse grained granite ending at clean break along biotite zone, no stain or weathering.

10'4"-10'10" 45° fracture, stained, slickensided (?), weathered biotite, finer grained granite than above, small garnets in breakage face at 10'11".

10'10"-11'2" granite, open fracture at 11'1 1/2" broken open along biotite zone, weathered, iron stained, fractures starts at a 45° angle then changes to horizontal 2/3 of way thru core.

11'2"-11'7" iron stained horizontal fracture at beginning, ending in 45° open, weathered and iron stained fracture.

11'7"-11'11" Biotite zone, open fractures at 11'9 1/2" and 11'11", stained and weathered, 30° (from horizontal) fracture face at bottom.

11'-11"-12'9" fine grained granite ending with 30° from horizontal iron stained fracture face.

12'9"-13'1 1/2" fine grained granite ending with iron and black stained, weathered fracture, 30° from horizontal.

13'1 1/2"-13'4" fine grained granite ending with 45° open quartz x-lls, iron stain, ending at 30° from horizontal iron stained fracture.

13'4"-13'9" fine grained granite ending with subhorizontal stained fracture.

13'9"-14'1" same as above.

Run #5 14'7"-18'8" Rec 47"

14'1"-14'5 1/2" rough angular break along stained zone, 60° from horizontal open fracture at 14'2 1/2" partially recemented, ending with 40° break - no stain.

14'5 1/2"-14'9 1/2" coarse grained granite ending with irregular break.

14'9 1/2"-16'1/2" fine grained granite with increasing fine grained biotite concentration to depth, ending with 50° angle iron stained fracture completely in biotite zone.

16'1/2"-18'3 1/2" fine grained biotite zone, fracture/break at 17'7", no iron stain.

<u>MO-2</u> NX Core Barrel

<u>Run #1</u> 10'-12'3", Rec 27"

fine grain biotite schist - almost gneissic in pattern, 3 equally spaced breaks, no fractures.

<u>Run #2</u> Rec 10", 9", 7"

fine grained biotite and quartz pieces, 1/2" to 5" in length, all angular in breakage, some with iron staining, coarse grain quartz with rugs, ending in fine grained hornblend (?).

<u>MO-3</u> NX Core Barrel

<u>Run #1</u> Rec 33", 9", 0, 10"

basalt, fractured throughout the core, vertical to horizontal fractures, continuous to noncontinuous, iron-like staining and coating, largest intact piece 7 1/2" long, rest are in the 1" to 3" range, grades from dark black-grey at top to beige-grey color at bottom of core.

<u>MO-4</u> NX Core Barrel

<u>Run #1</u> 9'6"-12'8"

9'6"-9'10" fine grained milky quartz with some biotite, hornblend and garnet ending with fracture, 30° from horizontal slightly iron stained.

9'10"-10'1 1/2" same as above ending with horizontal break.

10'1 1/2"-12'8" mscl. fine grained biotite schist pieces ending with a 3" coarse grained milky quartz chunk.

<u>Run #2</u> 14'6"-15'6"

3 pieces of about 8" total of fine grained biotite/quartz mixture, some iron staining on breakage surfaces.

MO-5 NX Core Barrel

12'6"-13'1"

4 pieces, fine to no grain, white to greenish hue quartz, some biotite.

MO-6 Drilling Chips

depth (ft.)	description
24-27	white to light green, angular coarse chips of quartz, some chlorite, trace amounts garnet.
33-36	medium to coarse tabular chips of biotite schist, light grey to grey, few qtz. chips, some iron staining on smaller chips.
50-56	medium size chips, 70% dark biotite schist, 30% qtz. chlorite facing on <10% of chips w/flat (slickensided?) surfaces.
64-67	white to light green, angular medium chips of qtz. and chlorite, some biotite schist chips.
70-73	medium size chips, 60% biotite schist, 40% milky qtz.
75-80	medium size chips, 60% biotite schist, 40% milky to clear qtz.
80-82	medium to coarse biotite schist chips, iron staining on many of the larger chips (1/2 to 3/4 inch).
87-90	medium, tabular, biotite schist chips, <5% milky qtz.
92-95	medium round biotite schist chips, some larger (1/2 inch) tabular chips, no iron staining.
99-102	fine, 60% milky qtz., 40% biotite schist.
104-107	biotite, qtz., chlorite schist, fine to medium size chips.
107-113	medium to coarse sized biotite schist chips, some tabular chips with iron stained sides, 15% qtz.
113-119	medium to coarse sized biotite schist chips, no iron stains, <5% qtz.
121-129	medium to coarse biotite-chlorite schist, fracture faces with iron staining, <1% milky to pinkish qtz.

124-127	medium to coarse (>1 inch size chips) of biotite schist, larger chips have chlorite faced slickensided surfaces. Light tan to dark brown-red, large chips of very fine grained material - some of it weathered or altered at the surface. Looks to be a large fracture zone with some secondary mineralization and infilling.
128-130	medium to coarse biotite schist, some iron staining, <10% qtz.

GOLDBERG · ZOINO & ASSOC., INC. GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT MOTTOLO HAZARDOUS WASTE RAYMOND, NEW HAMPSHIRE	REPORT OF BORING NO. B-2 SHEET 1 OF 1 DATE 5/6/80 FILE A-2676

BORING CO. Con-Tec, Inc.
FOREMAN R. Smiley
G-Z-A ENGINEER Charlie Lindberg

BORING LOCATION See Location Plan
GROUND ELEV. 242.3
DATE START 5/6/80 DATE END 5/7/80

CASING
SIZE: 2½"
HAMMER: 300 lb.
FALL: 24"

SAMPLER
TYPE: Ax Core
HAMMER Barrel lb.
FALL:

OTHER:

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION TIME

DEPTH	CAS. BL. /FT.	SAMPLE				STRTA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
		NO.	PEN./REC.	DEPTH	BLOWS/6"			
						SAND AND GRAVEL 4.0	Brown fine to coarse SAND, and fine to coarse Gravel, some Silt	
5 10 15						GLACIAL TILL 16.6	Light brown coarse to fine GRAVEL, some fine to coarse Sand, little Silt	
20 25						BEDROCK BIOTITE GNEISS 27.7	Moderately fractured biotite gneiss (1) Packer pressure test (PT-2) attempted from 18'-23'--unable to attain seal. (2) Packer pressure test (PT-1) run from 22'-27'. Flow = Flow = 2.2x10⁻6cfs at 10 psi (k = 0.2 ft/yr)	
							Bottom of boring at 27.7.	

REMARKS:(1) Boring is a redrilling of Con-Tec boring B-2 (July 1979). Sample descriptions from Con-Tec log. Casing was driven to rock and hole was cleaned out with roller bit. Bottom of hole was advanced 0.7 ft. beyond prev. depth. (2) Barcad multilevel sampling system installed in completed borehole.

GOLDBERG · ZOINO & ASSOC., INC.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
RAYMOND HAZARDOUS WASTE SITE
RAYMOND, NEW HAMPSHIRE

REPORT OF BORING NO. B-4
SHEET 1 OF 1
DATE
FILE A-2676

BORING CO. Con-Tec, Inc.
FOREMAN R. Smiley
G-Z-D ENGINEER C. Lindberg
BORING LOCATION See Location Plan
GROUND ELEV.
DATE START 5/7/80 DATE END 5/7/80

CASING
SIZE: 2½"
HAMMER: 300 lb.
FALL: 24"

SAMPLER
TYPE: Split spoon OTHER:
HAMMER 140 lb.
FALL: 30"

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION TIME

DEPTH	CAS. BL. /FT.	SAMPLE NO.	PEN./REC.	DEPTH	BLOWS/6"	STRATA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
		S-1	18/--	0-1.5	1-1-3	FILL 2.0	Brown fine to coarse SAND, some Silt, little Organic Silt, roots, etc. (FILL)	
5		S-2	18/ --	5-6.5	21-33-44	GLACIAL TILL	Gray-brown fine to coarse SAND and coarse to fine GRAVEL, little-Silt, occasional boulders.	
10		C-1	4.2/--	8.7-12.9	AX Core	12.9'	Cored Boulders within Till Matrix.	
		C-2	1.2/1,2	12,9-14.1	AX Core		Recovery = 100%	1
15		C-3	5.0/4.8	14.1-19.1	AX Core	BEDROCK (GNEISS)	Recovery = 96% Very slightly weathered, intact Gneiss with veins of quartzite	
20		C-4	5.0/4.7	19.1-24.1	AX Core	24.1'	Recovery = 94%	
25							Bottom of boring at 24.1 ft. a) ℄ BarCad 4-2 @ 20.5 ft. b) Tip of 1¼" steel wellpoint at 10.0 ft.	2
30								

REMARKS: 1. Packer pressure test run from 14.5 to 24.1 feet. Zero flow after 15 minutes at 10 psi.
2. BarCad multilevel groundwater sampling system installed in completed borehole.

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GOLDBERG · ZOINO & ASSOC., INC. GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT RAYMOND HAZARDOUS WASTE SITE RAYMOND, NEW HAMPSHIRE	REPORT OF BORING NO. JB-5 SHEET 1 OF 1 DATE 5/6/80 FILE A-2676

BORING CO. GZA
FOREMAN
G-Z-D ENGINEER C. Lindberg
BORING LOCATION See Location Plan
GROUND ELEV.
DATE START 5/6/80 DATE END 5/6/80

CASING
SIZE:
HAMMER: lb.
FALL:

SAMPLER
TYPE:
HAMMER lb.
FALL:

OTHER:

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION TIME
5/7	1.0	O.W.	1 day

DEPTH	CAS. BL. /FT.	SAMPLE				STRTA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
		NO.	PEN./REC.	DEPTH	BLOWS/6"			
						PEAT 0.5	Dark brown decayed vegetation mixed with organic Silt.	
1 2 3 4 5						Silty SAND 5.3'	Gray fine to medium SAND, some Silt.	
6 7 8							Refusal -- SAND, GRAVEL, SILT Groundwater observation well installed. Total length of 1¼" pipe = 8.1 ft. Johnson 1¼' 36" steel wellpoint from 3.0' to 5.7'. Stick up = 2.4 ft. Bentonite surface seal.	

REMARKS: 1. Boring advanced by jetting with 3/4 inch steel pipe. Sample descriptions inferred from examination of washed material.

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GOLDBERG · ZOINO & ASSOC., INC. GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT RAYMOND HAZARDOUS WASTE SITE RAYMOND, NEW HAMPSHIRE	REPORT OF BORING NO. JB-6 SHEET 1 OF 1 DATE 5/6/80 FILE A-2676

BORING CO. ______

FOREMAN ______

G-Z-D ENGINEER ______

BORING LOCATION See Location Plan

GROUND ELEV. ______

DATE START 5/6/80 DATE END 5/6/80

CASING

SIZE: ______

HAMMER: ______ lb.

FALL: ______

SAMPLER

TYPE: ______

HAMMER ______ lb.

FALL: ______

OTHER:

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION- TIME
5/7	0.75	O.W.	1 day

DEPTH	CAS. BL. /FT.	SAMPLE NO.	SAMPLE PEN./REC.	SAMPLE DEPTH	SAMPLE BLOWS/6"	STRTA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
						PEAT 0.5'	Decayed vegetation mixed with Organic Silt -- PEAT.	
1 2 3 4						Silty SAND 4.0'	Gray and brown fine to medium SAND, some Silt.	
						GLACIAL TILL 5.0'	SAND, GRAVEL, and SILT (very dense)	
5 6 7 8							Refusal Groundwater observation well installed. Total length 1¼" steel pipe = 8.1. Johnson 1¼" x 36" steel wellpoint 2.3' - 5.0'. Stickup = 3.1' Bentonite surface seal.	

REMARKS: 1. Boring advanced by jetting with 3/4" steel pipe. Sample descriptions inferred from examination of washed material.

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GOLDBERG · ZOINO & ASSOC., INC.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
RAYMOND HAZARDOUS WASTE SITE
RAYMOND, NEW HAMPSHIRE

REPORT OF BORING NO. JB-7
SHEET 1 OF 1
DATE 5/6/80 FILE A-2676

BORING CO. GZA
FOREMAN
G-Z-D ENGINEER C. Lindberg

BORING LOCATION See Location Plan
GROUND ELEV.
DATE START 5/6/80 DATE END 5/6/80

CASING

SIZE:
HAMMER: lb.
FALL:

SAMPLER

TYPE:
HAMMER lb.
FALL:

OTHER:

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION TIME
5/7	-0.45	O.W.	1 day
	(0.45'	above G.S	)

DEPTH	CAS. BL. /FT.	SAMPLE				STRTA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
		NO.	PEN./REC.	DEPTH	BLOWS/6"			
						PEAT 1.0'	Dark brown to black PEAT (Decayed vegetation)	
1								
2								
3						SAND and SILT	Gray fine to medium SAND and SILT.	
4								
5								
6						6.1'	Fine to coarse SAND, GRAVEL, SILT	
							Refusal	
7							Groundwater observation well installed. Total length 1¼" steel pipe = 8.1. Johnson 1¼" x 36" steel wellpoint 3.4'-6.1' Stickup = 2.0' Bentonite surface seal.	
8								

REMARKS:

1. Boring advanced by jetting with 3/4" steel pipe. Sample descriptions inferred from examination of washed material.

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GOLDBERG · ZOINO & ASSOC., INC.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
RAYMOND HAZARDOUS WASTE SITE
RAYMOND, NEW HAMPSHIRE

REPORT OF BORING NO. JB-8
SHEET 1 OF 1
DATE 5/6/80 FILE A-2676

BORING CO. GZA
FOREMAN
G-Z-D ENGINEER C. Lindberg

BORING LOCATION See Location Plan
GROUND ELEV.
DATE START 5/6/80 DATE END 5/6/80

CASING
SIZE:
HAMMER: lb.
FALL:

SAMPLER
TYPE:
HAMMER lb.
FALL:

OTHER:

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION TIME
5/7	0	O.W.	1 day

DEPTH	CAS. BL. /FT.	SAMPLE				STRTA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
		NO.	PEN./REC.	DEPTH	BLOWS/6"			
						PEAT 0.5	Dark brown PEAT.	
1 2						Silty SAND 3.0	Gray fine SAND, some Silt.	
3						SAND and GRAVEL 4.0	Brown fine to coarse SAND, some Gravel.	
4 5 6						SAND and SILT 6.8'	Yellow-brown fine SAND and SILT.	
7 8							Refusal Groundwater observation well installed. Total length 1¼" steel pipe = 8.1. Johnson 1¼" x 36" steel wellpoint 4-6.8' Stickup = 1.3. Bentonite surface seal.	

REMARKS: 1. Boring advanced by jetting with 3/4" steel pipe. Sample descriptions inferred from examination of washed material.

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GOLDBERG · ZOINO & ASSOC., INC. GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT RAYMOND HAZARDOUS WASTE SITE RAYMOND, NEW HAMPSHIRE	REPORT OF BORING NO. JB-9 SHEET 1 OF 1 DATE 5/6/80 , FILE A-2676

BORING CO. ______

FOREMAN ______

G-Z-D ENGINEER ______

BORING LOCATION ______

GROUND ELEV. ______

DATE START 5/6/80 DATE END 5/6/80

CASING

SIZE: ______

HAMMER: ______ lb.

FALL: ______

SAMPLER

TYPE: ______

HAMMER ______ lb.

FALL: ______

OTHER:

GROUNDWATER READINGS

DATE	DEPTH	CASING AT	STABILIZATION TIME
5/7	0.1	O.W.	1 day

DEPTH	CAS. BL. /FT.	SAMPLE NO.	SAMPLE PEN./REC.	SAMPLE DEPTH	SAMPLE BLOWS/6"	STRTA CHG. and GEN. DESC.	SAMPLE DESCRIPTION	NOTE
						PEAT 1.0	Dark brown PEAT.	
1 2						Silty SAND 3.0'	Gray fine SAND, some Silt.	
3						TILL 4.0'	Brown fine to coarse SAND, GRAVEL, SILT (Dense)	
4 5 6 7 8							Refusal Groundwater observation well installed. Total length 1¼" steel pipe = 8.1. Johnson 1¼" x 36" steel wellpoint 1.3' - 4.0' Stickup = 4.0' Bentonite surface seal.	

REMARKS:

a. Boring advanced by jetting with 3/4" steel pipe. Sample descriptions inferred from examination of washed material.

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

CONCORD, N.H. 03301
603-224-0020

PROJECT MOTTOLO DUMP SITE

LOCATION RAYMOND, N.H.

HOLE NO. 1

DATE STARTED 7/13/79 COMPLETED 7/13/79

SURF. ELEV.

GROUND WATER DRY

JOB NO. 7922

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Light brown, dry SILT and fine to coarse GRAVEL, COBBLES, trace fine to coarse sand (fill)
5.0'		5-9	1	5'-7'	Light brown, dry, medium-dense, fine SAND and SILT, trace fine to medium gravel (clean)
					Top of rock @ 9.0'
10.0'		75/0			Run #1 9.0' - 11.0' NWL Recovery 1.55' - 78% ATF - 4 BIOTITE GNEISS 11.0'
15.0'					Run #2 11.0' - 16.0' NWL Recovery 5.0' - 100% ATF - 5 BIOTITE FELDSPAR GNEISS 16.0'
20.0'					Run #3 16.0' - 19.0' NWL Recovery 3.25' - 108% ATF - 5 BIOTITE FELDSPAR GNEISS 19.0'
					BOTTOM OF BORING 19.0'

NOTE:
1. NWL = No water loss
2. ATF = Average time in minutes to drill one foot of rock
3. 3' Wellpoint installed in drill hole with 17' of 1½" riser pipe

TEST BORING LOG

CON-TEC., INC.
P.O. BOX 1153
CONCORD, N.H. 03301
603-224-0020

PROJECT MOTTOLO DUMP SITE

LOCATION RAYMOND, N.H.

HOLE NO. 2

DATE STARTED 7/13/79 COMPLETED 7/16/79

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 9.7'

JOB NO. 7922

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		6-9	1	0-2'	Light brown, dry, medium-dense, fine to coarse SAND and fine to coarse GRAVEL, some silt 4.0'
		12-14			
5.0'					
		100/0	2	5'-5.5'	CORED COBBLE 5'-5.5' Light brown, wet, very dense, coarse to fine GRAVEL, COBBLES, BOULDERS, some fine to coarse sand, little silt
10.0'					
		17-26	3	10'-11.5'	
		32			
15.0'					
		35-69	4	15'-16.4'	Top of rock @ 16.6'
		100/.4			Drilled into rock with Quarry Bit 18.0'
20.0'					Run #1 18.0' - 22.0' SWL Recovery 3.6' - 90% ATF - 4 BIOTITE GNEISS 22.0'
25.0'					Run #2 22.0' - 27.0' SWL Recovery 5.0' - 100% ATF 4-5 BIOTITE GNEISS and green-gray QUARTZ-CHLORITE PHYLLITE 27.0'
30.0'					BOTTOM OF BORING 27.0'

NOTE:

1. SWL = Some water loss @ 21.5'
2. ATF = Average time in minutes to drill one foot of rock
3. 3' Wellpoint installed in drill hole with 24.5' of 1¼" riser pipe

TEST BORING LOG

CON–TEC., INC.
P.O. BOX 1153
CONCORD, N.H. 03301
603-224-0020

PROJECT MOTTOLO DUMP SITE

LOCATION RAYMOND, N.H.

HOLE NO. 3

DATE STARTED 7/16/79 **COMPLETED** 7/16/79

SURF. ELEV.

GROUND WATER DRY

JOB NO. 7922

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 **OF** 1

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		3-6 14-21	1	0-2'	Light brown, dry, dense, fine to medium SAND and SILT, little fine to coarse gravel, cobbles
5.0'					TOP OF ROCK @ 3.5'
					Run #2 3.5' - 8.5' NWL Recovery 5.0' - 100% ATF - 4
10.0'					BIOTITE GNEISS 8.5'
					Run #2 8.5' - 13.5' NWL Recovery 4.6' - 92% ATF - 5 BIOTITE GNEISS 13.5'
15.0'					BOTTOM OF BORING 13.5'
					NOTE: 1. NWL = No water loss 2. ATF = Average time to drill one foot in minutes 3. 3' Wellpoint installed in drill hole with 9.5' of 1¼" riser pipe

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-1
FILE No. A-2761
DATE 7/22/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80^{0}

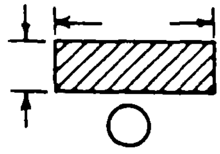
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 252.3'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY.	BOULDER COUNT CLASS	REMARK No.
0		Brown fine to coarse SAND, some coarse to fine Gravel, occasional boulders with pockets of fine SAND and SILT. (Glacial Till)	D			
1'			D			
2'			D			
3'						
4'	4.3'					
5'		BEDROCK AT 4.3 feet.				
6'						
7'						
8'						
9'						
10'						
11'						
12'						
13'						
14'						

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by rock at 4.3 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS
F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT
E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER
ELAPSED TIME TO READING (HRS.)
▽ G.W.L.

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-2
FILE No. A-2671
DATE 7/22/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80^0

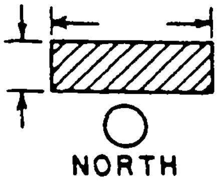
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 250.5
TIME STARTED
TIME COMPLETED

DEPTH	SOIL DESCRIPTION		EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0		Brown fine to medium SAND, trace Silt (disturbed).	E		
1'			E		
2'			E		
3'	3.5'		E		
4'	▼ 5.2'	Stratified, olive brown fine SAND and SILT.	E		1
5'			E		2
6'	S-1		E		
7'	7.9'		E		3
8'		Bedrock at 7.9 feet.			
9'					
10'					
11'					
12'					
13'					
14'					

REMARKS:
1. Groundwater at 5.2 ft. after 4 hours.
2. Jar sample obtained from 6.3-7.5 ft. for organic vapor analysis.
3. Groundwater observation well installed in test pit. Tip of Johnson 1¼"x30"x36" galvanized steel well point at 7.5 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

E - EASY
M - MODERATE
D - DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)	▽ G.W.L

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-3
FILE No. A-2761
DATE 7/22/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

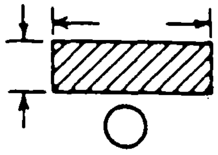
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE MODEL
CAPACITY 1/4 cu.yd. REACH 15 ft

GROUND ELEV. 248.2'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	0.9'	Brown fine to coarse SAND and GRAVEL, trace Silt.			
1'			D		
2'		Brown fine to coarse SAND and GRAVEL, little Silt, boulders (GLACIAL TILL)	D		
3'			D		
4'	▼ 5.1'		D		1
5'	6.2'		D		
6'		Bottom of exploration at 6.2 ft.			2
7'					
8'					
9'					
10'					
11'					
12'					
13'					
14'					

REMARKS:
1. Groundwater flowing into hole at 5.1 ft.
2. Excavation stopped by large boulders or bedrock at 6.2 ft.

TEST PIT PLAN



NORTH

VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)	G.W.L.

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-4
FILE No. A-2761
DATE 7/22/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

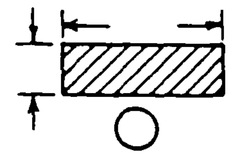
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 244.9'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0		Brown fine to coarse SAND and GRAVEL, some boulders, little Silt.	↑		
1'	1.1'		D		
2'		Brown medium to coarse SAND and GRAVEL, little Silt, boulders.	↓		
3'	3.2'				
4'					
5'		Gray medium to coarse SAND and GRAVEL, some boulders, little Silt (GLACIAL TILL)			
6'					
7'	▼7.0				1
	7.6'				2
8'		Bottom of exploration at 7.6' (Refusal)			
9'					
10'					
11'					
12'					
13'					
14'					

REMARKS:
1. Groundwater flowing into hole at 7.0 ft.
2. Excavation stopped by large boulders or rock at 7.6 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS
F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT
E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER
ELAPSED TIME TO READING (HRS.)
▽ G.W.L

TEST PIT FIELD LOG

GOLDBERG,ZOINO, DUNNICLIFF & ASSOCIATES,INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-5
FILE No. A-2761
DATE 7/22/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80^0

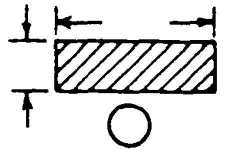
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE MODEL
CAPACITY 1/4 cu.yd. REACH 15 ft

GROUND ELEV. 260.6'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARI No.
0	0.6'	Dark brown fine to medium SAND, little Silt -(TOPSOIL)	E		
1'	2.1'	Brown fine to medium SAND, some Silt.	D		
2' 3' 4'	4.3'	Brown fine to coarse SAND and GRAVEL, little Silt, occasional boulders (GLACIAL TILL).	↓		
5'	5.6'	Rust brown fine to coarse SAND and GRAVEL, little Silt, some boulders (GLACIAL TILL).			
6' 7'	7.3'	Brown fine to coarse SAND and GRAVEL, little Silt, some boulders (GLACIAL TILL).			1
8'		Bottom of Exploration at 7.3 ft.			2
9'					
10'					
11'					
12'					
13'					
14'					

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by large boulders or bedrock at 7.3 ft.

TEST PIT PLAN



NORTH

VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V- VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)
G.W.L

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-6
FILE No. A-2761
DATE 7/22/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

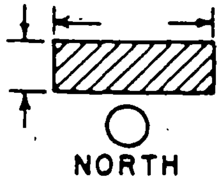
GROUND ELEV. 260.4'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMA No.
0	0.4'	Dark brown fine to medium SAND, little Silt -(TOPSOIL.)			
1' 2'	2.8'	Brown fine to coarse SAND and GRAVEL, little Silt, some boulders.	M		
3' 4' 5' 6' 7' 8' 9'	9.6'	Gray-brown fine to coarse SAND and GRAVEL, little Silt, occasional cobbles (GLACIAL TILL).	D		3
10' 11' 12' 13' 14'		Bottom of exploration at 9.6 ft. (Refusal)			1 2

REMARKS:

1. Groundwater not encountered.
2. Excavation stopped by large boulders or bedrock at 9.6 ft.
3. Black polyethylene water pipes encountered at 4.1 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
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GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)
G.W.L

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP- 7
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80^{0}

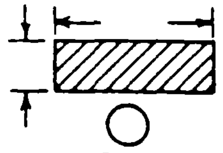
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE MODEL
CAPACITY 1/4 cu.yd. REACH 15 ft

GROUND ELEV. 258.8'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMAR No.
0					
1'		Dark brown grading to yellow-brown fine SAND, little Silt, (TOPSOIL/SUBSOIL.)	E		
2'	2.1'				
3'			D		
4'		Boulders in a brown fine to coarse SAND, some Gravel matrix.	↓		
5'					
6'	5.9'				
7'		Gray fine to medium SAND, little+ Silt, little Gravel, boulders (GLACIAL TILL).			
8'					
9'	9.5'				
10'		Bottom of exploration at 9.5 ft. (Refusal)			
11'					
12'					
13'					
14'					

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by large boulders or bedrock at 9.5 ft.

TEST PIT PLAN



VOLUME = ______ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS

F - FINE
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EXCAVATION EFFORT

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)
G.W.L.

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-8
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

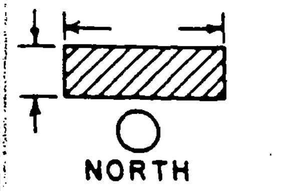
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 245.0'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	0.3'	Dark brown fine SAND, little Silt, roots etc. (TOPSOIL)	↑		
1' – 2'	2.5'	Yellow-brown fine SAND, little Silt (SUBSOIL.)	E		
3'	4.0'	Light brown fine to medium SAND, trace silt.	↓		
4' – 9'	10.0'	Gray fine SAND, some Gravel, little- Silt, trace medium to coarse Sand with cobbles and boulders (GLACIAL TILL).	D ↓		
10' – 14'		Bottom of exploration at 10.0 ft.			

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by large boulders or bedrock at 10.0 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
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F/M - FINE TO MEDIUM
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V- VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ▽ G.W.L.

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP- 9
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

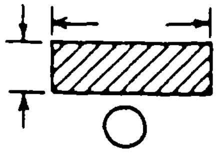
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 253.3'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY.	CLASS.	REMARK No.
0						
	0.6'	Dark brown fine SAND, little Silt -(TOPSOIL.)	↑			
1'						
2'		Brown fine to medium SAND, trace Silt, occasional boulders.	M			
3'	3.7'		↓			
4'						
5'		Brown fine to medium SAND, some Gravel, little Silt, few boulders. (Glacial Till)	D			
6'						
7'			↓			
8'	▼ (S-1)					1 2 3
9'	(W-1)	Bedrock at 8.4 ft.				
10'						
11'						
12'						
13'						
14'						

REMARKS:
1. Groundwater flowing into hole at 8.0 ft.
2. Soil and groundwater samples obtained for organic vapor analysis.
3. Irregular bedrock surface encountered. Depth to rock ranges from 7.2 ft. at east end of pit to 8.4' at center (deepest point).

TEST PIT PLAN



VOLUME = ______ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS
F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT
E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER
ELAPSED TIME TO READING (HRS)
▽ G.W.L

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-10
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80^{0}

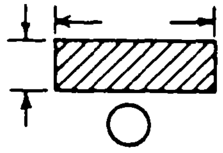
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 262.6'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMA Nc
0	0.5'	Dark brown fine SAND, little Silt, roots, etc. (TOPSOIL)	↑		
1' 2' 3'	3.5'	Boulders (1-4 ft. in diameter) in a light brown fine to medium SAND, little Gravel, trace Silt matrix.	D ↓		
4' 5' 6' 7' 8' 9' 10' 11' 12' 13' 14'		Bottom of exploration at 3.5 ft.			

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by large boulders at 3.5 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS
F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT
E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER
ELAPSED TIME TO READING (HRS.)
G.W.

TEST PIT FIELD LOG

GOLDBERG,ZOINO, DUNNICLIFF & ASSOCIATES,INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP- 10A
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

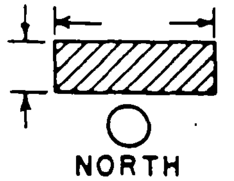
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 262.6'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT		REMAR No.
				QTY.	CLASS.	
0						
	0.7'	Dark brown fine SAND, little Silt, roots, etc.(TOPSOIL)				
1'						
2'		Broulders (1' to 4' (+) in diameter) in a light brown fine to medium SAND, little Gravel, trace Silt matrix.				
3'						
4'	4.4'					
		Bottom of exploration at 4.4 ft.				1 2 3
5'						
6'						
7'						
8'						
9'						
10'						
11'						
12'						
13'						
14'						

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by large boulders or bedrock at 4.4 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS
F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V- VERY
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BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT
E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)	▽ G.W.L

TEST PIT FIELD LOG

GOLDBERG, ZOINO, DUNNICLIFF & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-11
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

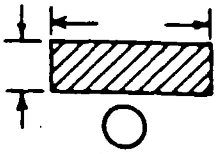
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft

GROUND ELEV. 262.0'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMAR No.
0	0.8	Miscellaneous FILL.	M		
1' 2' 3'	3.7'	Brown fine to medium SAND and BOULDERS. (FILL)	↓		
4'	4.1'	Dark brown fine SAND, some Silt, Organics (OLD TOPSOIL)			
5' 6' 7'	7.3'	Brown fine to medium SAND, few boulders.	M ↓		
8' 9'	9.7'	Brown fine to medium SAND, some Gravel, some Silt, occasional boulders (GLACIAL TILL)	P ↓		1 2
10' 11' 12' 13' 14'		Bottom of exploration at 9.7 ft. (Refusal)			

REMARKS:
1. Groundwater not encountered.
2. Excavation stopped by large boulders or bedrock at 9.7 ft.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS
F - FINE
M - MEDIUM
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EXCAVATION EFFORT
E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER
ELAPSED TIME TO READING (HRS.)
G.W.L

TEST PIT FIELD LOG

GOLDBERG,ZOINO, DUNNICLIFF & ASSOCIATES,INC.
GEOTECHNICAL CONSULTANTS

PROJECT
DESCRIPTION HAZARDOUS WASTE SITE
LOCATION RAYMOND, NEW HAMPSHIRE

TEST PIT No. TP-12
FILE No. A-2761
DATE 7/23/80

GZD ENGINEER C. Lindberg
WEATHER Clear, 80°

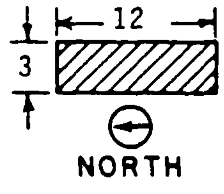
EXCAVATION EQUIPMENT
CONTRACTOR Marlyn Engineering
OPERATOR
MAKE
MODEL
CAPACITY 1/4 cu.yd.
REACH 15 ft.

GROUND ELEV. 263.1'
TIME STARTED
TIME COMPLETED

DEPTH		SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0		Brown fine to coarse SAND, some Gravel, with cobbles and and boulders (FILL)			
1'	1.8'				
2'					
3'		Gray fine to coarse SAND, some coarse to fine Gravel, little- Silt with cobbles and boulders (GLACIAL TILL)			
4'					
5'					
6'	6.7'				
7'		Bedrock surface			1 2
8'		8.2' S ←→ N			
9'					
10'					
11'					
12'					
13'					
14'					

REMARKS:
1. Groundwater not encountered.
2. Bedrock surface slopes to the north from a depth of 6.7 ft. at south end of pit to 8.2 ft. at north end.

TEST PIT PLAN



VOLUME = ________ cu.yd.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE	(TR.)	0 - 10%
LITTLE	(LI.)	10 - 20%
SOME	(SO.)	20 - 35%
AND		35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
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V - VERY
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BN. - BROWN
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EXCAVATION EFFORT

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.)	G.W.L

Summary of Residential Well Data
Mottolo Site, Raymond, New Hampshire

Lot No.	Address	Well Type	Depth (Feet)	Yield (gpm)
52-1	10 Blueberry Hill Road	Bedrock	125	unk.
52-2	12 Blueberry Hill Road	Bedrock	117	unk.
52-3	14 Blueberry Hill Road	Bedrock	200-225	unk.
52-4	16 Blueberry Hill Road	Bedrock	175	7-8
52-5	18 Blueberry Hill Road	Bedrock	unk.	unk.
52-6	20 Blueberry Hill Road	Bedrock	90	6
52-7	22 Blueberry Hill Road	Bedrock	unk.	low
52-8	24 Blueberry Hill Road	Bedrock	NA	NA
52-9	26 Blueberry Hill Road	Bedrock	125	unk.
52-10	40 Blueberry Hill Road	Bedrock	unk.	unk.
52-11	42 Blueberry Hill Road	Bedrock	160	15
52-13	44 Blueberry Hill Road	Bedrock	unk.	unk.
52-15	Monitoring Well MO-6	Bedrock	130	20-30
52-16	No Well on Lot			
52-17	No Well - house under construction			
52-18	No Well - house under construction			
52-19	No Well - house under construction			
52-20	No Well - house under construction			
52-21	No Well on Lot			
52-22	5 Huckleberry Road	Bedrock	136	5
52-23	No information on the well			
52-24	6 Huckleberry Road	Bedrock	162	8

Summary of Residential Well Data (continued)

Lot No.	Address	Well Type	Depth (Feet)	Yield (gpm)
52-25	No Well - house under construction			
52-26	8 Huckleberry Road - no Well information			
52-27	10 Huckleberry Road	Bedrock	250	unk.
52-28	No Well - house under construction			
52-29	Huckleberry Road - no Well information			
52-30	No Well on Lot			
52-31	Huckleberry Road	Bedrock	300	2.5
52-32	16 Huckleberry Road - no Well information			
52-40	No Well - house under construction			
52-41	18 Jennifer Lane	Bedrock	263	unk.
52-42	House under construction			
52-43	22 Jennifer Lane	Bedrock	180	6
52-44	House under construction			
52-45	Huckleberry Road	Bedrock	120	10
52-46	5 Jennifer Lane	Bedrock	300	4
52-47	Jennifer Lane	Bedrock	240	10
52-48	9 Jennifer Lane	Bedrock	250	12
52-49	Jennifer Lane	Bedrock	220	8
52-50	6 Jennifer Lane	Bedrock	140	30
52-51	8 Jennifer Lane	Bedrock	240	10
52-52	10 Jennifer Lane	Bedrock	260	16
52-53	1 Peach Tree Ct.	Bedrock	200	5

Summary of Residential Well Data (continued)

Lot No.	Address	Well Type	Depth (Feet)	Yield (gpm)
52-54	3 Peach Tree Ct.	Bedrock	250	50
52-55	4 Peach Tree Ct.	Bedrock	200	50
3	31 Blueberry Hill Road	Dug Overburden	16	unk.
4	No Well on Lot			
5	No Well on Lot			
6	No Well on Lot			

Information compiled from residential well inventory, builders records and field notes.

The State of New Hampshire

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DANIEL COLLINS, P.E.
Deputy Executive Director a
Chief Engineer

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

March 19, 1985

Dear Homeowner or Resident:

The New Hampshire Water Supply and Pollution Control Commission is conducting a survey of residential wells in the vicinity of the Mottolo waste disposal site located on Blueberry Hill Road. The Commission has sampled many of these wells in the past and will continue to monitor the water quality within the region. To date no contamination has been detected in any of the residential wells.

In order to make the most productive use of the available information we are seeking your assistance as we compile information on area residential wells. The information will help us better understand the hydrogeologic setting and the potential resources which may be at risk (i.e. water supply wells).

Please take some time to locate any written records you may have relating to the drilling or installation of your well. If you do not remember some of the details now, check with others who might have been present at the time of installation. Then answer the items on the enclosed questionnaire as best you can with the information at hand.

Please use the enclosed, self-addressed stamped envelope to return the completed questionnaire. If you have any questions regarding the information requested in the questionnaire, please contact me at 271-3503. Your assistance on this matter is greatly appreciated.

Sincerely,

John M. Regan

John M. Regan
Hydrogeologist

JMR/mjh
Enclosures

RESIDENTIAL WELL SURVEY

Date: ______________ Street Address: ________________________________

1. Homeowner's Name: ________________________________

2. Homeowner's Address: ________________________________

City/Town: ____________________ State & Zip: __________

Telephone Number: ____________________

3. Your Name (if different): ________________________________

4. Your Telephone Number: ________________________________

5. Previous Owner's Name: ________________________________

6. Please find your lot on the attached tax map for your area and mark the approximate location of your well with a "w" in a circle.

7. Well Information

Please use any available records to help you in providing the requested information.

a. Type of well:

Shallow dug	_________	Depth	_________	ft.
Shallow drilled	_________	Depth	_________	ft.
Bedrock/Artesian	_________	Depth	_________	ft.

b. Is the well cased? _______ Screened? _______
If so, screen is located between? _______ ft. and _______ ft.

c. Year well installed: _______

d. Well installer or driller: ________________________________

Address: ________________________________

City/Town: ____________________ State & Zip: __________

e. Yield of well in gallons/minute: ____________________

If yield not known, please answer following:

Size of storage tank _______ gal.

Has water ever run out or run low? _______

Describe use (demand) when problem occurred: ______________

____

____

(over)

Number of residents _______ adults _______ children
Ages of children ____________________

Number and Kinds of Animals ______________________________

8. Do you use a water filter, softener, or aerator? ____________

Describe: ______________________________

____

9. Water Quality

a. Has your water been analyzed (other than by the State or U. S. EPA)? ________

If so, please give dates, results, and laboratories: ________

____

____

b. Any changes in the taste, odor, or appearance of the water?

Please describe any changes and when they occurred: ________

____

10. Please mark the approximate location of your septic system leach field on the attached map. Use an "s" in a square to mark the area.

11. Would you permit your well to be sampled if it was chosen for testing by the NHWS&PCC? ________

12. Comments ______________________________

____

____

____

Please return to:

State of New Hampshire
Water Supply and Pollution Control Commission
Hazen Drive
P. O. Box 95
Concord, New Hampshire 03301

Thank you for your assistance.

APPENDIX D

Water Quality Results

Soil Gas Results - Hydrochemical Reconnaissance
Mottolo Site, Raymond

	No VOC Detected	trans-Dichloro-ethylene	cis-Dichloro-ethylene	Trichloro-ethylene	1,1 Dichlo-roethane	1,1,1-Trichloro-ethane	Benzene
M + 100	X						
M + 50	X						
M + 0	X						
M - 11	X						
M - 22		15	11			116	
M - 54		1400	6300	70	A	1800	
M - 66		2	22		11	40	
M - 84			8		6		
M - 103							3
M - 150	X						
M - 197	X						
M - 214 - 20	X						
M - 244	X						
P + 0	X						
P + 36	X						
P + 73	X						
At Well R-1			28				
Q + 0	X						
Q + 50	X						
Q + 100	X						
Q + 150	X						
Q + 200	X						
Q + 250	X						
Q + 300	X						

<u>Notes</u>:

A May be present, but masked by high concentration of trans-dichloroethylene.
Results indicative relative concentrations.

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46150
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,11:27
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:22
DATE COMPLETED: 08-30-85

Comments:
MOTTOLO SITE
BROOK A - SA4

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46152
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,11:35
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:25
DATE COMPLETED: 10-21-85

Comments:
MOTTOLO SITE
BROOK A - SA3

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	36.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	7.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter * ND = none detected
> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46154
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,11:45
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:29
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
BROOK A - SA2
REPLICATE

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	337.2000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	14.1000		
Toluene	68.5000		
Xylene, meta isomer	17.4000		
Xylenes, (ortho&para)	12.1000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter * ND = none detected
\> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46156
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,11:55
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:31
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
BROOK A - S-1

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46142
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,11:40
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:04
DATE COMPLETED: 08-30-85

Comments:
MOTTOLO SITE
WELL MO-5S

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	42.0000	Trichloromethane	ND
Trichloroethylene	11.0000	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter * ND = none detected
> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46144
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,11:45
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:11
DATE COMPLETED: 08-30-85

Comments:
MOTTOLO SITE
WELL MO-5D

Test Name		Result (ug/l)	Test Name		Result (ug/l)
Dichloromethane	ND		Trichlorofluoromethane	ND	
Dichlorobromomethane	ND				
Tetrachloromethane	ND		Acetone	ND	
Chlorodibromomethane	ND		Tetrahydrofuran		445.0000
Chloroethane			Diethyl ether	ND	
1,1-Dichloroethane	ND		Methyl Ethyl Ketone	ND	
1,2-Dichloroethane	ND		Methyl Isobutyl Keton	ND	
1,1,1-Trichloroethane	<	5.0000	1,3-Dichloropropane	ND	
1,1,2-Trichloroethane	ND		Trichlorotrifluoroeth	ND	
Tetrachloroethane	ND				
1,1-Dichloroethylene	ND		Tribromomethane	ND	
Dichloroethylene (c+t)		228.0000	Trichloromethane	ND	
Trichloroethylene		29.0000	t-1,2-Dichloroethylene		
Tetrachloroethylene	ND				
1,2-Dichloropropane	ND				
1,3-Dichloropropene	ND				
Benzene	ND				
Chlorobenzene	ND				
Dichlorobenzene	ND				
Ethylbenzene	ND				
Toluene	ND				
Xylene, meta isomer	ND				
Xylenes, (ortho&para)	ND				
Vinyl chloride					
Bromomethane					
Chloromethane					

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46146
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,12:04
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:14
DATE COMPLETED: 08-30-85

Comments:
MOTTOLO SITE
PIEZOMETER R-8
FIRST TIME SAMPLED

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46148
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-21-85,12:04
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:19
DATE COMPLETED: 08-30-85

Comments:
MOTTOLO SITE
PIEZOMETER R-11
FIRST TIME SAMPLED

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46158
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,14:35
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:36
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-1

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	10.3000	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46160
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,14:15
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:38
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-2D

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	1354.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	72.1000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	21.5000
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	278.0000	Trichloromethane	ND
Trichloroethylene	19.8000	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	< 5.0000		
Toluene	< 5.0000		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter * ND = none detected
> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46162
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,14:00
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:40
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-2S

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	2389.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	550.6000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	188.1000
1,1,1-Trichloroethane	27.6000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	244.1000	Trichloromethane	ND
Trichloroethylene	< 5.0000	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	< 5.0000		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	196.0000		
Toluene	1366.2000		
Xylene, meta isomer	224.6000		
Xylenes, (ortho&para)	168.1000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter * ND = none detected
> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46164
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,13:35
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:43
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-3D

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	1070.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	148.6000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	191.8000
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	543.0000	Trichloromethane	ND
Trichloroethylene	98.8000	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	10.1000		
Toluene	11.0000		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46166
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,12:17
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:45
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-3S

DIMETHYL HEPTANONE PRESENT

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	80.4000
Chlorodibromomethane	ND	Tetrahydrofuran	2267.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	461.8000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	858.7000
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	232.2000	Trichloromethane	ND
Trichloroethylene	37.5000	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	164.0000		
Toluene	1290.0000		
Xylene, meta isomer	194.9000		
Xylenes, (ortho&para)	132.7000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46168
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,14:30
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:48
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-4D
REPLICATE

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46170
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,11:45
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:51
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-4S

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	35.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater than
< = less than
ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46172
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,16:25
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:53
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
WELL MO-6

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 46174
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 08-22-85,16:32
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 08-23-85,08:55
DATE COMPLETED: 09-04-85

Comments:
MOTTOLO SITE
BROOK A - U/S OF RANDY LANE CULVERT

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44503

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,16:25
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:48
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
BROOK A - 35 FEET UPSTREAM OF RANDY LANE CULVERT

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

****

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44477

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,10:25
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:01
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
WELL MD-1
FIRST TIME SAMPLING

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	< 5.0000		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44487

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,14:15
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:20
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
WELL MO-4S
FIRST TIME SAMPLING

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		**Volatile Organics (cont.)**	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44489

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,15:07
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:24
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
WELL MO-4D
FIRST TIME SAMPLING

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44491

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,11:10
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:31
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
WELL MO-5S
FIRST TIME SAMPLING

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	12.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	40.0000	Tribromomethane	ND
Dichloroethylene (c+t)	42.2000	Trichloromethane	ND
Trichloroethylene	10.5000		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44493

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,11:15
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:34
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
WELL MO-5D
FIRST TIME SAMPLING

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		**Volatile Organics (cont.)**	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	341.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	66.5000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	(5.0000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	229.1000	Tribromomethane	ND
Dichloroethylene (c+t)	241.7000	Trichloromethane	ND
Trichloroethylene	33.3000		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44495

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,16:15
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:36
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
WELL MO-6
FIRST TIME SAMPLING

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44497

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,15:25
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:40
DATE COMPLETED: 08-09-85

Comments:

MOTTOLO SITE
BROOK A NEAR R-5 AND R-6

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		**Volatile Organics (cont.)**	
Dichloromethane	ND	Trichlorofluoromethane	PR
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	304.5000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	86.1000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	10.0000
1,1,1-Trichloroethane	< 5.0000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	17.7000	Tribromomethane	ND
Dichloroethylene (c+t)	18.6000	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	22.5000		
Toluene	> 200.0000		
Xylene, meta isomer	15.3000		
Xylenes, (ortho&para)	29.3000		
Vinyl chloride			
Bromomethane			

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44499

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,15:35
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:42
DATE COMPLETED: 08-08-85

Comments:

MTTOLO SITE
BROOK A NEAR R-3

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	426.7000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	85.4000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	< 5.0000	Tribromomethane	ND
Dichloroethylene (c+t)	< 5.0000	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	104.8000		
Xylene, meta isomer	12.1000		
Xylenes, (ortho&para)	22.2000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44501

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-25-85,15:45
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:45
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
BROOK A - 50 FEET UPSTREAM R-11

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	14.1000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	(5.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	10.4000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 44505

OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND

DATE SAMPLED: 07-24-85,16:00
PERSON SAMPLING: JOHN REGAN
DATE SUBMITTED: 07-26-85,09:51
DATE COMPLETED: 08-08-85

Comments:

MOTTOLO SITE
TRIP BLANK

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater then
< = less then
ND = none detected
PR = Present

| SAMPLE ID Number 40177 |

TYPE OF SAMPLE = IN-HOUSE
YOUR NAME = JREGAN
DATE SAMPLED = 05-02-85,09:50
DATE LOGGED IN = 05-03-85,08:37
DATE COMPLETED = 05-10-85
PERSON SAMPLING = JOHN REGAN
OWNERS NAME = MOTTOLO SITE AREA
SAMPLE LOCATION = RANDY LANE
CITY OR TOWN = RAYMOND
DIVISION = HW&GPD
PHONE NUMBER = 3744
MOTTOLO SITE AREA
BROOK A - UPSTREAM OF RANDY LANE CULVERT

ID #	TEST NAME	RESULT	ANALYST	DATE
85	Methane, dichloro-	ug/L ND	CZIBIK	05-08-85
86	Methane, dichlorobromo-	ug/L ND	CZIBIK	05-08-85
87	Methane, tribromo-	ug/L ND	CZIBIK	05-08-85
88	Methane, trichloro-	ug/L ND	CZIBIK	05-08-85
89	Methane, tetrachloro-	ug/L ND	CZIBIK	05-08-85
90	Methane, chlorodibromo-	ug/L ND	CZIBIK	05-08-85
92	Ethane, 1,1 dichloro	ug/L ND	CZIBIK	05-08-85
93	Ethane, 1,2 dichloro	ug/L ND	CZIBIK	05-08-85
94	Ethane, 1,1,1trichloro	ug/L ND	CZIBIK	05-08-85
95	Ethane, 1,1,2trichloro	ug/L ND	CZIBIK	05-08-85
96	Tetrachloroethane	ug/L ND	CZIBIK	05-08-85
97	Ethylene, 1,1 dichloro	ug/L ND	CZIBIK	05-08-85
99	Ethylene, trichloro	ug/L ND	CZIBIK	05-08-85
100	Ethylene, tetrachloro	ug/L ND	CZIBIK	05-08-85
101	Propane, 1,2 dichloro	ug/L ND	CZIBIK	05-08-85
102	1,3dichloropropane c+t	ug/L ND	CZIBIK	05-08-85
103	Benzene	ug/L ND	CZIBIK	05-08-85
104	Benzene, chloro	ug/L ND	CZIBIK	05-08-85
105	Benzenes, dichloro	ug/L ND	CZIBIK	05-08-85
106	Benzene, ethyl	ug/L ND	CZIBIK	05-08-85
107	Toluene	ug/L ND	CZIBIK	05-08-85
108	Xylene meta isomer	ug/L ND	CZIBIK	05-08-85
115	Methane,trichlorofluoro	ug/L ND	CZIBIK	05-08-85
274	Acetone	ug/L ND	CZIBIK	05-08-85
275	Tetrahydrofuran	ug/L ND	CZIBIK	05-08-85
276	Diethyl ether	ug/L ND	CZIBIK	05-08-85
277	Methyl ethyl ketone	ug/L ND	CZIBIK	05-08-85
278	Methyl isobutyl ketone	ug/L ND	CZIBIK	05-08-85
279	Propene 1,3 dimethyl t	ug/L ND	CZIBIK	05-08-85
280	Xylenes (ortho & para)	ug/L ND	CZIBIK	05-08-85
281	Trichlorotrifluoroeth.	ug/L ND	CZIBIK	05-08-85
282	1,2Dichloroethylene c+t	ug/L ND	CZIBIK	05-08-85

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39435

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:15
DATE COMPLETED: 05-06-85

Comments:

DUG WELL
SAMPLED-10:30

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39437

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:19
DATE COMPLETED: 05-06-85

Comments:

OW-3
SAMPLED-11:30

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39439

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:22
DATE COMPLETED: 05-08-85

Comments:

OW-2 SHALLOW
SAMPLED-12:45

HIGH CONCENTRATION OF A C9 KETONE; PROBABLY DI-ISOBUTYL KETONE.

Test Name		Result (ug/l)	Test Name		Result (ug/l)
Volatile Organics			Volatile Organics (cont.)		
Dichloromethane	ND		Trichlorofluoromethane	ND	
Dichlorobromomethane	ND				
Tetrachloromethane	ND		Acetone	ND	
Chlorodibromomethane	ND		Tetrahydrofuran	<	5.0000
Chloroethane			Diethyl ether	ND	
1,1-Dichloroethane		7.7000	Methyl Ethyl Ketone	ND	
1,2-Dichloroethane	ND		Methyl Isobutyl Keton	ND	
1,1,1-Trichloroethane		10.7000	1,3-Dichloropropane	ND	
1,1,2-Trichloroethane	ND		Trichlorotrifluoroeth	ND	
Tetrachloroethane	ND				
1,1-Dichloroethylene	ND		Tribromomethane	ND	
Dichloroethylene (c+t)		70.5000	Trichloromethane	ND	
Trichloroethylene	ND				
Tetrachloroethylene	ND				
1,2-Dichloropropane	ND				
1,3-Dichloropropene	ND				
Benzene	ND				
Chlorobenzene	ND				
Dichlorobenzene	ND				
Ethylbenzene		14.4000			
Toluene		87.9000			
Xylene, meta isomer		13.1000			
Xylenes, (ortho&para)	<	5.0000			
Vinyl chloride					
Bromomethane					
Chloromethane					

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39441

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:23
DATE COMPLETED: 05-08-85

Comments:

OW-2 DEEP
SAMPLED-13:15

HIGH CONCENTRATION OF A C9 KETONE; PROBABLY DI-ISOBUTYL KETONE.

Volatile Organics

Test Name	Result (ug/l)
Dichloromethane	
Dichlorobromomethane	ND
Tetrachloromethane	ND
Chlorodibromomethane	ND
Chloroethane	
1,1-Dichloroethane	731.4000
1,2-Dichloroethane	ND
1,1,1-Trichloroethane	109.3000
1,1,2-Trichloroethane	ND
Tetrachloroethane	ND
1,1-Dichloroethylene	ND
Dichloroethylene (c+t)	1065.0000
Trichloroethylene	ND
Tetrachloroethylene	ND
1,2-Dichloropropane	ND
1,3-Dichloropropene	ND
Benzene	ND
Chlorobenzene	ND
Dichlorobenzene	ND
Ethylbenzene	585.0000
Toluene	3059.0000
Xylene, meta isomer	630.8000
Xylenes, (ortho&para)	527.0000
Vinyl chloride	
Bromomethane	
Chloromethane	

Volatile Organics (cont.)

Test Name	Result (ug/l)
Trichlorofluoromethane	ND
Acetone	38.3000
Tetrahydrofuran	265.5000
Diethyl ether	ND
Methyl Ethyl Ketone	15.7000
Methyl Isobutyl Keton	29.6000
1,3-Dichloropropane	ND
Trichlorotrifluoroeth	ND
Tribromomethane	ND
Trichloromethane	ND

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39443

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:24
DATE COMPLETED: 05-08-85

Comments:

OW-4 SHALLOW
SAMPLED-12:15

HIGH CONCENTRATION OF A C9 KETONE; PROBABLY DI-ISOBUTYL KETONE.

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	228.4000	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	21.9000
Chlorodibromomethane	ND	Tetrahydrofuran	85.4000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	3338.0000	Methyl Ethyl Ketone	30.3000
1,2-Dichloroethane	14.1000	Methyl Isobutyl Keton	85.1000
1,1,1-Trichloroethane	764.6000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	PR
Tetrachloroethane	ND		
1,1-Dichloroethylene	35.9000	Tribromomethane	ND
Dichloroethylene (c+t)	2374.0000	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	121.6000		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	117.4000		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	96.8000		
Toluene	512.8000		
Xylene, meta isomer	144.7000		
Xylenes, (ortho&para)	27.3000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39445

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:26
DATE COMPLETED: 05-06-85

Comments:

JB-9
SAMPLED-15:25

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39447

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:27
DATE COMPLETED: 05-06-85

Comments:

JB-8
SAMPLED-15:55

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		**Volatile Organics (cont.)**	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	< 5.0000		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	< 5.0000		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	5.2000		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39449

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:28
DATE COMPLETED: 05-08-85

Comments:

OW-4 DEEP
NO DUPLICATE OBTAINED AT THIS STATION
SAMPLED-12:00

PRESENCE OF A C9 KETONE; PROBABLY DI-ISOBUTYL KETONE.

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	151.5000	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	26.2000
Chlorodibromomethane	ND	Tetrahydrofuran	37.4000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	17.6000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	12.7000
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	13.9000	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	17.6000		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39450

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:30
DATE COMPLETED: 05-08-85

Comments:

JB-5
SAMPLED-15:05

Volatile Organics

Test Name	Result (ug/l)
Dichloromethane	ND
Dichlorobromomethane	ND
Tetrachloromethane	ND
Chlorodibromomethane	ND
Chloroethane	
1,1-Dichloroethane	131.8000
1,2-Dichloroethane	ND
1,1,1-Trichloroethane	12.2000
1,1,2-Trichloroethane	ND
Tetrachloroethane	ND
1,1-Dichloroethylene	ND
Dichloroethylene (c+t)	47.3000
Trichloroethylene	ND
Tetrachloroethylene	ND
1,2-Dichloropropane	ND
1,3-Dichloropropene	ND
Benzene	ND
Chlorobenzene	ND
Dichlorobenzene	ND
Ethylbenzene	ND
Toluene	7.8000
Xylene, meta isomer	ND
Xylenes, (ortho&para)	11.7000
Vinyl chloride	
Bromomethane	
Chloromethane	

Volatile Organics (cont.)

Test Name	Result (ug/l)
Trichlorofluoromethane	ND
Acetone	ND
Tetrahydrofuran	6.3000
Diethyl ether	ND
Methyl Ethyl Ketone	ND
Methyl Isobutyl Keton	ND
1,3-Dichloropropane	ND
Trichlorotrifluoroeth	ND
Tribromomethane	ND
Trichloromethane	ND

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39452

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:31
DATE COMPLETED: 05-08-85

Comments:

JB-7
SAMPLED-15:45

HIGH CONCENTRATION OF A C9 KETONE PRESENT; PROBABLY DI-ISOBUTYL KETONE.

Test Name	Result (ug/l)
Volatile Organics	
Dichloromethane	ND
Dichlorobromomethane	ND
Tetrachloromethane	ND
Chlorodibromomethane	ND
Chloroethane	
1,1-Dichloroethane	1222.0000
1,2-Dichloroethane	ND
1,1,1-Trichloroethane	122.0000
1,1,2-Trichloroethane	ND
Tetrachloroethane	ND
1,1-Dichloroethylene	35.7000
Dichloroethylene (c+t)	1858.6001
Trichloroethylene	ND
Tetrachloroethylene	ND
1,2-Dichloropropane	ND
1,3-Dichloropropene	ND
Benzene	ND
Chlorobenzene	ND
Dichlorobenzene	ND
Ethylbenzene	249.3000
Toluene	2781.0000
Xylene, meta isomer	318.0000
Xylenes, (ortho&para)	187.2000
Vinyl chloride	
Bromomethane	
Chloromethane	

Test Name	Result (ug/l)
Volatile Organics (cont.)	
Trichlorofluoromethane	ND
Acetone	220.0000
Tetrahydrofuran	544.0000
Diethyl ether	ND
Methyl Ethyl Ketone	239.9000
Methyl Isobutyl Keton	309.7000
1,3-Dichloropropane	ND
Trichlorotrifluoroeth	ND
Tribromomethane	ND
Trichloromethane	ND

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39454

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:32
DATE COMPLETED: 05-06-85

Comments:

S-1
SAMPLED-16:10

Test Name	Result (ug/l)
Volatile Organics	
Dichloromethane	ND
Dichlorobromomethane	ND
Tetrachloromethane	ND
Chlorodibromomethane	ND
Chloroethane	
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Tetrachloroethane	ND
1,1-Dichloroethylene	ND
Dichloroethylene (c+t)	ND
Trichloroethylene	ND
Tetrachloroethylene	ND
1,2-Dichloropropane	ND
1,3-Dichloropropene	ND
Benzene	ND
Chlorobenzene	ND
Dichlorobenzene	ND
Ethylbenzene	ND
Toluene	ND
Xylene, meta isomer	ND
Xylenes, (ortho&para)	ND
Vinyl chloride	
Bromomethane	
Chloromethane	

Test Name	Result (ug/l)
Volatile Organics (cont.)	
Trichlorofluoromethane	ND
Acetone	ND
Tetrahydrofuran	ND
Diethyl ether	ND
Methyl Ethyl Ketone	ND
Methyl Isobutyl Keton	ND
1,3-Dichloropropane	ND
Trichlorotrifluoroeth	ND
Tribromomethane	ND
Trichloromethane	ND

ug/l = micrograms per liter
) = greater then
(= less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39456

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:34
DATE COMPLETED: 05-06-85

Comments:

S-3
SAMPLED-14:55

Test Name		Result (ug/l)	Test Name		Result (ug/l)
Volatile Organics			Volatile Organics (cont.)		
Dichloromethane	ND		Trichlorofluoromethane	ND	
Dichlorobromomethane	ND				
Tetrachloromethane	ND		Acetone	ND	
Chlorodibromomethane	ND		Tetrahydrofuran	<	5.0000
Chloroethane			Diethyl ether	ND	
1,1-Dichloroethane	<	5.0000	Methyl Ethyl Ketone	ND	
1,2-Dichloroethane	ND		Methyl Isobutyl Keton	ND	
1,1,1-Trichloroethane	ND		1,3-Dichloropropane	ND	
1,1,2-Trichloroethane	ND		Trichlorotrifluoroeth	ND	
Tetrachloroethane	ND				
1,1-Dichloroethylene	ND		Tribromomethane	ND	
Dichloroethylene (c+t)	<	5.0000	Trichloromethane	ND	
Trichloroethylene	ND				
Tetrachloroethylene	ND				
1,2-Dichloropropane	ND				
1,3-Dichloropropene	ND				
Benzene	ND				
Chlorobenzene	ND				
Dichlorobenzene	ND				
Ethylbenzene	ND				
Toluene	<	5.0000			
Xylene, meta isomer	ND				
Xylenes, (ortho&para)	ND				
Vinyl chloride					
Bromomethane					
Chloromethane					

ug/l = micrograms per liter
> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39458

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:35
DATE COMPLETED: 05-06-85

Comments:

LEACHATE SEEP
SAMPLED-16:25

PRESENCE OF A C9 KETONE; PROBABLY DI-ISOBUTYL KETONE.

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	18.2000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	27.8000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	92.7000	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	5.3000		
Toluene	11.6000		
Xylene, meta isomer	< 5.0000		
Xylenes, (ortho&para)	7.4000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION

Organic Chemical Analysis

SAMPLE NO.: 39460

OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL RD.
CITY OR TOWN RAYMOND

DATE SAMPLED: 04-11-85
PERSON SAMPLING: J. REGAN
DATE SUBMITTED: 04-12-85,10:36
DATE COMPLETED: 05-06-85

Comments:

TRIP BLANK

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Volatile Organics		Volatile Organics (cont.)	
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND		
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater then
< = less then
ND = none detected
PR = Present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39473
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:09
Date Completed: 05-03-85

Comments:
DUG WELL
SAMPLED-10:35

Test Name	MCL		Result (mg/l)	Test Name	MCL		Result (mg/l)
Primary Standards				Secondary Standards			
Arsenic	(0.05)	<	.0050	Chloride, Cl	(250)		
Barium	(1.0)	<	.5000	Copper, Cu	(1.0)	<	.1000
Cadmium	(0.010)	<	.0050	Iron, Fe	(0.30		.1000
Chromium	(0.05)	<	.0300	Manganese, Mn	(0.05		.0700
Lead	(0.05)	<	.0100	Sulfate, SO4	(250)		
Mercury	(0.002)			Sodium, Na	(20-250		
Selenium	(0.01)	<	.0050	Turbidity	(N.T.U.		
Silver	(0.05)	<	.0010	Specific Conductance	(mhos		
Nitrate/Nitrite	(10.0)			pH	(units		
Fluoride, F	(2.4)			Total Hardness as	CaCO3		
Coliform Bact./100 ml				Calcium Hardness as	CaCO3		
Non-Coliform Bact.				Total Alkalinity as	CaCO3		
Iron Bacteria				TDS (tot. Dis. Sol.)	(500)		
Coliform, Tot. MPN/100				C.O.D.			
Other Heavy Metal							
				T.K.N.			
Aluminum, Al				NH3			
Antimony, Sb				Total Solids			
Molybdenum, Mo				T.O.C.			
Vanadium, Va				Total P			
Zinc, Zn		<	.0300	Sulfide			
Nickel, Ni							

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39478
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:17
Date Completed: 04-19-85

Comments:
DUG WELL
SAMPLED-10:30

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			Secondary Standards		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		11.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39474
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:13
Date Completed: 05-03-85

Comments:
OW-4 SHALLOW
SAMPLED-12:15

Test Name	MCL		Result (mg/l)	Test Name	MCL		Result (mg/l)
Primary Standards				Secondary Standards			
Arsenic	(0.05)		.0060	Chloride, Cl	(250)		
Barium	(1.0)	<	.5000	Copper, Cu	(1.0)	<	.1000
Cadmium	(0.010)	<	.0050	Iron, Fe	(0.30		190.0000
Chromium	(0.05)	<	.0300	Manganese, Mn	(0.05		7.5000
Lead	(0.05)		.0300	Sulfate, SO4	(250)		
Mercury	(0.002)			Sodium, Na	(20-250		
Selenium	(0.01)	<	.0050	Turbidity	(N.T.U.		
Silver	(0.05)	<	.0010	Specific Conductance	(mhos		
Nitrate/Nitrite	(10.0)			pH	(units		
Fluoride, F	(2.4)			Total Hardness as	CaCO3		
Coliform Bact./100 ml				Calcium Hardness as	CaCO3		
Non-Coliform Bact.				Total Alkalinity as	CaCO3		
Iron Bacteria				TDS (tot. Dis. Sol.)	(500)		
Coliform, Tot. MPN/100				C.O.D.			
Other Heavy Metal							
				T.K.N.			
Aluminum, Al				NH3			
Antimony, Sb				Total Solids			
Molybdenum, Mo				T.O.C.			
Vanadium, Va				Total P			
Zinc, Zn			2.3000	Sulfide			
Nickel, Ni							

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.:	39480
Owners Name:	MOTTOLO HAZARDOUS WASTE SITE
Address:	BLUEBERRY HILL ROAD
City or Town:	RAYMOND
Date sampled:	04-11-85
Person sampling:	J. REGAN
Date Submitted:	04-15-85,11:24
Date Completed:	04-19-85

Comments:
OW-4 SHALLOW
SAMPLED-12:15

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			Secondary Standards		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		90.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

mg/l = milligrams per liter - (otherwise noted)
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ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39475
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND.
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:14
Date Completed: 05-03-85

Comments:
S-3
SAMPLED-14:55

Test Name	MCL		Result (mg/l)	Test Name	MCL		Result (mg/l)
Primary Standards				**Secondary Standards**			
Arsenic	(0.05)	<	.0050	Chloride, Cl	(250)		
Barium	(1.0)	<	.5000	Copper, Cu	(1.0)	<	.1000
Cadmium	(0.010)	<	.0050	Iron, Fe	(0.30		.9000
Chromium	(0.05)	<	.0300	Manganese, Mn	(0.05		.3100
Lead	(0.05)	<	.0100	Sulfate, SO4	(250)		
Mercury	(0.002)			Sodium, Na	(20-250		
Selenium	(0.01)	<	.0050	Turbidity	(N.T.U.		
Silver	(0.05)	<	.0010	Specific Conductance	(mhos		
Nitrate/Nitrite	(10.0)			pH	(units		
Fluoride, F	(2.4)			Total Hardness as	CaCO3		
Coliform Bact./100 ml				Calcium Hardness as	CaCO3		
Non-Coliform Bact.				Total Alkalinity as	CaCO3		
Iron Bacteria				TDS (tot. Dis. Sol.)	(500)		
Coliform, Tot. MPN/100				C.O.D.			
Other Heavy Metal							
				T.K.N.			
Aluminum, Al				NH3			
Antimony, Sb				Total Solids			
Molybdenum, Mo				T.O.C.			
Vanadium, Va				Total P			
Zinc, Zn			.0300	Sulfide			
Nickel, Ni							

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39483
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:27
Date Completed: 04-19-85

Comments:
S-3
SAMPLED-14:55

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Test Name          MCL          Result    Test Name                MCL        Result
                                (mg/l)                                        (mg/l)
*****************************************************************************
    Primary Standards                  *       Secondary Standards
    ------------------                 *     -----------------------
Arsenic         (0.05)                 * Chloride, Cl            (250)
Barium          (1.0)                  * Copper, Cu              (1.0)
Cadmium         (0.010)                * Iron, Fe                (0.30
Chromium        (0.05)                 * Manganese, Mn           (0.05
Lead            (0.05)                 * Sulfate, SO4            (250)
Mercury        (0.002)                 * Sodium, Na            (20-250
Selenium        (0.01)                 * Turbidity             (N.T.U.
Silver          (0.05)                 * Specific Conductance (mhos
Nitrate/Nitrite(10.0)                  * pH                     (units
Fluoride, F      (2.4)                 * Total Hardness as      CaCO3
Coliform Bact./100 ml                  * Calcium Hardness as    CaCO3
Non-Coliform Bact.                     * Total Alkalinity as    CaCO3
Iron Bacteria                          * TDS (tot. Dis. Sol.) (500)
Coliform, Tot. MPN/100                 * C.O.D.
     Other Heavy Metal                 *
    ------------------                 * T.K.N.
Aluminum, Al                           * NH3
Antimony, Sb                           * Total Solids
Molybdenum, Mo                         * T.O.C.                            8.0000
Vanadium, Va                           * Total P
Zinc, Zn                               * Sulfide
Nickel, Ni                             *
*****************************************************************************
          mg/l = milligrams per liter - (otherwise noted)
          >    = greater than       *   < = less than
          ND   = none detected      *  PR = present
*****************************************************************************
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State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39476
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:15
Date Completed: 05-03-85

Comments:
MW-2 SHALLOW
SAMPLED-15:45

Test Name	MCL		Result (mg/l)	Test Name	MCL		Result (mg/l)
Primary Standards				Secondary Standards			
Arsenic	(0.05)		.0090	Chloride, Cl	(250)		
Barium	(1.0)	<	.5000	Copper, Cu	(1.0)	<	.1000
Cadmium	(0.010)	<	.0050	Iron, Fe	(0.30		10.0000
Chromium	(0.05)	<	.0300	Manganese, Mn	(0.05		.6300
Lead	(0.05)	<	.0100	Sulfate, SO4	(250)		
Mercury	(0.002)			Sodium, Na	(20-250		
Selenium	(0.01)	<	.0050	Turbidity	(N.T.U.		
Silver	(0.05)	<	.0010	Specific Conductance	(mhos		
Nitrate/Nitrite	(10.0)			pH	(units		
Fluoride, F	(2.4)			Total Hardness as	CaCO3		
Coliform Bact./100 ml				Calcium Hardness as	CaCO3		
Non-Coliform Bact.				Total Alkalinity as	CaCO3		
Iron Bacteria				TDS (tot. Dis. Sol.)	(500)		
Coliform, Tot. MPN/100				C.O.D.			
Other Heavy Metal							
				T.K.N.			
Aluminum, Al				NH3			
Antimony, Sb				Total Solids			
Molybdenum, Mo				T.O.C.			
Vanadium, Va				Total P			
Zinc, Zn		<	.0300	Sulfide			
Nickel, Ni							

mg/l = milligrams per liter - (otherwise noted)
> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.:	39481
Owners Name:	MOTTOLO HAZARDOUS WASTE SITE
Address:	BLUEBERRY HILL ROAD
City or Town:	RAYMOND
Date sampled:	04-11-85
Person sampling:	J. REGAN
Date Submitted:	04-15-85,11:25
Date Completed:	04-19-85

Comments:
OW-2 SHALLOW
SAMPLED-12:45

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			**Secondary Standards**		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		24.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

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State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39482
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:26
Date Completed: 04-19-85

Comments:
OW-2 DEEP
SAMPLED-13:35

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			Secondary Standards		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		70.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

mg/l = milligrams per liter - (otherwise noted)
> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39477
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:16
Date Completed: 05-03-85

Comments:
S-1 BROOK A
SAMPLED-16:10

Test Name	MCL		Result (mg/l)	Test Name	MCL		Result (mg/l)
Primary Standards				Secondary Standards			
Arsenic	(0.05)	<	.0050	Chloride, Cl	(250)		
Barium	(1.0)	<	.5000	Copper, Cu	(1.0)	<	.1000
Cadmium	(0.010)	<	.0050	Iron, Fe	(0.30		.2000
Chromium	(0.05)	<	.0300	Manganese, Mn	(0.05		.1700
Lead	(0.05)	<	.0100	Sulfate, SO4	(250)		
Mercury	(0.002)			Sodium, Na	(20-250		
Selenium	(0.01)	<	.0050	Turbidity	(N.T.U.		
Silver	(0.05)	<	.0010	Specific Conductance	(mhos		
Nitrate/Nitrite	(10.0)			pH	(units		
Fluoride, F	(2.4)			Total Hardness as	CaCO3		
Coliform Bact./100 ml				Calcium Hardness as	CaCO3		
Non-Coliform Bact.				Total Alkalinity as	CaCO3		
Iron Bacteria				TDS (tot. Dis. Sol.)	(500)		
Coliform, Tot. MPN/100				C.O.D.			
Other Heavy Metal							
				T.K.N.			
Aluminum, Al				NH3			
Antimony, Sb				Total Solids			
Molybdenum, Mo				T.O.C.			
Vanadium, Va				Total P			
Zinc, Zn		<	.0300	Sulfide			
Nickel, Ni							

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39486
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:29
Date Completed: 04-19-85

Comments:
S-1
SAMPLED-16:10

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			Secondary Standards		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		9.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39479
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:22
Date Completed: 04-19-85

Comments:
WELL-3
SAMPLED-11:40

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			Secondary Standards		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		16.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

mg/l = milligrams per liter - (otherwise noted)
> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39484
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:28
Date Completed: 04-19-85

Comments:
JB-5
SAMPLED-15:05

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Test Name          MCL          Result    Test Name               MCL        Result
                                (mg/l)                                       (mg/l)
*****************************************************************************
    Primary Standards                   *      Secondary Standards
    ------------------                  *      ----------------------
Arsenic        (0.05)                   * Chloride, Cl            (250)
Barium         (1.0)                    * Copper, Cu              (1.0)
Cadmium        (0.010)                  * Iron, Fe                (0.30
Chromium       (0.05)                   * Manganese, Mn           (0.05
Lead           (0.05)                   * Sulfate, SO4            (250)
Mercury       (0.002)                   * Sodium, Na           (20-250
Selenium       (0.01)                   * Turbidity            (N.T.U.
Silver         (0.05)                   * Specific Conductance (mhos
Nitrate/Nitrite(10.0)                   * pH                    (units
Fluoride, F     (2.4)                   * Total Hardness as     CaCO3
Coliform Bact./100 ml                   * Calcium Hardness as   CaCO3
Non-Coliform Bact.                      * Total Alkalinity as   CaCO3
Iron Bacteria                           * TDS (tot. Dis. Sol.) (500)
Coliform, Tot. MPN/100                  * C.O.D.
     Other Heavy Metal                  *
   ------------------                   * T.K.N.
Aluminum, Al                            * NH3
Antimony, Sb                            * Total Solids
Molybdenum, Mo                          * T.O.C.                            33.0000
Vanadium, Va                            * Total P
Zinc, Zn                                * Sulfide
Nickel, Ni                              *
*****************************************************************************
           mg/l = milligrams per liter - (otherwise noted)
           >    = greater than       *   < = less than
           ND   = none detected      *  PR = present
*****************************************************************************
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State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Inorganic Chemical Analysis

Sample No.: 39487
Owners Name: MOTTOLO HAZARDOUS WASTE SITE
Address: BLUEBERRY HILL ROAD
City or Town: RAYMOND
Date sampled: 04-11-85
Person sampling: J. REGAN
Date Submitted: 04-15-85,11:30
Date Completed: 04-19-85

Comments:
JB-9
SAMPLED-11:20

Test Name	MCL	Result (mg/l)	Test Name	MCL	Result (mg/l)
Primary Standards			Secondary Standards		
Arsenic	(0.05)		Chloride, Cl	(250)	
Barium	(1.0)		Copper, Cu	(1.0)	
Cadmium	(0.010)		Iron, Fe	(0.30	
Chromium	(0.05)		Manganese, Mn	(0.05	
Lead	(0.05)		Sulfate, SO4	(250)	
Mercury	(0.002)		Sodium, Na	(20-250	
Selenium	(0.01)		Turbidity	(N.T.U.	
Silver	(0.05)		Specific Conductance	(mhos	
Nitrate/Nitrite	(10.0)		pH	(units	
Fluoride, F	(2.4)		Total Hardness as	CaCO3	
Coliform Bact./100 ml			Calcium Hardness as	CaCO3	
Non-Coliform Bact.			Total Alkalinity as	CaCO3	
Iron Bacteria			TDS (tot. Dis. Sol.)	(500)	
Coliform, Tot. MPN/100			C.O.D.		
Other Heavy Metal					
			T.K.N.		
Aluminum, Al			NH3		
Antimony, Sb			Total Solids		
Molybdenum, Mo			T.O.C.		110.0000
Vanadium, Va			Total P		
Zinc, Zn			Sulfide		
Nickel, Ni					

mg/l = milligrams per liter - (otherwise noted)
\> = greater than * < = less than
ND = none detected * PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 36007
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-11-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-14-85,08:36
DATE COMPLETED: 02-07-85

Comments:
MONITORING WELL #2

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	62.1000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	343.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	116.8000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	1266.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	169.3000		
Toluene	1202.0000		
Xylene, meta isomer	221.0000		
Xylenes, (ortho&para)	146.0000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than
ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 36008
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-11-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-14-85,08:41
DATE COMPLETED: 02-07-85

Comments:
MONITORING WELL #4

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	22.7000
Chlorodibromomethane	ND	Tetrahydrofuran	69.3000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	314.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	114.5000
1,1,1-Trichloroethane	24.0000	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	73.1000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	141.0000		
Toluene	174.0000		
Xylene, meta isomer	204.0000		
Xylenes, (ortho&para)	212.3000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 36009
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-11-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-14-85,08:44
DATE COMPLETED: 02-07-85

Comments:
JB#5

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	64.5000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	190.2000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	188.0000
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	100.2000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	34.5300		
Toluene	137.4000		
Xylene, meta isomer	38.6000		
Xylenes, (ortho&para)	41.1000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 36010
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-11-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-14-85,08:46
DATE COMPLETED: 02-07-85

Comments:
JB#6

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	326.0000
Chlorodibromomethane	ND	Tetrahydrofuran	337.0000
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	790.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	66.7000
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	740.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	224.0000		
Toluene	1372.0000		
Xylene, meta isomer	345.0000		
Xylenes, (ortho&para)	229.0000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 36011
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-11-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-14-85,08:46
DATE COMPLETED: 04-08-85

Comments:
SI #4

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	9.6000
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 36012
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-11-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-14-85,08:47
DATE COMPLETED: 02-07-85

Comments:
TRIP BLANK

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35890
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:17
DATE COMPLETED: 01-24-85

Comments:
MONITORING WELL #2
WELL EVACUATED PRIOR TO SAMPLING
SAMPLING METHOD:STAINLESS/TEFLON BAILER

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane		Trichlorofluoromethane	
Dichlorobromomethane			
Tetrachloromethane		Acetone	
Chlorodibromomethane		Tetrahydrofuran	
Chloroethane		Diethyl ether	
1,1-Dichloroethane		Methyl Ethyl Ketone	
1,2-Dichloroethane		Methyl Isobutyl Keton	
1,1,1-Trichloroethane		1,3-Dichloropropane	
1,1,2-Trichloroethane		Trichlorotrifluoroeth	
Tetrachloroethane			
1,1-Dichloroethylene		Tribromomethane	
Dichloroethylene (c+t)		Trichloromethane	
Trichloroethylene		t-1,2-Dichloroethylene	
Tetrachloroethylene			
1,2-Dichloropropane			
1,3-Dichloropropene			
Benzene			
Chlorobenzene			
Dichlorobenzene			
Ethylbenzene			
Toluene			
Xylene, meta isomer			
Xylenes, (ortho&para)			
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35891
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:20
DATE COMPLETED: 01-14-84

Comments:
MONITOR WELL #2
DUPLICATE SAMPLE
GC SCREEN ANALYSIS-UNITS ARE PPB

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	PR
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	194.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	40.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	1590.0000		
Xylene, meta isomer	126.0000		
Xylenes, (ortho&para)	138.0000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter * ND = none detected
\> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35892
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:22
DATE COMPLETED: 01-14-84

Comments:
MONITORING WELL #4
GC SCREEN ANALYSIS- UNITS ARE PPB

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	PR
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	285.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	38.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	153.0000		
Toluene	203.0000		
Xylene, meta isomer	538.0000		
Xylenes, (ortho&para)	360.0000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35893
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:23
DATE COMPLETED: 01-14-84

Comments:
JB-5
GC SCREEN ANALYSIS-UNITS ARE PPB

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	PR
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	176.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	43.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	78.0000		
Toluene	267.0000		
Xylene, meta isomer	74.0000		
Xylenes, (ortho&para)	87.0000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35894
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:24
DATE COMPLETED: 01-14-84

Comments:
JB-6
GC SCREEN ANALYSIS UNITS ARE PPB

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	PR
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	264.0000	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	130.0000	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	14.0000		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	121.0000		
Toluene	897.0000		
Xylene, meta isomer	199.0000		
Xylenes, (ortho&para)	130.0000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35895
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:26
DATE COMPLETED: 01-14-84

Comments:
S-4
STREAM SAMPLE

GC SCREEN ANALYSIS

Test Name	Result (ug/l)		Test Name	Result (ug/l)
Dichloromethane	ND	*	Trichlorofluoromethane	ND
Dichlorobromomethane	ND	*		
Tetrachloromethane	ND	*	Acetone	ND
Chlorodibromomethane	ND	*	Tetrahydrofuran	ND
Chloroethane		*	Diethyl ether	ND
1,1-Dichloroethane	ND	*	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	*	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	*	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	*	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND	*		
1,1-Dichloroethylene	ND	*	Tribromomethane	ND
Dichloroethylene (c+t)	ND	*	Trichloromethane	ND
Trichloroethylene	ND	*	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND	*		
1,2-Dichloropropane	ND	*		
1,3-Dichloropropene	ND	*		
Benzene	ND	*		
Chlorobenzene	ND	*		
Dichlorobenzene	ND	*		
Ethylbenzene	ND	*		
Toluene	ND	*		
Xylene, meta isomer	ND	*		
Xylenes, (ortho&para)	ND	*		
Vinyl chloride		*		
Bromomethane		*		
Chloromethane		*		

ug/l = micrograms per liter * ND = none detected
> = greater than * PR = present
< = less than *

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35896
OWNERS NAME: MOTTOLO HAZ. WASTE SITE
OWNERS ADDRESS: BLUEBERRYHILL RD.
CITY OR TOWN RAYMOND
DATE SAMPLED: 01-07-85
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 01-08-85,14:27
DATE COMPLETED: 01-14-84

Comments:
TRIP BLANK

GC SCREEN ANALYSIS

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	ND
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	ND
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	ND		
Toluene	ND		
Xylene, meta isomer	ND		
Xylenes, (ortho&para)	ND		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
> = greater than
< = less than

ND = none detected
PR = present

State of New Hampshire
WATER SUPPLY AND POLLUTION CONTROL COMMISSION
HAZARDOUS WASTE AND GROUNDWATER PROTECTION DIVISION
Organic Chemical Analysis

SAMPLE NO.: 35005
OWNERS NAME: MOTTOLO HAZARDOUS WASTE SITE
OWNERS ADDRESS: BLUEBERRY HILL ROAD
CITY OR TOWN RAYMOND
DATE SAMPLED: 12-04-84
PERSON SAMPLING: R. WICKSON
DATE SUBMITTED: 12-07-84,15:32
DATE COMPLETED: 12-13-84

Comments:
MONITORING WELL # 3 - MOTTOLO SITE
SAMPLE TAKEN WITH STAINLESS STEEL/TEFLON
BAILER - PRESENCE OF DIMETHYL SULFIDE

Test Name	Result (ug/l)	Test Name	Result (ug/l)
Dichloromethane	ND	Trichlorofluoromethane	ND
Dichlorobromomethane	ND		
Tetrachloromethane	ND	Acetone	10.2000
Chlorodibromomethane	ND	Tetrahydrofuran	ND
Chloroethane		Diethyl ether	ND
1,1-Dichloroethane	ND	Methyl Ethyl Ketone	5.4000
1,2-Dichloroethane	ND	Methyl Isobutyl Keton	ND
1,1,1-Trichloroethane	ND	1,3-Dichloropropane	ND
1,1,2-Trichloroethane	ND	Trichlorotrifluoroeth	ND
Tetrachloroethane	ND		
1,1-Dichloroethylene	ND	Tribromomethane	ND
Dichloroethylene (c+t)	ND	Trichloromethane	ND
Trichloroethylene	ND	t-1,2-Dichloroethylene	
Tetrachloroethylene	ND		
1,2-Dichloropropane	ND		
1,3-Dichloropropene	ND		
Benzene	ND		
Chlorobenzene	ND		
Dichlorobenzene	ND		
Ethylbenzene	< 5.0000		
Toluene	10.4000		
Xylene, meta isomer	7.4000		
Xylenes, (ortho&para)	7.9000		
Vinyl chloride			
Bromomethane			
Chloromethane			

ug/l = micrograms per liter
\> = greater than
< = less than

ND = none detected
PR = present

Summary of Residential Water Quality Data - Organic Analyses
Mottolo Site, Raymond, New Hampshire

Location and Name	Well Type	Instrument	Compound		Results in parts per billion				
Carey	NA			Date:	5/2/79	10/18/79		2/16/82	12/13/82
				Sample #:	91240	01754		43687	06571
		IR	Alphatic Hydrocarbons		ND	Present		-	-
		GC			ND	ND		-	-
		OVA						ND	-
		GC/MS							ND
Dalbec	NA			Date:	5/2/79	5/29/79	10/18/79	10/18/79	
				Sample #:	91235	92436	01748	01747	
		IR/GC			NA	-	ND	ND	
		IR/GC/ECD			-	ND	-	-	
Desantis	NA			Date:	5/3/79				
				Sample #:	91276				
		IR	Hydrocarbons		Trace				
		GC			ND				
Francis	NA			Date:	5/14/79				
				Sample #:	91814				
		IR/GC			ND				
Nesci	NA			Date:	10/18/79				
				Sample #:	01749				
		IR/GC			ND				
McNeil	NA			Date:	2/16/82	12/13/82	2/9/84		
				Sample #:	43685	6570	22884		
		OVA			ND	-	-		
		GC/MS				ND	ND		
Calder	Bedrock			Date:	2/16/82				
				Sample #:	43679				
		GC/MS			ND				

Summary of Residential Water Quality Data - Organic Analyses (continued)

Location and Name	Well Type	Instrument	Compound		Results in parts per billion						
Lot #2	NA			Date:	10/18/79	2/10/82	2/13/82				
				Sample #:	01752	43686	6573				
		IR/GC			ND	–	–				
		OVA			–	ND	–				
		GC/MS			–	–	ND				
Lot #3 (Blessor)	Dug			Date:	1/31/86						
				Sample #:	52534						
		GC/MS			ND						
Lot #16	NA			Date:	10/18/79						
				Sample #:	01751						
		IR			ND						
		GC	Carbon Tetrachloride		1.5						
			Chloroform		6.7						
Lot #52-1 (Papamichael)	Bedrock			Date:	2/16/82	12/13/82	2/9/84				
				Sample #:	43678	06575	22889				
		GC/MS			ND	–	–				
		GC/MS			–	ND	ND				
Lot #52-2 (McDermott)	Bedrock			Date:	10/18/79	2/16/82	2/9/84	2/9/84			
				Sample #:	01750	43677	22883	22882			
		IR/GC			ND	–	–	–			
		GC/MS			–	ND	–	–			
		GC/MS			–	–	ND	ND			
Lot #52-3 (Stracke)	Bedrock			Date:	12/13/82	12/13/82	4/26/85	2/21/86			
				Sample #:	6568	6569	39959	53410			
		GC/MS			ND	ND	ND	ND			
Lot #52-4 (Annis)	Bedrock			Date:	5/2/79	10/18/79	2/13/82	2/16/82	2/9/84	4/26/85	1/31/86
				Sample #:	91236	01755	6574	43680	22886	39958	52538
		IR/GC			ND	–	–	–	–	–	–
		IR	Aliphatic Hydrocarbons		–	Present	–	–	–	–	–
		GC			–	ND	–	–	–	–	–
		GC/MS			–	–	ND	–	–	–	–
								ND	ND	ND	ND

Summary of Residential Water Quality Data – Organic Analyses (continued)

Location and Name	Well Type	Instrument	Compound		Results in parts per billion						
Lot #52-5	Bedrock			Date:	2/16/82	4/26/85	5/15/86				
(Choumitsky)				Sample #:	43681	39957	57196				
		GC/MS			ND	ND	ND				
Lot #52-6	Bedrock			Date:	5/2/79	10/18/79	2/16/82	3/21/84	4/26/85	5/15/86	
(DeFlumeri)				Sample #:	91238	01757	43682	24481	39956	57195	
		IR/GC			ND	–	–	–	–	–	
		IR	Aliphatic Hydrocarbons		–	Present	–	–	–	–	
		GC			–	ND	–	–	–	–	
		OVA			–	–	ND	–	–	–	
		GC/MS			–	–	–	ND	ND	ND	
Lot #52-7	Bedrock			Date:	5/2/79	2/16/82	2/9/84	4/4/85	9/6/85	2/21/86	
(Jewett)				Sample #:	91237	43683	22885	39119	56758	53406	
		IR/GC			ND	–	–	–	–	–	
		OVA			–	ND	–	–	–	–	
		GC/MS			–	–	ND	ND	ND	ND	
Lot #52-8	Bedrock			Date:	5/2/79	10/18/79	2/16/82	12/13/82	4/4/85	9/6/85	2/21/86
(Sullivan)				Sample #:	92139	01756	43684	6572	39118	46757	53405
		IR/GC			ND	–	–	–	–	–	–
		IR	Aliphatic Hydrocarbons		–	Present	–	–	–	–	–
		GC	Carbon Tetrachloride			1	–	–	–	–	–
		OVA			–	–	ND	–	–	–	–
		GC/MS			–	–	–	ND	ND	ND	ND
Lot #52-9	Bedrock			Date:	2/9/84	2/9/84	4/4/85	9/6/85	5/15/86		
(Britt)				Sample #:	22888	22887	39117	46756	57194		
		GC/MS			ND	ND	ND	ND	ND		
Lot #52-10	Bedrock			Date:	3/9/85	2/21/86					
(McLaughlin)				Sample #:	38859	53404					
		GC/MS			ND	ND					
Lot #52-11	Bedrock			Date:	3/29/85	1/31/86					
(Stewart)				Sample #:	38858	52532					
		GC/MS			ND	ND					

Summary of Residential Water Quality Data - Organic Analyses (continued)

Location and Name	Well Type	Instrument	Compound		Results in parts per billion	
Lot #52-13	Bedrock			Date:	4/4/85	5/15/86
(Brimicombe)				Sample #:	39116	57193
		GC/MS			ND	ND
Lot #52-22	Bedrock			Date:	5/15/86	
(Cadoret)		GC/MS		Sample #:	57203	
					ND	
Lot #52-26	Bedrock			Date:	5/15/86	
(Varney)		GC/MS		Sample #:	57202	
					ND	
Lot #52-27	Bedrock			Date:	5/15/86	
(Graves)		GC/MS		Sample #:	57201	
					ND	
Lot #52-31	Bedrock			Date:	5/15/86	
(Sensale)		GC/MS		Sample #:	57199	
					ND	
Lot #52-32	Bedrock			Date:	5/15/86	
(Clauson)		GC/MS		Sample #:	57200	
					ND	
Lot #52-43	Bedrock			Date:	3/29/85	
(Banarer)				Sample #:	38860	
		GC/MS			ND	
Lot #52-45	Bedrock			Date:	9/6/85	
(Sayers)				Sample #:	46760	
		GC/MS			ND	
Lot #52-46	Bedrock			Date:	4/4/85	
(Warden)				Sample #:	39120	
		GC/MS			ND	

Summary of Residential Water Quality Data – Organic Analyses (continued)

Location and Name	Well Type	Instrument	Compound		Results in parts per billion			
Lot #52-47				Date:	3/29/85			
(Iverson)				Sample #:	38862			
		GC/MS			ND			
Lot #52-48	Bedrock			Date:	4/26/85	2/21/86		
(Panageotos)				Sample #:	39962	53409		
		GC/MS			ND	ND		
Lot #52-49	Bedrock			Date:	4/26/85			
(Wilkinson)				Sample #:	39963			
		GC/MS			ND			
Lot #52-50	Bedrock			Date:	4/22/85	4/22/85	9/6/85	9/6/85
(Robinson)				Sample #:	39751	39751	46763	46762
		GC/MS			ND	ND	ND	ND
Lot #52-51	Bedrock			Date:	4/26/85	1/31/86		
(Loos-				Sample #:	39960	52542		
Campbell)		GC/MS			ND	ND		
Lot #52-53	Bedrock			Date:	4/26/85			
(Fongeallaz)				Sample #:	39964			
		GC/MS			ND			
Lot #52-56	Bedrock			Date:	2/16/82	4/26/85	9/6/85	
(Chiechomsky)				Sample #:	43681	39957	46761	
		OVA			ND	–	–	
		GC/MS			–	ND	ND	

ND – No compounds detected.
NA – No information available.
IR – Infrared analysis
GC – Gas chromatograph analysis
ECD – Electron Capture Detector
OVA – Organic Vapor Analyzer
GC/MS – Gas Chromatograph/Mass Spectrometer

Residential Wells - Summary of Inorganic Analyses
Mottolo Site, Raymond, New Hampshire
(Results in milligram/liter unless otherwise noted)

Name	Date	Nitrate and Nitrite	Chloride	pH (units)	Color (15 apparent units)	Arsenic	Barium	Cadmium	Chromium	Iron	Lead	Manganese	Selenium	Copper	Mercury	Alkalinity (as $CaCO_3$)	Flouride	Sodium	Turbidity (NTU's)	Silver	Hardness (as $CaCO_3$)
Carey	5/2/79	.05	12.5	7.4	0	0.01	<0.1	<0.005	<0.01	0.1	<0.01	0.23	<0.01	<0.1	<0.001	55	0.26	5.2	<1.0	<0.01	
	10/18/79	.11	24	7.3	0	<0.01	<0.1	<0.005	<0.01	0.1	<0.05	0.31	<0.01	<0.1	<0.001	86	0.36	5.2	-	<0.01	130
Bill	5/2/79	0.25	27	6.8	0	<0.01	<0.1	<0.005	0.01	<0.1	<0.01	<0.01	<0.01	0.1	<0.001	25	<0.10	9.1	<1.0	0.02	
	10/18/79	2.11	28	6.6	0	<0.01	<0.1	<0.005	<0.01	0.1	<0.05	0.01	<0.01	<0.1	<0.001	39	<0.10	11.4	-	<0.01	80
Lot 52-6 Deflumeri	5/2/79	<0.10	<10	7.3	5	0.02	<0.1	<0.005	0.01	1.9	<0.01	0.23	<0.01	0.1	<0.001	53	<0.10	4.9	32	<0.01	
		<0.05	<10	7.1	0	<0.01	<0.1	<0.005	<0.01	1.5	<0.05	0.22	<0.01	<0.1	<0.001	50	0.18	4.9	-	<0.01	60
Lot 52-7 Jewett	5/2/79	0.05	12	7.3	0	<0.01	<0.1	<0.005	0.01	0.1	<0.01	0.08	<0.01	0.1	<0.001	53	<0.10	4.9	<1.0	<0.01	
Slye	5/2/79	0.40	<10	6.4	0	<0.01	<0.1	<0.005	0.02	<0.1	<0.01	<0.01	<0.01	0.2	<0.001	20	<0.10	4.4	<1.0	0.01	
	10/18/79	1.12	11	6.9	0	<0.01	<0.1	<0.005	<0.01	<0.1	<0.05	0.02	<0.01	<0.1	<0.001	25	<0.10	7.7		<0.01	48
Dalbec	5/2/79	0.10	10.5	6.9	5	0.04	<0.1	<0.005	<0.01	14	<0.01	22.4	<0.01	0.1	<0.001	78	<0.10	4.0	96	<0.01	
	10/18/79	<0.05	14	6.5	0	0.01	<0.1	<0.005	0.01	16.5	<0.05	18.6	<0.01	<0.1	<0.001	70	<0.10	6.4		<0.01	74
Mitchell	10/18/79	.12	<10	7.1	0	<0.01	<0.1	<0.005	0.01	<0.1	<0.05	0.02	<0.01	0.1	<0.001	22	<0.10	8.5		<0.01	30
Lot 52-2 McDermott	10/18/79	0.08	22.5	7.1	0	<0.01	<0.1	<0.005	0.01	0.2	<0.05	0.09	<0.01	0.1	<0.001	22	0.19	8.9		<0.01	52
Matteau	10/18/79	.17	<10	7.1	0	<0.01	<0.1	<0.005	0.01	<0.1	<0.05	0.02	<0.01	0.1	<0.001	22	<0.10	8.5		0.02	30
NESCI	10/18/79	.27	<10	7.3	0	<0.01	<0.1	<0.005	0.01	0.1	<0.05	0.10	<0.01	<0.1	<0.001	71	0.37	4.7		<0.01	86

Table C.1-1 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-1

COMPOUNDS								
Laboratory	NHWS	NHWS	EPA					
Analysis by	GC	GC	GC					
Sampling of	8/79	10/79	4/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride	~1							
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		3.8						
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene			<10					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

All Results in ug/1 (ppb) unless noted

Table C.1-2

Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-2-1

Laboratory	NHWS	NHWS	NHWS	EPA	ERCO	ERCO^a	ERCO^a	
Analysis by	GC	GC	GC	GC/MS	GC/MS	GC/MS	GC/MS	
COMPOUNDS / Sampling of	8/79	10/79	11/79	4/80	7/80	10/80	12/80	
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride			3					
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene					1,200			
10. 1,1-dichloroethane					200			
11. Trans-1,2-dichloroethylene				10,000	4,400	8,500	2,800	
12. Chloroform			1.3		24			
13. 1,2-dichloroethane					23			
14. 1,1,1-trichloroethane		15		2,000	3,100	12,000	2,200	
15. Carbon tetrachloride	~1		~1					
16. Bromodichloromethane								
17. 1,2-dichloropropane					1 to 9			
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene	100	340		200	130			
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene	~1	6.5	1		12			
27. Toluene				3,000	760	5,500	2,600	
28. Chlorobenzene					1 to 9			
29. Ethyl benzene					160			
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Xylenes								
Tetrahydrofuran				Present				
Methyl Ethyl Ketone				Present				
Methyl Isobutyl Ketone				Present				
Acetone				Present				
Hexanol				Present				

a. Duplicate sample also analyzed by EPA. See Appendix , Quality Control Program.

All Results in ug/l (ppb) unless noted

Table C.1-3 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-2-2

Laboratory	ERCO	EPA						
Analysis by	GC	GC/MS						
COMPOUNDS Sampling of	7/80	10/80						
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride	~2,000[a]	1,000						
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane		500						
11. Trans-1,2-dichloroethylene		10,000						
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane		3,000						
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	15,000	4,000						
28. Chlorobenzene								
29. Ethyl benzene		400						
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Xylenes	~25,000[a]	600						
Tetrahydrofuran	41,000	10,000						
Isopropanol	37,000	Present						
Acetone	14,000	Present						
Dimethyl Formanide	140,000							
Methyl Isobutyl Ketone	28,000[b]	Present						
Butanol		Present						
Hexanol		Present						
Other Unidentified	~400,000							

a. Compound identification uncertain.
b. Eluted close to Dioxane.

All Results in ug/l (ppb) unless noted

Table C.1-4

Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-3

Laboratory	NHWS	NHWS	EPA					
Analysis by	GC	GC	GC					
COMPOUNDS Sampling of	8/79	10/79	4/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride	~ 2							
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		15.6	< 10					
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene			< 10					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

All Results in ug/l (ppb) unless noted

Table C.1-5 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
OW-4-1

Laboratory	ERCO	ERCO	ERCO[a]					
Analysis by	GC	GC/MS	GC/MS					
Sampling of	7/80	10/80	12/80					
COMPOUNDS								
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
6. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane			2,000					
11. Trans-1,2-dichloroethylene			3,000					
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane		3,100	3,100					
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		650						
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	100-1,000	500	790					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Xylenes	1,000[b]							
Tetrahydrofuran	8,000	100,000						
Methyl Ethyl Ketone	18,000[c]							
Methyl Isobutyl Ketone	10,000[d]							
Acetone	1,000							
Methyl Propyl Ketone	9,000							
Other Unidentified	~30,000							

[a] Duplicate sample also analyzed by EPA. See Appendix , Quality Control Program.
[b] Compound identification uncertan.
[c] Co-eluted with Chloroform.
[d] Eluted close to Dioxane.

All Results in ug/l (ppb) unless noted

Table C.1-6 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-4-2

Laboratory	ERCO							
Analysis by	GC							
COMPOUNDS Sampling of	7/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform	NO							
13. 1,2-dichloroethane	COMPOUNDS							
14. 1,1,1-trichloroethane	DETECTED							
15. Carbon tetrachloride	AT OR							
16. Bromodichloromethane	ABOVE							
17. 1,2-dichloropropane	1 ppm							
18. Trans-1,3-dichloropropylene	(by vol.)							
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

All Results in ug/l (ppb) unless noted

Table C.1-7 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station: JB-5

Laboratory	ERCO[a]							
Analysis by	GC/MS							
COMPOUNDS Sampling of	12/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane	990							
11. Trans-1,2-dichloroethylene	9,600							
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	2,900							
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

a. Duplicate sample also analyzed by EPA. See Appendix , Quality Control Program.

All Results in ug/l (ppb) unless noted

Table C.1-8

Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
JB-7

Laboratory	ERCO	ERCO						
Analysis by	GC	GC/MS						
COMPOUNDS Sampling of	7/80	10/80						
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane		200						
11. Trans-1,2-dichloroethylene		620						
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene		10						
28. Chlorobenzene								
29. Ethyl benzene		28						
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Xylenes								
Tetrahydrofuran	11,000	~28,000						
Methyl Ethyl Ketone	28,000[a]							
Methyl Isobutyl Ketone	6,000[b]							
Acetone	8,000							
Other Unidentified	14,000							

[a] Co-eluted with Chloroform.

[b] Eluted close to Dioxane.

All Results in ug/l (ppb) unless noted

Table C.1-9 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Surface Drainage
Behind Shed Near Access

Laboratory	EPA							
Analysis by	GC							
COMPOUNDS Sampling of	4/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform	NO							
13. 1,2-dichloroethane	COMPOUNDS							
14. 1,1,1-trichloroethane	DETECTED							
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

All Results in ug/l (ppb) unless noted

Table C.1-10 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Surface Drainage
Upgradient of OW-2

Laboratory	EPA							
Analysis by	GC/MS							
COMPOUNDS Sampling of	4/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	100							
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene	8							
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	20							
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Acetone	Present							
Tetrahydrofuran	Present							
Methyl Ethyl Ketone	Present							
Methyl Isobutyl Ketone	Present							
2-Butanol	Present							

All Results in ug/l (ppb) unless noted

Table C.1-11 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Surface Pool Downgradie
of Buried Drums

Laboratory	EPA							
Analysis by	GC/MS							
COMPOUNDS Sampling of	4/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride	100							
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	60							
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene	300							
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	300							
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Acetone	Present							
Isopropyl Alcohol	Present							
Tetrahydrofuran	Present							
Methyl Ethyl Ketone	Present							
Methyl Isobutyl Ketone	Present							
2-Butanol	Present							
Hexanol	Present							

All Results in ug/l (ppb) unless noted

Table C.1-12 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Surface Pools at Base
of Slope Near JB-5

Laboratory	EPA						
Analysis by	GC/MS						
COMPOUNDS Sampling of	4/80						
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride							
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
11. Trans-1,2-dichloroethylene	2,000						
12. Chloroform							
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
15. Carbon tetrachloride							
16. Bromodichloromethane							
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene	200						
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform							
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene							
27. Toluene	400						
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							

ADDITIONAL COMPOUNDS

Acetone	Present						
Tetrahydrofuran	Present						
Methyl Ethyl Ketone	Present						
Methyl Isobutyl Ketone	Present						

All Results in ug/l (ppb) unless noted

Table C.1-13 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook Upstream Near
JB-8

Laboratory	EPA							
Analysis by	GC							
COMPOUNDS Sampling of	4/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane	NO							
11. Trans-1,2-dichloroethylene	COMPOUNDS							
12. Chloroform	DETECTED							
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

All Results in ug/1 (ppb) unless noted

Table C.1-14 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook Near JB-6

Laboratory	EPA							
Analysis by	GC/MS							
COMPOUNDS / Sampling of	4/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	40							
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene	40							
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	1							
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

Acetone	Present							
Tetrahydrofuran	Present							
Methyl Ethyl Ketone	Present							
Methyl Isobutyl Ketone	Present							

All Results in ug/l (ppb) unless noted

Table C.1-15 Page 1 of 1

WATER QUALITY MONITORING DATA

VOLATILE ORGANICS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook Downstream
at Abandoned Road

Laboratory	EPA							
Analysis by	GC							
COMPOUNDS Sampling of	4/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene	< 10							
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL COMPOUNDS

All Results in ug/l (ppb) unless noted

Table C.2-1 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-1

Laboratory	GZA	GZA	GZA					
Analysis by	Port.GC*	Port.GC*	Port.GC					
COMPOUNDS Sampling of	5/5/80	7/22/80	10/9/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
6. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor								
Content, ppm	1.2	0.4						
Methane			✓					
Unidentified Compounds								

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

* Organic vapor content analysis only.

Table C.2-2 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-2-1

Laboratory	GZA	GZA	GZA	GZA	GZA			
Analysis by	Port.GC	Port.GC	Port.GC	Port.GC	Port.GC			
COMPOUNDS Sampling of	4/26/80	5/7/80	7/22/80	10/9/80	12/11/80			
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride					✓			
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	✓	✓	>1 ppm	1 ppm	2-3 ppm			
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane	✓	✓	>1 ppm	10 ppm	2-3 ppm			
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene	✓	✓	✓	<1 ppm	<1 ppm			
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	✓	✓	3-4 ppm	9 ppm	2-3 ppm			
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	210	37	280					
Methane	✓	✓	✓	✓	✓			
Unidentified Compounds	✓(2)	✓(2)	✓(3)	✓(4)	✓(2)			

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-3 **Page 1 of 1**

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-2-2

COMPOUNDS								
Laboratory	GZA	GZA	GZA					
Analysis by	Port.GC	Port.GC	Port.GC					
Sampling of	5/7/80	7/22/80	10/9/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride			✓					
7. Acrylonitrile								
6. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	✓	✓	5-6 ppm					
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane	✓	✓						
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene			<1 ppm					
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	✓	✓	8-9 ppm					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	940	600						
Methane	✓	✓	✓					
Unidentified Compounds	✓(2)	✓(3)	✓(2)					

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-4 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-3

Laboratory	GZA	GZA	GZA	GZA				
Analysis by	Port.GC*	Port.GC*	Port.GC	Port.GC				
COMPOUNDS Sampling of	4/26/80	5/5/80	7/22/80	10/9/80				
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor								
Content, ppm	0	0	1.6					
Methane			✓	✓				
Unidentified Compounds								

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-5

Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station:
OW-4-1

Laboratory	GZA *	GZA	GZA	GZA				
Analysis by	Port.GC	Port.GC	Port.GC	Port.GC				
COMPOUNDS Sampling of	5/7/80	7/22/80	10/9/80	12/11/80				
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride			✓	✓				
7. Acrylonitrile								
6. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene		✓	✓	✓				
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane		✓	2-3 ppm	2-3 ppm				
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		✓	✓	✓				
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene		✓	<1 ppm	<1 ppm				
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	0.4	40						
Methane		✓	✓	✓				
Unidentified Compounds		✓(5)	✓(4)	✓(4)				

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED.

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

* Organic vapor content analysis only.

Table C.2-6

Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-4-2

Laboratory	GZA *	GZA	GZA					
Analysis by	Port.GC	Port.GC	Port.GC					
COMPOUNDS Sampling of	5/7/80	7/22/80	10/9/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene		<<1 ppm	<<1 ppm					
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane		<<1 ppm	<<1 ppm					
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene		<<1 ppm	<<1 ppm					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	0	54						
Methane		✓	✓					
Unidentified Compounds		✓(2)	✓(1)					

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

* Organic vapor content

Table C.2-7 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-5

COMPOUNDS

Laboratory	GZA	GZA	GZA	GZA				
Analysis by	Port.GC	Port.GC	Port.GC	Port.GC				
Sampling of	5/7/80	7/22/80	10/9/80	12/11/80				
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride			✓	✓				
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	✓	✓	6-7ppm	9-10ppm				
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane		✓		<1 ppm				
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		✓	✓	✓				
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	✓	✓	1-2 ppm	2-3 ppm				
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor								
Content, ppm	190	>1000						
Methane	✓	✓	✓	✓				
Unidentified Compounds	✓(1)	✓(3)	✓(3)	✓(1)				

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-8

Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-6

Laboratory	GZA	GZA *	GZA					
Analysis by	Port.GC	Port.GC	Port.GC					
COMPOUNDS Sampling of	5/7/80	7/22/80	10/9/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride			✓					
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	✓		4-5 ppm					
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane			1-2 ppm					
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene			✓					
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	✓		2-3 ppm					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	4.2	240						
Methane	✓		✓					
Unidentified Compounds	✓(2)							

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-9

Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-7

COMPOUNDS								
Laboratory	GZA	GZA	GZA					
Analysis by	Port.GC	Port.GC	Port.GC					
Sampling of	5/7/80	7/22/80	10/9/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride			✓					
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	✓	✓	1-2 ppm					
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane	✓							
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene	✓	✓	<1 ppm					
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	63	75						
Methane	✓	✓	✓					
Unidentified Compounds	✓(2)	✓(3)	✓(2)					

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-10 **Page 1 of 1**

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-8

COMPOUNDS

Laboratory	GZA	GZA	GZA					
Analysis by	Port.GC	Port.GC	Port.GC					
Sampling of	5/7/80	7/22/80	10/9/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
6. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	46	5.2						
Methane	✓	✓	✓					
Unidentified Compounds								

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

Table C.2-11 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-9

COMPOUNDS

Laboratory	GZA *	GZA*	GZA	GZA				
Analysis by	Port.GC	Port.GC	Port.GC	Port.GC				
Sampling of	5/7/80	7/22/80	10/9/80	12/11/80				
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
6. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor								
Content, ppm	0.0	350						
Methane			✓	✓				
Unidentified Compounds								

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not quantified.

* Organic vapor analysis only

Table C.2-12 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: TP-2(OW)

Laboratory	GZA	GZA						
Analysis by	Port GC	Port GC						
COMPOUNDS Sampling of	7/22/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene	✓	✓						
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm								
Methane	✓	✓						
Unidentified Compounds	✓(4)	✓ (1)						

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not qualified.

Table C.2-13

Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: S-1

Laboratory	GZA	GZA	GZA					
Analysis by	Port GC	Port GC	Port GC					
COMPOUNDS Sampling of	5/5/80	7/22/80	12/11/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	0.0	1.8						
Methane		✓	✓					

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not qualified.

Table C.2-14 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: S-2

Laboratory	GZA	GZA	GZA					
Analysis by	Port GC*	Port GC*	Port GC					
COMPOUNDS Sampling of	5/5/80	7/22/80	12/11/80					
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor								
Content, ppm	0.6	400						
Methane			✓					

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not qualified.

Table C.2-15 Page 1 of 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: S-3

COMPOUNDS

Laboratory	GZA	GZA						
Analysis by	Port GC	Port GC						
Sampling of	5/5/80	7/22/80						
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene		<1 ppm						
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane		<1 ppm						
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		<1 ppm						
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene		<1 ppm						
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor Content, ppm	0.6	160						
Methane		✓						
Unidentified Compounds		✓(2)						

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not qualified.

Table C.2-16 **Page** 1 **of** 1

WATER QUALITY MONITORING DATA

PORTABLE GC SCREENING

Site: Mottolo
Location: Raymond, NH

Sampling Station: S-4

COMPOUNDS

Laboratory	GZA							
Analysis by	Port GC*							
Sampling of	5/5/80							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride								
7. Acrylonitrile								
8. Trichlorofluoromethane								
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane								
11. Trans-1,2-dichloroethylene								
12. Chloroform								
13. 1,2-dichloroethane								
14. 1,1,1-trichloroethane								
15. Carbon tetrachloride								
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene								
20. Benzene								
21. Dibromochloromethane								
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene								
27. Toluene								
28. Chlorobenzene								
29. Ethyl benzene								
30. Bis-chloromethyl ether								
31. 2-chloroethyl vinyl ether								
32. Acrolein								

ADDITIONAL

Total Organic Vapor								
Content, ppm	0.0							

NOTES: ALL RESULTS IN mg/l (ppm) UNLESS NOTED

(1) Total organic vapor contents based on 3 cc injections of headspace gas from water samples. A Century Systems OVA-128 with flame ionization detector was employed. Results expressed in ppm referenced to a methane in air standard.

(2) Compound identifications are tentative only and were based on matching peak elution times with retention times of known compounds.

(3) All reported concentrations were based on single point calibration standards and should be considered approximate only.

(4) ✓ indicates compound detected but concentrations not qualified.

Table C.3-1

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
OW-1

	Laboratory	NHWS	NHWS	NHWS					
	Analysis by								
Compounds	Sampling on	8/79	10/79	11/79					
Arsenic		< .05		< .01					
Barium		.11							
Cadmium		.013		.007					
Chromium		.05		.03					
Copper				< .1					
Iron		144							
Lead		.06							
Manganese		5.4							
Mercury									
Nickel				< .1					
Selenium		.01							
Zinc				5					
Silver									

Additional Parameters

pH units	6.5	6.2	5.8					
Spec. Conductance, uMHOs	141	104	74					
TOC	10	2						
COD	72	55	32					
Phenolics								
$NO_2 + NO_3$	1.71							
Chloride	1	1						
Sulfate	4							
Total Solids	31							
Color	5							

All Results in mg/l (ppm) unless noted

Table C.3-2 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
OW-2-1

	Laboratory Analysis by	NHWS	NHWS	NHWS	NHWS	NHWS	NHWS		
Compounds	Sampling on	8/79	10/79	11/79	7/80	10/80	12/80		
Arsenic		< .05	.5	.37	1.73	.18	<.005		
Barium		< .01	.15		.2				
Cadmium		< .01	<.005	<.005	< .005				
Chromium		.02	.02	.02	.09	.05	.08		
Copper			.8	.1	.1				
Iron		84	140		245	310	130		
Lead		< .05			.02				
Manganese		1.7	50		90	73	23.5		
Mercury					<.001				
Nickel				.1	.2				
Selenium		<.01	<.01		< .005				
Zinc				.21	.87	.64	.77		
Silver					< .01				

Additional Parameters

pH units	6.8	6.4	6.3	6.3				
Spec. Conductance, uMHOs	235	1,010	1,200	7,600				
TOC	27	660			1,300	100[a]		
COD	167	1,336	1,560	1,730				
Phenolics						<.15		
$NO_2 + NO_3$	.09							
Chloride	16							
Sulfate	10							
Total Solids	213	975						
Color								

a. Approximate from dilution.

All Results in mg/1 (ppm) unless noted

Table C.3-3 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
OW-2-2

Laboratory	NHWS	NHWS						
Analysis by								
Compounds Sampling on	7/80	10/80						
Arsenic	.23	1.6						
Barium	.05							
Cadmium	< .005							
Chromium	.01	.01						
Copper	< .1							
Iron	220	200						
Lead	< .01							
Manganese	59.5	49						
Mercury	< .001							
Nickel	.1							
Selenium	< .005							
Zinc	.11	.06						
Silver	< .01							

Additional Parameters								
pH units	6.6							
Spec. Conductance, uMHOs	1,022							
TOC		1,200						
COD	2,150							
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table C.3-4 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station: OW-3

Compounds	Laboratory Analysis by Sampling on							
	NHWS	NHWS	NHWS	GZA				
	8/79	10/79	11/79	5/80				
Arsenic	< .05		< .01					
Barium	< .01							
Cadmium	< .01		< .005					
Chromium	.02		< .01					
Copper			< .1					
Iron	98							
Lead	< .05							
Manganese	.51							
Mercury								
Nickel			.1					
Selenium	< .01							
Zinc			11.2					
Silver								
Additional Parameters								
pH units	8.4	6.6	5.7	6.4				
Spec. Conductance, uMHOs	83	38	23	55				
TOC	6	1						
COD	48	157	72					
Phenolics								
$NO_2 + NO_3$	.08							
Chloride	8	2						
Sulfate	6							
Total Solids	139							
Color	10							

All Results in mg/l (ppm) unless noted

Table C.3-5 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
OW-4-1

Laboratory Analysis by	GZA	NHWS	NHWS	NHWS				
Compounds Sampling on	5/80	7/80	10/80	12/80				
Arsenic		<.01	.035	.02				
Barium		.11						
Cadmium		.006						
Chromium		.05	.02	.03				
Copper		.1						
Iron		220	85	40				
Lead		.07	.015					
Manganese		14.5	19	23.5				
Mercury		<.001						
Nickel		.2						
Selenium		<.005						
Zinc		38	31.5	77				
Silver		.02						
Additional Parameters								
pH units	7.0	6.3						
Spec. Conductance, uMHOs	120	238						
TOC			200	200a.				
COD		193						
Phenolics				.132				
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

a. Approximate from dilution.

All Results in mg/1 (ppm) unless noted

Table C.3-6

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station: JB-5

Compounds	NHWS	NHWS	NHWS					
Laboratory Analysis by								
Sampling on	7/80	10/80	12/80					
Arsenic	.29	.14	.15					
Barium	.13							
Cadmium	.008							
Chromium	.11	.02	.04					
Copper	.2							
Iron	180	130	150					
Lead	1.1	.09						
Manganese	39.4	29.5	38					
Mercury	<.001							
Nickel	.2							
Selenium	<.005							
Zinc	1.96	.81	.87					
Silver	.01							

Additional Parameters								
pH units	6.4							
Spec. Conductance, uMHOs	500							
TOC		300	100 [a]					
COD	809							
Phenolics			.106					
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

[a] Approximate from dilution.

All Results in mg/l (ppm) unless noted

Table C.3-7 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
JB-6

Laboratory Analysis by	NHWS							
Compounds — Sampling on	7/80							
Arsenic	.14							
Barium	.22							
Cadmium	<.005							
Chromium	.21							
Copper	.2							
Iron	105							
Lead	.13							
Manganese	9							
Mercury	<.001							
Nickel	.1							
Selenium	<.005							
Zinc	47							
Silver	.01							
Additional Parameters								
pH units	6.4							
Spec. Conductance, uMHOs	153							
TOC								
COD	834							
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table C.3-8 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station: JB-7

Laboratory Analysis by	NHWS	NHWS						
Compounds Sampling on	7/80	10/80						
Arsenic	.6	.19						
Barium	.11							
Cadmium	.007							
Chromium	.05	.03						
Copper	.3							
Iron	175	105						
Lead	3.2	.575						
Manganese	23.5	19.5						
Mercury	<.001							
Nickel	.2							
Selenium	<.005							
Zinc	16	4.5						
Silver	<.01							

Additional Parameters

pH units	6.4							
Spec. Conductance, uMHOs	220							
TOC		100						
COD	154							
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
JB-8

Laboratory	GZA	NHWS						
Analysis by								
Compounds Sampling on	5/80	7/80						
Arsenic		.17						
Barium		.3						
Cadmium		< .005						
Chromium		.05						
Copper		.1						
Iron		60						
Lead	-	.01						
Manganese		1.89						
Mercury		< .001						
Nickel		.1						
Selenium		< .005						
Zinc		19						
Silver		.01						

Additional Parameters								
pH units	6.8							
Spec. Conductance, uMHOs	151							
TOC								
COD	38.5							
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table C.5-10

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
JB-9

Compounds									
	Laboratory	NHWS							
	Analysis by								
	Sampling on	12/80							
Arsenic		.032							
Barium									
Cadmium									
Chromium		.08							
Copper									
Iron		55							
Lead									
Manganese		2.21							
Mercury									
Nickel									
Selenium									
Zinc		23.5							
Silver									

Additional Parameters

pH units								
Spec. Conductance, uMHOs								
TOC	20							
COD								
Phenolics	< .005							
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/1 (ppm) unless noted

Table C.3-11

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook S-1
(Upstream)

Laboratory Analysis by	GZA	NHWS						
Compounds Sampling on	5/80	7/80						
Arsenic		.01						
Barium		.1						
Cadmium		< .005						
Chromium		.02						
Copper		.1						
Iron		25						
Lead		.16						
Manganese		24						
Mercury		< .001						
Nickel		.1						
Selenium		< .005						
Zinc		.21						
Silver		< .01						

Additional Parameters

pH units	5.4	6.8						
Spec. Conductance, uMHOs	50	77.7						
TOC								
COD		2,000						
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table C.3-12

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook S-2
(Near JB-6)

Laboratory	GZA							
Analysis by								
Compounds / Sampling on	5/80							
Arsenic								
Barium								
Cadmium								
Chromium								
Copper								
Iron								
Lead								
Manganese								
Mercury								
Nickel								
Selenium								
Zinc								
Silver								
Additional Parameters								
pH units	5.71							
Spec. Conductance, uMHOs	210							
TOC								
COD								
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/1 (ppm) unless noted

Table C.3-13

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook S-3
(Downstream)

Compounds / Laboratory Analysis by / Sampling on	GZA 5/80	NHWS 7/80						
Arsenic		.023						
Barium		.2						
Cadmium		< .005						
Chromium		.01						
Copper		< .1						
Iron		15						
Lead		.025						
Manganese		15.5						
Mercury		< .001						
Nickel		< .1						
Selenium		< .005						
Zinc		.11						
Silver		< .01						

Additional Parameters

pH units	5.91	6.8						
Spec. Conductance, uMHOs	70	21.5						
TOC								
COD		385						
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table C.3-14 Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Brook S-4
(Upstream Near JB-8)

Laboratory Analysis by	GZA							
Compounds Sampling on	5/80							
Arsenic								
Barium								
Cadmium								
Chromium								
Copper								
Iron								
Lead								
Manganese								
Mercury								
Nickel								
Selenium								
Zinc								
Silver								

Additional Parameters

pH units	6.06							
Spec. Conductance, uMHOs	115							
TOC								
COD								
Phenolics								
$NO_2 + NO_3$								
Chloride								
Sulfate								
Total Solids								
Color								

All Results in mg/l (ppm) unless noted

Table C.3-15

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Well in Shed Near
Access Road

Laboratory	NHWS	NHWS							
Analysis by									
Compounds Sampling on	8/79	10/79							
Arsenic	< .05	< .01							
Barium	< .1	< .1							
Cadmium	< .01	< .005							
Chromium	< .01	< .01							
Copper		.49							
Iron	.1	.1							
Lead	< .05								
Manganese	.01	.04							
Mercury									
Nickel									
Selenium	< .01	< .01							
Zinc									
Silver									

Additional Parameters

pH units	6.5	6.6							
Spec. Conductance, uMHOs	85	125							
TOC	4	1							
COD	12	2							
Phenolics									
$NO_2 + NO_3$	.31	.24							
Chloride	< 1	1							
Sulfate	5								
Total Solids	74	87							
Color	10								

All Results in mg/l (ppm) unless noted

Table C.3-16

Page 1 of 1

WATER QUALITY MONITORING DATA

INORGANIC COMPOUNDS
AND OTHER PARAMETERS

Site: Mottolo
Location: Raymond, NH

Sampling Station:
Surface Runoff
Near OW-2

Laboratory Analysis by	NHWS	NHWS						
Compounds / Sampling on	8/79	11/79						
Arsenic	< .05	< .01						
Barium	< .1							
Cadmium	< .01	< .005						
Chromium	< .01	< .01						
Copper								
Iron	.3							
Lead	< .05							
Manganese	.1							
Mercury								
Nickel		.1						
Selenium	< .01							
Zinc		.01						
Silver								

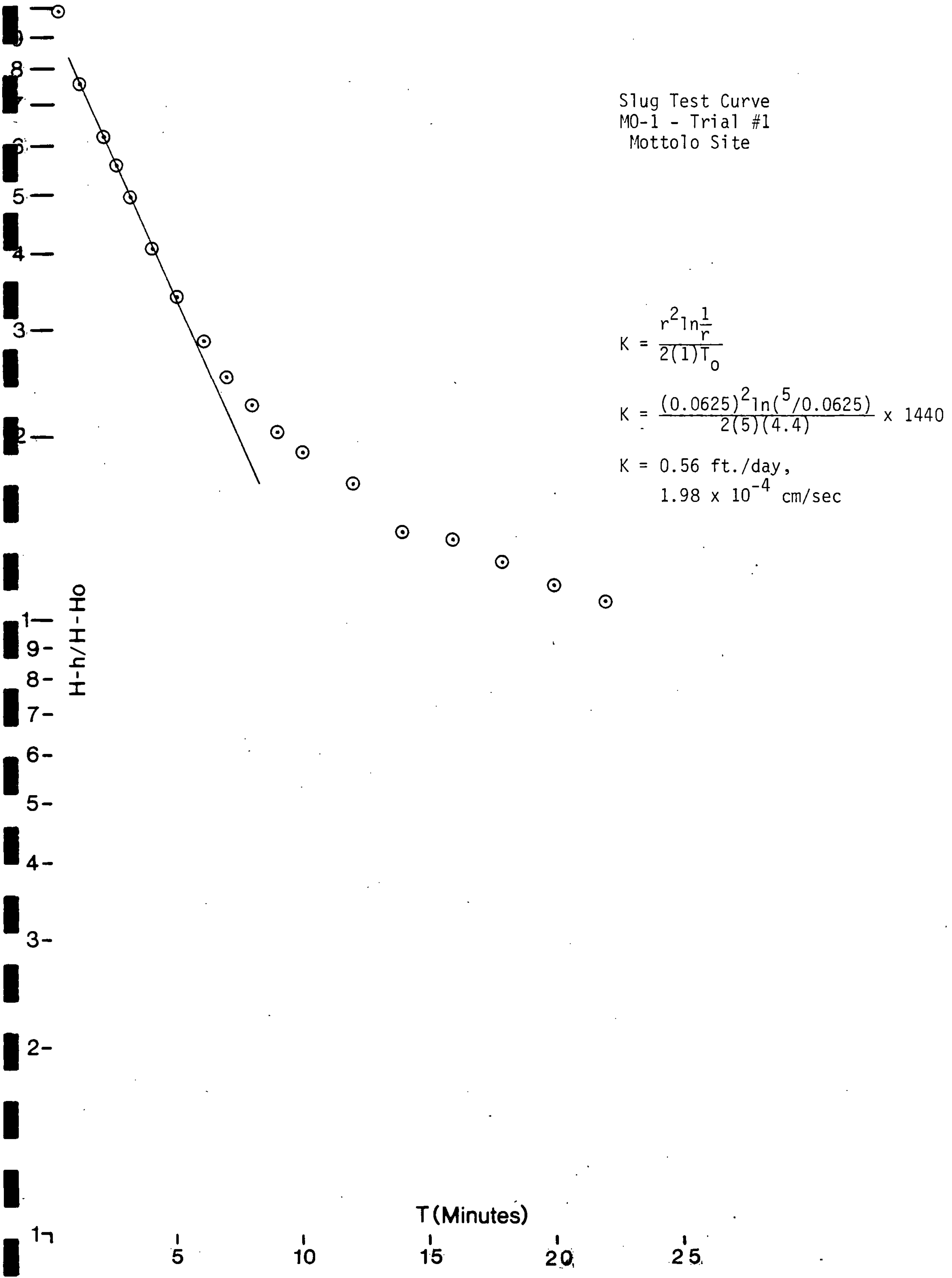
Additional Parameters

pH units	5.4	5.6						
Spec. Conductance, uMHOs	34	32						
TOC	11							
COD	28	56						
Phenolics								
$NO_2 + NO_3$	.06							
Chloride	1							
Sulfate	80							
Total Solids	56							
Color	70							

All Results in mg/l (ppm) unless noted

APPENDIX E

Slug Test and Water Elevation Data

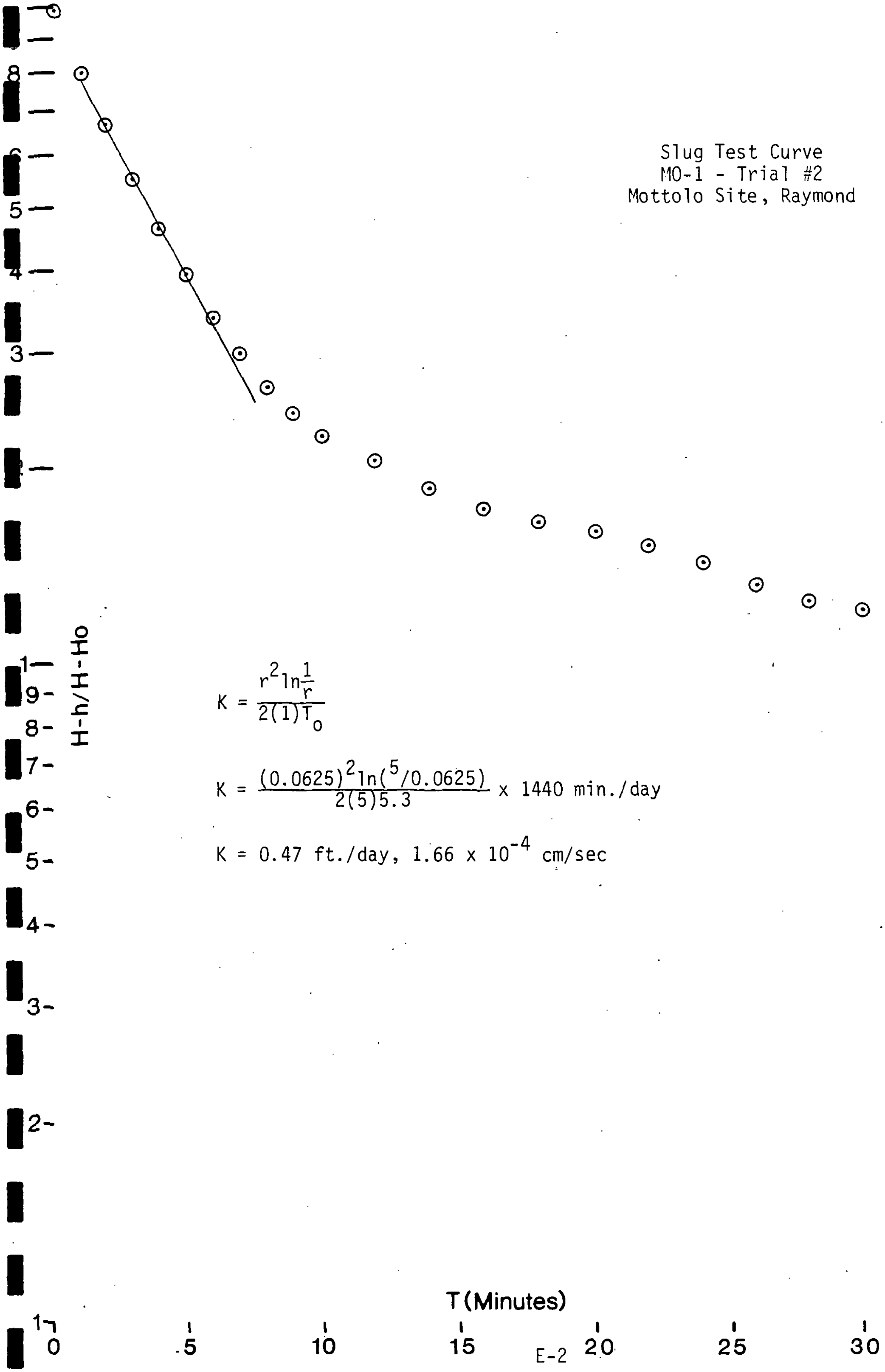


Slug Test Curve
MO-1 - Trial #1
Mottolo Site

$$K = \frac{r^2 \ln \frac{l}{r}}{2(l)T_o}$$

$$K = \frac{(0.0625)^2 \ln(5/0.0625)}{2(5)(4.4)} \times 1440$$

$K = 0.56$ ft./day,
1.98×10^{-4} cm/sec

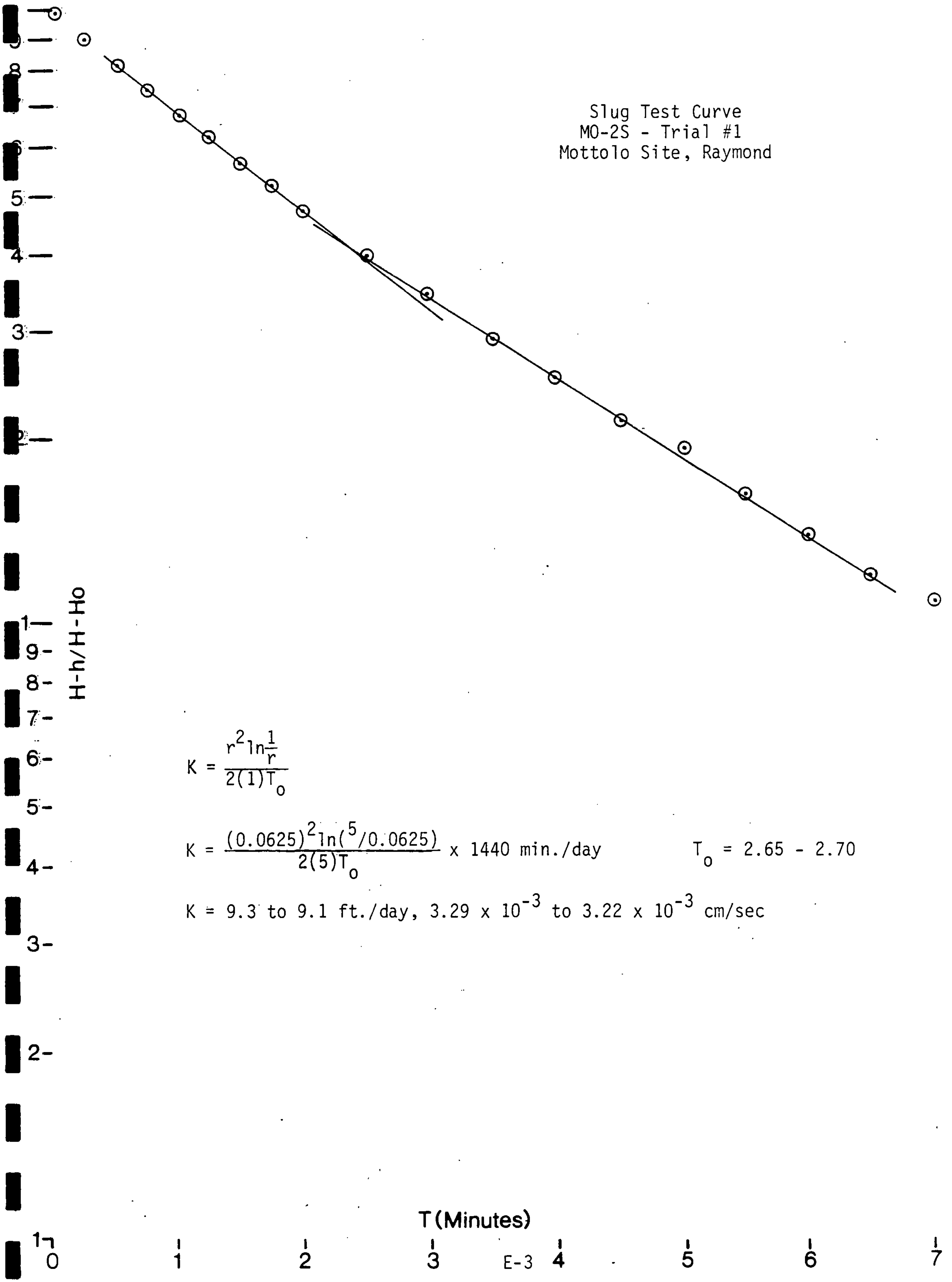


Slug Test Curve
MO-1 - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln \frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)5.3} \times 1440 \text{ min./day}$$

$K = 0.47$ ft./day, 1.66×10^{-4} cm/sec

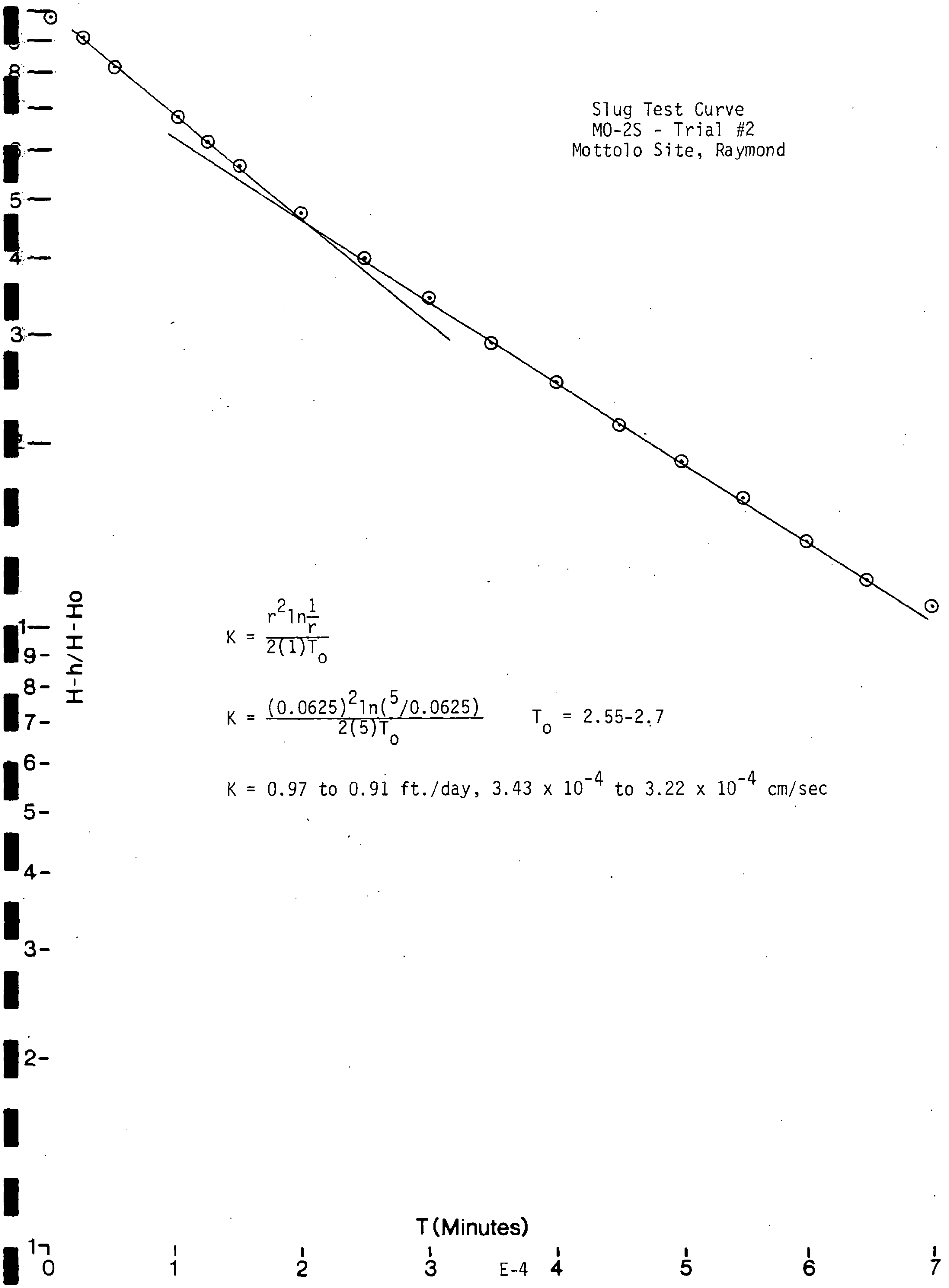


Slug Test Curve
MO-2S - Trial #1
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)T_o} \times 1440 \text{ min./day} \qquad T_o = 2.65 - 2.70$$

K = 9.3 to 9.1 ft./day, 3.29×10^{-3} to 3.22×10^{-3} cm/sec

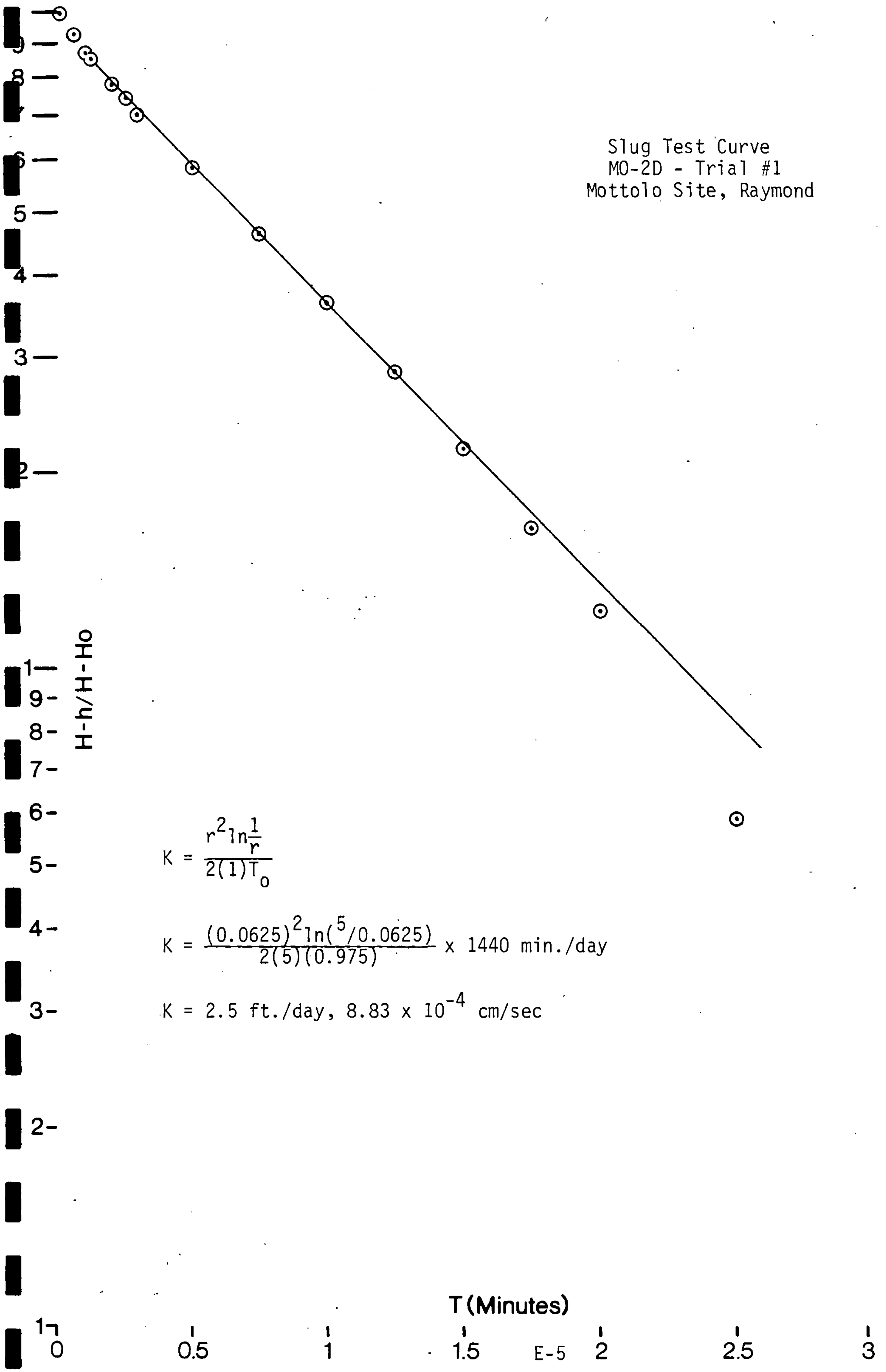


Slug Test Curve
MO-2S - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)T_o} \qquad T_o = 2.55\text{-}2.7$$

K = 0.97 to 0.91 ft./day, 3.43×10^{-4} to 3.22×10^{-4} cm/sec

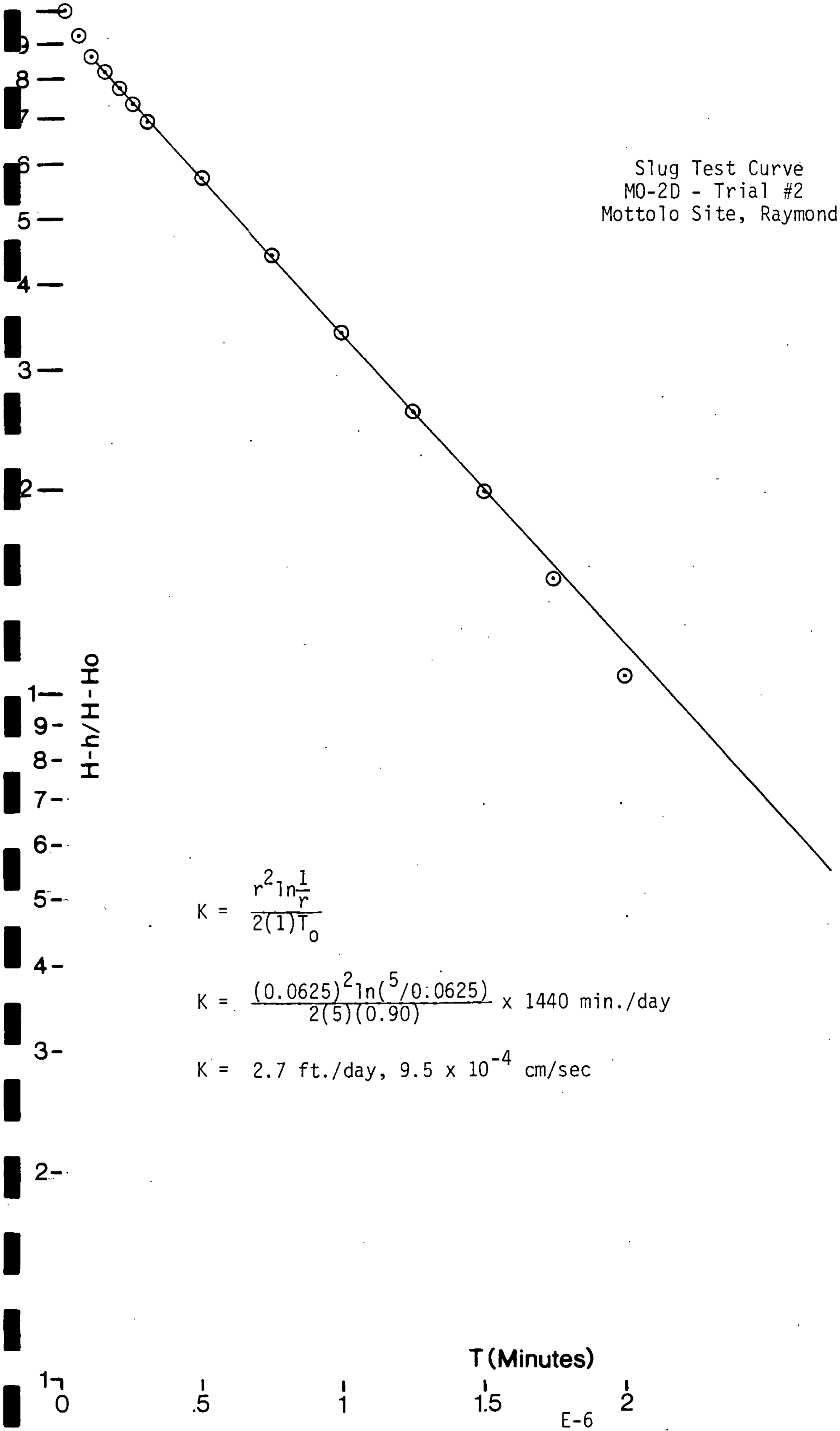


Slug Test Curve
MO-2D - Trial #1
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)(0.975)} \times 1440 \text{ min./day}$$

$$K = 2.5 \text{ ft./day}, 8.83 \times 10^{-4} \text{ cm/sec}$$



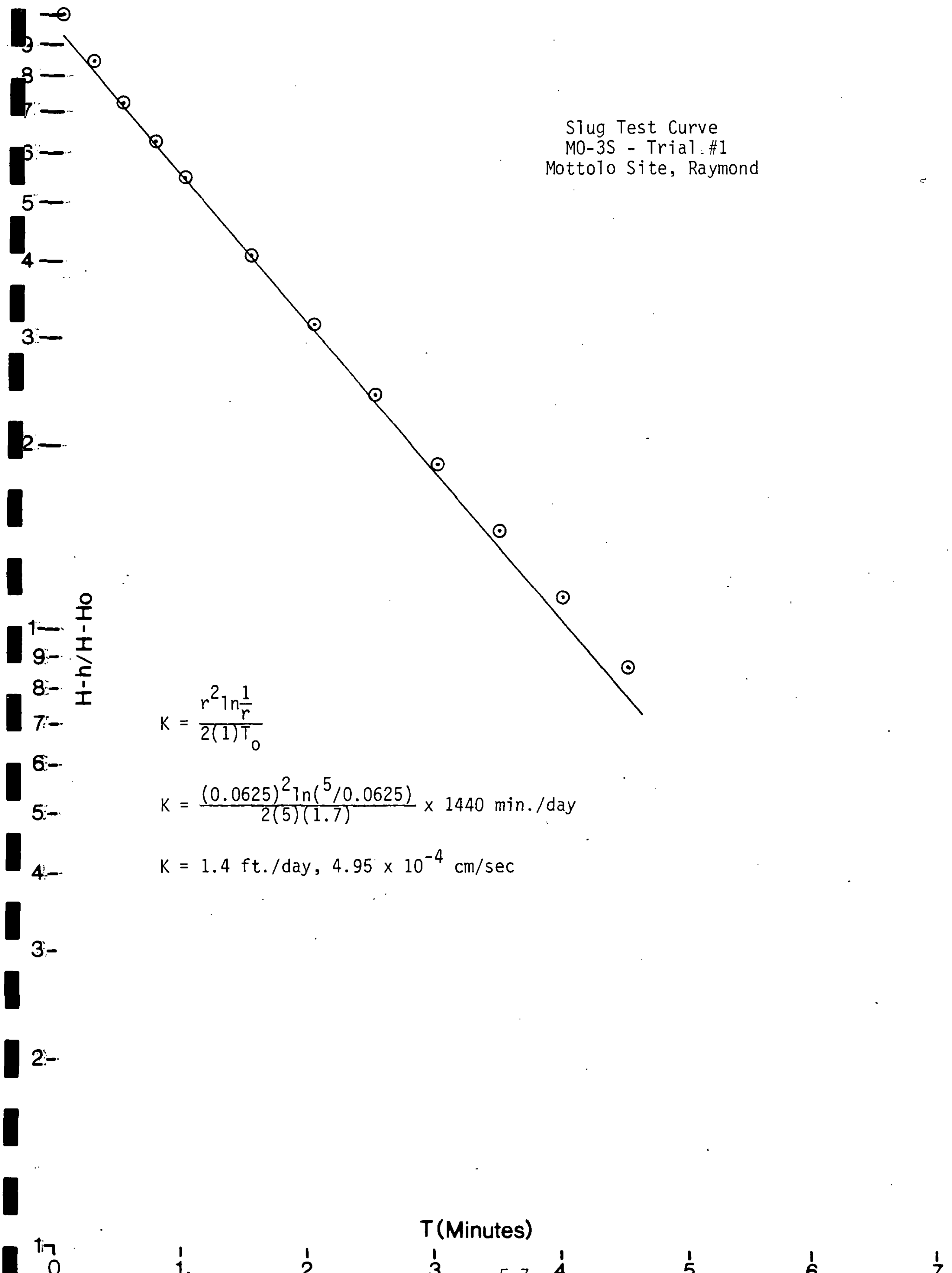
Slug Test Curve
MO-2D - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln \frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)(0.90)} \times 1440 \text{ min./day}$$

K = 2.7 ft./day, 9.5 x 10^{-4} cm/sec

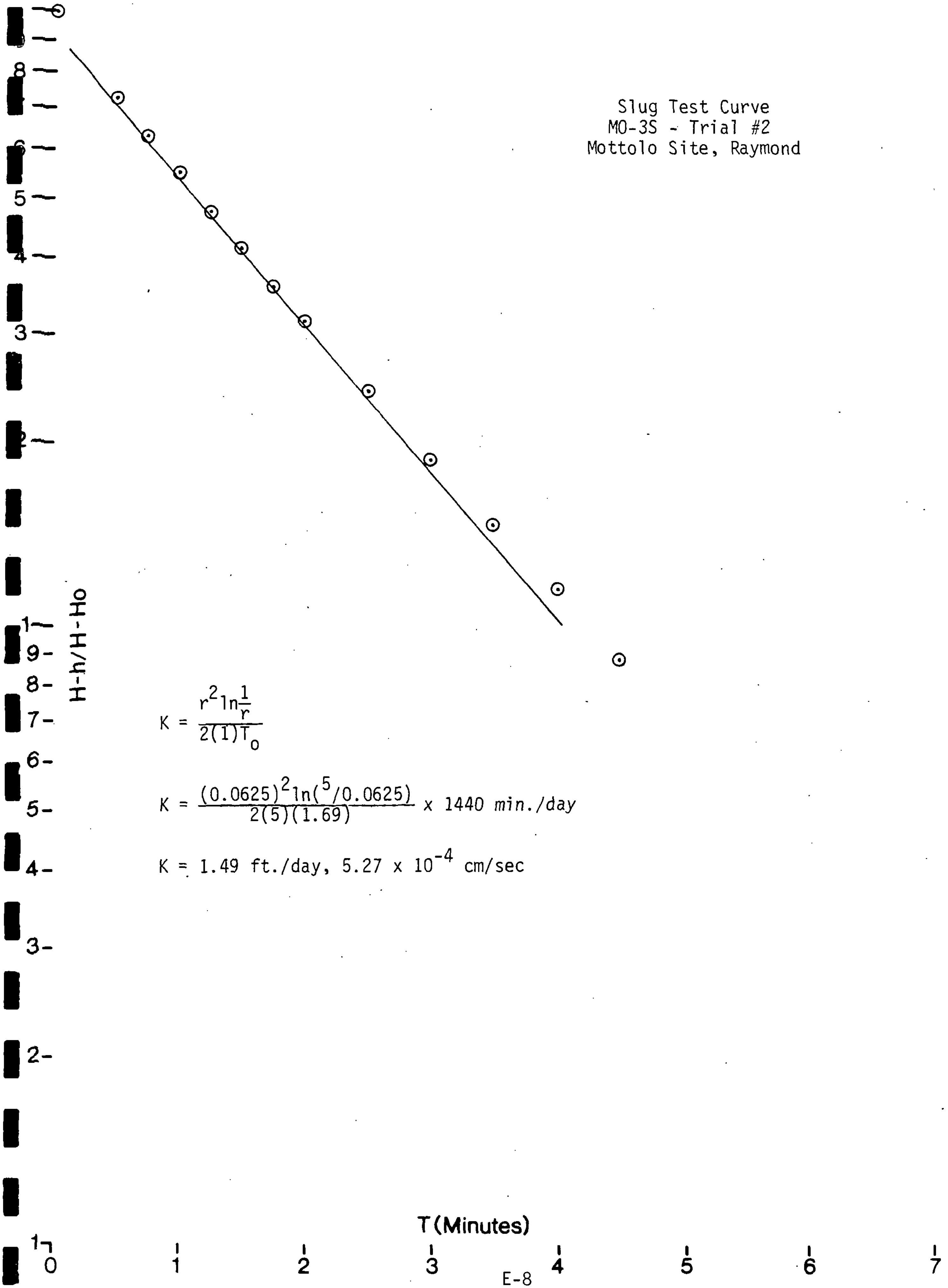
Slug Test Curve
MO-3S - Trial #1
Mottolo Site, Raymond



$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)(1.7)} \times 1440 \text{ min./day}$$

$K = 1.4$ ft./day, 4.95×10^{-4} cm/sec

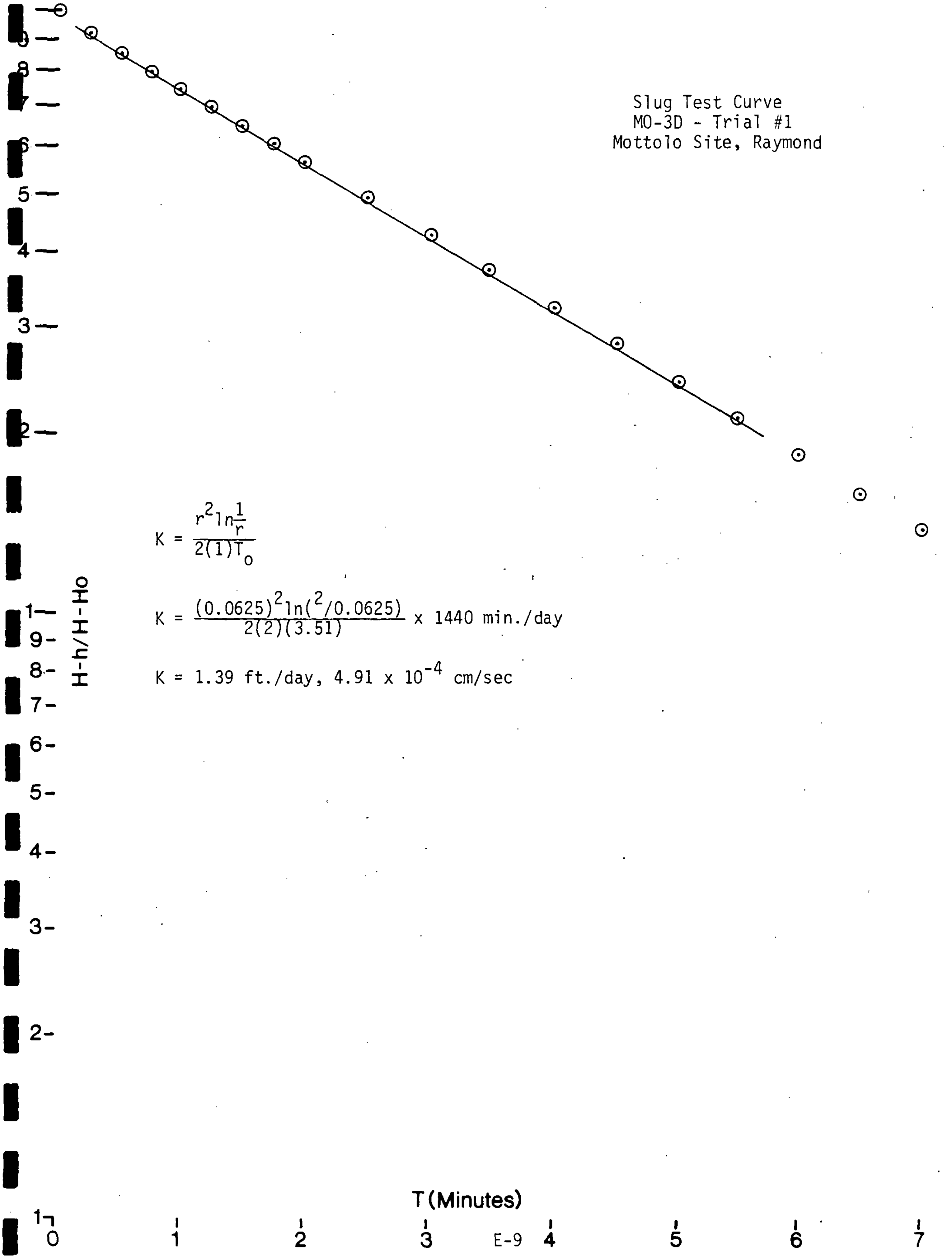


Slug Test Curve
MO-3S - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(5/0.0625)}{2(5)(1.69)} \times 1440 \text{ min./day}$$

$K = 1.49$ ft./day, 5.27×10^{-4} cm/sec

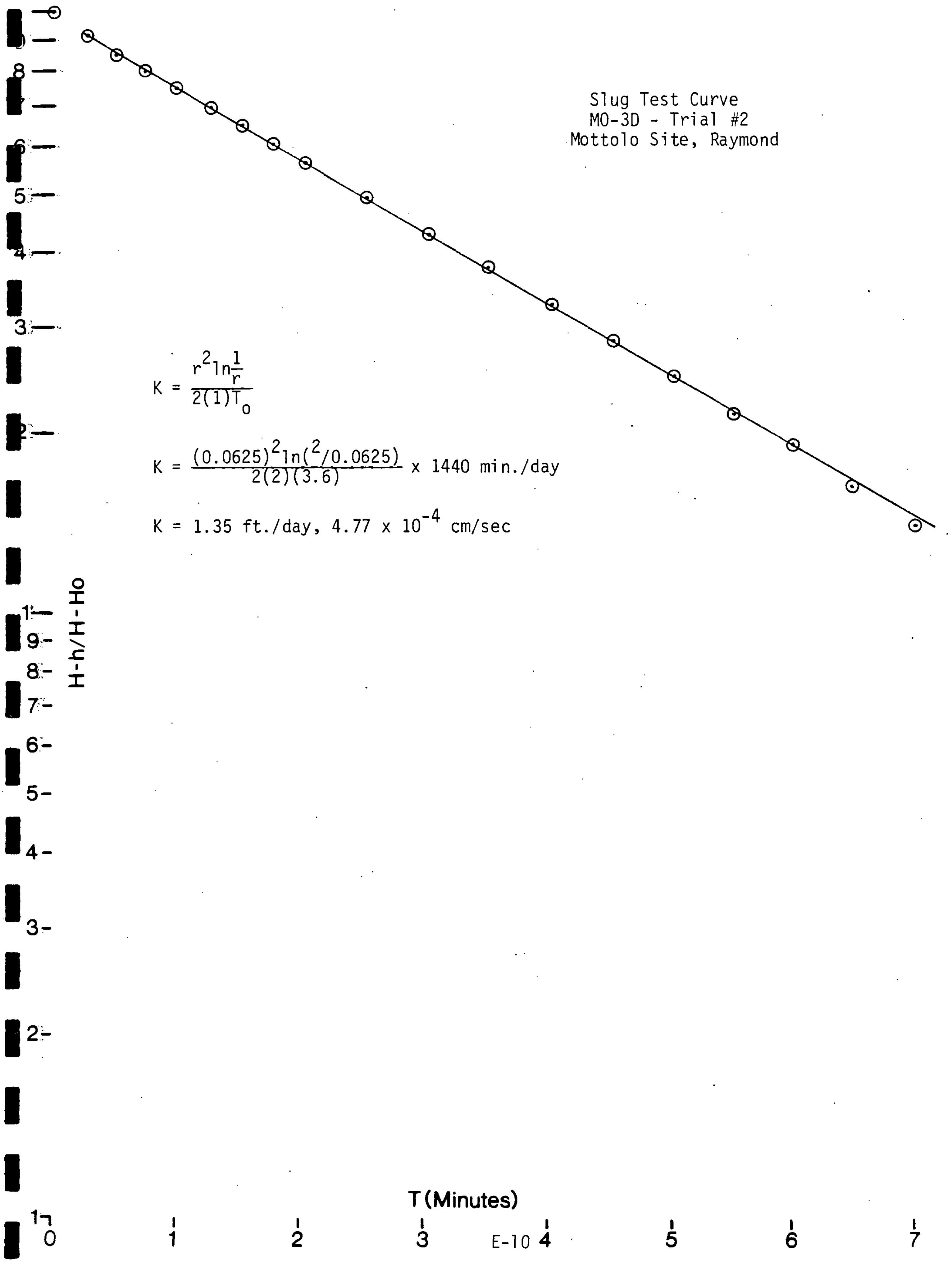


Slug Test Curve
MO-3D - Trial #1
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^2/0.0625)}{2(2)(3.51)} \times 1440 \text{ min./day}$$

$$K = 1.39 \text{ ft./day}, 4.91 \times 10^{-4} \text{ cm/sec}$$

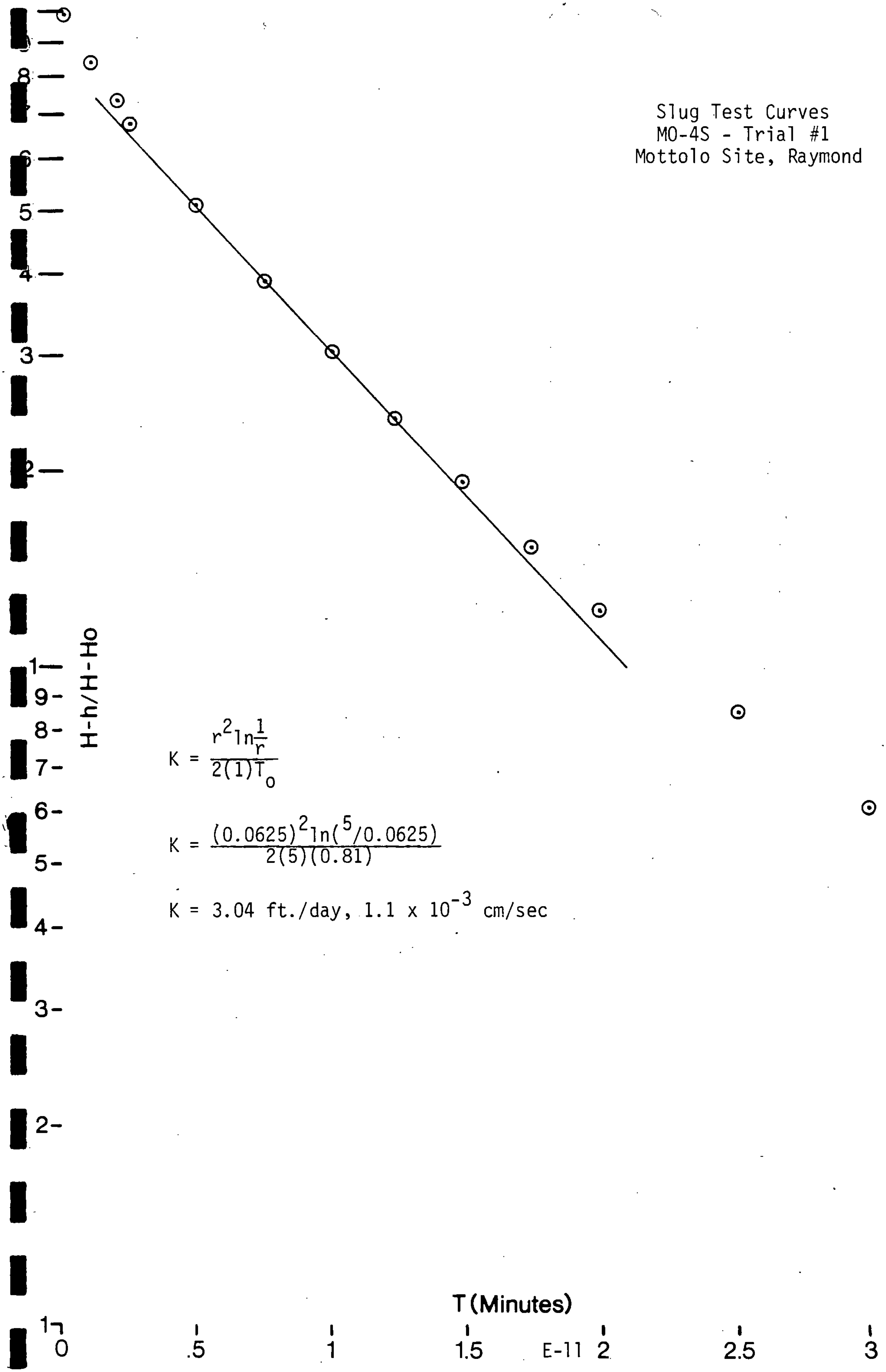


Slug Test Curve
MO-3D - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln \frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln({}^2/0.0625)}{2(2)(3.6)} \times 1440 \text{ min./day}$$

$$K = 1.35 \text{ ft./day}, 4.77 \times 10^{-4} \text{ cm/sec}$$

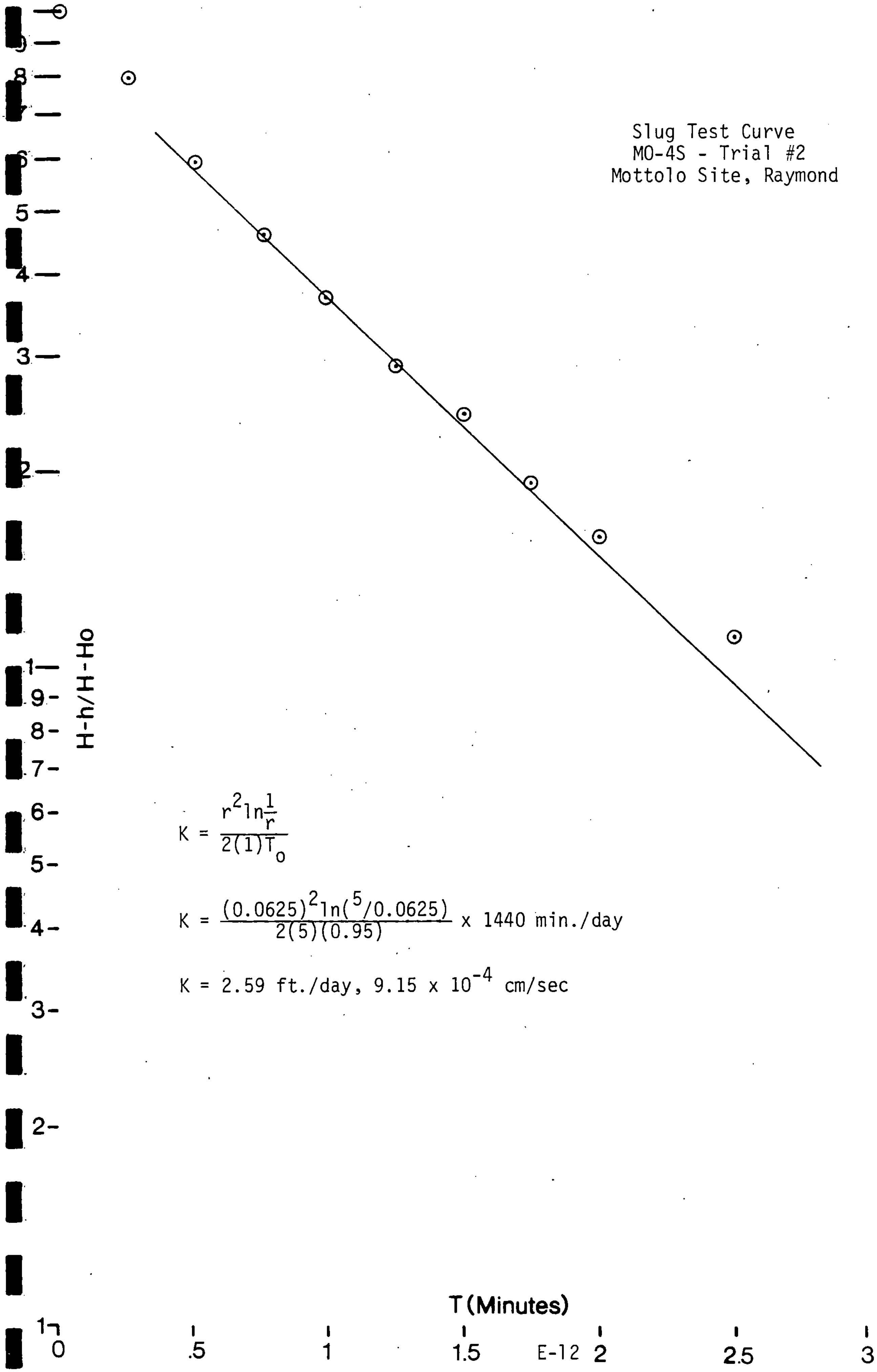


Slug Test Curves
MO-4S - Trial #1
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)(0.81)}$$

K = 3.04 ft./day, 1.1 x 10^{-3} cm/sec

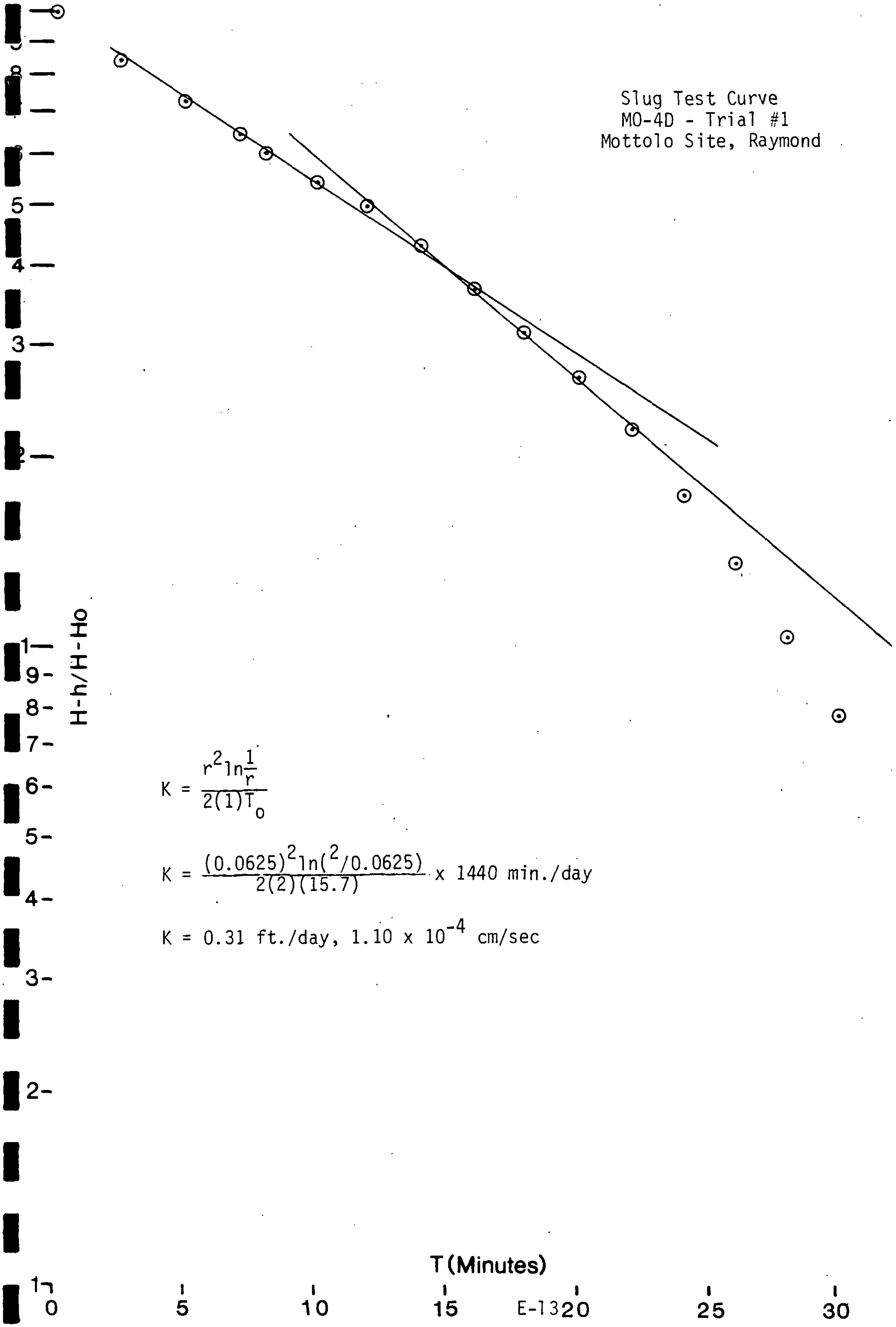


Slug Test Curve
MO-4S - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^5/0.0625)}{2(5)(0.95)} \times 1440 \text{ min./day}$$

$K = 2.59$ ft./day, 9.15×10^{-4} cm/sec

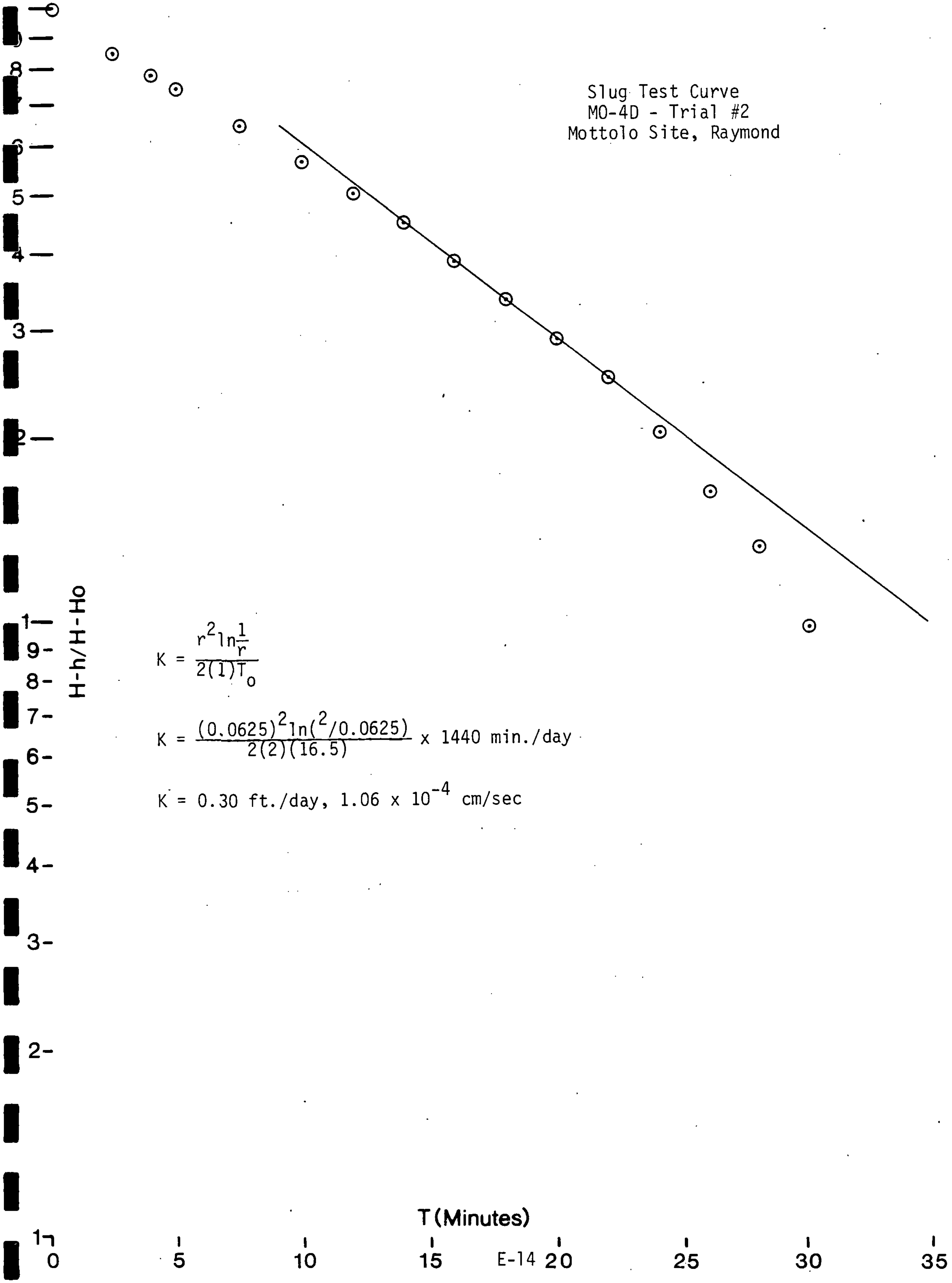


Slug Test Curve
MO-4D - Trial #1
Mottolo Site, Raymond

$$K = \frac{r^2 \ln \frac{1}{r}}{2(1)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^2/0.0625)}{2(2)(15.7)} \times 1440 \text{ min./day}$$

$K = 0.31$ ft./day, 1.10×10^{-4} cm/sec



Slug Test Curve
MO-4D - Trial #2
Mottolo Site, Raymond

$$K = \frac{r^2 \ln\frac{l}{r}}{2(l)T_o}$$

$$K = \frac{(0.0625)^2 \ln(^2/0.0625)}{2(2)(16.5)} \times 1440 \text{ min./day}$$

$$K = 0.30 \text{ ft./day}, 1.06 \times 10^{-4} \text{ cm/sec}$$

Groundwater Elevation Summary
Mottolo Site, Raymond, New Hampshire

		April 10, 1985		July 3, 1985		July 5, 1985		July 25, 1985		August 22, 1985	
Well Location	Reference Elevation[1]	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation
MO-1	264.75 (pvc)					11.38	253.37	12.04	252.71	12.32	252.43
MO-2S	220.51 (pvc)			2.75	217.76	2.92	217.59	2.88	217.63	2.89	217.62
MO-2D	220.34 (pvc)			2.53	217.81	2.58	217.76	2.73	217.61	2.73	217.61
MO-3S	220.98 (steel)					3.58	217.40	3.56	217.42	3.54	217.44
MO-3D	221.36 (pvc)					3.21	218.15	3.40	217.96	3.41	217.95
MO-4S	221.25 (pvc)					1.92	219.33	2.04	219.21	2.04	219.21
MO-4D	221.77 (pvc)					2.04	219.73	2.16	219.61	2.27	219.50
MO-5S	215.30 (pvc)							3.62	211.68	3.00	212.30
MO-5D	215.12 (pvc)							3.17	211.95	2.79	212.33
MO-6	202.04 (steel)							flowing	+202.04	flowing	+202.04
Dug Well	258.26	5.35	252.91					7.10	251.16	8.68	249.58
OW-1	256.78 (steel)	12.35*	244.43					- not measured -		- not measured -	
OW-2	243.94 (shallow-steel)	4.60	239.34					7.78	236.16	8.01	235.93
	243.94 (deep-barcad)	- not measured -						- not measured -		- not measured -	
OW-3	255.10	5.90	249.20					7.85	247.25	8.16	246.94
OW-4	251.01 (shallow-steel)	4.75	246.26					7.33	243.68	7.35	243.66
	251.22 (deep-barcad)	- not measured -						- not measured -		11.70	239.52
JB-5	223.46 (top of riser)	3.67	219.79					- not measured -		- not measured -	
JB-6	221.96 (top of riser)	3.93	218.03					- not measured -		- not measured -	

Groundwater Elevation Summary (continued)

		April 10, 1985		July 3, 1985		July 5, 1985		July 25, 1985		August 22, 1985	
Well Location	Reference Elevation[1]	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation
JB-7	221.24 (top of riser)	2.16	219.08							2.42	218.82
JB-8	222.07 (top of riser)	1.92	220.15							2.08	219.99
JB-9	222.26 (top of riser)	4.65	217.61								
R-1	221.23 (top of tubing)									4.18	217.05
R-2	218.78 (top of tubing)									2.15	216.63
R-3	218.81 (top of tubing)									2.16	216.65
Open Piezometer nr R-3	220.79			3.83	216.96					4.06	216.73
R-4	221.60 (top of tubing)									3.53	218.07
R-5	219.12			0.92	218.20					1.17	217.95
R-6	220.10 (top of tubing)									2.18	217.92
R-7	217.43 (top of tubing)									2.69	214.74
R-8	215.10 (top of tubing)									0.68	214.42
R-9	222.53 (top of tubing)									dry	-
R-10	217.14 (top of tubing)									2.21	214.93
R-11	213.77 (top of tubing)									1.37	212.40

[1] Tied to site vertical datum.

*Well is bent.