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VOLUME III OF VIII
MOTTOLO SITE
REMEDIAL INVESTIGATION REPORT
APPENDIX A-1

Submitted to:

United States Environmental Protection Agency
Region I
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APPENDIX A-1
SUMMARY ASSESSMENT REPORT
FEBRUARY 1988

VOLUME II OF III

SUMMARY ASSESSMENT REPORT
MOTTOLO SUPERFUND SITE
RAYMOND, NEW HAMPSHIRE

Prepared for:

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VOLUME II OF III

SUMMARY ASSESSMENT
MOTTOLO SUPERFUND SITE
RAYMOND, NEW HAMPSHIRE

1.0 INTRODUCTION

Balsam Environmental Consultants, Inc. (Balsam) has prepared a summary assessment of prior investigations conducted at the Mottolo Superfund site in Raymond, New Hampshire. This assessment includes a discussion of the environmental setting and history of the site, and summarizes findings of past hydrogeologic investigations, environmental sampling, and an health risk assessment conducted for the site. A limited assessment of the findings of these studies is provided herein. This assessment was undertaken to summarize the current understanding of site conditions and to provide the basis for the "Scope of Work for the Remedial Investigation/Feasibility Study" deliverable for the site.

2.0 ENVIRONMENTAL SETTING

2.1 SITE LOCATION AND GENERAL DESCRIPTION

The Mottolo Superfund site is located on Blueberry Hill Road in southeastern Raymond, New Hampshire. A locus plan is provided as Figure 2-1. Raymond is a rural, residential community with a population of approximately 9,000.

The Mottolo property comprises approximately 50 acres; however, the portion previously studied and of current interest is generally contained within two acres, formerly occupied by a piggery. The remainder of the parcel is undeveloped and heavily wooded. An area plan is provided as Figure 2-2.

The property is bounded by a residential neighborhood to the north. Areas to the south and east of the site are presently undergoing residential development, while land to the west remains undeveloped.

The cleared area of the site presently contains three structures. The first is an abandoned, one-story, wooden structure located on the site access road and which houses a dug well. The second structure is an abandoned, one-story, wooden-frame building on a concrete slab formerly used as the main piggery building. The third structure is a concrete slab from a former, one-story, wooden-frame building presumably used in the piggery operations. This slab is located to the west of the former main building. A site plan is provided as Figure 2-3.

2.2 TOPOGRAPHY

The topography in the Raymond area is typical of glaciated regions of southern New Hampshire. Land elevation in the vicinity of the Mottolo site ranges from approximately 185 to 235 feet above mean sea level (MSL). Generally, regional topographic relief slopes downward toward the northeast at approximately 10 percent. The majority of the former working area of the site, which contains the piggery building and pad as shown on

Figure 2-3, is located in an upland area. In this area, topographic relief reportedly drops by approximately 15 feet toward the north, across a former drum disposal area to the swale (Figure 2-3). The topography to the east of the former piggery building drops steeply (approximately 50 feet) to form the valley which contains Brook A. The remaining cleared area north of the swale has minimal relief which slopes toward the south (and the swale) at approximately three percent. It should be noted that the natural topography in the former drum disposal area and north of the swale has been altered by prior site activities, as discussed in Section 3.3.

At the base of the former drum disposal area, a seasonal stream, located in a swale draining approximately four acres of the undeveloped woodland between the cleared site area and Blueberry Hill Road, flows easterly across the site and down the valley wall into Brook A (Figure 2-3). Brook A flows northerly, eventually joining the Exeter River, which provides a secondary drinking water supply for the Town of Exeter, approximately 4,300 feet downstream of the site (Figure 2-1). Drainage patterns in the site vicinity suggest that surface water drainage is generally toward the north and northeast in the direction of the swale and Brook A, respectively.

2.3 GEOLOGY

Surficial geologic deposits in the site area are generally the result of pre-glacial and glacial events. According to United States Geological Survey (USGS) surficial geologic maps, the site is located in an upland area, surrounded by primarily surficial sediments previously deposited in glacial lakes. Prior investigations have indicated that the site stratigraphy consists largely of fill, topsoil, stratified drift, and glacial till. All of these units are significant in that they possess different hydraulic properties and will, therefore, influence contaminant distribution and migration variably.

Topsoil, subsoil, and natural organic debris (humus) exist in both the upland and lower site sections. Topsoils in the valley of Brook A have not been disturbed and generally consist of less than two feet of leaf litter

and humus. Much of the topsoil in the former drum disposal area has been stripped or is covered by fill. Soils observed southwest of the piggery building indicated a natural soil profile; typically 0.5 feet of topsoil over 1 to 2 feet of sandy subsoil.

Several varieties of fill exist on the property. Waste apparently associated with the piggery operation was pushed over the steep embankment located immediately east of the main building. This fill has been reported to include tin cans, paper, bottles, bones, and empty 55-gallon drums. Inspections of this area by United States Environmental Protection Agency (EPA) and New Hampshire representatives have not indicated the presence of hazardous wastes in this fill. Cut and fill operations associated with prior drum burial activities were apparently relatively limited. However, local areas filled for roadways and barrel cover may reach a thickness of ten feet. Some on-site grading was also performed by EPA during the 1980 site remedial program.

The stratified drift consists of a mixture of sand and silt that was deposited in contact with glacial melt water. Prior investigations indicated that stratified drift is present in two locations on site. These include areas along the swale and along the valley of Brook A. The stratified drift near Brook A has probably been reworked by alluvial processes and has been reported to consist largely of fine to coarse sand and silty sand. Such material is of relatively high permeability and would tend to be more transmissive to ground water flow than the other stratigraphic units beneath the site.

The glacial till was reported by the New Hampshire Water Supply and Pollution Control Commission (NHWS&PCC) to be a dense, poorly sorted mixture of clay, silt, sand, pebbles, cobbles, boulders and gravel that was largely compacted and deposited beneath the weight of glacial ice. Since glacial till is typically dense and well-graded, it has a relatively low permeability and tends to serve as a confining layer to ground water flow. Data indicate that the topsoil and stratified deposits are generally absent

in the upland portion of the site, excluding the area adjacent to the swale. Thus, in this upland area, the surficial sediments consist primarily of glacial till which directly overlies the bedrock. Conversely, in the lower areas of the site, the glacial till is apparently absent, leaving topsoil and stratified drift directly overlying the bedrock near Brook A.

Based on site boring logs, overburden depth on site varies from zero (at bedrock outcrops) in the southwestern portion of the site to approximately 20 feet near monitoring well OW-2 (see Figure 2-4).

The site is situated on the southeastern flank of the Massabesic Anticlinorium. The trace of the axial surface of the anticlinorium is reportedly approximately 7 miles northwest of the site and strikes about 48-52°E through that area. Rock coring information indicates that the uppermost bedrock in the site area consists of primarily biotite-quartz schist, quartz and granite of the Berwick and Merrimack formations. This information is consistent with regional geologic data published by the USGS.

Site-specific information indicates that the bedrock is weathered and fractured at various depths and at different locations on the site. The bedrock topography reportedly slopes downward from the former drum disposal area northeasterly towards an east-west oriented bedrock trough beneath the swale and then down to the valley of Brook A. The bedrock topography appears to influence the direction of shallow ground water flow in the vicinity of the former drum disposal area.

3.0 SITE HISTORY

3.1 SITE DISCOVERY

The site was discovered in April 1979 when a local official's complaint resulted in an investigation of the Mottolo property by the New Hampshire Bureau of Solid Waste Management (BSWM). This investigation revealed a small (one-quarter acre) open face dump containing approximately thirty (30) exposed 55-gallon drums (DPHS, 1987). This area is shown as the former drum disposal area on Figure 2-3. During the initial investigation, some of the drums were observed to be leaking. At that time, a leachate seep entering a swale at the toe of the disposal area was also observed. The swale flowed in a northeasterly direction and discharged into Brook A.

Samples were collected from the leachate seep on April 16, 1979 by the NHWS&PCC. Aldehydes, ketones, alcohols, esters and aliphatic compounds were identified in the samples. These compounds were reportedly consistent with labeling on the exposed drums (DPHS, 1987).

In May 1979, the NHWS&PCC diverted the swale away from the toe of the drum disposal area to its present location (Figure 2-3). During the summer of 1979, the NHWS&PCC constructed a sand and gravel berm on the northern edge of the drum disposal area to prevent overland runoff from the disposal area from directly entering Brook A via the swale. A berm was also constructed east of the drum disposal area along the tree line.

3.2 NHWS&PCC Preliminary Investigation

In July 1979, the NHWS&PCC installed three monitoring wells at the site at locations OW-1, OW-2, and OW-3 as shown on Figure 2-4. The three wells ranged in depth from 13.5 feet to 27 feet and were reportedly screened at least five feet into bedrock.

The NHWS&PCC collected ground water samples from the three on-site wells in August and October, 1979. Samples were screened at the NHWS&PCC laboratory using gas chromatograph (GC) techniques. The GC analytical method number were not specified in analytical records and site reports. Results of both sampling rounds indicated the presence of low levels of volatile organic compounds (VOC's) in samples from wells OW-1 and OW-3 and relatively higher levels of VOC's in the samples from well OW-2.

During the fall of 1979, the NHWS&PCC also sampled residential water supply wells in the vicinity of the Mottolo site. Samples were analyzed by the NHWS&PCC laboratory for the presence of VOC's. No VOC's were identified during analysis of the residential well samples.

3.3 EPA Preliminary Investigation

The EPA became involved in the Mottolo site shortly after the State of New Hampshire was notified of the potential environmental and health impacts associated with the site. On April 14, 1980, EPA personnel conducted a site reconnaissance to assess general site conditions. The reconnaissance survey included a site walkover and ambient air monitoring with a photo-ionization detector. No VOC's were identified above background levels except in the vicinity of exposed 55-gallon drums where photoionization detector readings ranged between 0 to 20 parts per million (ppm).

On April 16, 1980, the EPA's Technical Assistance Team (TAT), at the request of NHWS&PCC, obtained both ground and surface water samples from the site. Ground water samples were taken from the three on-site wells. Surface water samples were taken from both off-site and on-site locations. On-site surface water samples were taken from the swale and from an impoundment that formed along the berm at the toe of the disposal area. Off-site samples were collected from Brook A. All samples were analyzed at the EPA New England Regional Laboratory in Lexington, Massachusetts.

Samples from wells OW-1 and OW-3 were analyzed using GC techniques. The sample from well OW-2 was analyzed using gas chromatography/mass spectrometry (GC/MS) techniques. Some surface water samples were analyzed by GC and others by GC/MS techniques. The results of the analyses indicated that several VOC's were present and were being discharged from the site into Brook A.

3.4 GHR/GZA INVESTIGATION

In April 1980, the NHWS&PCC retained GHR Engineering Corporation (GHR) of New Bedford, Massachusetts to perform an engineering and hydrogeologic investigation of the Mottolo site. The objectives of the GHR investigation were to define the degree and extent of contamination on-site, characterize hydrogeologic conditions controlling contaminant migration from the disposal area and to identify alternative remedial approaches and evaluate associated costs.

GHR subcontracted the hydrogeologic phase of the investigation to Goldberg-Zoino & Associates, Inc. (GZA) of Newton Upper Falls, Massachusetts. This phase of the investigation included the advancement of soil borings, the installation of ground water monitoring wells, and laboratory analysis of environmental samples collected from the site.

The GHR/GZA investigation included the execution of two deep borings, five shallow borings, soil sampling, packer pressure testing of site bedrock, the excavation of twelve test pits, the installation of six single-level observation wells and two multi-level sampling systems, and periodic sampling of surface water and ground water between May and December, 1980. This investigation was conducted concurrently with the EPA Emergency Response discussed in Section 3.5 below.

This investigation reported that the ground water was contaminated with VOC's and selected inorganic compounds in the overburden and bedrock aquifers. It also assessed ground water flow directions, described the

areal distribution of the contaminant plume in ground water, and reported that Brook A was being impacted by the site. Detailed discussion of the results of this study is provided in Section 4.1.

3.5 EPA EMERGENCY RESPONSE

In September 1980, the EPA prepared the site for the exhumation, staging and removal of the buried drums. At that time, the area north of the drainage swale, including the berm constructed in 1979, was cleared and graded to construct a temporary staging area for the excavated drums. Excavation of the drums was performed by Marlyn Engineering of Whitman, Massachusetts, an EPA contractor, between September 8 and December 5, 1980 (GHR, 1981). As the drums were excavated, they were staged on site for characterization. The contents of each drum were characterized as either a flammable liquid, flammable solid, irritant or poison by an on-site chemist. Analyses for numerous compounds including PCB's and pesticides were also reportedly performed on samples from each drum: neither pesticides nor PCB's were observed in any of these samples.

After the contents of each drum were classified, the drums were reportedly moved to another staging area on site and stored according to classification. Approximately 1,600 55-gallon drums and 5-gallon pails were excavated and characterized during this operation. Although most of the drums appeared to be dented or partially crushed, EPA estimated that 83 55-gallon drums and seven 5-gallon pails were found empty.

Authorization for drum removal was not obtained until November 16, 1981. Drum removal began approximately one year later on December 14, 1981 and was completed on January 15, 1982. Prior to transport off-site, many of the drums were repacked into 80-gallon recovery drums. Approximately 160 cubic yards of contaminated soil were also transported off-site for disposal at this time. After the removal operation was completed, the berm north of the drum disposal area was reportedly reconstructed and the excavated area was partially regraded and seeded. Performance of the

removal operation was described in an EPA On-Scene Coordinator Report (OSC report, undated). It should be noted that there is no record of samples obtained from well OW-1 after April, 1980. Thus, it appears that well OW-1 was destroyed during the remedial response described above.

3.4 NHWS&PCC INVESTIGATION

In June 1986, the NHWS&PCC completed a hydrogeologic investigation of the Mottolo hazardous waste site. The purpose of the investigation was to develop information describing the site and to determine more accurately areas of contamination and the risks to potential receptors associated with migration of contaminants from the site. The investigation included a fracture fabric analysis of the bedrock geology of the area, geophysical surveys, a hydrochemical reconnaissance of the site, the installation of ten monitoring wells, the measurement of ground water and surface water elevations, and the sampling of monitoring wells and nearby surface waters (NHWS&PCC, 1986).

No additional drums were discovered at the site during this investigation. However, it was determined that contaminants were present in the ground water and nearby surface waters. NHWS&PCC defined a plume of contaminated ground water originating from the former disposal area and flowing in an easterly direction toward Brook A. Results from surface water and ground water sample analyses indicated the presence of VOC's in both the overburden and bedrock aquifers. At the time of release of the report, VOC's had not been detected in any residential wells (which were being sampled periodically by NHWS&PCC) or in Brook A at the Randy Lane culvert, located approximately 1,800 feet downstream of the site. The detection of VOC's in a monitoring well couplet 230 feet downstream of the confluence of Brook A and the site drainage swale reportedly indicated a possible discharge of contaminated ground water from the bedrock aquifer to the overburden aquifer because VOC's were not detected in samples from micropiezometers located between the site and the couplet. NHWS&PCC concluded that the site posed a potential risk to residential water

supplies. Performance of further investigation and remediation of the site in accordance with the "National Contingency Plan" (NCP) was recommended. A more detailed discussion of the NHWS&PCC study is provided in Section 4.2.

3.7 NEW HAMPSHIRE PUBLIC HEALTH SERVICES ENVIRONMENTAL HEALTH RISK ASSESSMENT

Subsequent to the NHWS&PCC hydrogeologic investigation, the State of New Hampshire Division of Public Health Services (DPHS) completed a Health Risk Assessment for the site in May 1987. The objective of the assessment was to summarize potential health effects associated with exposure to the contaminants present at the site. The study included an exposure assessment, a hazard identification/dose-response assessment and risk characterization.

The DPHS found that the site was readily accessible and should, at a minimum, be posted to inhibit unauthorized entry. The potential risk to area residents from exposure to contaminated water supplies was also addressed. The DPHS concluded that there was no present risk posed by consumption of ground water since samples from residential wells indicated no contamination at that time. Future risk associated with the use of contaminated ground water was also estimated by performing calculations of increased lifetime cancer risks, using unit risk values derived by the EPA Carcinogenic Assessment Group. Additional studies to better define areas of contamination were recommended, along with continued monitoring of residential wells. Details on this study are provided in Section 5.0.

3.8 HAZARD RANKING SYSTEM STATUS

In July 1987, the Mottolo site was placed on the National Priority List (NPL) and became eligible for funding under the Superfund Amendments and Reauthorization Act of 1986 (SARA). The site was originally proposed for inclusion on the NPL in April 1985 under Group 8 with a Hazard Ranking

System (HRS) score of 30.24, approximately two points above the minimum threshold value of 28.5.

3.9 RESIDENTIAL WELL SAMPLING

Selected residential well water samples have been collected periodically from homes north of the site and analyzed for VOC's by the NHWS&PCC since 1979. No VOC's were detected in these samples until the spring of 1986 and fall of 1987. During these sampling rounds, generally less than 15 ppb of total VOC's were identified in domestic wells at locations shown on Figure 3-1. The contaminant most frequently identified has been tetrahydrofuran (THF), although 1,1,1-trichloroethane (TCA), meta-xylene, and methyl ethyl ketone (MEK) have been reported in samples from some wells.

During the spring of 1986, one VOC was reported present by NHWS&PCC in a sample from one of the residential water wells north of the Mottolo site. VOC's were reported present in samples from four different residential water supply wells during the November 1987 NHWS&PCC sampling event. The locations of all five wells are shown on Figure 3-1. The spring 1986 analytical report indicated the presence of meta-xylene at a concentration less than the method detection limit (5 ppb). Subsequent analyses of samples from this well have not shown detectable levels of VOC's to be present.

Based on verbal conversations with NHWS&PCC personnel, THF was reported present in November 1987 samples from four residential wells at concentrations less than the method detection limit (15 ppb). In addition, a trace level (less than 5 ppb) of TCA was observed in the sample from one of these wells and 22.6 ppb of MEK was reported present in a sample from another of these wells.

4.0 HYDROGEOLOGIC INVESTIGATION SUMMARY

4.1 GHR/GZA INVESTIGATION

4.1.1 Subsurface Investigations

In May 1980, two borings were advanced at locations OW-2 and OW-4 under the direction of GZA personnel (Figure 2-4). The boring at OW-2 was drilled to replace the NHWS&PCC bedrock well OW-2 previously installed at that location. The two borings were completed using a truck-mounted hydraulic rotary drilling rig. Standard wash boring techniques were employed using 2 1/2-inch inside diameter (ID) casing. Soil samples were obtained using a split spoon sampler at five-foot intervals or changes in stratigraphy. The upper ten feet of bedrock was cored at each boring location using a double tube AX size (1 7/8-inch O.D.) core barrel to evaluate the nature and degree of bedrock fracturing.

In July 1980, 12 test pits were excavated on-site by Marlyn Engineering of Whitman, Massachusetts, an EPA emergency response contractor, using a small backhoe. The test pits were examined by GHR and GZA personnel to define the location of the bedrock/overburden interface and to further examine the condition of the bedrock. Soil and water samples were obtained from selected test pits and were analyzed for total VOC's using a Century Systems model OVA 128 portable gas chromatograph. These results were used to further delineate the extent of subsurface contamination. A steel monitoring point was installed in one of the test pits (TP-2) upgradient of the drum disposal area to be used as an observation well. No information concerning the use of this observation well was identified in review of subsequent reports, excluding the field screening of one ground water sample collected from the well.

4.1.2 Permeability Testing

To assess the hydraulic characteristics of the bedrock, in situ permeability testing was performed within the bedrock formation at each

existing location using a packer pressure test technique. Quantitative permeability values were not obtained because of the inability to obtain adequate seals within the bedrock during the pressure testing operation. In situ permeability testing was not performed in borings advanced in the overburden formation. Estimates of overburden permeability were based on observation of split spoon soil samples and comparison to published values for various geologic materials. GHR/GZA estimated that the overburden permeability values for on-site material ranged between 0.1 to 1 foot per day for the glacial till and 1 to 10 feet per day for the stratified sands.

4.1.3 Monitoring Well Installations

GZA personnel installed multi-level ground water monitoring systems in the two borings. Gas-driven Barcad sampling devices were installed in the bedrock formation and a steel observation well was installed above the Barcad system at each location. An Ottawa sand filter was placed around the Barcad sampling devices and a bentonite seal was placed above the sand filter.

The steel observation wells were constructed using 36-inch long, 1 1/4-inch ID galvanized steel wire-wound well screens and steel riser. The steel well material was steam-cleaned prior to being used to construct the monitoring points. Ottawa sand was placed around the screened interval with a bentonite surface seal of unknown thickness placed above the sand pack to prevent surface water infiltration. A protective steel casing with locking cap was placed over each well to protect them against vandalism.

To further monitor the extent of ground water contamination, five shallow observation wells (JB-5 through JB-9) were installed in May 1980 at locations shown on Figure 2-4. The wells were installed using a jetting technique in which water from the upstream portion of Brook A was utilized. Jetted borings approximately four to seven feet deep were advanced at each location. Johnson galvanized steel well points connected to 1-1/4 inch ID steel risers were placed into the open boreholes. The risers were then

manually driven as deep as possible into the soil. A bentonite clay surface seal of unknown thickness was then placed around the top of the riser pipes.

4.1.4 Ground Water Sampling

GHR/GZA obtained ground water samples from on-site monitoring wells OW-2S, OW-2D, OW-4S, OW-4D, JB-5 and JB-7 during three sampling rounds in 1980. Samples were collected from the same six wells excluding JB-5 in July 1980, from wells OW-2S, OW-2D, OW-4S and JB-7 in October 1980, and from wells OW-2S, OW-4S, and JB-5 in December 1980, to assess ground water quality and to define the extent of contamination. Energy Resources Company, Inc. (ERCO) of Cambridge, Massachusetts analyzed the samples for priority pollutant VOC's using GC and GC/MS techniques. NHWS&PCC also analyzed selected ground water samples for trace metals, total organic carbon and total phenols. In the second sampling round, duplicate samples were analyzed by both ERCO and EPA using GC/MS techniques for quality control purposes.

Simultaneous with the sampling and laboratory analysis, GZA field screened selected samples with a Century Systems model OVA-128 portable GC/organic vapor analyzer (OVA) in the GC mode. GHR/GZA used this information to provide qualitative contamination data for sampling points not subjected to detailed laboratory analysis. As no detailed information was available concerning the analytical technique or protocol used for sample analysis, (eg., means to account for temperature variations that may have occurred while the GC/OVA was in use on site), the quality of these screening data could not be assessed. Accordingly, the assessment of ground water samples obtained during this study has been based on results of laboratory analyses.

In the course of the GHR/GZA investigation, a variety of VOC's and inorganic compounds were identified in the ground water at the Mottolo site. Based on the hydrogeologic and analytical data, GHR/GZA reported

that the contaminated ground water was migrating in an easterly direction from the upland area toward Brook A.

Elevated levels of VOC's were found in ground water samples from bedrock well OW-2D. GHR/GZA indicated that this finding might be the result of localized fracturing in the upper portion of the bedrock at this location; however, the data did not allow for confirmation. GHR/GZA further indicated that, if the finding was the result of extensive fracturing in the bedrock, the plume geometry within the rock would likely be complex and evaluation would require extensive bedrock drilling and testing.

GHR found that the highest concentrations of VOC's and heavy metal contaminants were reported present in ground water samples from overburden monitoring wells OW-2S and JB-5. Elevated levels of VOC's were also reported in ground water samples from the overburden wells at locations OW-4S and JB-7. The ground water sampling results are discussed in detail in Section 6.3 of this report.

4.1.5 Estimated Soil Contamination

Based on the results of the ground water and soil sampling, GHR/GZA estimated the presence of between 8,000 and 12,000 cubic yards of contaminated soil on-site (after the EPA Emergency Response discussed in Section 3.5). This estimate assumed that the areal extent of the contaminated soil zone correlated with the areal extent of the site ground water contamination plume. Assessment of soil and sediments in the unsaturated zone, Brook A, and the swale were not, apparently, considered in this calculation.

4.1.6 Summary of Results

Significant findings of the GHR/GZA hydrogeologic investigation included:

- o The overburden material consisted primarily of glacial till deposits up to 15 feet thick of poorly sorted silt, sand, gravel,

cobbles, and boulders in addition to up to 6 feet of stratified deposits of fine to coarse sand and silty sand near Brook A.

- o The bedrock formation underlying the site was identified as a biotite schist that appeared to be weathered and fractured at certain locations and depths.
- o The direction of ground water flow in the overburden was determined to be in an easterly direction across the site toward Brook A.
- o The highest concentrations of contaminants in ground water on site were observed in the overburden at monitoring locations OW-2S and JB-5.
- o GHR/GZA observed a correlation between bedrock and overburden contamination was observed suggesting a hydraulic connection between the two aquifers, based upon analytical results for samples obtained from wells OW-2S and OW-2D.
- o The volume of contaminated soil on site was estimated to be 8,000 to 12,000 cubic yards.
- o Further study was necessary to adequately characterize subsurface conditions at the site.

4.2 NHWS&PCC INVESTIGATION

In March 1985, the NHWS&PCC began a hydrogeologic investigation of the Mottolo Hazardous Waste Site. The investigation was completed in June, 1986. The following sections provide a summary of the studies conducted as part of this investigation.

4.2.1 Fracture Fabric Analysis

A local and regional fracture fabric analysis was performed by BCI Geonetics, Inc. (BCI) of Laconia, New Hampshire to ascertain the structural fabric of the bedrock so that the significance of fracture systems as potential contaminant pathways could be evaluated. No lineaments were identified passing beneath the site. However, a general northwesterly trend was observed in fractures identified in the surrounding area. BCI concluded from this study that the apparent photolineament fractures may provide a potential pathway for contaminant migration from the site.

4.2.2 Geophysical Studies

Several surface geophysical techniques were used at the site to assist in characterizing site conditions. The surveys were performed by the NHWS&PCC Hydrogeological Investigation unit under the direction of John F. Kick, Ph.D, a geophysicist under contract with NHWS&PCC. The geophysical techniques employed at the site included proton precession magnetometry, seismic refraction, electrical resistivity and electromagnetic (terrain conductivity) surveys. The data obtained from the various surveys were used to provide additional information on subsurface conditions at the site, to identify and evaluate geologic structural features, and to assist in selecting locations for additional ground water monitoring wells.

The proton precession magnetometer survey was performed to identify the presence of buried metallic objects on site and to assess the presence of bedrock fractures in the site vicinity, particularly those northeast of the site that were identified during the fracture fabric analysis. The survey was performed using an EG&G Geometric Uni-Mag G846 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. The data from this survey resulted in the following conclusions: 1) there were no areas near the

former piggery building containing significant buried metallic objects; 2) there were several surface metallic objects which produced localized anomalies; and 3) the survey showed no significant magnetic signature in the geologic features in the vicinity of Brook A.

A seismic refraction survey was performed to gather more information about the thickness and type of overburden materials and the bedrock topography and condition. The equipment used was an S.I.E. Model RS-4 12 channel seismic system. Waves were generated by small explosives and geophones were buried in the ground at spacings ranging from 10 to 20 feet. Three lines covering approximately 620 feet of linear traverse were completed. Interpretation of the seismic data was conducted using the critical distance method. The results indicated that the overburden in the vicinity of the drum disposal area, piggery building and along the valley of Brook A was generally less than 20 feet thick. The results also indicated a bedrock divide near the northwest corner of the former piggery building where bedrock outcrops.

The objectives of the electrical resistivity survey were to obtain additional information on the nature of the overburden materials, to evaluate the bedrock surface, and to determine the relative variation of water quality to assist in defining the extent of the contaminant plume. A Bison 2350B battery-powered earth resistivity system was used. Steel stakes were used for both potential and current electrodes. The surveys were conducted using the Schlumberger and double dipole section. Five Schlumberger soundings and one double dipole section were completed. The results from the survey were also to be used in locating additional monitoring wells. Lower resistivity values with increasing depth that were found in the area between wells JB-5 and JB-7 suggested the presence of contaminated ground water. Low resistivity values also found at the surface near JB-7 may have been caused by contaminated runoff from the swale.

The electromagnetic survey was performed to better define the areal extent of contamination in the shallow overburden materials. Seven electromagnetic traverse lines totaling approximately 1,290 feet were run using a Geonic EM-31 instrument. Depth of penetration was approximately 18 feet. Reported results indicated that much of the former disposal area and leachate seep area showed negative or zero readings. NHWS&PCC concluded that this was the result of shallow soil depths over low conductivity bedrock. Review of the data, however, indicated that no traverse lines were actually completed over the former disposal area and that positive results were obtained in four of the traverses completed downgradient of the former disposal area, indicating the potential presence of ion-effected ground water.

4.2.3 Hydrochemical Reconnaissance

In May 1985, NHWS&PCC contracted Pine and Swallow Associates (PSA) to perform a hydrochemical reconnaissance to define areas of contamination, aid in the location of additional monitoring wells and possibly detect other plumes of contamination. The reconnaissance was conducted in three phases: 1) soil gas survey; 2) surface water sampling; 3) installation and sampling of micropiezometers.

Soil gas sampling was performed to detect diffused vapors from VOC's present in the ground water. Twenty samples were collected along three traverse lines and analyzed in the field using a Photovac 10A10 GC. One line was located perpendicular to the assumed ground water flow direction, another was located adjacent to Brook A and north of the leachate seep area, and the third line traversed the area southwest of the bedrock divide located near the western edge of the former disposal area.

Analytical data are not available for review at this time. However, reported results indicated that the overburden plume was limited to an area of 75 to 100 feet in width. Review of a plot of the results suggested that

this estimation of the areal extent of the plume was apparently based, in part, on the positive response of the Photovac GC to four soil gas samples collected from two locations adjacent to Brook A (along the traverse line performed perpendicular to the assumed ground water flow direction). The basis for assuming the Photovac GC responded positively is that the four samples analyzed were not reported as non-detected, whereas all others were reported non-detected, although no quantification of the GC response was reported.

VOC's were not detected in soil gas samples collected along the line southwest of the former disposal area. Also, VOC's were generally not detected along the line adjacent to Brook A, although cis-1,2-dichloroethylene (cis-1,2-DCE) was reported as detected in a soil gas sample at a micropiezometer in the area. Review of the plotted data did not indicate the location of this positive identification. Furthermore, it is not clear whether this sample was soil gas or from the headspace of a ground water sample obtained at the micropiezometer. Based on these results of the soil gas study, NHWS&PCC concluded that there was at least one narrow plume confined to the immediate area of the leachate seeps.

Micropiezometers were installed in areas where ground water was assumed to exist too close to the ground surface for soil gas analysis, particularly adjacent to and within Brook A. Eleven micropiezometers were installed and used to obtain ground water samples and to evaluate hydraulic relationships between ground water and Brook A. The micropiezometers were installed by first driving a 0.5 inch ID steel pipe to refusal. A 0.5 inch OD polyethylene tube with a slotted screen was then inserted inside the steel pipe and the pipe withdrawn enough to expose the screen to the soil. A cap was placed on the steel pipe to protect the polyethylene tubing. The steel pipe used to construct the micropiezometers was steam cleaned prior to installation.

Ground water samples were collected in 40 ml glass vials after pumping and purging the micropiezometers with a peristaltic pump. Results of field analysis of headspace of ground water samples, using the Photovac GC, reportedly correlated well with results obtained from the soil gas analyses. VOC's were identified in samples collected along an approximately 100-foot traverse line parallel and adjacent to Brook A. The southern extent of VOC's were not identified along this traverse line. However, analytical results of the samples obtained downstream of the leachate seep area identified between wells couplets MO-2 and MO-3 (Figure 2-4) did not indicate the presence of VOC's. Hydraulic gradient information obtained from the micropiezometers indicated an upward vertical component to ground water flow, suggesting that ground water was discharging into Brook A in this area.

Surface water samples were obtained from five locations along the swale north of the drum disposal area and five locations along Brook A. The samples were analyzed in the field on a Photovac GC. Results of the analysis indicated the presence of VOC contamination in the swale, possibly as a result of ground water seepage. Analytical results of samples obtained from Brook A indicated decreasing contamination downstream from the leachate seeps. Upstream surface water samples apparently were not analyzed.

No detailed information was available concerning the analytical technique or protocol used to account for temperature variations that may have occurred while the Photovac GC was in use on site. Without this information, the quality of analytical data generated from soil gas, micropiezometer, and surface water samples cannot be assessed.

4.2.4 Monitoring Well Installation

Based on the data obtained from the hydrochemical reconnaissance and geophysical surveys, NHWS&PCC installed ten additional monitoring wells in

June and July 1985. Four monitoring well couplets (locations MO-2 through MO-5 as shown on Figure 2-4) were installed to evaluate the hydraulic connection between overburden and bedrock, and to further investigate ground water quality and the extent of on-site ground water contamination. Two bedrock monitoring wells were also installed at locations MO-1 and MO-6 to monitor upgradient and off-site downgradient ground water quality, respectively.

The on-site well construction was performed by Soils Engineering Inc. of Charlestown, New Hampshire under the supervision of NHWS&PCC personnel. Well MO-1 was installed using a truck-mounted Acker drilling rig. A Mobile Drill B-47 drilling rig mounted on a tracked Bombardier vehicle was used to install well couplets MO-2 through MO-5 due to difficulty in accessing these locations. The overburden wells were advanced using hollow stem or solid stem augers to bedrock refusal or desired depth. Split spoon soil samples were collected at five-foot intervals at each hollow-stem auger boring location. It is not clear whether or how soil samples were collected when the solid stem augers were used. Samples were classified and placed in glass jars for retention by the NHWS&PCC. Grain size analyses were performed on selected samples to verify field soil classification.

A diamond bit core barrel or a tricone roller bit was used to advance bedrock wells MO-1 through MO-5 to a depth of five to twelve feet into the bedrock. Samples indicated that the bedrock is weathered and fractured at various near surface depths and locations throughout the site. The monitoring wells were constructed using 1 1/2-inch ID Schedule 40 polyvinyl chloride (PVC) pipe with threaded flush joints, excluding well MO-2D. Well screens were 0.01-inch slotted PVC. An Ottawa sand pack was placed around the screens with the exception of well MO-2D, where a filter was apparently not used. A bentonite clay seal was reportedly placed above the screens in all wells and at the overburden-bedrock interface in the bedrock wells, excluding well MO-2D. According to the well construction logs, the bentonite seals average 1 to 2 feet in thickness. A seal of such thickness

is generally considered an undesirable well construction technique for water quality monitoring wells because it may not isolate the overburden and bedrock aquifers appropriately. Protective steel casings with locking caps were installed with cement grout surface seals around the wells.

The off-site monitoring well, MO-6, was installed by Tasker Well Company of Northwood, New Hampshire using a Porta Drill percussion rotary rig. An 8 1/4 inch diameter tricone roller bit with a bentonite slurry was used in the drilling process. The well was advanced to a depth of 130 feet where it yielded approximately 20 to 30 gallons per minute under flowing artesian conditions. The well was of open hole construction with a six-inch diameter steel casing extending from the ground surface to approximately ten feet into the bedrock formation. Bedrock chips were collected from the wash water during the drilling process and placed in plastic bags to be retained by NHWS&PCC. Well MO-6 was secured with a locking steel cap.

4.2.5 Hydraulic Testing

Hydraulic testing using the slug test method was performed in seven of the monitoring wells to obtain data on the hydraulic conductivity of both the overburden and bedrock. Water level and time data were recorded using a Geonetic Insitu SE1000 data collection system connected to a downhole pressure transducer. The data were analyzed using the Hvorslev method for a point piezometer. The estimated hydraulic conductivity values determined for the overburden material ranged from 1.45 to 9.7 feet per day. The values estimated for the bedrock formation ranged between 0.30 to 2.7 feet per day.

4.2.6 Site Geology

Information obtained from on-site borings indicated that the overburden aquifer consists of glacial till and stratified drift ranging from medium to silty sand. The overburden in the upland portion of the site was reported to be primarily composed of glacial till. Observations in the

area of the former drum disposal area indicated that the area was backfilled with a sandy soil after the drum removal operation. A thin layer of stratified sandy drift was also identified underlying the swale north of the drum disposal area. Information about the overburden material adjacent to Brook A indicated that this portion of the site is composed of reworked stratified drift ranging from silty very fine sand, to a medium to coarse sand. Thin layers of glacial till were also observed between the stratified sand deposits and bedrock in some locations.

The depth to bedrock at the four on-site well couplet locations (MO-2, MO-3, MO-4 and MO-5) ranged from nine to thirteen feet below ground surface. Previous investigations identified a bedrock divide near the former drum disposal area. The NHWS&PCC investigation confirmed earlier findings and identified a bedrock slope away from the disposal area toward the northeast. An east-west trending bedrock trough was also identified adjacent to the disposal area beneath the swale.

4.2.7 Ground Water Flow

Results from previous investigations indicated that the direction of ground water flow in the overburden was from the former drum disposal area toward the east. The NHWS&PCC hydrogeologic investigation indicated ground water flow in the overburden and bedrock was northerly, toward the swale from the former disposal area, then easterly, toward Brook A.

The investigation also provided information about hydraulic gradients between the overburden and bedrock aquifers, and an assessment of the interaction between ground water and surface water in Brook A was performed. Measurements of ground water and surface water elevations were obtained on July 25, 1985 and again on August 21 and 22, 1985. The measurements obtained August 22 were used to construct ground water elevation contour maps of both the overburden and bedrock aquifers.

Based on the data compiled from water elevation measurements, the NHWS&PCC determined that a downward hydraulic gradient existed in the upland portion of the site suggesting that the bedrock aquifer was recharged by the overburden aquifer and that ground water in the overburden at this location flows toward a bedrock trough located to the north, then follows the topography east toward Brook A. An upward vertical hydraulic gradient was observed in the vicinity of Brook A, suggesting that contaminated ground water from the drum disposal area is discharging to the brook. The NHWS&PCC also determined that the bedrock aquifer in the vicinity of monitoring well MO-6 was under flowing artesian conditions. To assess the interaction between ground water and surface water, a series of micropiezometers were installed adjacent to Brook A. Elevation measurements were obtained at each micropiezometer and compared to surface water elevations obtained at the same time. This information also indicated that an upward vertical gradient existed in the overburden aquifer and that ground water was ultimately discharging into Brook A. It should be noted that the ground water level elevations calculated in the study above were based on data collected from the summer of 1985 sampling round.

The NHWS&PCC chose a representative flow path between the former drum disposal area and Brook A. Flow path lengths were based on information obtained from ground water contour maps. The hydraulic gradients were calculated using the ground water elevation data collected on August 22, 1985. Ground water velocities and travel times were calculated using the average, maximum and minimum hydraulic conductivity values of the overburden obtained from in situ permeability tests performed on site. A summary of these data is presented in Table 4-1. It appears that these calculations assume that ground water flow follows a linear path toward Brook A. However, since information regarding site conditions indicates that ground water flow is not truly linear at the site (eg., vertical gradients exist), this method will tend to predict a faster time of travel than that actually likely to occur. Nonetheless, this approach is reasonable as an order-of-magnitude estimate of ground water travel time.

4.2.8 Ground Water Sampling

Ground water samples were collected on three occasions during the NHWS&PCC hydrogeologic investigation. The first round of sampling was conducted in April 1985. Ground water samples were obtained from the monitoring wells present on the site at that time. These included wells OW-2S, OW-2D, OW-3, OW-4S, OW-4D, and JB-5 through JB-9. The samples were analyzed for VOC's and several inorganic parameters by the NHWS&PCC laboratory. Duplicate samples from these wells, excluding well OW-2S were also sent to Compuchem Laboratories (Compuchem) of Research Triange Park, North Carolina by Normandeau Associates, Inc. (NAI). The analytical results from this sampling round are discussed in detail in Section 6.4 of this report. Following the installation of the ten additional monitoring wells in June and July 1985, two rounds of ground water samples were collected from selected wells. The first sampling round was performed in July 25, 1985 and the second on August 21 and 22, 1985. All samples were analyzed for the presence of VOC's by the NHWS&PCC laboratory.

Prior to sample collection, each monitoring well was purged by hand bailing or pumping a minimum of three static well volumes from each well. Samples obtained after purging the two Barcad samplers were collected directly from discharge lines of a peristaltic pump. All other samples were collected using dedicated clean bailers or bailers that were field cleaned using distilled water and methanol. The analytical results of these sampling events are also discussed in Section 6.4.

4.2.9 Surface Water Evaluation

During field activities by the NHWS&PCC, it was reported that water was only observed flowing in the drainage swale north of the former drum disposal area during spring runoff in April and May. During the summer and fall months, the swale was reported to be dry.

NHWS&PCC observed several leachate seeps adjacent to Brook A between wells MO-2S and MO-3S. The seeps were characterized by brownish-orange precipitate and colonies of similarly stained bacteria. Leachate precipitate was also observed on the bottom of the brook channel. The NHWS&PCC reported that the greatest impact on Brook A was observed during periods of low flow and hypothesized that this condition was probably due to less surface runoff and a greater relative proportion of ground water contribution to Brook A flow. Additional data appears necessary to confirm this theory.

Field analysis of surface water samples obtained in April and May 1985 identified low concentrations of VOC's in Brook A downstream of the confluence of the drainage swale and the leachate seeps. VOC's were not detected in surface water samples from Brook A at the Randy Lane culvert, located approximately 1,800 feet downstream of the site. As discussed previously, samples collected from Brook A and the swale during the hydrochemical reconnaissance also identified the presence of VOC's during field screening with a Photovac GC. Low levels of VOC's were identified in Brook A adjacent to the leachate seep area with decreasing levels observed downstream.

Two additional sets of surface water samples were collected on July 25 and August 21, 1985. These samples were analyzed by the NHWS&PCC laboratory for the presence of VOC's using GC/MS analytical techniques. The highest levels of VOC's were reported to be identified in samples obtained from Brook A during July and August, 1985. Surface water samples collected from Brook A at the Randy Lane culvert again showed non-detectable levels of VOC's. Surface water analytical results are discussed in more detail in Section 7.0 of this report.

4.2.10 NHWS&PCC Recommendations

Based on the results of the hydrogeologic investigation, the NHWS&PCC recommended that additional work be performed to further characterize the

nature and extent of ground water contamination. Specifically, the NHWS&PCC recommended additional subsurface investigation in the bedrock aquifer downgradient of monitoring location MO-5 to identify potential impacts on residential wells located north and east of the site. Additional investigations to identify and evaluate remedial alternatives were also recommended. The NHWS&PCC further recommended that an environmental and health risk assessment be performed to identify potential impacts associated with contamination on site.

4.2.11 Summary of Results

Based on a review of the NHWS&PCC 1985 report, the major conclusions of the report appear to be as follows:

- o No bedrock fracture lineaments were observed passing through the site but several were observed near the site.
- o There were no indications of buried metallic objects identified near the piggery building or of structural geologic features in the valley east of the site based on magnetic survey.
- o There is approximately less than 20 feet of overburden on site overlying bedrock. A bedrock divide exists near the northwest corner of the piggery building. Surficial geology consists of glacial till overlying bedrock in the upland areas and stratified drift overlying bedrock in the valley of Brook A.
- o An overburden ground water plume of VOC's was limited to a narrow area of 75 to 100 feet in width from ground water moving through the embankment from the swale and former disposal area toward Brook A.
- o A second plume of unknown extent was identified in the overburden and bedrock approximately 230 feet north of the first plume identified above.

- o The swale receives VOC-contaminated ground water seepage.
- o VOC's were identified in the overburden and bedrock aquifers.
- o Brook A exhibits decreasing VOC concentrations downstream of the confluence with the site drainage swale.
- o There is an upward component of ground water flow to Brook A.
- o Bedrock beneath the site is weathered and fractured at various depths at different locations on the site. The bedrock consists of biotite schist, quartz, and granite.
- o A comparison between ground water quality of a background on-site dug well and wells downgradient of the former drum disposal area showed significant increases in the concentrations of iron and manganese above background water quality. Slight increases above background in the concentrations of arsenic, lead, and zinc were also reported although the levels were not above state and federal drinking water standards.

5.0 DPHS ENVIRONMENTAL HEALTH RISK ASSESSMENT

In May 1987, the State of New Hampshire Division of Public Health Services (DPHS) completed a health risk assessment for the purpose of summarizing the potential health effects associated with exposure to chemicals at the Mottolo site. DPHS reviewed prior investigations to determine the nature and extent of contamination and selected indicator compounds representative of potential chemical hazards to exposed populations. Subsequent sections of the assessment include an exposure assessment, a hazard identification and dose-response assessment, and a risk characterization.

The indicator compounds were selected on the basis of concentration, frequency of detection and toxicity. Characteristics related to environmental mobility and persistence were also considered. VOC's were selected as indicator compounds because they were the best characterized class of compounds found at the site and were deemed most likely to migrate off-site. Indicator compounds chosen included benzene, 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-DCE, trans-1,2-dichloroethene (trans-1,2-DCE), ethylbenzene, THF, trichloroethylene (TCE), toluene and xylenes.

The exposure assessment was performed to evaluate the potential exposure to humans living near the site. This assessment included identification of exposure pathways, determination of contaminant fate and transport in the environment, and determination of the exposure routes of concern, while also defining the populations at risk. (DPHS, 1987)

The hazard identification and dose-response assessment included a review of the toxicity of the selected indicator compounds, as well as an assessment of the relationship between the dose and the resulting response (DPHS, 1987). The information obtained from this segment of the study was subsequently used in the risk characterization.

The risk characterization summarized the site-specific data used to assess the potential risks to the surrounding population from exposure to the contaminants of concern. The DPHS concluded that there was no present risk to area residents from consumption of ground water, as samples from residential wells indicated the absence of contamination at that time. Future potential adult excess lifetime cancer risks associated with ingestion of contaminated drinking water present at the Mottolo site were calculated to range from 10^{-6} to 10^{-3} .

Several observations and conclusions were made by DPHS after completion of the risk assessment. The DPHS recommended that, since the site was easily accessible, the area be posted to warn the population in the area of the potential health risks and inhibit unauthorized entry. They also concluded that the on-site exposure routes of concern were exposure to surface water and subsurface contaminated soils (DPHS, 1987). Exposure routes of future concern included ingestion and dermal contact with contaminated ground water, and inhalation of VOC's released from ground water. Because of the concern regarding potential exposure of the area population through contaminated water supplies, DPHS recommended that further studies be performed to better define the extent of the ground water contamination. DPHS also recommended continued sampling of residential wells in the area.

6.0 GROUND WATER ANALYTICAL DATA SUMMARY

6.1 NHWS&PCC PRELIMINARY INVESTIGATION RESULTS

Ground water samples were collected from OW-1, OW-2, and OW-3 by the NHWS&PCC in August and October 1979 and screened at the NHWS&PCC laboratory using GC techniques (the GC analytical method number was not specified in analytical records and site reports). Results of the August GC screening indicated the presence of low levels (trace to 2 parts per billion (ppb)) of tetrachloromethane in samples from all three wells, and 100 ppb of TCE and a trace of tetrachloroethene (PCE) in the sample from well OW-2. The October analysis detected low levels of TCE in samples from wells OW-1 and OW-3 (3.8 and 15.6 ppb, respectively) and increased levels of TCE (340 ppb) and PCE (6.5 ppb) in the sample from well OW-2. The analytical results are summarized in Table 6-1.

During the fall of 1979, the NHWS&PCC also sampled existing residential supply wells in the vicinity of the Mottolo site. Samples were analyzed by the NHWS&PCC laboratory for the presence of VOC's. No VOC's were detected during analysis of the residential well samples.

6.2 EPA PRELIMINARY INVESTIGATION RESULTS

During April, 1980, the EPA's TAT obtained ground water samples from wells OW-1, OW-2 and W-3. Samples were analyzed by GC (wells OW-1 and OW-3) and GC/MS (well OW-2) in the EPA laboratory for VOC's. Results for OW-1 reported less than 10 ppb of toluene with no other VOC's detected. Toluene was not reported in OW-1 in the prior sampling round discussed in Section 6.1 above. Results for OW-2 did not compare well with the prior sampling round. TCA, toluene and trans-1,2-DCE were reported present at 2,000, 3,000 and 10,000 ppb, respectively. These parameters were not reported previously in the samples obtained from this well. TCE, which was reported previously, was identified at a comparable concentration

(200 ppb). Sample analysis results from well OW-3 samples were generally comparable to the prior round with toluene and TCE reported at less than 10 ppb.

6.3 GHR/GZA INVESTIGATION RESULTS

Ground water samples were collected by GHR/GZA from on-site monitoring wells during three sampling events in July, October and December 1980. The samples obtained by GHR/GZA were analyzed for VOC's by ERCO, Inc. of Cambridge, Massachusetts and for trace metals, total organic carbon and total phenols by the NHWS&PCC laboratory. Duplicate samples were also collected in the October round and were analyzed by ERCO, Inc. and the USEPA for quality control purposes using GC/MS techniques. VOC analyses were performed using GC and GC/MS techniques. The GC analytical method number was not specified in analytical reports reviewed. Analytical data from these sampling events are summarized in Tabled 6-1.

To supplement laboratory analysis, GHR/GZA also used a Century Systems model OVA 128 portable gas chromatograph/organic vapor analyzer to screen ground water samples for the presence of VOC's. In general, the portable GC results identified similar types of compounds as were found in laboratory analyses. For this reason and because of the higher reliability placed on analytical laboratory GC/MS results, the assessment of ground water quality has been based on the results of laboratory analyses.

Five ground water samples were collected and analyzed by GC/MS and GC techniques during the July 1980 sampling event. The samples were obtained from monitoring locations OW-2S (shallow), OW-2D (deep), OW-4S (shallow), OW-4D (deep) and JB-7. A number of VOC's were identified in each sample with the exception of the sample obtained from OW-4D, in which no VOC's were identified above the method detection limit. Compounds that were identified at more than one sampling location included toluene, xylenes, THF, MEK, and acetone.

During the October 1980 sampling event, ground water samples were obtained from wells OW-2S, OW-2D, OW-4S and JB-7. Although overall correlation between the October and July analytical results is not strong, toluene and THF were identified consistently during both sampling rounds (Table 6-1).

Only three samples were obtained during the December 1980 sampling event for GC/MS analysis. These samples were collected from wells OW-2S, OW-4D and JB-5. Some correlation was observed between results from this sampling round and those from previous sampling rounds. Other VOC's observed during this sampling round included trans-1,2-DCE and TCA (Table 6-1).

Ground water samples were obtained from monitoring locations OW-2S, OW-2D, OW-4S, JB-5, JB-6, JB-7 and JB-8 in July 1980 for inorganic analysis. Analytical results identified several inorganic constituents above the EPA proposed maximum contaminant levels (MCL's). Arsenic was identified above the proposed MCL at six locations, chromium at three locations, and lead at four locations.

During the October 1980 sampling round, samples were obtained from wells OW-2S, OW-2D, OW-4S, JB-5 and JB-7 and submitted for inorganic analyses. Arsenic was identified above the proposed EPA MCL in four wells, lead was detected above the EPA MCL in two wells, and chromium was not detected above the EPA MCL.

Four ground water samples were obtained in December 1980 from monitoring locations OW-2S, OW-4S, JB-5 and JB-9. Inorganic analysis of these samples identified the presence of arsenic and chromium above the EPA proposed MCL's, at one and two locations, respectively. Table 6-2 summarizes the inorganic data. It should be noted that no background water quality data were collected during the three sampling events discussed above. Due to the absence of these background data, an assessment of potential impacts to ground water due to inorganic compounds could not be conducted. In addition, it is unclear if these 1980 samples were filtered prior to preservation and analysis, and may therefore be unrepresentative of actual dissolved metals concentrations in the ground water.

6.4 NHWS&PCC INVESTIGATION RESULTS

Following the GHR/GZA ground water sampling and analytical evaluation of on-site ground water quality, the NHWS&PCC performed two rounds of sampling from several on-site monitoring wells in January 1985. Monitoring wells sampled at this time included JB-5, JB-6, OW-2S and OW-4S. All samples were analyzed for VOC's by the NHWS&PCC. The method of analysis was not specified on the analytical data reports reviewed. The analytical data from these sampling events are summarized in Table 6-1.

The analytical results from the two January 1985 ground water sampling events correlated quite well in the types of compounds detected, although the levels reported varied between the two rounds. VOC's identified consistently in samples from the four monitoring wells included 1,1-DCA, 1,2-DCE, toluene, ethylbenzene and xylenes. In addition, THF was identified in samples collected from the four monitoring wells during the second round.

Additional sampling of the on-site monitoring wells was performed by the NHWS&PCC during a hydrogeologic investigation performed in the spring of 1985. As part of the investigation, ground water samples were obtained from existing on-site monitoring wells in April 1985. At this time, selected samples were split with NAI. Data from these sampling events are also summarized in the Table 6-1.

Ten monitoring wells were sampled at this time including: OW-2S, OW-2D, OW-3, OW-4S, OW-4D, JB-5, JB-6, JB-7, JB-8 and JB-9. Ground water samples obtained by the NHWS&PCC were analyzed by their laboratory for VOC's. Samples obtained by NAI were analyzed by Compuchem. Analyses by Compuchem were performed in accordance with EPA Method 624. As an added quality control measure, NAI submitted duplicate samples from selected wells to Environmental Testing and Certification (ETC) of Edison, New Jersey. ETC also employed EPA Method 624 for VOC analysis. The analytical method used

by the NHWS&PCC laboratory was not specified in analytical data reports or other project related reports reviewed. The analytical results of the April 1985 sampling round are also presented in Table 6-1.

The ground water results from each laboratory were reviewed and compared to assess the acceptability of the ground water quality data. This comparison indicates general correlation between the concentrations and constituents identified in samples, where the laboratories analyzed the same list of parameters. The NHWS&PCC laboratory apparently analyzed a more inclusive list of compounds than the other laboratories resulting in some differences in the compounds reported. No VOC's were identified above the method detection limits by any of the laboratories in the ground water samples obtained from monitoring locations OW-3, JB-8 and JB-9, with the exception of approximately 5 ppb of toluene and traces of chlorobenzene and TCE which were identified in the sample from well JB-8 by the NHWS&PCC laboratory.

The major constituents detected in the sample from well OW-2S included toluene and trans-1,2-DCE. Other VOC's identified in this sample included 1,1-DCA, ethylbenzene, TCA, xylenes, and THF. The sample obtained from the associated bedrock monitoring point, well OW-2D, identified the presence of similar VOC's, but at higher concentrations. Additional VOC's identified in the sample from well OW-2D included THF, vinyl chloride, acetone, MEK, and methyl isobutyl ketone (MIBK).

Analysis of ground water samples obtained at monitoring location OW-4 (shallow and deep) identified the presence of the largest number of VOC's observed on-site during this sampling round. The highest concentration of total VOC's detected in on-site ground water was observed in the sample from well OW-4S. The compounds identified at the greatest concentration included 1,1-DCA; trans-1,2-DCE; TCA and toluene. Other compounds identified during analysis by both the NHWS&PCC and contract laboratories included ethylbenzene, xylenes, MEK, 1,1-DCA and methylene chloride. Several compounds were also detected by the NHWS&PCC laboratory that were not reported by the contract laboratories, including acetone, MIBK, 1,2-dichloroethane (1,2-DCA), THF and PCE.

The analytical results for the sample from well OW-4D identified the presence of fewer VOC's than in the overburden sampling point, OW-4S, at the same location. THF was identified at the highest relative concentration along with MIBK, 1,1-DCA and trans-1,2-DCE. Compounds identified by the NHWS&PCC analysis but not reported by the contract laboratories included PCE, 1,1-DCE, benzene, dichloromethane, 1,2-DCA, toluene and methylene chloride.

Concentrations observed in the ground water sample from the bedrock well at this location, OW-4S, were significantly lower than those observed in the sample from well OW-4S.

Ground water samples were also obtained from monitoring wells JB-5 and JB-7. Analysis of the sample from well JB-5 identified the presence of 1,1-DCA, trans-1,2-DCE and TCA: three other compounds, toluene, xylenes and THF were also identified in the sample from well JB-5 by the NHWS&PCC laboratory, but were not reported by the contract laboratories. The analytical results for the sample from well JB-7 also identified several VOC's that were detected in other on-site ground water samples. Toluene and trans-1,2-DCE were detected at the highest concentrations, along with 1,1-DCA, MIBK, ethylbenzene and TCA. Analysis by the NHWS&PCC laboratory also identified the presence of xylenes, THF, acetone, MEK and 1,1-DCE in the sample from well JB-7, but these compounds were not reported by the contract laboratories.

During the April, 1985 sampling round, samples were also collected from wells OW-2S, OW-2D, OW-3, OW-4S, JB-5, JB-9 and a dug well located in the small building adjacent to the access road. The samples were analyzed by the NHWS&PCC laboratory for inorganic parameters. A summary of these data is provided in Table 6-2.

The sample collected from the dug well was apparently used to represent background water quality on the site. A comparison of the analytical data

from this well with that from the others indicated no parameters were identified above the EPA proposed MCL's. Iron and manganese were identified in samples from wells OW-2S and OW-4S to be above the EPA National Secondary Drinking Water Standards (NSDWS). However, manganese was reported to be above this standard in the dug well also.

These data do not correlate well with results from the prior samples collected by GHR/GZA and analyzed by the NHWS&PCC during July, October and December, 1980, as discussed in Section 6.3. It is not clear if the larger relative metals concentrations in the earlier sampling rounds may be due to the sampling technique (e.g. field filtration was not performed).

Ground water samples were obtained from monitoring wells MO-1 through MO-6 in July and August 1985 by the NHWS&PCC. The samples were analyzed by the NHWS&PCC laboratory for the presence of VOC's. The analytical data are summarized in Table 6-1.

Samples were obtained in July 1985 from monitoring locations MO-1, MO-4S, MO-4D, MO-5S, MO-5D and MO-6. No VOC's were identified in ground water samples collected from wells MO-1, MO-4S, MO-4D and MO-6 with the exception of trichloroethylene (TCE), which was detected at less than 5 ppb in well MO-1. The highest concentrations of VOC's identified during analysis of the July ground water samples were detected in the sample from well MO-5D. THF was identified at the highest concentration, along with 1,2-DCE (cis and trans) and 1,1-DCE. Other VOC's detected during analysis of the sample from this well included 1,1-DCA, TCE, and TCA.

Similar VOC's were identified during analysis of the sample from well MO-5S, but at lower concentrations than those found in the sample from well MO-5D. Cis-1,2-DCE and trans-1,2-DCE, 1,1-DCE, TCE and 1,1-DCA were also identified in the sample from well MO-5S.

During the August 1985 sampling round, ground water samples were collected from all ten of the monitoring wells installed in June and July 1985.

Analysis of samples obtained from wells MO-1, MO-4D and MO-6 confirmed the previous analytical results that reported no detection of VOC contamination: THF was identified in the sample from well MO-4S, in which VOC's were not detected during the July analysis. Analysis of ground water samples obtained from monitoring wells MO-5S and MO-5D identified the same VOC's at similar concentrations as were observed in the previous sampling round, with the exception that 1,1-DCA and 1,1-DCE were not identified in either sample collected in the August round.

Four wells sampled in the August round were not sampled during the July sampling round; MO-2S, MO-2D, MO-3S and MO-3D. The highest total VOC concentrations were detected in samples obtained from monitoring wells MO-3S and MO-3D.

The analytical results for samples from wells MO-2S and MO-3S indicated a generally similar pattern in the types and concentrations of VOC's observed. THF and toluene were identified at the highest concentrations in each sample. Other VOC's identified during analysis of the samples from wells MO-2S and MO-3S included: 1,1-DCA; MIBK; DCE; xylenes; ethylbenzene and TCE. Two compounds, benzene and TCA, were identified in the sample from well MO-2S, while acetone was detected in the sample from well MO-3S, but not in that from well MO-2S.

Analytical results from wells MO-2D and MO-3D also exhibited a generally similar pattern of types and concentrations of VOC's reported. As in the overburden monitoring wells at these locations, THF was identified at the highest concentration. Cis-1,2-DCE and trans-1,2-DCE, 1,1-DCA, MIBK, TCE and toluene were also identified during analysis of both samples. In addition, ethylbenzene was identified in the sample from well MO-2D and m-xylene was identified in the sample from well MO-3D.

7.0 SURFACE WATER ANALYTICAL DATA SUMMARY

Surface water samples were collected at the Mottolo site on April 16, 1980 by the EPA, in 1980 by GZA, and in 1985 by the NHWS&PCC. Selected samples taken from each round were analyzed for VOC's and various inorganic parameters. A summary of these data is provided below.

7.1 EPA PRELIMINARY INVESTIGATION RESULTS

On April 16, 1980, two EPA personnel, with assistance from the NHWS&PCC, obtained surface water samples from seven locations on site. Three samples were taken along Brook A; one upstream of the former disposal area and two downstream. The other four samples were taken from the on-site swale or surface impoundment. Figure 7-1 shows the sample locations.

Analytical results from the EPA lab revealed the presence of several organic compounds including acetone, THF, trans-1,2-DCE, MEK, TCE, MIBK, and toluene. Table 7-1 summarizes the results of these analyses.

The analytical results indicated contamination of surface water in the swale at locations north and east of the drum disposal area and in water impounded by the runoff control berm constructed north and east of the drum area. In addition, contamination at approximately 80 ppb total VOC's was observed in Brook A downstream of the confluence with the swale drainage and the leachate seep area, although a sample downstream of this point contained only a trace of TCE, suggesting relatively rapid attenuation of VOC's in the brook. VOC's were not detected in samples collected from the drainage swale and brook at locations upstream of the drum burial area.

7.2 GHR/GZA INVESTIGATION RESULTS

GZA performed three rounds of surface water sampling and screened the samples with a portable GC in May, July and December 1980. Samples were

collected from locations designated S-1, S-2, S-3 and S-4, however, no plan was available in the report which indicated the location of these sampling points. Results ranged between 0 and 400 ppm of total volatile organic vapors based on a head-space analysis. It should be noted that results from this investigation are subject to the same reservations discussed in Section 4.2.3.

Samples for inorganic analysis were also collected from locations S-1 and S-3 in Brook A. These locations were reported as upstream and downstream of the drainage swale confluence, respectively. The samples were submitted to the NHWS&PCC laboratory for analysis. Results indicated a slight increase in arsenic and barium in sample S-3; however, both of these compounds were detected below EPA's MCL. Sample S-3 also showed a relative decrease in the concentrations of chromium, copper, iron, lead, manganese, nickel, zinc, specific conductance and chemical oxygen demand in comparison to sample S-1. Iron and manganese were reported above EPA NSDWS's in both sample S-1 and S-3, while lead was reported above the EPA MCL in sample S-1. A summary of these results is provided as Table 7-3.

7.3 NHWS&PCC INVESTIGATION RESULTS

The initial NHWS&PCC sampling rounds were performed in April and May, 1985. Samples were collected at locations S-1 and S-3, as shown on Figure 7-2, as well as at Randy Lane and at a leachate seep. Samples were submitted to the NHWS&PCC laboratory for organic and inorganic analysis. The organic analytical results are provided in Table 7-2, and the inorganic results are provided in Table 7-3.

Results from the initial sampling for organic analyses indicated that trace levels of four VOC's (cis-1,2-DCE and trans-1,2-DCE; 1,1-DCA; toluene; and THF) were present in Brook A, downstream of the leachate seep. VOC's were not detected in samples collected upstream of the site and downstream at the Randy Lane culvert.

Results from the inorganic analyses indicated no compounds were detected above EPA MCL's in either sample. No increase was observed in compounds detected in sample S-3 excluding slight increases in iron and manganese concentrations. Iron was reported above the EPA NSDWS in the sample from S-3 while manganese was reported above the EPA NSDWS in both sample S-1 and S-3. These data are summarized in Table 7-3.

As part of the hydrochemical phase of the investigation, further evaluation of surface water was performed. Samples taken at this time were screened using the headspace analysis method discussed previously and the Photovac GC. Tabulated results from this round were not presented. Results from this sampling round indicated that the swale was collecting contaminated seepage from the former drum disposal area.

Additional samples were obtained in July and August, 1985 and were analyzed in the NHWS&PCC laboratory using gas GC/MS analytical methods. Samples taken during these two rounds were obtained from locations S-1, SA-1, SA-2, SA-3, SA-4, shown in Figure 7-3, and two other locations near the Randy Lane culvert.

Analytical results of the samples taken from Brook A in July and August, 1985 indicated an apparent correlation of higher levels of VOC's with seasonal reduction in stream flow. With reduced streamflow, types and levels of contaminants found in the samples taken from the brook near the leachate seep area were similar to those found in the April 1985 leachate sample. VOC's were not detected in the upstream sample (S-1), nor at the Randy Lane culvert. The results for samples collected at location SA-3 and SA-4, located approximately 100 and 250 feet downstream of the leachate seep area, respectively, together with the results for samples from the Randy Lane culvert area, indicated relatively rapid attenuation of VOC's with increasing distance downstream. A summary of these surface water sampling data is shown on Table 7-2.

REFERENCES

DPSH, 1987, New Hampshire Department of Public Health Services, Health Risk Assessment, Mottolo Hazardous Waste Site, Raymond, New Hampshire, Final Report, May 1987.

GHR, 1981, Hazardous Waste Site Investigation, Mottolo Site, Blueberry Hill Road, Raymond, New Hampshire, Volume I and Volume II, December, 1981.

NHWS&PCC, 1986, New Hampshire Water Supply and Pollution Control Commission, Hydrogeological Investigation Unit, Commission Report #149, Hydrogeological Investigation of the Mottolo Hazardous Waste Site, Raymond, New Hampshire, June, 1986.

OSC Report, undated, U.S. Environmental Protection Agency, On-Scene Coordinator Report, Mottolo Hazardous Waste Site, Raymond, New Hampshire.

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TABLE 4-1

GROUND WATER VELOCITIES AND TIMES OF TRAVEL

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

- Notes: 1) Data are for ground water flow in the overburden as presented in NHWS&PCC, 1986.
- 2) Travel times are from former drum burial area to Brook A.

TABLE 6.1

MOTTOLO SITE OW-1
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-1	OW-1	OW-1
		8/79	10/79	4/80
		NHWSPCC	NHWSPCC	EPA
		GC	GC	GC
DICHLOROMETHANE		NR	NR	NR
DICHLOROBROMOMETHANE		NR	NR	NR
TETRACHLOROMETHANE		1	NR	NR
CHLORODIBROMOMETHANE		NR	NR	NR
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		NR	NR	NR
1,2-DICHLOROETHANE		NR	NR	NR
1,1,1-TRICHLOROETHANE		NR	NR	NR
1,1,2-TRICHLOROETHANE		NR	NR	NR
TETRACHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHYLENE		NR	NR	NR
DICHLOROETHYLENE(C&T)		NR	NR	NR
TRICHLOROETHYLENE		NR	3.8	NR
TETRACHLOROETHYLENE		NR	NR	NR
1,2-DICHLOROPROPANE		NR	NR	NR
1,3-DICHLOROPROPENE		NR	NR	NR
BENZENE		NR	NR	NR
CHLOROBENZENE		NR	NR	NR
DICHLOROBENZENE		NR	NR	NR
ETHYLBENZENE		NR	NR	NR
TOLUENE		NR	NR	<10.0
XYLENE META ISOMER		NR	NR	NR
XYLENES(O&P)		NR	NR	NR
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		NR	NR	NR
ACETONE		NR	NR	NR
TETRAHYDROFURAN		NR	NR	NR
DIETHYL ETHER		NR	NR	NR
METHYL ETHYL KETONE		NR	NR	NR
METHYL ISOBUTYL KETONE		NR	NR	NR
1,3-DICHLOROPROPANE		NR	NR	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	NR
TRIBROMOMETHANE		NR	NR	NR
TRICHLOROMETHANE		NR	NR	NR
t-1,2-DICHLOROETHYLENE		NR	NR	NR

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE OW-2S
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-2S	OW-2S	OW-2S	OW-2S	OW-2S
		8/79	10/79	11/79	4/80	7/80
		NHWSPCC	NHWSPCC	NHWSPCC	EPA	ERCO
		GC	GC	GC	GC/MS	GC/MS
DICHLOROMETHANE		NR	NR	3	NR	NR
DICHLOROBROMOMETHANE		NR	NR	NR	NR	NR
TETRACHLOROMETHANE		1	NR	1	NR	NR
CHLORODIBROMOMETHANE		NR	NR	NR	NR	NR
CHLOROETHANE		NR	NR	NR	NR	NR
1,1-DICHLOROETHANE		NR	NR	NR	NR	200
1,2-DICHLOROETHANE		NR	NR	NR	NR	23
1,1,1-TRICHLOROETHANE		NR	15	NR	2000	3100
1,1,2-TRICHLOROETHANE		NR	NR	NR	NR	NR
TETRACHLOROETHANE		NR	NR	NR	NR	NR
1,1-DICHLOROETHYLENE		NR	NR	NR	NR	NR
DICHLOROETHYLENE(C&T)		NR	NR	NR	NR	1200
TRICHLOROETHYLENE		100	340	NR	200	130
TETRACHLOROETHYLENE		1	6.5	1	NR	12
1,2-DICHLOROPROPANE		NR	NR	NR	NR	1-9
1,3-DICHLOROPROPENE		NR	NR	NR	NR	NR
BENZENE		NR	NR	NR	NR	NR
CHLOROBENZENE		NR	NR	NR	NR	1-9
DICHLOROBENZENE		NR	NR	NR	NR	NR
ETHYLBENZENE		NR	NR	NR	NR	160
TOLUENE		NR	NR	NR	3000	760
XYLENE META ISOMER		NR	NR	NR	PR	NR
XYLENES(O&P)		NR	NR	NR	NR	NR
VINYL CHLORIDE		NR	NR	NR	NR	NR
BROMOMETHANE		NR	NR	NR	NR	NR
CHLOROMETHANE		NR	NR	NR	NR	NR
TRICHLOROFLUOROMETHANE		NR	NR	NR	NR	NR
ACETONE		NR	NR	NR	PR	NR
TETRAHYDROFURAN		NR	NR	NR	PR	NR
DIETHYL ETHER		NR	NR	NR	NR	NR
METHYL ETHYL KETONE		NR	NR	NR	PR	NR
METHYL ISOBUTYL KETONE		NR	NR	NR	PR	NR
1,3-DICHLOROPROPANE		NR	NR	NR	NR	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	NR	NR	NR
TRIBROMOMETHANE		NR	NR	NR	NR	NR
TRICHLOROMETHANE		NR	NR	1.3	NR	24
t-1,2-DICHLOROETHYLENE		NR	NR	NR	10000	4400

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE OW-2S
 GROUNDWATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	OW-2S	OW-2S	OW-2S
		10/80	10/80	12/80
		EPA	ERCO	ERCO
		GC/MS	GC/MS	GC/MS
DICHLOROMETHANE		1000	NR	NR
DICHLOROBROMOMETHANE		ND	NR	NR
TETRACHLOROMETHANE		ND	NR	NR
CHLORODIBROMOMETHANE		ND	NR	NR
CHLOROETHANE		ND	NR	NR
1,1-DICHLOROETHANE		600	NR	NR
1,2-DICHLOROETHANE		ND	NR	NR
1,1,1-TRICHLOROETHANE		3000	12000	2200
1,1,2-TRICHLOROETHANE		ND	NR	NR
TETRACHLOROETHANE		ND	NR	NR
1,1-DICHLOROETHYLENE		ND	NR	NR
DICHLOROETHYLENE (C&T)		ND	NR	NR
TRICHLOROETHYLENE		ND	NR	NR
TETRACHLOROETHYLENE		ND	5500	2600
1,2-DICHLOROPROPANE		ND	NR	NR
1,3-DICHLOROPROPENE		ND	NR	NR
BENZENE		ND	NR	NR
CHLOROBENZENE		ND	NR	NR
DICHLOROBENZENE		NR	NR	NR
ETHYLBENZENE		300	NR	NR
TOLUENE		4000	NR	NR
XYLENE META ISOMER		-	NR	NR
XYLENES(O&P)		300	NR	NR
VINYL CHLORIDE		ND	NR	NR
BROMOMETHANE		ND	NR	NR
CHLOROMETHANE		ND	NR	NR
TRICHLOROFLUOROMETHANE		ND	NR	NR
ACETONE		NR	NR	NR
TETRAHYDROFURAN		20000	NR	NR
DIETHYL ETHER		NR	NR	NR
METHYL ETHYL KETONE		NR	NR	NR
METHYL ISOBUTYL KETONE		NR	NR	NR
1,3-DICHLOROPROPANE		ND	NR	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	NR
TRIBROMOMETHANE		NR	NR	NR
TRICHLOROMETHANE		ND	NR	NR
t-1,2-DICHLOROETHYLENE		5000	8500	2800

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE
 --=O,P,M, XYLENES NOT QUALIFIED

TABLE 6.1

MOTTOLO SITE OW-2S
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-2S	OW-2S	OW-2S
		4/11/85	1/7/85	1/11/85
		NHWSPCC	NHWSPCC	NHWSPCC
		NR	GC	NR
DICHLOROMETHANE		ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		7.7	194.0	343
1,2-DICHLOROETHANE		ND	ND	ND
1,1,1-TRICHLOROETHANE		10.7	ND	116.8
1,1,2-TRICHLOROETHANE		ND	ND	ND
TETRACHLOROETHANE		ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND
DICHLOROETHYLENE(C&T)		70.5	40.0	1266.0
TRICHLOROETHYLENE		ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND
BENZENE		ND	ND	ND
CHLOROBENZENE		ND	ND	ND
DICHLOROBENZENE		ND	ND	ND
ETHYLBENZENE		14.4	ND	169.3
TOLUENE		87.9	1590.0	1202.0
XYLENE META ISOMER		13.1	126.0	221.0
XYLENES(O&P)		<5.0	138.0	146.0
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		ND	ND	ND
ACETONE		ND	PR	ND
TETRAHYDROFURAN		<5.0	ND	62.1
DIETHYL ETHER		ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND
METHYL ISOBUTYL KETONE		ND	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

DETECTION LIMITS REPORTED

--=O,P,M, XYLENES NOT QUALIFIED

TABLE 6.1

MOTTOLO SITE OW-2D
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANAYLSIS BY	OW-2D 7/80 ERCO GC	OW-2D 10/80 EPA GC/MS	OW-2D 4/11/85 NHWSPOC NR	OW-2D 4/11/85 COMPUCH NR
DICHLOROMETHANE		2000	1000	ND	NR
DICHLOROBROMOMETHANE		NR	NR	ND	BDL(10)
TETRACHLOROMETHANE		NR	NR	ND	BDL(10)
CHLORODIBROMOMETHANE		NR	NR	ND	BDL(10)
CHLOROETHANE		NR	NR	NR	BDL(10)
1,1-DICHLOROETHANE		NR	500	731.4	760
1,2-DICHLOROETHANE		NR	NR	ND	BDL(10)
1,1,1-TRICHLOROETHANE		NR	3000	109.3	120
1,1,2-TRICHLOROETHANE		NR	NR	ND	BDL(10)
TETRACHLOROETHANE		NR	NR	ND	BDL(10)
1,1-DICHLOROETHYLENE		NR	NR	ND	BDL(10)
DICHLOROETHYLENE (C&T)		NR	NR	1065.0	NR
TRICHLOROETHYLENE		NR	NR	ND	BDL(10)
TETRACHLOROETHYLENE		NR	NR	ND	BDL(10)
1,2-DICHLOROPROPANE		NR	NR	ND	BDL(10)
1,3-DICHLOROPROPENE		NR	NR	ND	BDL(10)
BENZENE		NR	NR	ND	BDL(10)
CHLOROBENZENE		NR	NR	ND	BDL(10)
DICHLOROBENZENE		NR	NR	ND	NR
ETHYLBENZENE		NR	400	585.0	450
TOLUENE		15000	4000	3059.0	2900
XYLENE META ISOMER		-	-	630.8	NR
XYLENES(O&P)		25000a	600	527.0	NR
VINYL CHLORIDE		NR	NR	NR	590
BROMOMETHANE		NR	NR	NR	BDL(10)
CHLOROMETHANE		NR	NR	NR	BDL(10)
TRICHLOROFLUOROMETHANE		NR	NR	ND	BDL(10)
ACETONE		14000	PR	38.3	NR
TETRAHYDROFURAN		41000	10000	265.5	NR
DIETHYL ETHER		NR	NR	ND	NR
METHYL ETHYL KETONE		NR	NR	15.7	NR
METHYL ISOBUTYL KETONE		28000	PR	29.6	NR
1,3-DICHLOROPROPANE		NR	NR	ND	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	ND	NR
TRIBROMOMETHANE		NR	NR	ND	BDL(10)
TRICHLOROMETHANE		NR	NR	ND	NR
t-1,2-DICHLOROETHYLENE		NR	10000	NR	1300

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

DETECTION LIMITS REPORTED WHERE AVAILABLE

a=COMPOUND IDENTIFICATION UNCERTAIN

-=O,P,M, XYLENES NOT QUALIFIED

TABLE 6.1

MOTTOLO SITE OW-3
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-3	OW-3	OW-3
		8/79	10/79	4/80
		NHWSPCC	NHWSPCC	EPA
		GC	GC	GC
DICHLOROMETHANE		NR	NR	NR
DICHLOROBROMOMETHANE		NR	NR	NR
TETRACHLOROMETHANE		2	NR	NR
CHLORODIBROMOMETHANE		NR	NR	NR
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		NR	NR	NR
1,2-DICHLOROETHANE		NR	NR	NR
1,1,1-TRICHLOROETHANE		NR	NR	NR
1,1,2-TRICHLOROETHANE		NR	NR	NR
TETRACHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHYLENE		NR	NR	NR
DICHLOROETHYLENE(C&T)		NR	NR	NR
TRICHLOROETHYLENE		NR	15.6	<10
TETRACHLOROETHYLENE		NR	NR	NR
1,2-DICHLOROPROPANE		NR	NR	NR
1,3-DICHLOROPROPENE		NR	NR	NR
BENZENE		NR	NR	NR
CHLOROBENZENE		NR	NR	NR
DICHLOROBENZENE		NR	NR	NR
ETHYLBENZENE		NR	NR	NR
TOLUENE		NR	NR	<10
XYLENE META ISOMER		NR	NR	NR
XYLENES(O&P)		NR	NR	NR
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		NR	NR	NR
ACETONE		NR	NR	NR
TETRAHYDROFURAN		NR	NR	NR
DIETHYL ETHER		NR	NR	NR
METHYL ETHYL KETONE		NR	NR	NR
METHYL ISOBUTYL KETONE		NR	NR	NR
1,3-DICHLOROPROPANE		NR	NR	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	NR
TRIBROMOMETHANE		NR	NR	NR
TRICHLOROMETHANE		NR	NR	NR
t-1,2-DICHLOROETHYLENE		NR	NR	NR

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE OW-3
 GROUNDWATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	OW-3	OW-3	OW-3
		12/4/84	4/11/85	4/11/85
		NHWSPCC	NHWSPCC	COMPUCH
		NR	NR	NR
DICHLOROMETHANE		ND	ND	NR
DICHLOROBROMOMETHANE		ND	ND	BDL(10)
TETRACHLOROMETHANE		ND	ND	BDL(10)
CHLORODIBROMOMETHANE		ND	ND	BDL(10)
CHLOROETHANE		ND	NR	BDL(10)
1,1-DICHLOROETHANE		ND	ND	BDL(10)
1,2-DICHLOROETHANE		ND	ND	BDL(10)
1,1,1-TRICHLOROETHANE		ND	ND	BDL(10)
1,1,2-TRICHLOROETHANE		ND	ND	BDL(10)
TETRACHLOROETHANE		ND	ND	BDL(10)
1,1-DICHLOROETHYLENE		ND	ND	BDL(10)
DICHLOROETHYLENE(C&T)		ND	ND	NR
TRICHLOROETHYLENE		ND	ND	BDL(10)
TETRACHLOROETHYLENE		ND	ND	BDL(10)
1,2-DICHLOROPROPANE		ND	ND	BDL(10)
1,3-DICHLOROPROPENE		ND	ND	BDL(10)
BENZENE		ND	ND	BDL(10)
CHLOROBENZENE		ND	ND	BDL(10)
DICHLOROBENZENE		ND	ND	NR
ETHYLBENZENE		<5.0	ND	BDL(10)
TOLUENE		10.4	ND	BDL(10)
XYLENE META ISOMER		7.4	ND	NR
XYLENES(O&P)		7.9	ND	NR
VINYL CHLORIDE		NR	NR	BDL(10)
BROMOMETHANE		NR	NR	BDL(10)
CHLOROMETHANE		NR	NR	BDL(10)
TRICHLOROFLUOROMETHANE		ND	ND	BDL(10)
ACETONE		10.2	ND	NR
TETRAHYDROFURAN		ND	ND	NR
DIETHYL ETHER		ND	ND	NR
METHYL ETHYL KETONE		5.4	ND	NR
METHYL ISOBUTYL KETONE		ND	ND	NR
1,3-DICHLOROPROPANE		ND	ND	NR
TRICHLOROTRIFLUOROETHANE		ND	ND	NR
TRIBROMOMETHANE		ND	ND	BDL(10)
TRICHLOROMETHANE		ND	ND	NR
t-1,2-DICHLOROETHYLENE		NR	NR	BDL(10)

ALL VALUES REPORTED IN ug/L
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED

TABLE 6.1

MOTTOLO SITE OW-4S
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-4S	OW-4S	OW-4S
		7/80	10/80	12/80
		ERCO	ERCO	ERCO
		GC	GC/MS	GC/MS
DICHLOROMETHANE		NR	NR	NR
DICHLOROBROMOMETHANE		NR	NR	NR
TETRACHLOROMETHANE		NR	NR	NR
CHLORODIBROMOMETHANE		NR	NR	NR
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		NR	NR	2000
1,2-DICHLOROETHANE		NR	NR	NR
1,1,1-TRICHLOROETHANE		NR	3100	3100
1,1,2-TRICHLOROETHANE		NR	NR	NR
TETRACHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHYLENE		NR	NR	NR
DICHLOROETHYLENE(C&T)		NR	NR	NR
TRICHLOROETHYLENE		NR	650	NR
TETRACHLOROETHYLENE		NR	NR	NR
1,2-DICHLOROPROPANE		NR	NR	NR
1,3-DICHLOROPROPENE		NR	NR	NR
BENZENE		NR	NR	NR
CHLOROBENZENE		NR	NR	NR
DICHLOROBENZENE		NR	NR	NR
ETHYLBENZENE		NR	NR	NR
TOLUENE		100-1000	500	790
XYLENE META ISOMER		-	NR	NR
XYLENES(O&P)		1000a	NR	NR
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		NR	NR	NR
ACETONE		1000	NR	NR
TETRAHYDROFURAN		8000	100000	NR
DIETHYL ETHER		NR	NR	NR
METHYL ETHYL KETONE		18000	NR	NR
METHYL ISOBUTYL KETONE		10000	NR	NR
1,3-DICHLOROPROPANE		NR	NR	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	NR
TRIBROMOMETHANE		NR	NR	NR
TRICHLOROMETHANE		NR	NR	NR
t-1,2-DICHLOROETHYLENE		NR	NR	3000

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

()=DETECTION LIMIT

a=COMPOUND IDENTIFICATION UNCERTAIN

-=O,P,M, XYLENES NOT QUALIFIED

TABLE 6.1

MOTTOLO SITE OW-4S
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-4S	OW-4S	OW-4S	OW-4S
		1/7/85	1/11/85	4/11/85	4/11/85
		NHWSPCC	NHWSPCC	NHWSPCC	COMPUCH
		GC	NR	NR	NR
DICHLOROMETHANE		ND	ND	228.4	310
DICHLOROBROMOMETHANE		ND	ND	ND	BDL(50)
TETRACHLOROMETHANE		ND	ND	ND	BDL(50)
CHLORODIBROMOMETHANE		ND	ND	ND	BDL(50)
CHLOROETHANE		NR	NR	NR	48
1,1-DICHLOROETHANE		285.0	314.0	3338.0	3400
1,2-DICHLOROETHANE		ND	ND	14.1	BDL(50)
1,1,1-TRICHLOROETHANE		ND	24.0	764.6	660
1,1,2-TRICHLOROETHANE		ND	ND	ND	BDL(50)
TETRACHLOROETHANE		ND	ND	ND	BDL(50)
1,1-DICHLOROETHYLENE		ND	ND	35.9	BDL(50)
DICHLOROETHYLENE(C&T)		38.0	73.1	2374.0	NR
TRICHLOROETHYLENE		ND	ND	ND	30
TETRACHLOROETHYLENE		ND	ND	121.6	BDL(50)
1,2-DICHLOROPROPANE		ND	ND	ND	BDL(50)
1,3-DICHLOROPROPENE		ND	ND	ND	BDL(50)
BENZENE		ND	ND	117.4	BDL(50)
CHLOROENZENE		ND	ND	ND	BDL(50)
DICHLOROBENZENE		ND	ND	ND	NR
ETHYLBENZENE		153.0	141.0	96.8	72
TOLUENE		203.0	174.0	512.8	440
XYLENE META ISOMER		538.0	204.0	144.7	NR
XYLENES(O&P)		360.0	212.3	27.3	NR
VINYL CHLORIDE		NR	NR	NR	BDL(50)
BROMOMETHANE		NR	NR	NR	BDL(50)
CHLOROMETHANE		NR	NR	NR	BDL(50)
TRICHLOROFLUOROMETHANE		ND	ND	ND	BDL(50)
ACETONE		PR	22.7	21.9	NR
TETRAHYDROFURAN		ND	69.3	85.4	NR
DIETHYL ETHER		ND	ND	ND	NR
METHYL ETHYL KETONE		ND	ND	30.3	NR
METHYL ISOBUTYL KETONE		ND	114.5	85.1	NR
1,3-DICHLOROPROPANE		ND	ND	ND	NR
TRICHLOROTRIFLUOROETHANE		ND	ND	PR	NR
TRIBROMOMETHANE		ND	ND	ND	BDL(50)
TRICHLOROMETHANE		ND	ND	ND	NR
t-1,2-DICHLOROETHYLENE		NR	NR	NR	2500

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

()=DETECTION LIMIT

a=COMOUND IDENTIFICATION UNCERTAIN

--=O,P,M, XYLENES NOT QUALIFIED

TABLE 6.1

MOTTOLO SITE OW-4D
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	OW-4D	OW-4D	OW-4D
		7/80 ERCO GC	4/11/85 NHWSPOC NR	4/11/85 COMPUCH NR
DICHLOROMETHANE			151.5	BDL(10)
DICHLOROBROMOMETHANE			ND	BDL(10)
TETRACHLOROMETHANE	NO		ND	BDL(10)
CHLORODIBROMOMETHANE	COM-		ND	BDL(10)
CHLOROETHANE	POUNDS		NR	BDL(10)
1,1-DICHLOROETHANE	DETECTED		17.6	17
1,2-DICHLOROETHANE	AT OR		ND	BDL(10)
1,1,1-TRICHLOROETHANE	ABOVE		ND	BDL(10)
1,1,2-TRICHLOROETHANE	1 PPM		ND	BDL(10)
TETRACHLOROETHANE	BY VOL		ND	BDL(10)
1,1-DICHLOROETHYLENE			ND	BDL(10)
DICHLOROETHYLENE(C&T)			13.9	NR
TRICHLOROETHYLENE			ND	BDL(10)
TETRACHLOROETHYLENE			ND	BDL(10)
1,2-DICHLOROPROPANE			ND	BDL(10)
1,3-DICHLOROPROPENE			ND	BDL(10)
BENZENE			ND	BDL(10)
CHLOROBENZENE			ND	BDL(10)
DICHLOROBENZENE			ND	NR
ETHYLBENZENE			ND	BDL(10)
TOLUENE			17.6	BDL(10)
XYLENE META ISOMER			ND	NR
XYLENES(O&P)			ND	NR
VINYL CHLORIDE			NR	BDL(10)
BROMOMETHANE			NR	BDL(10)
CHLOROMETHANE			NR	BDL(10)
TRICHLOROFLUOROMETHANE			ND	BDL(10)
ACETONE			26.2	NR
TETRAHYDROFURAN			37.4	NR
DIETHYL ETHER			ND	NR
METHYL ETHYL KETONE			ND	NR
METHYL ISOBUTYL KETONE			12.7	NR
1,3-DICHLOROPROPANE			ND	NR
TRICHLOROTRIFLUOROETHANE			ND	NR
TRIBROMOMETHANE			ND	BDL(10)
TRICHLOROMETHANE			ND	NR
t-1,2-DICHLOROETHYLENE			NR	17

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE JB-5
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	JB-5	JB-5	JB-5	JB-5	JB-5
		12/80	1/7/85	1/11/85	4/11/85	4/11/85
		ERCO	NHWSPCC	NHWSPCC	NHWSPCC	COMPUCH
		GC/MS	GC	NR	NR	NR
DICHLOROMETHANE		NR	ND	ND	ND	BDL(10)
DICHLOROBROMOMETHANE		NR	ND	ND	ND	BDL(10)
TETRACHLOROMETHANE		NR	ND	ND	ND	BDL(10)
CHLORODIBROMOMETHANE		NR	ND	ND	ND	BDL(10)
CHLOROETHANE		NR	NR	NR	NR	BDL(10)
1,1-DICHLOROETHANE		990	176.0	190.2	131.8	110
1,2-DICHLOROETHANE		NR	ND	ND	ND	BDL(10)
1,1,1-TRICHLOROETHANE		NR	ND	ND	12.2	11
1,1,2-TRICHLOROETHANE		NR	ND	ND	ND	BDL(10)
TETRACHLOROETHANE		NR	ND	ND	ND	BDL(10)
1,1-DICHLOROETHYLENE		NR	ND	ND	ND	BDL(10)
DICHLOROETHYLENE(C&T)		NR	43.0	100.2	47.3	BDL(10)
TRICHLOROETHYLENE		NR	ND	ND	ND	BDL(10)
TETRACHLOROETHYLENE		NR	ND	ND	ND	BDL(10)
1,2-DICHLOROPROPANE		NR	ND	ND	ND	BDL(10)
1,3-DICHLOROPROPENE		NR	ND	ND	ND	BDL(10)
BENZENE		NR	ND	ND	ND	BDL(10)
CHLOROBENZENE		NR	ND	ND	ND	BDL(10)
DICHLOROBENZENE		NR	ND	ND	ND	BDL(10)
ETHYLBENZENE		NR	78.0	34.5	ND	BDL(10)
TOLUENE		2900	267.0	137.4	7.8	BDL(10)
XYLENE META ISOMER		NR	74.0	38.6	ND	NR
XYLENES(O&P)		NR	87.0	41.1	11.7	NR
VINYL CHLORIDE		NR	NR	NR	NR	BDL(10)
BROMOMETHANE		NR	NR	NR	NR	BDL(10)
CHLOROMETHANE		NR	NR	NR	NR	BDL(10)
TRICHLOROFLUOROMETHANE		NR	ND	ND	ND	BDL(10)
ACETONE		NR	PR	ND	ND	NR
TETRAHYDROFURAN		NR	ND	64.5	6.3	NR
DIETHYL ETHER		NR	ND	ND	ND	NR
METHYL ETHYL KETONE		NR	ND	ND	ND	NR
METHYL ISOBUTYL KETONE		NR	ND	188.0	ND	NR
1,3-DICHLOROPROPANE		NR	ND	ND	ND	BDL
TRICHLOROTRIFLUOROETHANE		NR	ND	ND	ND	BDL
TRIBROMOMETHANE		NR	ND	ND	ND	NR
TRICHLOROMETHANE		NR	ND	ND	ND	NR
t-1,2-DICHLOROETHYLENE		9600	NR	NR	NR	51

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

[]=BLIND DUPLICATE

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE JB-6
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	JB-6	JB-6	JB-6
		1/7/85	1/11/85	4/11/85
		NHWSPCC	NHWSPCC	COMPUCH
		GC	NR	NR
DICHLOROMETHANE		ND	ND	BDL(10)
DICHLOROBROMOMETHANE		ND	ND	BDL(10)
TETRACHLOROMETHANE		ND	ND	BDL(10)
CHLORODIBROMOMETHANE		ND	ND	BDL(10)
CHLOROETHANE		NR	NR	BDL(10)
1,1-DICHLOROETHANE		264.0	790.0	70[57]
1,2-DICHLOROETHANE		ND	ND	BDL(10)
1,1,1-TRICHLOROETHANE		ND	ND	BDL(10)
1,1,2-TRICHLOROETHANE		ND	ND	BDL(10)
TETRACHLOROETHANE		ND	ND	BDL(10)
1,1-DICHLOROETHYLENE		ND	ND	BDL(10)
DICHLOROETHYLENE(C&T)		130.0	740.0	BDL(10)
TRICHLOROETHYLENE		ND	ND	BDL(10)
TETRACHLOROETHYLENE		ND	ND	BDL(10)
1,2-DICHLOROPROPANE		ND	ND	BDL(10)
1,3-DICHLOROPROPENE		ND	ND	BDL(10)
BENZENE		14.0	ND	BDL(10)
CHLOROBENZENE		ND	ND	BDL(10)
DICHLOROBENZENE		ND	ND	BDL(10)
ETHYLBENZENE		121.0	224.0	BDL(10)
TOLUENE		897.0	1372.0	93[72]
XYLENE META ISOMER		199.0	345.0	NR
XYLENES(O&P)		130.0	229.0	NR
VINYL CHLORIDE		NR	NR	BDL(10)
BROMOMETHANE		NR	NR	BDL(10)
CHLOROMETHANE		NR	NR	BDL(10)
TRICHLOROFLUOROMETHANE		ND	ND	BDL(10)
ACETONE		PR	326.0	NR
TETRAHYDROFURAN		ND	337.0	NR
DIETHYL ETHER		ND	ND	NR
METHYL ETHYL KETONE		ND	ND	NR
METHYL ISOBUTYL KETONE		ND	66.7	NR
1,3-DICHLOROPROPANE		ND	ND	BDL(10)
TRICHLOROTRIFLUOROETHANE		ND	ND	BDL(10)
TRIBROMOMETHANE		ND	ND	NR
TRICHLOROMETHANE		ND	ND	NR
t-1,2-DICHLOROETHYLENE		NR	NR	15[13]

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

[]=BLIND DUPLICATE

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE JB-7
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	JB-7	JB-7	JB-7	JB-7
		7/80	10/80	4/11/85	4/11/85
		ERCO	ERCO	NHWSPOC	COMPUCH
		GC	GC/MS	NR	NR
DICHLOROMETHANE		NR	NR	ND	BDL(200)
DICHLOROBROMOMETHANE		NR	NR	ND	BDL(200)
TETRACHLOROMETHANE		NR	NR	ND	NR
CHLORODIBROMOMETHANE		NR	NR	ND	BDL(200)
CHLOROETHANE		NR	NR	NR	BDL(200)
1,1-DICHLOROETHANE		NR	200	1222.0	950.0
1,2-DICHLOROETHANE		NR	NR	ND	BDL(200)
1,1,1-TRICHLOROETHANE		NR	NR	122.0	110(200)
1,1,2-TRICHLOROETHANE		NR	NR	ND	BDL(200)
TETRACHLOROETHANE		NR	NR	ND	DDL(200)
1,1-DICHLOROETHYLENE		NR	NR	35.7	BDL(200)
DICHLOROETHYLENE(C&T)		NR	NR	1858.6	NR
TRICHLOROETHYLENE		NR	NR	ND	BDL(200)
TETRACHLOROETHYLENE		NR	NR	ND	BDL(200)
1,2-DICHLOROPROPANE		NR	NR	ND	BDL(200)
1,3-DICHLOROPROPENE		NR	NR	ND	DBL(200)
BENZENE		NR	NR	ND	BDL(200)
CHLOROBENZENE		NR	NR	ND	BDL(200)
DICHLOROBENZENE		NR	NR	ND	NR
ETHYLBENZENE		NR	28	249.3	180(200)
TOLUENE		NR	10	2781.0	3300
XYLENE META ISOMER		NR	NR	318.0	NR
XYLENES(O&P)		NR	NR	187.0	NR
VINYL CHLORIDE		NR	NR	NR	BDL(200)
BROMOMETHANE		NR	NR	NR	NR
CHLOROMETHANE		NR	NR	NR	NR
TRICHLOROFLUOROMETHANE		NR	NR	ND	BDL(200)
ACETONE		8000	NR	220.0	NR
TETRAHYDROFURAN		11000	28000	544.0	NR
DIETHYL ETHER		NR	NR	ND	NR
METHYL ETHYL KETONE		28000	NR	239.9	NR
METHYL ISOBUTYL KETONE		6000	NR	309.7	NR
1,3-DICHLOROPROPANE		NR	NR	ND	NR
TRICHLOROTRIFLUOROETHANE		NR	NR	ND	NR
TRIBROMOMETHANE		NR	NR	ND	BDL(200)
TRICHLOROMETHANE		NR	NR	ND	NR
t-1,2-DICHLOROETHYLENE		NR	620	NR	2000

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

[]=BLIND DUPLICATE

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE JB-8
 GROUNDWATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	JB-8	JB-8
		4/11/85 NHWSPOC NR	4/11/85 COMPUCH NR
DICHLOROMETHANE		ND	BDL(10)
DICHLOROBROMOMETHANE		ND	BDL(10)
TETRACHLOROMETHANE		ND	NR
CHLORODIBROMOMETHANE		ND	BDL(10)
CHLOROETHANE		NR	BDL(10)
1,1-DICHLOROETHANE		ND	BDL(10)
1,2-DICHLOROETHANE		ND	BDL(10)
1,1,1-TRICHLOROETHANE		ND	BDL(10)
1,1,2-TRICHLOROETHANE		ND	BDL(10)
TETRACHLOROETHANE		ND	BDL(10)
1,1-DICHLOROETHYLENE		ND	BDL(10)
DICHLOROETHYLENE(C&T)		ND	NR
TRICHLOROETHYLENE		<5.0	BDL(10)
TETRACHLOROETHYLENE		ND	BDL(10)
1,2-DICHLOROPROPANE		ND	BDL(10)
1,3-DICHLOROPROPENE		ND	BDL(10)
BENZENE		ND	BDL(10)
CHLOROBENZENE		<5.0	BDL(10)
DICHLOROBENZENE		ND	NR
ETHYLBENZENE		ND	BDL(10)
TOLUENE		5.2	BDL(10)
XYLENE META ISOMER		ND	NR
XYLENES(O&P)		ND	NR
VINYL CHLORIDE		NR	BDL(10)
BROMOMETHANE		NR	NR
CHLOROMETHANE		NR	NR
TRICHLOROFLUOROMETHANE		ND	BDL(10)
ACETONE		ND	NR
TETRAHYDROFURAN		ND	NR
DIETHYL ETHER		ND	NR
METHYL ETHYL KETONE		ND	NR
METHYL ISOBUTYL KETONE		ND	NR
1,3-DICHLOROPROPANE		ND	NR
TRICHLOROTRIFLUOROETHANE		ND	NR
TRIBROMOMETHANE		ND	BDL(10)
TRICHLOROMETHANE		ND	NR
t-1,2-DICHLOROETHYLENE		NR	BDL(10)

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 []=BLIND DUPLICATE
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE JB-9
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	JB-9	JB-9
		4/11/85 NHWSPCC NR	4/11/85 COMPUCH NR
DICHLOROMETHANE		ND	BDL(10)
DICHLOROBROMOMETHANE		ND	BDL(10)
TETRACHLOROMETHANE		ND	NR
CHLORODIBROMOMETHANE		ND	BDL(10)
CHLOROETHANE		NR	BDL(10)
1,1-DICHLOROETHANE		ND	BDL(10)
1,2-DICHLOROETHANE		ND	BDL(10)
1,1,1-TRICHLOROETHANE		ND	BDL(10)
1,1,2-TRICHLOROETHANE		ND	BDL(10)
TETRACHLOROETHANE		ND	BDL(10)
1,1-DICHLOROETHYLENE		ND	BDL(10)
DICHLOROETHYLENE(C&T)		ND	NR
TRICHLOROETHYLENE		ND	BDL(10)
TETRACHLOROETHYLENE		ND	BDL(10)
1,2-DICHLOROPROPANE		ND	BDL(10)
1,3-DICHLOROPROPENE		ND	BDL(10)
BENZENE		ND	BDL(10)
CHLOROBENZENE		ND	BDL(10)
DICHLOROBENZENE		ND	NR
ETHYLBENZENE		ND	BDL(10)
TOLUENE		ND	BDL(10)
XYLENE META ISOMER		ND	NR
XYLENES(O&P)		ND	NR
VINYL CHLORIDE		NR	BDL(10)
BROMOMETHANE		NR	NR
CHLOROMETHANE		NR	NR
TRICHLOROFLUOROMETHANE		ND	BDL(10)
ACETONE		ND	NR
TETRAHYDROFURAN		ND	NR
DIETHYL ETHER		ND	NR
METHYL ETHYL KETONE		ND	NR
METHYL ISOBUTYL KETONE		ND	NR
1,3-DICHLOROPROPANE		ND	NR
TRICHLOROTRIFLUOROETHANE		ND	NR
TRIBROMOMETHANE		ND	BDL(10)
TRICHLOROMETHANE		ND	NR
t-1,2-DICHLOROETHYLENE		NR	BDL(10)

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

[]=BLIND DUPLICATE

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE MO-1
 1985 GROUNDWATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	MO-1	MO-1
		7/25/85	8/22/85
		NHWSPCC	NHWSPCC
		NR	NR
DICHLOROMETHANE		ND	ND
DICHLOROBROMOMETHANE		ND	ND
TETRACHLOROMETHANE		ND	ND
CHLORODIBROMOMETHANE		ND	ND
CHLOROETHANE		NR	NR
1,1-DICHLOROETHANE		ND	ND
1,2-DICHLOROETHANE		ND	ND
1,1,1-TRICHLOROETHANE		ND	ND
1,1,2-TRICHLOROETHANE		ND	ND
TETRACHLOROETHANE		ND	ND
1,1-DICHLOROETHYLENE		ND	ND
DICHLOROETHYLENE(C&T)		ND	ND
TRICHLOROETHYLENE		<5.0	10.3
TETRACHLOROETHYLENE		ND	ND
1,2-DICHLOROPROPANE		ND	ND
1,3-DICHLOROPROPENE		ND	ND
BENZENE		ND	ND
CHLOROBENZENE		ND	ND
DICHLOROBENZENE		ND	ND
ETHYLBENZENE		ND	ND
TOLUENE		ND	ND
XYLENE META ISOMER		ND	ND
XYLENES(O&P)		ND	ND
VINYL CHLORIDE		NR	NR
BROMOMETHANE		NR	NR
CHLOROMETHANE		NR	NR
TRICHLOROFLUOROMETHANE		ND	ND
ACETONE		ND	ND
TETRAHYDROFURAN		ND	ND
DIETHYL ETHER		ND	ND
METHYL ETHYL KETONE		ND	ND
METHYL ISOBUTYL KETONE		ND	ND
1,3-DICHLOROPROPANE		ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND
TRIBROMOMETHANE		ND	ND
TRICHLOROMETHANE		ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED
 PR=PRESENT
 BDL=BELOW DETECTION LIMIT
 []=BLIND DUPLICATE
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE MO-2
 GROUNDWATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	MO-2S	MO-2D
		8/22/85	8/22/85
		NHWSPCC	NHWSPCC
		NR	NR
DICHLOROMETHANE		ND	ND
DICHLOROBROMOMETHANE		ND	ND
TETRACHLOROMETHANE		ND	ND
CHLORODIBROMOMETHANE		ND	ND
CHLOROETHANE		NR	NR
1,1-DICHLOROETHANE		550.6	72.1
1,2-DICHLOROETHANE		ND	ND
1,1,1-TRICHLOROETHANE		27.6	ND
1,1,2-TRICHLOROETHANE		ND	ND
TETRACHLOROETHANE		ND	ND
1,1-DICHLOROETHYLENE		ND	ND
DICHLOROETHYLENE (C&T)		244.1	278.0
TRICHLOROETHYLENE		<5.0	19.8
TETRACHLOROETHYLENE		ND	ND
1,2-DICHLOROPROPANE		ND	ND
1,3-DICHLOROPROPENE		ND	ND
BENZENE		<5.0	ND
CHLOROBENZENE		ND	ND
DICHLOROBENZENE		ND	ND
ETHYLBENZENE		196.0	<5.0
TOLUENE		1366.2	<5.0
XYLENE META ISOMER		224.6	ND
XYLENES(O&P)		168.0	ND
VINYL CHLORIDE		NR	NR
BROMOMETHANE		NR	NR
CHLOROMETHANE		NR	NR
TRICHLOROFLUOROMETHANE		ND	ND
ACETONE		ND	ND
TETRAHYDROFURAN		2389.0	1354.0
DIETHYL ETHER		ND	ND
METHYL ETHYL KETONE		ND	ND
METHYL ISOBUTYL KETONE		188.1	21.5
1,3-DICHLOROPROPANE		ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND
TRIBROMOMETHANE		ND	ND
TRICHLOROMETHANE		ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR

ALL VALUES REPORTED IN ug/l
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 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE MO-3
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	MO-3S	MO-3D
		8/22/85	8/22/85
		NHWSPCC	NHWSPCC
		NR	NR
DICHLOROMETHANE		ND	ND
DICHLOROBROMOMETHANE		ND	ND
TETRACHLOROMETHANE		ND	ND
CHLORODIBROMOMETHANE		ND	ND
CHLOROETHANE		NR	NR
1,1-DICHLOROETHANE		461.8	148.6
1,2-DICHLOROETHANE		ND	ND
1,1,1-TRICHLOROETHANE		ND	ND
1,1,2-TRICHLOROETHANE		ND	ND
TETRACHLOROETHANE		ND	ND
1,1-DICHLOROETHYLENE		ND	ND
DICHLOROETHYLENE(C&T)		232.2	543.0
TRICHLOROETHYLENE		37.5	98.8
TETRACHLOROETHYLENE		ND	ND
1,2-DICHLOROPROPANE		ND	ND
1,3-DICHLOROPROPENE		ND	ND
BENZENE		ND	ND
CHLOROBENZENE		ND	ND
DICHLOROBENZENE		ND	ND
ETHYLBENZENE		164.0	10.1
TOLUENE		1290.0	11.0
XYLENE META ISOMER		194.9	ND
XYLENES(O&P)		132.7	ND
VINYL CHLORIDE		NR	NR
BROMOMETHANE		NR	NR
CHLOROMETHANE		NR	NR
TRICHLOROFLUOROMETHANE		ND	ND
ACETONE		80.4	ND
TETRAHYDROFURAN		2267.0	1070.0
DIETHYL ETHER		ND	ND
METHYL ETHYL KETONE		ND	ND
METHYL ISOBUTYL KETONE		858.7	191.8
1,3-DICHLOROPROPANE		ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND
TRIBROMOMETHANE		ND	ND
TRICHLOROMETHANE		ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR

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 PR=PRESENT
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 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE MO-4
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSTS BY	MO-4S	MO-4D	MO-4S	MO-4D
		7/25/85	7/25/85	8/22/85	8/22/85
		NHWSPCC	NHWSPCC	NHWSPCC	NHWSPCC
		NR	NR	NR	NR
DICHLOROMETHANE		ND	ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND	ND
CHLOROETHANE		NR	NR	NR	NR
1,1-DICHLOROETHANE		ND	ND	ND	ND
1,2-DICHLOROETHANE		ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	ND	ND	ND
1,1,2-TRICHLOROETHANE		ND	ND	ND	ND
TETRACHLOROETHANE		ND	ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND	ND
DICHLOROETHYLENE(C&T)		ND	ND	ND	ND
TRICHLOROETHYLENE		ND	ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND	ND
BENZENE		ND	ND	ND	ND
CHLOROBENZENE		ND	ND	ND	ND
DICHLOROBENZENE		ND	ND	ND	ND
ETHYLBENZENE		ND	ND	ND	ND
TOLUENE		ND	ND	ND	ND
XYLENE META ISOMER		ND	ND	ND	ND
XYLENES(O&P)		ND	ND	ND	ND
VINYL CHLORIDE		NR	NR	NR	NR
BROMOMETHANE		NR	NR	NR	NR
CHLOROMETHANE		NR	NR	NR	NR
TRICHLOROFLUOROMETHANE		ND	ND	ND	ND
ACETONE		ND	ND	ND	ND
TETRAHYDROFURAN		ND	ND	35.0	ND
DIETHYL ETHER		ND	ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND	ND
METHYL ISOBUTYL KETONE		ND	ND	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR	NR

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

[]=BLIND DUPLICATE

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE MO-5
 GROUNDWATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	MO-5S	MO-5D	MO-5S	MO-5D
		7/25/85	7/25/85	8/21/85	8/21/85
		NHWSPCC	NHWSPCC	NHWSPCC	NHWSPCC
		NR	NR	NR	NR
DICHLOROMETHANE		ND	ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND	ND
CHLOROETHANE		NR	NR	NR	NR
1,1-DICHLOROETHANE		12.0	66.5	ND	ND
1,2-DICHLOROETHANE		ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	<5.0	ND	<5.0
1,1,2-TRICHLOROETHANE		ND	ND	ND	ND
TRICHLOROETHANE		ND	ND	ND	ND
1,1-DICHLOROETHYLENE		40.0	229.0	ND	ND
DICHLOROETHYLENE(C&T)		42.2	241.7	42.0	228.0
TRICHLOROETHYLENE		18.5	33.3	11.0	29.0
TETRACHLOROETHYLENE		ND	ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND	ND
BENZENE		ND	ND	ND	ND
CHLOROBENZENE		ND	ND	ND	ND
DICHLOROBENZENE		ND	ND	ND	ND
ETHYLBENZENE		ND	ND	ND	ND
TOLUENE		ND	ND	ND	ND
XYLENE META ISOMER		ND	ND	ND	ND
XYLENES(O&P)		ND	ND	ND	ND
VINYL CHLORIDE		NR	NR	NR	NR
BROMOMETHANE		NR	NR	NR	NR
CHLOROMETHANE		NR	NR	NR	NR
TRICHLOROFLUOROMETHANE		ND	ND	ND	ND
ACETONE		ND	ND	ND	ND
TETRAHYDROFURAN		ND	341.0	ND	445.0
DIETHYL ETHER		ND	ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND	ND
METHYL ISOBUTYL KETONE		ND	ND	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR	NR

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
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 []=BLIND DUPLICATE
 ()=DETECTION LIMIT
 DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.1

MOTTOLO SITE MO-6
GROUNDWATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	MO-6	MO-6
		7/25/85	8/22/85
		NHWSPCC	NHWSPCC
		NR	NR
DICHLOROMETHANE		ND	ND
DICHLOROBROMOMETHANE		ND	ND
TETRACHLOROMETHANE		ND	ND
CHLORODIBROMOMETHANE		ND	ND
CHLOROETHANE		NR	NR
1,1-DICHLOROETHANE		ND	ND
1,2-DICHLOROETHANE		ND	ND
1,1,1-TRICHLOROETHANE		ND	ND
1,1,2-TRICHLOROETHANE		ND	ND
TETRACHLOROETHANE		ND	ND
1,1-DICHLOROETHYLENE		ND	ND
DICHLOROETHYLENE(C&T)		ND	ND
TRICHLOROETHYLENE		ND	ND
TETRACHLOROETHYLENE		ND	ND
1,2-DICHLOROPROPANE		ND	ND
1,3-DICHLOROPROPENE		ND	ND
BENZENE		ND	ND
CHLOROBENZENE		ND	ND
DICHLOROBENZENE		ND	ND
ETHYLBENZENE		ND	ND
TOLUENE		ND	ND
XYLENE META ISOMER		ND	ND
XYLENES(O&P)		ND	ND
VINYL CHLORIDE		NR	NR
BROMOMETHANE		NR	NR
CHLOROMETHANE		NR	NR
TRICHLOROFLUOROMETHANE		ND	ND
ACETONE		ND	ND
TETRAHYDROFURAN		ND	ND
DIETHYL ETHER		ND	ND
METHYL ETHYL KETONE		ND	ND
METHYL ISOBUTYL KETONE		ND	ND
1,3-DICHLOROPROPANE		ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND
TRIBROMOMETHANE		ND	ND
TRICHLOROMETHANE		ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

BDL=BELOW DETECTION LIMIT

[]=BLIND DUPLICATE

()=DETECTION LIMIT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 6.2

MOTTOLO SITE
GROUNDWATER INORGANIC DATA
PROJECT #6185

COMPOUND	DUG WELL	DUG WELL	DUG WELL
	8/79 NHWSPPC	10/79 NHWSPPC	4/85 NHWSPPC
ARSENIC	<.05	<.01	<.005
BARIIUM	<.1	<.1	<.5
CADMIUM	<.01	<.005	<.005
CHROMIUM	<.01	<.01	<.03
COPPER	NR	0.49	<.1
IRON	0.1	0.1	0.1
LEAD	<.05	NR	<.01
MANGANESE	0.01	0.04	0.07
MERCURY	NR	NR	NR
NICKEL	NR	NR	NR
SELENIUM	<.01	<.01	<.005
ZINC	NR	NR	<.03
SILVER	NR	NR	<.001
pH units	6.5	6.6	NR
SPEC. CONDUCTANCE (uMHOs)	85	125	NR
TOC	4	1	11
COD	12	2	NR
PHENOLICS	NR	NR	NR
NO2 + NO3	0.31	0.24	NR
CHLORIDE	<1	1	NR
SULFATE	5	NR	NR
TOTAL SOLIDS	74	87	NR
COLOR	10	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
GROUNDWATER INORGANIC DATA
PROJECT #6185

COMPOUND	JB-5	JB-5	JB-5	JB-5
	7/80	10/80	12/80	4/85
	NHWSPCC	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	0.29	0.14	0.15	NR
BARIUM	0.13	NR	NR	NR
CADMIUM	0.008	NR	NR	NR
CHROMIUM	0.11	0.02	0.04	NR
COPPER	0.2	NR	NR	NR
IRON	180	130	150	NR
LEAD	1.1	0.09	NR	NR
MANGANESE	39.4	29.5	38	NR
MERCURY	<.001	NR	NR	NR
NICKEL	0.2	NR	NR	NR
SELENIUM	<.005	NR	NR	NR
ZINC	1.96	0.81	0.87	NR
SILVER	0.01	NR	NR	NR
pH units	6.4	NR	NR	NR
SPEC. CONDUCTANCE (uMHOs)	500	NR	NR	NR
TOC	NR	300	100 a	33
COD	809	NR	NR	NR
PHENOLICS	NR	NR	0.106	NR
NO2 + NO3	NR	NR	NR	NR
CHLORIDE	NR	NR	NR	NR
SULFATE	NR	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR	NR
COLOR	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED

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NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
 GROUNDWATER INORGANIC DATA
 PROJECT #6185

COMPOUND	JB-6	JB-7	JB-7
	7/80	7/80	10/80
	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	0.14	0.6	0.19
BARIUM	0.22	0.11	NR
CADMIUM	<.005	0.007	NR
CHROMIUM	0.21	0.05	0.03
COPPER	0.2	0.3	NR
IRON	105	175	105
LEAD	0.13	3.2	0.575
MANGANESE	9	23.5	19.5
MERCURY	<.001	<.001	NR
NICKEL	0.1	0.2	NR
SELENIUM	<.005	<.005	NR
ZINC	47	16	4.5
SILVER	0.01	<.01	NR
pH units	6.4	6.4	NR
SPEC. CONDUCTANCE (uMHOs)	153	220	NR
TOC	NR	NR	100
COD	834	154	NR
PHENOLICS	NR	NR	NR
NO2 + NO3	NR	NR	NR
CHLORIDE	NR	NR	NR
SULFATE	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR
COLOR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
 NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
GROUNDWATER INORGANIC DATA
PROJECT #6185

COMPOUND	JB-8	JB-8	JB-9	JB-9
	5/80 GZA	7/80 NHWSPCC	12/80 NHWSPCC	4/85 NHWSPCC
ARSENIC	NR	0.17	0.032	NR
BARIUM	NR	0.3	NR	NR
CADMIUM	NR	<.005	NR	NR
CHROMIUM	NR	0.05	0.08	NR
COPPER	NR	0.1	NR	NR
IRON	NR	60	55	NR
LEAD	NR	0.01	NR	NR
MANGANESE	NR	1.89	2.21	NR
MERCURY	NR	<.001	NR	NR
NICKEL	NR	0.1	NR	NR
SELENIUM	NR	<.005	NR	NR
ZINC	NR	19	23.5	NR
SILVER	NR	0.01	NR	NR
pH units	6.8	NR	NR	NR
SPEC. CONDUCTANCE (uMHOs)	151	NR	NR	NR
TOC	NR	NR	20	110
COD	38.5	NR	NR	NR
PHENOLICS	NR	NR	<.005	NR
NO2 + NO3	NR	NR	NR	NR
CHLORIDE	NR	NR	NR	NR
SULFATE	NR	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR	NR
COLOR	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
 GROUNDWATER INORGANIC DATA
 PROJECT #6185

COMPOUND	OW-1	OW-1	OW-1
	8/79	10/79	11/79
	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	<.05	NR	<.01
BARIUM	0.11	NR	NR
CADMIUM	0.013	NR	0.007
CHROMIUM	0.05	NR	0.03
COPPER	NR	NR	<.1
IRON	144	NR	NR
LEAD	0.06	NR	NR
MANGANESE	5.4	NR	NR
MERCURY	NR	NR	NR
NICKEL	NR	NR	<.1
SELENIUM	0.01	NR	NR
ZINC	NR	NR	5
SILVER	NR	NR	NR
pH units	6.5	6.2	5.8
SPEC. CONDUCTANCE (uMHOs)	141	104	74
TOC	10	2	NR
COD	72	55	32
PHENOLICS	NR	NR	NR
NO2 + NO3	1.71	NR	NR
CHLORIDE	1	1	NR
SULFATE	4	NR	NR
TOTAL SOLIDS	31	NR	NR
COLOR	5	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
 NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
GROUNDWATER INORGANIC DATA
PROJECT #6185

COMPOUND	OW-2D	OW-2D	OW-2D
	7/80	10/80	4/85
	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	0.23	1.6	NR
BARIUM	0.05	NR	NR
CADMIUM	<.005	NR	NR
CHROMIUM	0.01	0.01	NR
COPPER	<.1	NR	NR
IRON	220	200	NR
LEAD	<.01	NR	NR
MANGANESE	59.5	49	NR
MERCURY	<.001	NR	NR
NICKEL	0.1	NR	NR
SELENIUM	<.005	NR	NR
ZINC	0.11	0.06	NR
SILVER	<.01	NR	NR
pH units	6.6	NR	NR
SPEC. CONDUCTANCE (μ MHOs)	1022	NR	NR
TOC	NR	1200	70
COD	2150	NR	NR
PHENOLICS	NR	NR	NR
NO ₂ + NO ₃	NR	NR	NR
CHLORIDE	NR	NR	NR
SULFATE	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR
COLOR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
GROUNDWATER INORGANIC DATA
PROJECT #6185

COMPOUND	OW-2S	OW-2S	OW-2S	OW-2S
	8/79	10/79	11/79	7/80
	NHWSPCC	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	<.05	0.5	0.37	1.73
BARIUM	<.01	0.15	NR	0.2
CADMIUM	<.01	<.005	<.005	<.005
CHROMIUM	0.02	0.02	0.02	0.09
COPPER	NR	0.8	0.1	0.1
IRON	84	140	NR	245
LEAD	<.05	NR	NR	0.02
MANGANESE	1.7	50	NR	90
MERCURY	NR	NR	NR	<.001
NICKEL	NR	NR	0.1	0.2
SELENIUM	<.01	<.01	NR	<.005
ZINC	NR	NR	0.21	0.87
SILVER	NR	NR	NR	<.01
pH units	6.8	6.4	6.3	6.3
SPEC. CONDUCTANCE (uMHOs)	235	1010	1200	7600
TOC	27	660	NR	NR
COD	167	1336	1560	1730
PHENOLICS	NR	NR	NR	NR
NO2 + NO3	0.09	NR	NR	NR
CHLORIDE	16	NR	NR	NR
SULFATE	10	NR	NR	NR
TOTAL SOLIDS	213	975	NR	NR
COLOR	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
 GROUNDWATER INORGANIC DATA
 PROJECT #6185

COMPOUND	OW-2S	OW-2S	OW-2S
	10/80	12/80	4/85
	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	0.18	<.005	0.009
BARIUM	NR	NR	<.5
CADMIUM	NR	NR	<.005
CHROMIUM	0.05	0.08	<.03
COPPER	NR	NR	.1
IRON	310	130	10
LEAD	NR	NR	<.01
MANGANESE	73	23.5	0.63
MERCURY	NR	NR	NR
NICKEL	NR	NR	NR
SELENIUM	NR	NR	<.005
ZINC	0.64	0.77	<.03
SILVER	NR	NR	<.001
pH units	NR	NR	NR
SPEC. CONDUCTANCE (uMHOs)	NR	NR	NR
TOC	1300	100 a	24
COD	NR	NR	NR
PHENOLICS	NR	<.15	NR
NO2 + NO3	NR	NR	NR
CHLORIDE	NR	NR	NR
SULFATE	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR
COLOR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED

a APPROXIMATE FROM DILUTION

NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
 GROUNDWATER INORGANIC DATA
 PROJECT #6185

COMPOUND	OW-3	OW-3	OW-3	OW-3	OW-3
	8/79	10/79	11/79	5/80	4/85
	NHWSPCC	NHWSPCC	NHWSPCC	GZA	NHWSPCC
ARSENIC	<.05	NR	<.01	NR	NR
BARIUM	<.01	NR	NR	NR	NR
CADMIUM	<.01	NR	<.005	NR	NR
CHROMIUM	0.02	NR	<.01	NR	NR
COPPER	NR	NR	<.1	NR	NR
IRON	98	NR	NR	NR	NR
LEAD	<.05	NR	NR	NR	NR
MANGANESE	0.51	NR	NR	NR	NR
MERCURY	NR	NR	NR	NR	NR
NICKEL	NR	NR	0.1	NR	NR
SELENIUM	<.01	NR	NR	NR	NR
ZINC	NR	NR	11.2	NR	NR
SILVER	NR	NR	NR	NR	NR
pH units	8.4	6.6	5.7	6.4	NR
SPEC. CONDUCTANCE (uMHOs)	83	38	23	55	NR
TOC	6	1	NR	NR	16
COD	48	157	72	NR	NR
PHENOLICS	NR	NR	NR	NR	NR
NO2 + NO3	0.08	NR	NR	NR	NR
CHLORIDE	8	2	NR	NR	NR
SULFATE	6	NR	NR	NR	NR
TOTAL SOLIDS	139	NR	NR	NR	NR
COLOR	10	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
 NR=NOT REPORTED OR NO DATA AVAILABLE

TABLE 6.2

MOTTOLO SITE
GROUNDWATER INORGANIC DATA
PROJECT #6185

COMPOUND	OW-4S	OW-4S	OW-4S	OW-4S	OW-4S
	5/80 GZA	7/80 NHWSPCC	10/80 NHWSPCC	12/80 NHWSPCC	4/85 NHWSPCC
ARSENIC	NR	<.01	0.035	0.02	0.006
BARIUM	NR	0.11	NR	NR	<.5
CADMIUM	NR	0.006	NR	NR	<.005
CHROMIUM	NR	0.05	0.02	0.03	<.03
COPPER	NR	0.1	NR	NR	<.1
IRON	NR	220	85	40	190
LEAD	NR	0.07	0.015	NR	0.03
MANGANESE	NR	14.5	19	23.5	7.5
MERCURY	NR	<.001	NR	NR	NR
NICKEL	NR	0.2	NR	NR	NR
SELENIUM	NR	<.005	NR	NR	<.005
ZINC	NR	38	31.5	77	2.3
SILVER	NR	0.02	NR	NR	<.001
pH units	7	6.3	NR	NR	NR
SPEC. CONDUCTANCE (uMHOs)	120	238	NR	NR	NR
TOC	NR	NR	200	200 a	90
COD	NR	193	NR	NR	NR
PHENOLICS	NR	NR	NR	NR	NR
NO2 + NO3	NR	NR	NR	0.132	NR
CHLORIDE	NR	NR	NR	NR	NR
SULFATE	NR	NR	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR	NR	NR
COLOR	NR	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED

a APPROXIMATE FROM DILUTION

NR=NOT REPORTED OR NO DATA AVAILABLE

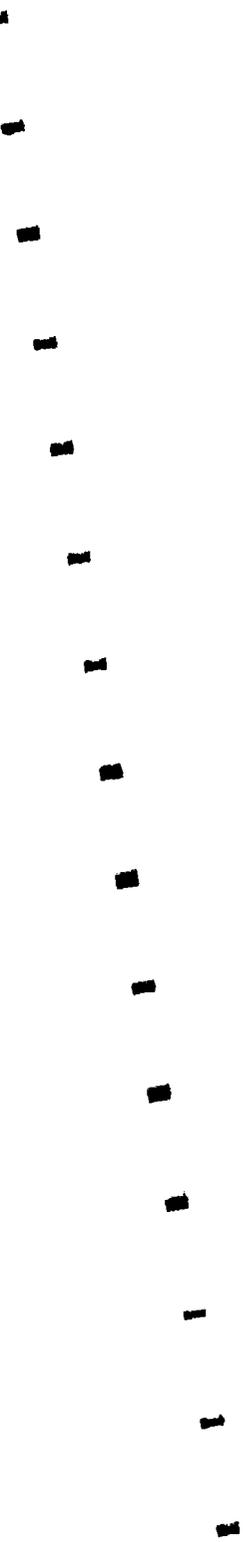


TABLE 7.1

 MOTTOLO SITE
 EPA SURFACE WATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	70214 4/80 EPA GC	70215 4/80 EPA GC/MS	70216 4/80 EPA GC
CHLOROMETHANE		ND	ND	ND
BROMOMETHANE		ND	ND	ND
DICHLORODIFLUOROMETHANE		ND	ND	ND
VINYL CHLORIDE		ND	ND	ND
CHLOROETHANE		ND	ND	ND
METHYLENE CHLORIDE		ND	ND	ND
ACRYLONITRILE		ND	ND	ND
TRICHLOROFLUOROMETHANE		ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND
1,1-DICHLOROETHANE		ND	ND	ND
t-1,2-DICHLOROETHYLENE		ND	40	ND
CHLOROFORM		ND	ND	ND
1,2-DICHLOROETHANE		ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	ND	ND
CARBON TETRACHLORIDE		ND	ND	ND
BROMODICHLOROMETHANE		ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND
t-1,3-DICHLOROPROPYLENE		ND	ND	ND
TRICHLOROETHYLENE		ND	40	<10
BENZENE		ND	ND	ND
DIBROMOCHLOROMETHANE		ND	ND	ND
c-1,3-DICHLOROPROPYLENE		ND	ND	ND
1,1,2-TRICHLOROETHANE		ND	ND	ND
BROMOFORM		ND	ND	ND
1,1,2,2-TETRACHLOROETHANE		ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND
TOLUENE		ND	1	ND
CHLOROBENZENE		ND	ND	ND
ETHYLBENZENE		ND	ND	ND
BIS-CHLOROMETHYL ETHER		ND	ND	ND
2-CHLOROETHYL VINYL ETHER		ND	ND	ND
ACROLEIN		ND	ND	ND
ADDITIONAL COMPOUNDS				
ACETONE		NR	PR	NR
ISOPROPYL ALCOHOL		NR	NR	NR
TETRAHYDROFURN		NR	PR	NR
METHYL ETHYL KETONE		NR	PR	NR
METHYL ISOBUTYL KETONE		NR	PR	NR
2-BUTANOL		NR	NR	NR
HEXANOL		NR	NR	NR

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 7.1

MOTTOLO SITE
EPA SURFACE WATER DATA
PROJECT #6185

COMPOUND	ANALYSIS BY	70205	70208	70212	70213
		4/80 EPA GC	4/80 EPA GC/MS	4/80 EPA GC/MS	4/80 EPA GC/MS
CHLOROMETHANE		ND	ND	ND	ND
BROMOMETHANE		ND	ND	ND	ND
DICHLORODIFLUOROMETHANE		ND	ND	ND	ND
VINYL CHLORIDE		ND	ND	ND	ND
CHLOROETHANE		ND	ND	ND	ND
METHYLENE CHLORIDE		ND	ND	ND	100
ACRYLONITRILE		ND	ND	ND	ND
TRICHLOROFLUOROMETHANE		ND	ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND	ND
1,1-DICHLOROETHANE		ND	ND	ND	ND
t-1,2-DICHLOROETHYLENE		ND	100	2000	60
CHLOROFORM		ND	ND	ND	ND
1,2-DICHLOROETHANE		ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	ND	ND	ND
CARBON TETRACHLORIDE		ND	ND	ND	ND
BROMODICHLOROMETHANE		ND	ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND	ND
t-1,3-DICHLOROPROPYLENE		ND	ND	ND	ND
TRICHLOROETHYLENE		ND	8	200	300
BENZENE		ND	ND	ND	ND
DIBROMOCHLOROMETHANE		ND	ND	ND	ND
c-1,3-DICHLOROPROPYLENE		ND	ND	ND	ND
1,1,2-TRICHLOROETHANE		ND	ND	ND	ND
BROMOFORM		ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE		ND	ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND	ND
TOLUENE		ND	20	400	300
CHLOROBEZENE		ND	ND	ND	ND
ETHYLBENZENE		ND	ND	ND	ND
BIS-CHLOROMETHYL ETHER		ND	ND	ND	ND
2-CHLOROETHYL VINYL ETHER		ND	ND	ND	ND
ACROLEIN		ND	ND	ND	ND
ADDITIONAL COMPOUNDS					
ACETONE		NR	PR	PR	PR
ISOPROPYL ALCOHOL		NR	NR	NR	PR
TETRAHYDROFURN		NR	PR	PR	PR
METHYL ETHYL KETONE		NR	PR	PR	PR
METHYL ISOBUTYL KETONE		NR	PR	PR	PR
2-BUTANOL		NR	PR	NR	PR
HEXANOL		NR	NR	NR	PR

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

DETECTION LIMITS REPORTED WHERE AVAILABLE

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TABLE 7.2

MOTTOLO SITE
 NHWSPCC SURFACE WATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	S-1	S-1	S-3
		4/11/85	8/21/85	4/11/85
		NHWSPCC	NHWSPCC	NHSWPCC
		GC/MS	GC/MS	GC/MS
DICHLOROMETHANE		ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		ND	ND	<5.0
1,2-DICHLOROETHANE		ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	ND	ND
1,1,2-TRICHLOROETHANE		ND	ND	ND
TETRACHLOROETHANE		ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND
DICHLOROETHYLENE (C&T)		ND	ND	<5.0
TRICHLOROETHYLENE		ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND
BENZENE		ND	ND	ND
CHLOROBENZENE		ND	ND	ND
DICHLOROBENZENE		ND	ND	ND
ETHYLBENZENE		ND	ND	ND
TOLUENE		ND	ND	<5.0
XYLENE META ISOMER		ND	ND	ND
XYLENES(O&P)		ND	ND	ND
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		ND	ND	ND
ACETONE		ND	ND	ND
TETRAHYDROFURAN		ND	ND	<5.0
DIETHYL ETHER		ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND
METHYL ISOBUTYL KETONE		ND	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 7.2

MOTTOLO SITE
 NHWSPCC SURFACE WATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	SA-1	SA-2	SA-2
		7/25/85	7/25/85	8/21/85
		NHWSPCC	NHWSPCC	NHWSPCC
		GC/MS	GC/MS	GC/MS
DICHLOROMETHANE		ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		86.1	85.4	ND
1,2-DICHLOROETHANE		ND	ND	ND
1,1,1-TRICHLOROETHANE		<5.0	ND	ND
1,1,2-TRICHLOROETHANE		ND	ND	ND
TETRACHLOROETHANE		ND	ND	ND
1,1-DICHLOROETHYLENE		17.7	<5.0	ND
DICHLOROETHYLENE(C&T)		18.6	<5.0	ND
TRICHLOROETHYLENE		ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND
BENZENE		ND	ND	ND
CHLOROBENZENE		ND	ND	ND
DICHLOROBENZENE		ND	ND	ND
ETHYLBENZENE		22.5	ND	14.1
TOLUENE		>200.0	104.8	68.5
XYLENE META ISOMER		15.3	12.1	17.4
XYLENES(O&P)		29.3	22.2	12.1
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		PR	ND	ND
ACETONE		ND	ND	ND
TETRAHYDROFURAN		304.5	426.7	337.2
DIETHYL ETHER		ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND
METHYL ISOBUTYL KETONE		10.0	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR

ALL VALUES REPORTED IN ug/L

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

DETECTION LIMITS REPORTED

TABLE 7.2

MOTTOLO SITE
 NHWSPCC SURFACE WATER DATA
 PROJECT #6185

COMPOUND	ANALYSIS BY	SA-3	SA-4	SA-4	LEACHATE
		8/21/85	7/25/85	8/21/85	4/11/85
		NHWSPCC	NHWSPCC	NHWSPCC	NHWSPCC
		GC/MS	GC/MS	GC/MS	NR
DICHLOROMETHANE		ND	ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND	ND
CHLOROETHANE		NR	NR	NR	NR
1,1-DICHLOROETHANE		ND	<5.0	ND	ND
1,2-DICHLOROETHANE		ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	10.4	ND	27.8
1,1,2-TRICHLOROETHANE		ND	ND	ND	ND
TETRACHLOROETHANE		ND	ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND	ND
DICHLOROETHYLENE(C&T)		7.0	ND	ND	92.7
TRICHLOROETHYLENE		ND	ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND	ND
BENZENE		ND	ND	ND	ND
CHLOROBENZENE		ND	ND	ND	ND
DICHLOROBENZENE		ND	ND	ND	ND
ETHYLBENZENE		ND	ND	ND	5.3
TOLUENE		ND	ND	ND	11.6
XYLENE META ISOMER		ND	ND	ND	5.0
XYLENES(O&P)		ND	ND	ND	7.4
VINYL CHLORIDE		NR	NR	NR	NR
BROMOMETHANE		NR	NR	NR	NR
CHLOROMETHANE		NR	NR	NR	NR
TRICHLOROFLUOROMETHANE		ND	ND	ND	ND
ACETONE		ND	ND	ND	ND
TETRAHYDROFURAN		36.0	14.1	ND	18.2
DIETHYL ETHER		ND	ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND	ND
METHYL ISOBUTYL KETONE		ND	ND	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR	NR

ALL VALUES REPORTED IN ug/l

ND=NOT DETECTED

NR=NOT REPORTED OR NO DATA AVAILABLE

PR=PRESENT

DETECTION LIMITS REPORTED WHERE AVAILABLE

TABLE 7.2

MOTTOLO SITE
 NHWSPCC SURFACE WATER DATA
 PROJECT #6185

BROOK # 35 FT UPSTREAM
 RANDY LN CULVERT

COMPOUND	ANALYSIS BY	5/2/85	7/25/85	8/22/85
		NHWSPCC NR	NHWSPCC GC/MS	NHWSPCC GC/MS
DICHLOROMETHANE		ND	ND	ND
DICHLOROBROMOMETHANE		ND	ND	ND
TETRACHLOROMETHANE		ND	ND	ND
CHLORODIBROMOMETHANE		ND	ND	ND
CHLOROETHANE		NR	NR	NR
1,1-DICHLOROETHANE		ND	ND	ND
1,2-DICHLOROETHANE		ND	ND	ND
1,1,1-TRICHLOROETHANE		ND	ND	ND
1,1,2-TRICHLOROETHANE		ND	ND	ND
TETRACHLOROETHANE		ND	ND	ND
1,1-DICHLOROETHYLENE		ND	ND	ND
DICHLOROETHYLENE(C&T)		ND	ND	ND
TRICHLOROETHYLENE		ND	ND	ND
TETRACHLOROETHYLENE		ND	ND	ND
1,2-DICHLOROPROPANE		ND	ND	ND
1,3-DICHLOROPROPENE		ND	ND	ND
BENZENE		ND	ND	ND
CHLOROBENZENE		ND	ND	ND
DICHLOROBENZENE		ND	ND	ND
ETHYLBENZENE		ND	ND	ND
TOLUENE		ND	ND	ND
XYLENE META ISOMER		ND	ND	ND
XYLENES(O&P)		ND	ND	ND
VINYL CHLORIDE		NR	NR	NR
BROMOMETHANE		NR	NR	NR
CHLOROMETHANE		NR	NR	NR
TRICHLOROFLUOROMETHANE		ND	ND	ND
ACETONE		ND	ND	ND
TETRAHYDROFURAN		ND	ND	ND
DIETHYL ETHER		ND	ND	ND
METHYL ETHYL KETONE		ND	ND	ND
METHYL ISOBUTYL KETONE		ND	ND	ND
1,3-DICHLOROPROPANE		ND	ND	ND
TRICHLOROTRIFLUOROETHANE		ND	ND	ND
TRIBROMOMETHANE		ND	ND	ND
TRICHLOROMETHANE		ND	ND	ND
t-1,2-DICHLOROETHYLENE		NR	NR	NR

ALL VALUES REPORTED IN ug/l
 ND=NOT DETECTED
 NR=NOT REPORTED OR NO DATA AVAILABLE
 PR=PRESENT
 DETECTION LIMITS REPORTED

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TABLE 7.3

MOTTOLO SITE
SURFACE WATER INORGANIC DATA
PROJECT #6185

COMPOUND	S-1	S-1	S-2	S-3	S-3
	7/80	5/80	5/80	5/80	7/80
	NHWSPCC	GZA	GZA	GZA	NHWSPCC
ARSENIC	0.01	NR	NR	NR	0.023
BARIUM	0.1	NR	NR	NR	0.2
CADMIUM	<.005	NR	NR	NR	<0.005
CHROMIUM	0.02	NR	NR	NR	0.01
COPPER	0.1	NR	NR	NR	0.1
IRON	25	NR	NR	NR	15
LEAD	0.16	NR	NR	NR	0.025
MANGANESE	24	NR	NR	NR	15.5
MERCURY	<.001	NR	NR	NR	<0.001
NICKEL	0.1	NR	NR	NR	<0.1
SELENIUM	<.005	NR	NR	NR	<0.005
ZINC	0.21	NR	NR	NR	0.11
SILVER	<0.01	NR	NR	NR	<0.01
pH units	6.8	5.4	5.71	5.91	6.8
SPEC. CONDUCTANCE (uMHOs)	77.7	50	210	70	21.5
TOC	NR	NR	NR	NR	NR
COD	20000	NR	NR	NR	385
PHENOLICS	NR	NR	NR	NR	NR
NO2 + NO3	NR	NR	NR	NR	NR
CHLORIDE	NR	NR	NR	NR	NR
SULFATE	NR	NR	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR	NR	NR
COLOR	NR	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED

a APPROXIMATE FROM DILUTION

NR=NOT REPORTED OR NO DATA AVAILABLE

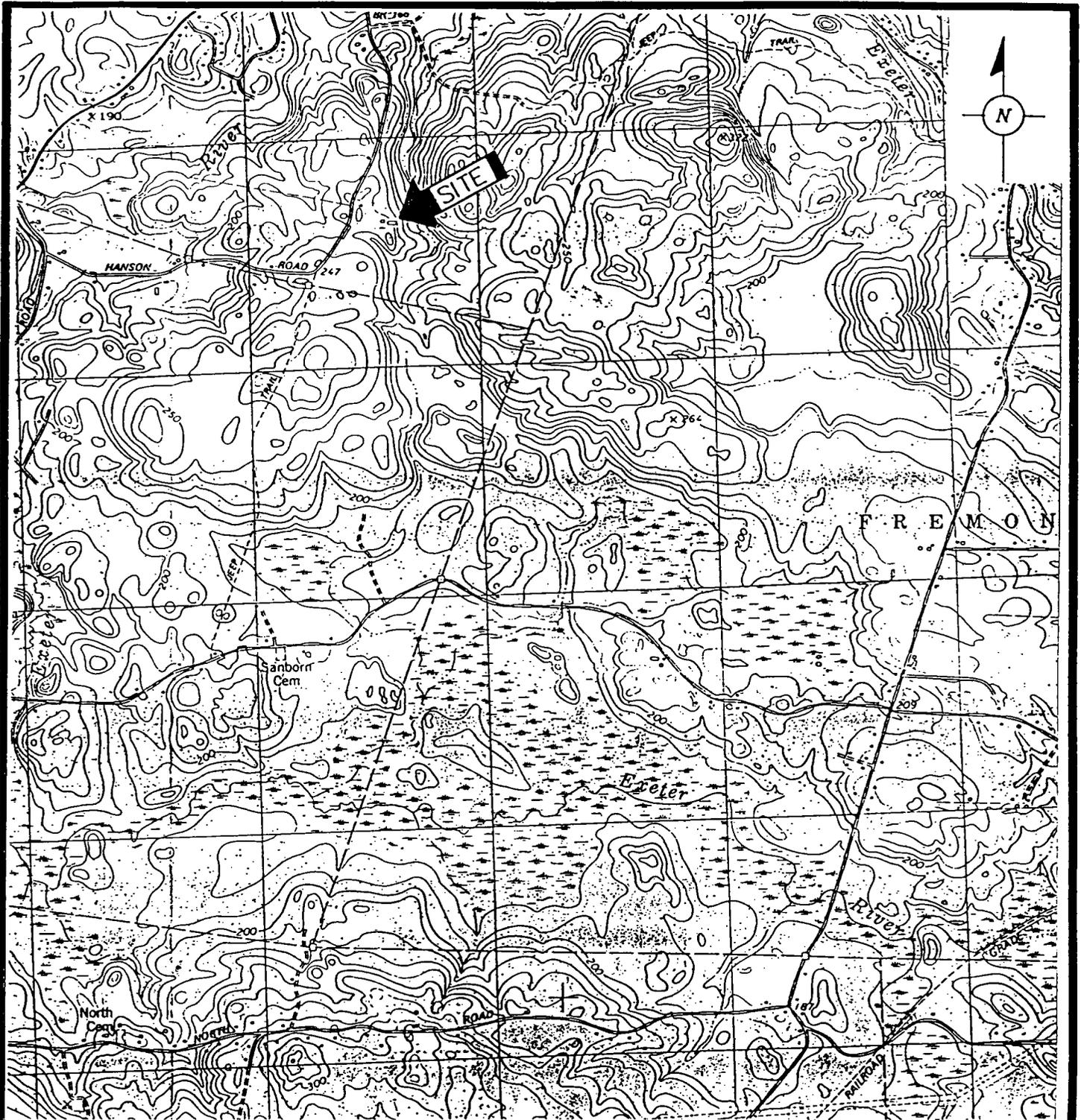
TABLE 7.3

MOTTOLO SITE
 SURFACE WATER INORGANIC DATA
 PROJECT #6185

COMPOUND	S-1A	S-1	S-3	S-3
	4/11	4/11	4/11	4/11
	NHWSPCC	NHWSPCC	NHWSPCC	NHWSPCC
ARSENIC	<0.005	NR	<0.005	NR
BARIUM	<0.5	NR	<0.5	NR
CADMIUM	<0.005	NR	<0.005	NR
CHROMIUM	<0.03	NR	<0.03	NR
COPPER	<0.1	NR	<0.1	NR
IRON	0.2	NR	0.9	NR
LEAD	<0.01	NR	<0.01	NR
MANGANESE	0.17	NR	0.31	NR
MERCURY	NR	NR	NR	NR
NICKEL	NR	NR	NR	NR
SELENIUM	<0.005	NR	<.005	NR
ZINC	<0.03	NR	0.03	NR
SILVER	<0.001	NR	<0.001	NR
pH units	NR	NR	NR	NR
SPEC. CONDUCTANCE (uMHOs)	NR	NR	NR	NR
TOC	NR	NR	NR	NR
COD	NR	NR	NR	NR
PHENOLICS	NR	NR	NR	NR
NO2 + NO3	NR	NR	NR	NR
CHLORIDE	NR	NR	NR	NR
SULFATE	NR	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR	NR
COLOR	NR	NR	NR	NR
TKN	NR	NR	NR	NR
NH3	NR	NR	NR	NR
TOTAL SOLIDS	NR	NR	NR	NR
TOC	NR	9.0	NR	8.0
TOTAL P	NR	NR	NR	NR
SULFIDE	NR	NR	NR	NR

ALL VALUES REPORTED IN mg/l UNLESS NOTED
 a APPROXIMATE FROM DILUTION
 NR=NOT REPORTED OR NO DATA AVAILABLE

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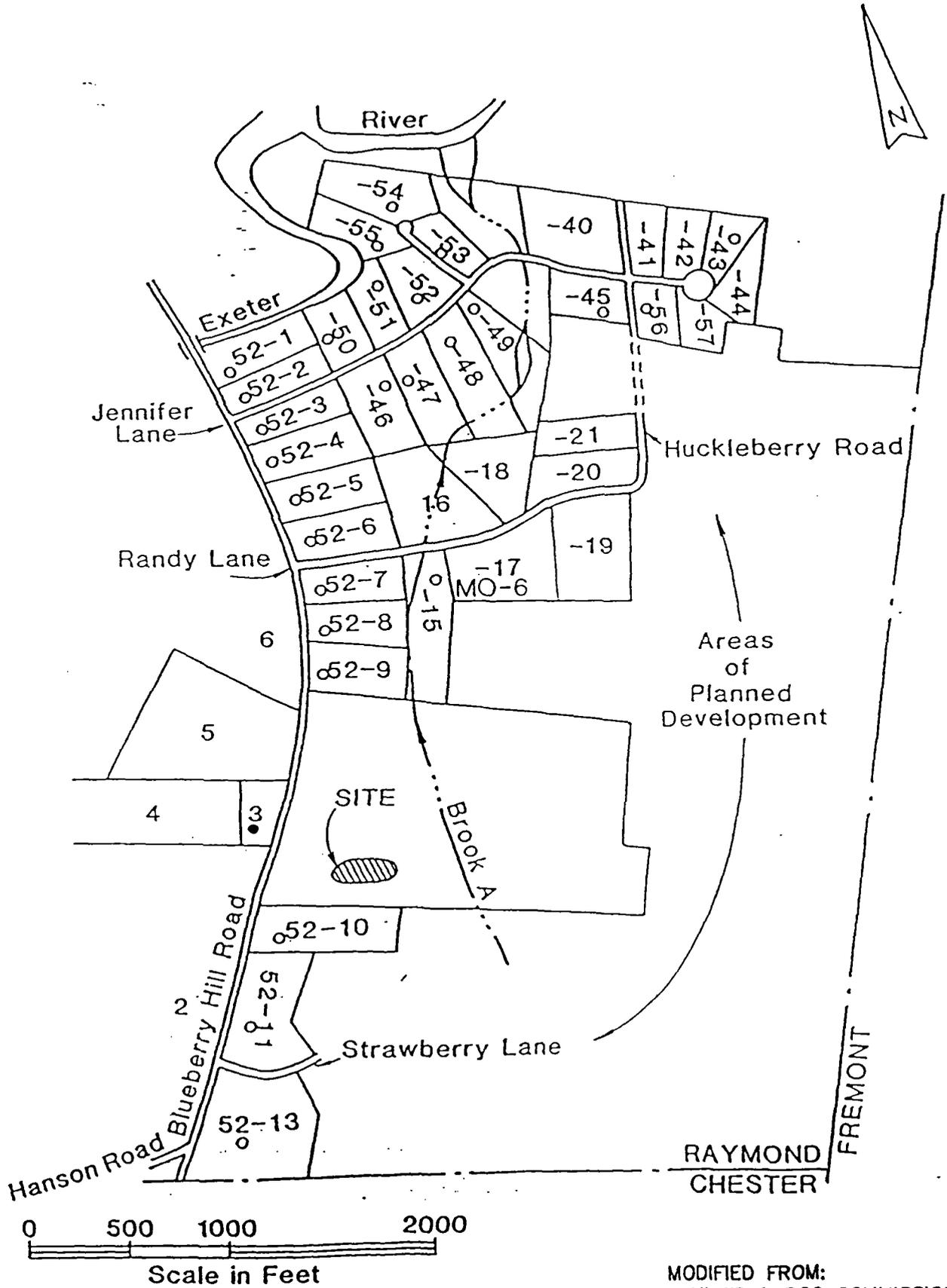
SOURCE:

USGS, 1981, SANDOWN QUADRANGLE,
 NEW HAMPSHIRE, US GEOLOGICAL SURVEY
 7.5' SERIES (TOPOGRAPHIC), 1981

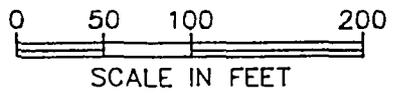
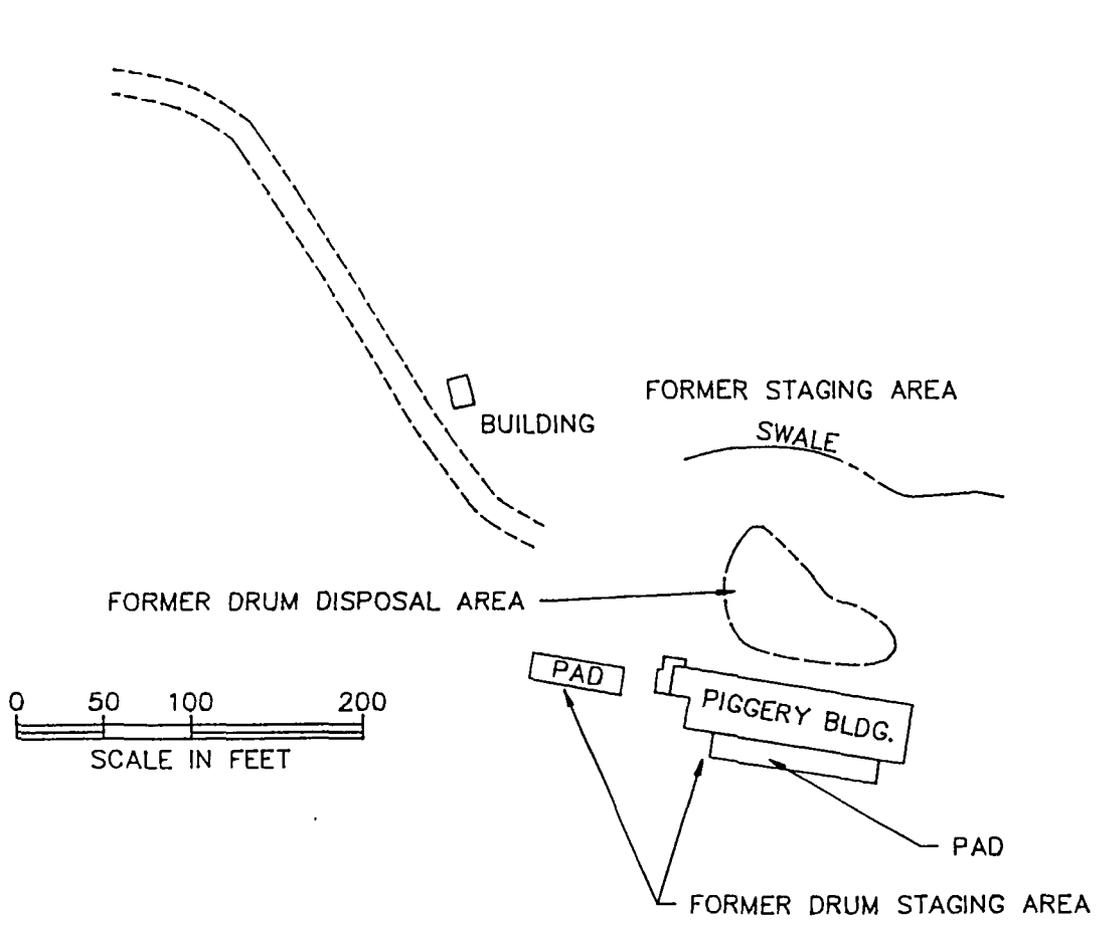
USGS, 1981, MT. PAWTUCKAWAY QUADRANGLE
 NEW HAMPSHIRE US GEOLOGICAL SURVEY
 7.5' SERIES (TOPOGRAPHIC), 1981

BALSAM ENVIRONMENTAL CONSULTANTS, INC. Salem, N.H.			CLIENT K.J. QUINN & COMPANY	
			TITLE SITE LOCUS PLAN	
DATE 2/12/88	DRAWN BY D.J.P.	CHECKED E.S.W.	PROJECT MOTTOLO SUPERFUND PROJECT	
SCALE 1:24000	DESIGNED E.S.W.	APPROVED L.C.S.	FIGURE NO. FIG. 2-1	PROJECT NO. 6185

FIGURE 2-2
AREA SKETCH

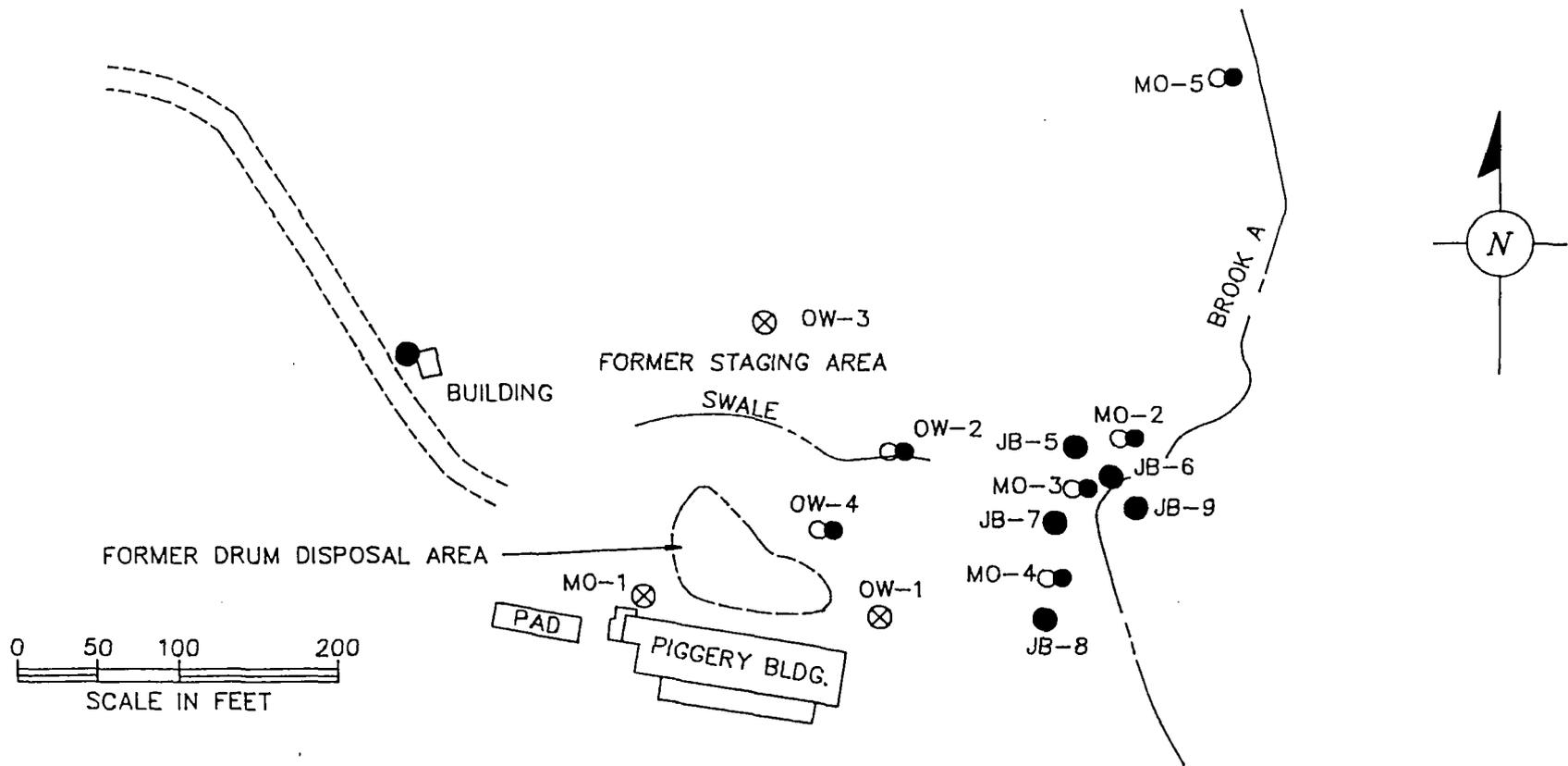


MODIFIED FROM:
NHWS & PCC COMMISSION
REPORT #149, JUNE, 1986



BASE MAP SOURCE:
GHR ENGINEERING REPORT,
UPDATED JULY, 1985 BY
RSL LAYOUT AND DESIGN

BALSAM ENVIRONMENTAL CONSULTANTS, INC. <i>Salem, N.H.</i>			CLIENT K.J. QUINN & COMPANY	
			TITLE SITE PLAN	
DATE 2/19/88	DRAWN BY D.J.P.	CHECKED E.S.W.	PROJECT MOTTOLO SUPERFUND PROJECT	
SCALE AS SHOWN	DESIGNED E.S.W.	APPROVED L.C.S.	FIGURE NO. FIG. 2-3	PROJECT NO. 6185



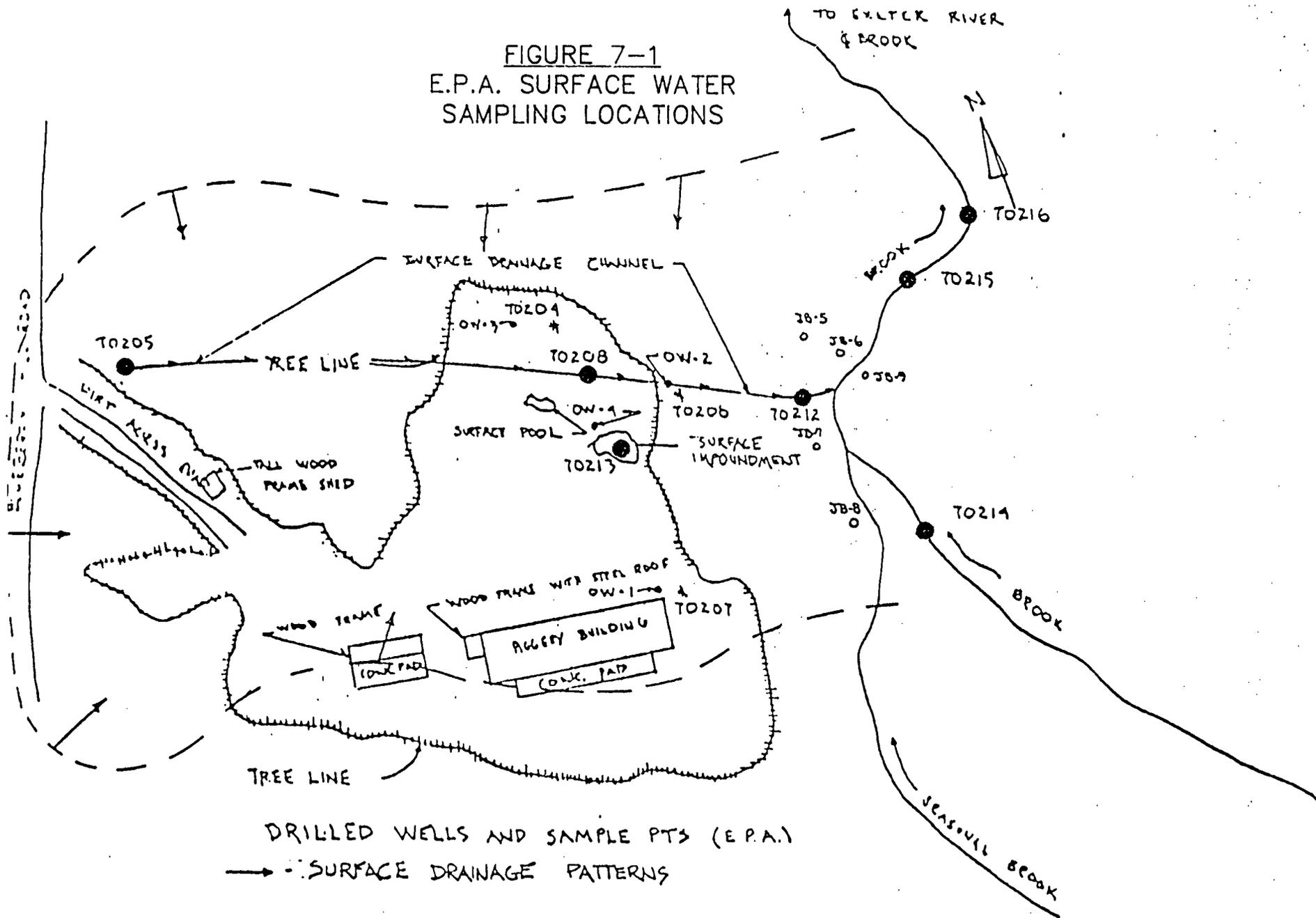
LEGEND:

- = OVERBURDEN WELL
- ⊗ = BEDROCK WELL
- = MONITORING WELL COUPLET

BASE MAP SOURCE:
 GHR ENGINEERING REPORT,
 UPDATED JULY, 1985 BY
 RSL LAYOUT AND DESIGN

BALSAM ENVIRONMENTAL CONSULTANTS, INC. Solem, N.H.			CLIENT K.J. QUINN & COMPANY	
			TITLE MONITORING WELL LOCATION PLAN	
DATE 2/19/88	DRAWN BY D.J.P.	CHECKED E.S.W.	PROJECT MOTTOLO SUPERFUND PROJECT	
SCALE AS SHOWN	DESIGNED E.S.W.	APPROVED L.C.S.	FIGURE NO. FIG. 2-4	PROJECT NO. 6185

FIGURE 7-1
E.P.A. SURFACE WATER
SAMPLING LOCATIONS

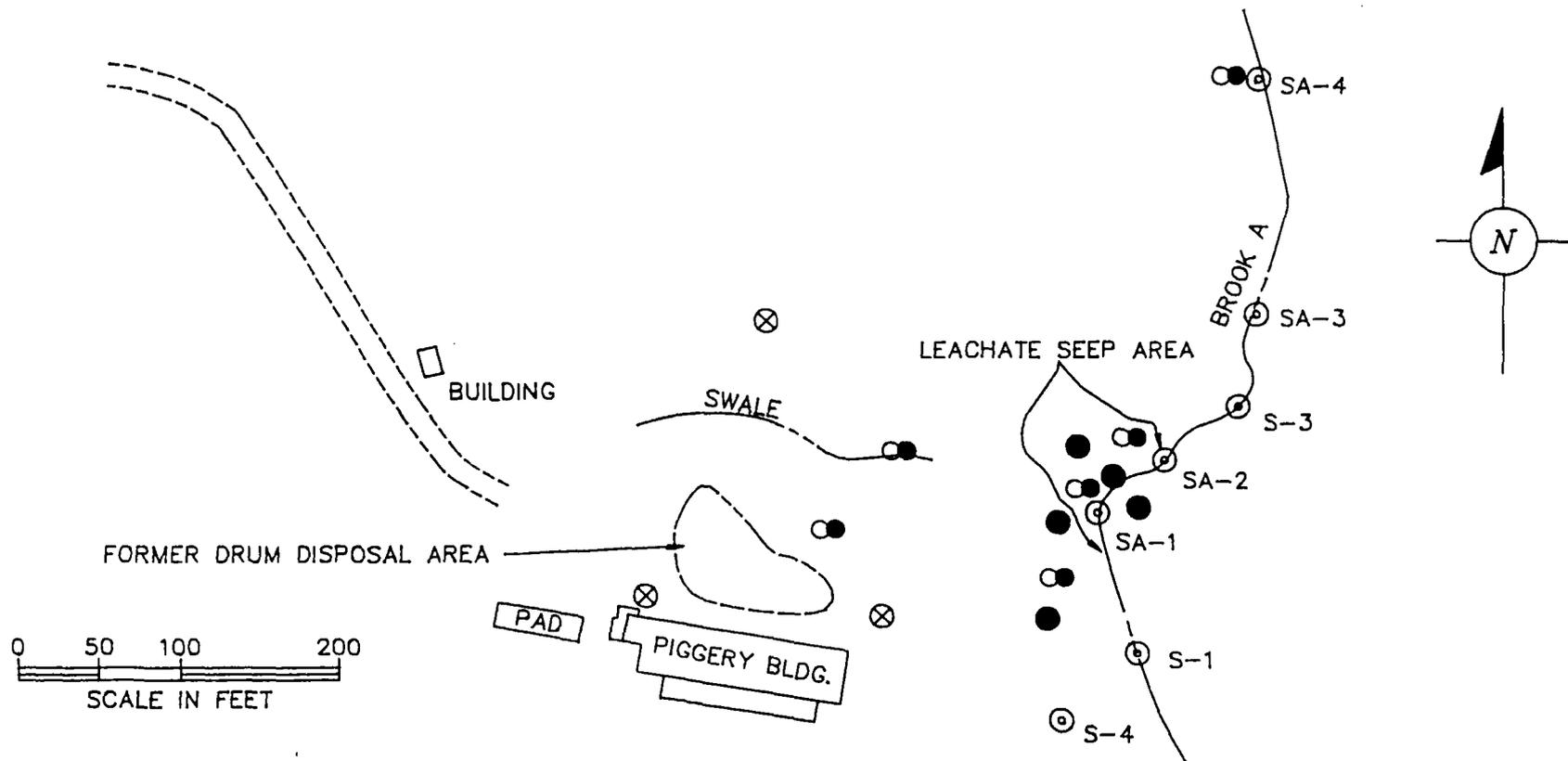


DRILLED WELLS AND SAMPLE PTS (E.P.A.)
 ——— SURFACE DRAINAGE PATTERNS

LEGEND

● = SAMPLE LOCATIONS

MODIFIED FROM:
 EPA ON SCENE COORDINATOR
 REPORT, UNDATED

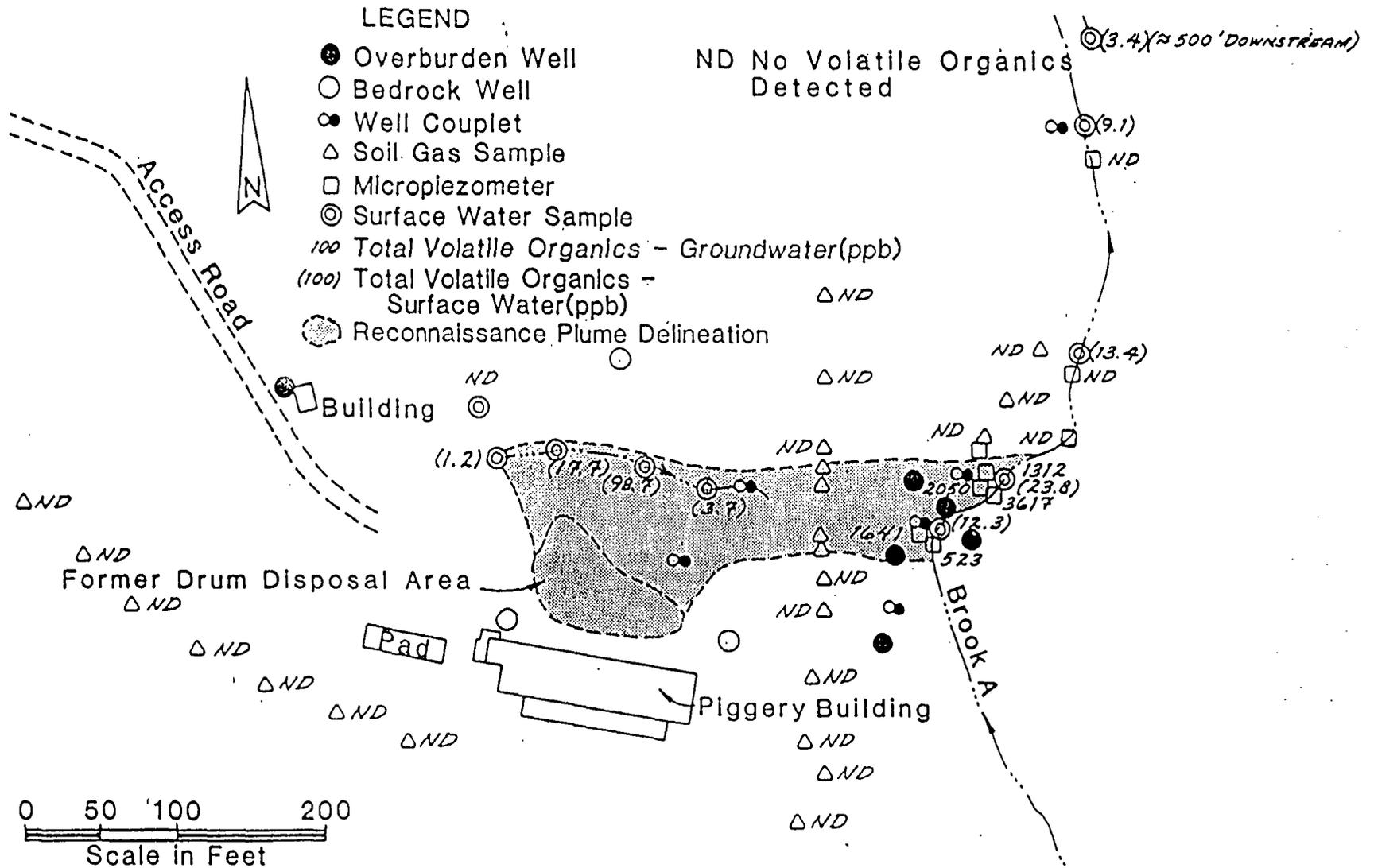


LEGEND:

- = OVERBURDEN WELL
- ⊗ = BEDROCK WELL
- = MONITORING WELL COUPLET
- ⊙ = SURFACE WATER SAMPLING LOCATION

BASE MAP SOURCE:
GHR ENGINEERING REPORT,
UPDATED JULY, 1985 BY
RSL LAYOUT AND DESIGN

BALSAM ENVIRONMENTAL CONSULTANTS, INC. Salem, N.H.			CLIENT K.J. QUINN & COMPANY	
			TITLE SURFACE WATER SAMPLING LOCATIONS	
DATE 2/19/88	DRAWN BY D.J.P.	CHECKED E.S.W.	PROJECT MOTTOLO SUPERFUND PROJECT	
SCALE AS SHOWN	DESIGNED R.J.R.	APPROVED L.C.S.	FIGURE NO. FIG. 7-2	PROJECT NO. 6185



MODIFIED FROM:
 NHWS & PCC HYDROGEOLOGICAL
 INVESTIGATION OF THE MOTTOLO
 HAZARDOUS WASTE SITE, COMMISSION
 REPORT #149, JUNE, 1986