Site Review And Update

CHEMSOL, INCORPORATED

PISCATAWAY, MIDDLESEX COUNTY, NEW JERSEY

CERCLIS NO. NJD980528889

JULY 20, 1995

REVISED

DECEMBER 5, 1995

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia

Site Review and Update: A Note of Explanation

The purpose of the Site Review and Update is to discuss the current status of a hazardous waste site and to identify future ATSDR activities planned for the site. The SRU is generally reserved to update activities for those sites for which public health assessments have been previously prepared (it is not intended to be an addendum to a public health assessment). The SRU, in conjunction with the ATSDR Site Ranking Scheme, will be used to determine relative priorities for future ATSDR public health actions.

REVISED

SITE REVIEW AND UPDATE

CHEMSOL, INCORPORATED

PISCATAWAY, MIDDLESEX COUNTY, NEW JERSEY

CERCLIS NO. NJD980528889

Prepared by:

New Jersey Department of Health
Environmental Health Service
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Chemsol, Inc. site is located at the end of Fleming Street, on Lots 1-A and 1-B of Block Number 229 A, about one-half mile north of the Interstate 287, in the Township of Piscataway, Middlesex County, New Jersey (**Figure 1.1**). The Chemsol site has sometimes been referred to as the Tang Realty site. The Chemsol, Inc. site is bounded on the south by the Reading Railroad right-of-way. The site covers approximately 40 acres, and is divided into two main lots (1-A and 1-B). The division of the site into Lot 1-A and 1-B is based on historical site contamination and current site fencing. Lot 1-A and 1-B are approximately 27 and 13 acres in area. Currently, there are no buildings on the site with the exception of a groundwater treatment system.

Land use in the vicinity of the site is commercial and residential. Industrial and retail/wholesale businesses are located south and east of the site. Single family residences are located immediately west and southwest of the site. An apartment complex is located north of the site. The nearest residence is approximately 100 feet to the west. Three surface water bodies (streams) are located on the site, which are tributaries to the Bound Brook. The Bound Brook is classified by the State of New Jersey as FW-2 Non-Trout waters (**Figure 1.2**).

Groundwater underlying the site exists in two zones. A perched water zone exists at depths of less than five feet. The second zone is identified as the upper bedrock aquifer (water table); the water table of the upper bedrock aquifer is at depths of approximately ten to thirty feet.

The Chemsol site was operated as a solvent recovery and waste reprocessing facility in the 1950's through approximately 1964. Recovery and reprocessing activities included operation such as mixing, blending and distillation of acetone, ethyl alcohol and lacquers. The facility was closed after a series of industrial accidents, explosions and fires. In 1978, the site was purchased by Tang Realty Corporation. In September 1983, Chemsol, Inc. was placed on the National Priorities List. In 1984, the New Jersey Department of Environmental Protection (NJDEP) entered into an Administrative Consent Order with Tang Realty requiring that Tang Realty perform an investigation to evaluate contamination at the site and develop a remedial action plan for the site.

Between 1980 and 1990, approximately 40 groundwater monitoring wells were installed by Tang Realty on site or downgradient from the site. Sampling from these monitoring wells indicated that groundwater was contaminated with organic compounds including chloroform, 1,2-dichloroethane, methylene chloride, vinyl chloride, and benzene. The concentration of total VOC's in the perched zone ranged from less than 3 ppb to 87,080 ppb. In the upper bedrock aquifer (water table), concentrations of total VOC's ranged from non-detect to 516,380 ppb. Pesticides were detected in three of five perched zone wells and six of sixteen upper bedrock aquifer (water table) wells. PCB's were not detected in any of the monitoring wells. Sampling and analyses of soils performed between 1980 and 1987 detected the presence of polychlorinated biphenyls (PCBs) and organic compounds.

In the Summer of 1988, Tang Realty removed approximately 3,700 cubic yards of PCB-contaminated soils for off-site disposal. During the soil excavations for removal of PCB-contaminated soils, several thousand small (less than 1 gallon) containers of unknown substances were discovered. These unknown substances were disposed off-site through a separate removal action by the United States Environmental Protection Agency (USEPA). The removal action was completed in October 1991.

Between January and March 1990, sampling was conducted by Tang Realty and the Middlesex County Health Department at private residential wells located downgradient of the site in the Nova Ukraine area of Piscataway Township. The results of sampling indicated the presence of organic contaminants in residential wells. The maximum reported concentrations of VOC's in private potable wells were: trichloroethene (TCE - 4.4 ppb); tetrachloroethene (PCE- 310 ppb); 1,1,2,2- tetrachloroethane (560 ppb); chlorobenzene (3.5 ppb); chloromethane (3.77 ppb); trans 1,2-dichloroethylene (7.2 ppb); and trichlorofluromethane (3.6 ppb). The Township extended municipal water service into the Nova Ukraine area during the fall of 1990. In the Fall of 1990, USEPA and the NJDEP agreed that USEPA should perform site investigations. Table one presents the contaminants detected in the private wells of the Nova Ukraine area and their associated comparison values.

Table 1 - *Potable well contaminants; Nova Ukraine Area, 1990.*

Compound	Concentration (ppb)	Comparison Value (ppb)
Trichloroethylene	4.4	3.0 CREG
1,1,2,2 Tetrachloroethane	560.0	0.2 CREG
Chlorobenzene	3.5	4.0 NJMCL
Chloromethane	3.7	None
Trans-1,2 Dichloroethylene	7.2	10 NJMCL

In February 1991, USEPA sampled residential wells in the Nova Ukraine area that were known not to have requested connection to the public water supply. The analytical results from this sampling indicated the presence of organic contaminants in two of three wells. One of the two contaminated private potable well showed tetrachloroethene (PCE) at a reported concentration of 5.0 ppb, and the other well was contaminated with trichlorofluromethane at a reported concentration of 3.0 ppb. In May 1991, EPA provided the residents with the analytical results from the residential well sampling. In coordination with USEPA, the Piscataway Township had recommended to the remaining private well users in the Nova Ukraine area that they connect to the public water supply.

A USEPA Remedial Investigation and Feasibility Study (RI/FS) was conducted in 1991 to assess the nature and extent of contamination at the site and to evaluate remedial alternatives. During RI/FS planning activities, EPA determined that a Focused Feasibility Study (FFS) should be conducted to assess interim remedial actions for groundwater. USEPA is addressing the Chemsol site in two phases. The first phase included an FFS to evaluate interim actions to restrict the off-site migration of highly contaminated groundwater to a depth of approximately 130 feet. The FFS indicated that site related contaminants have been released into the groundwater at the site. Furthermore, based on data collected from off-site monitoring wells, contaminants have migrated and continue to migrate off of the site. Additionally, while the levels of total volatile organics were higher in the upper bedrock aquifer wells than in the perched water wells, total semi-volatile organic compounds were found to be higher in the perched water wells than in the upper bedrock aquifer wells.

The FFS report indicated the following:

1. Groundwater down to a depth of at least 130 feet is heavily contaminated with hazardous substances, including volatile and semi-volatile organic compounds, pesticides, and inorganic compounds;

2. Groundwater in off-site monitoring wells is contaminated with hazardous substances similar in type and/or identical to those which were found in the groundwater at the site.

FSS did not fully define the extent of contamination in off-site areas, the lower bedrock aquifer, in on-site soils, and surface water bodies. Such characterization is the subject of the site-wide RI/FS, which is ongoing and expected to be completed in 1996.

The Record of Decision (ROD) was signed in September 1991. The major elements of the selected remedy included installation of a groundwater collection and extraction system for removal of contaminated groundwater from the perched zone and upper bedrock aquifer and an on-site treatment plant to treat the groundwater.

In November 1992, USEPA collected and analyzed additional potable well samples from residences located immediately west and southwest of the site for VOC's. The results indicated that of the twelve residences sampled, two had no VOC's detected. Ten residential wells showed contamination with VOC's including 1,1-dichloroethene, chloroform, 1,1,1-trichloroethane, tetrachloroethene (PCE), and trichlorofluromethane. The maximum reported concentrations of VOC's in private potable wells were 1,1-dichloroethene (0.9 ppb), chloroform (1.1 ppb), 1,1,1-trichloroethane (2.4 ppb), tetrachloroethene (PCE - 1.6 ppb), and trichlorofluromethane (2.6 ppb). Table 2 summarizes the contaminants detected in private potable wells and their associated comparison values.

Table 2 - *Residential Well Samples; 1992.*

Compound	Concentration (ppb)	Comparison Value (ppb)
1,1 Dichloroethene	**0.9**	**0.06 CREG**
Chloroform	1.1	6.0 CREG
1,1,1 Trichloroethane	2.4	26 NJMCL
Tetrachloroethylene	**1.6**	**0.7 CREG**
Trichlorofloromethane	**2.6**	**None**

Source: USEPA

Design of the interim remedy (pumping and treatment of groundwater) was completed during the summer of 1994. The interim remedy became fully operational in September 1994. The second phase consists of a comprehensive RI/FS to address deeper and off-site groundwater contamination, as well as air and soil contamination is on-going and expected to be completed in 1996.

ATSDR:

The Agency for Toxic Substances and Disease Registry (ATSDR) completed a preliminary health assessment for the Chemsol, Inc. site in April 1989. The preliminary health assessment noted that contaminated groundwater, surface water and on-site soils were the identifiable human exposure pathways associated with the site. Contaminants of concern at the site consisted of volatile organic compounds (VOC's) including chloroform, tetrachloroethylene, trichloroethylene, carbon tetrachloride, toluene, benzene and heavy metals in groundwater and soils.

Potential human exposure pathways included ingestion and direct contact with groundwater, surface water, soil, and possible ingestion of bioaccumulated contaminants in the food chain. In addition, inhalation of volatilized contaminants or contaminants entrained in air during remedial operations is another potential source for human exposure. The 1989 preliminary health assessment did not identify any community health concerns.

The ATSDR identified the following public health concerns in the 1989 preliminary health assessment:

1) Inhalation of site related contaminants entrained in air is a potential exposure pathway to the residents living near the site. This pathway is not substantiated in the light of current site data and information. In general, the site is well vegetated;

2) Off-site production wells (Parkway Plastics production wells) was found to be contaminated. However, it was not known at that time whether this well supplied water for potable purposes. Local residents who rely on private wells for their drinking water supply may be at risk;

3) Direct contact and incidental ingestion of contaminated soil by area residents is the most likely route of exposure. This pathway is not substantiated in the light of current site data and information; the Chemsol site is fenced (Lot 1-B) and unauthorized access is not likely;

4) There is a potential human exposure pathway to bioaccumulated contaminants in the food chain. This pathway is not substantiated in the light of current site data and information. No crops or gardens (i.e., containing edible plants) are being grown on-site.

5) Off-site area surface water is used for recreational fishing which might be impacted by site related contaminants. This pathway is not substantiated in the light of current site data and information as no fishing is reported near the site.

In summary, the ATSDR categorized the site in 1989 as a potential public health concern because of the risk to human health resulting from possible exposure to hazardous substances at concentrations that may result in adverse health effects. In addition, ATSDR concluded that further information is needed to adequately assess the impact of the site on public health. Recommendations were made to conduct the following activities:

1) Off-site groundwater sampling of the production wells should be done to determine the potential public health concerns.

2) Exposure point ambient air monitoring for particulates at the site,in order to evaluate the potential for inhalation of volatilized contaminants or contaminants entrained in air during remedial operations is another potential source for human exposure.

3) No crops or gardens (i.e., containing edible plants) should be grown on-site;

4) Obtain additional information on contaminants to further characterize the site and characterization of the hydrogeology of the area;

5) Additional information on potential environmental pathways through which the contaminants can reach the residents living near the site;

6) A drinking water survey indicating the location and population using the groundwater (public and private wells) or the surface water should be conducted. All private well users in the area should have their water supplies tested for possible chemical contamination; and,

7) Additional information on the individuals living near the site should be obtained to facilitate in defining possible exposures to sensitive populations (e.g., children and elderly).

In addition to the 1989 preliminary health assessment, the NJDOH and the Agency for Toxic Substances and Disease Registry (ATSDR) has prepared a Site Visit Report on the Chemsol, Inc. site (Appendix A).

PUBLIC HEALTH IMPLICATIONS

In this section, NJDOH will discuss the potential health effects in persons exposed to specific contaminants. To evaluate health effects, ATSDR has developed a Minimal Risk Level (MRL) for contaminants commonly found at hazardous waste sites. The MRL is an estimate of daily human exposure to a contaminant below which non-cancer, adverse health effects are unlikely to occur. MRLs are developed for each route of exposure, such as ingestion and inhalation, and for the length of exposure, such as acute (less than 14 days), intermediate (15 to 364 days), and chronic (greater than 365 days). ATSDR presents these MRLs in the Toxicological Profiles. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. In the following discussion, NJDOH used ATSDR Toxicological Profiles to obtain information for the contaminants of concern at the site. The NJDOH will use a USEPA Reference Dose (RfD) as a health guideline, when a MRL is not available. The RfD is an estimate of daily human exposure of a contaminant for a lifetime below which (non-cancer) health effects are unlikely to occur.

Chemsol, Inc. began operation in 1950's. Residents living near the Chemsol, Inc. site in Nova Ukraine section were potentially exposed to volatile organic contaminants (as reported in Table 1) in their drinking water for approximately 40 years until 1990, when contamination was detected. The actual length of exposure may be less than 40 years. The Township extended municipal water service into the Nova Ukraine area during the fall of 1990. Compounds detected in excess of ATSDR comparison values are evaluated in this section.

In November 1992, USEPA collected and analyzed additional residential well samples for VOC's near the site. The sampling results indicated that of the twelve wells sampled, ten showed contamination with VOC's as presented in Table 2. These private wells may still be in use for potable purposes. Exposure duration to these VOC's is estimated to be occurring for up to approximately 45 years (1950 to 1995). The actual length of exposure may be less than 45 years. Compounds detected in excess of ATSDR comparison values are evaluated in this section.

Private Potable Well Pathways

The toxicological evaluation of the completed human exposure pathway at the Chemsol, Inc. site is based upon chronic oral ingestion of contaminants in potable well water. The toxicological effects of the contaminants detected in private potable wells in the vicinity of the Chemsol, Inc. site have been considered singly. The cumulative or synergistic effects of possible mixture of

contaminants may serve to enhance their public health significance. Additionally, individual or mixtures of contaminants may have the ability to produce greater adverse health effects in children as compared to adults. Non-potable domestic usage of contaminated water (showers) may be associated with significant exposure through the inhalation and dermal contact routes. Current literature suggests exposure doses from these routes may approach those associated with direct ingestion. There are no data available to estimate the exposure doses to these secondary routes of exposure at the Chemsol, Inc. site. This toxicological discussion recognizes their potential contribution to exposure dose estimates and consequent public health implications. Cancer estimates are based on an intake of 2 liters of water per day for a 70 kilogram adult for the period indicated. However, the actual length of exposure may be less than 40 to 45 years as indicated. Toxicological evaluation was completed for those compounds detected in excess of ATSDR comparison values and were based upon the maximum concentrations detected.

Trichloroethene (TCE)

A 40 year exposure duration was assumed for this compound. No chronic oral MRL or RfD is available for trichloroethene to evaluate the potential for non-carcinogenic health effects. However, Estimated Exposure Doses (EED) calculated from the maximum reported concentration of trichloroethene (4.4 ppb) in 1990 near the site were well below the No Observed Adverse Effects Level (NOAEL) for animal studies presented in the ATSDR Toxicological Profile for this chemical. At such concentrations, it is unlikely that non-carcinogenic adverse health effects would occur. Currently there is scientific debate regarding the carcinogenicity of TCE in humans. However, animal studies have shown that tumors can result from oral exposure to TCE. USEPA is considering classification of TCE as either a probable or possible human carcinogen. NJDOH concurs with USEPA regarding TCE's potential carcinogenicity in humans. Chronic oral exposure to TCE at maximum concentrations found in potable wells for a duration of 40 years would result in an insignificant or no increased cancer risk.

Tetrachloroethene (PCE)

A 40 year exposure duration was assumed for this compound. Based upon maximum reported levels of tetrachloroethene (310 ppb) detected in private potable wells in 1990, estimated exposure doses were below the USEPA chronic oral RfD of 0.01 mg/kg/day. No chronic oral MRL is available. However, Estimated Exposure Doses (EED) calculated from the maximum reported concentration of tetrachloroethene were below the No Observed Adverse Effects Level (NOAEL) for animal studies presented in the ATSDR Toxicological Profile for this chemical. At such concentrations, it is unlikely that non-carcinogenic adverse health effects would occur. Currently there is scientific debate regarding the carcinogenicity of PCE in humans. However, animal studies have shown that tumors can result from oral exposure to PCE. USEPA is considering classification of PCE as either a probable or possible human carcinogen. NJDOH concurs with USEPA regarding PCE's potential carcinogenicity in humans. Chronic oral exposure to tetrachloroethene at maximum concentrations found in private potable wells for a duration of 40 years would result in low increased cancer risk. A 45 year exposure duration was

also assumed for this compound as in November 1992, USEPA collected and analyzed additional potable well samples from residences located immediately west and southwest of the site for VOC's. The maximum reported concentration of PCE was 1.6 ppb. Based upon maximum reported levels of tetrachloroethene (1.6 ppb) estimated exposure doses were below the USEPA chronic oral RfD of 0.01 mg/kg/day. At such concentrations, it is unlikely that non-carcinogenic adverse health effects would occur. Chronic oral exposure to tetrachloroethene at maximum concentrations found in private potable wells for a duration of 45 years (1950 to 1995) would result in an insignificant or no increased cancer risk.

1,1 Dichloroethene (DCE)

A 45 year exposure duration was assumed for this compound. Site data indicate that exposure to 1,1-dichloroethene is occurring among residents in the area of the Chemsol site through the ingestion pathway, by using contaminated residential well water for drinking and other domestic purposes. Based upon maximum reported concentration (0.9 ppb) of 1,1-dichloroethene detected in residential wells near the site, estimated exposure doses are below the Minimum Risk Level (MRL) for chronic oral exposure represented in the ATSDR Toxicological Profile for 1,1-dichloroethene. At such concentrations, it is not likely that non-carcinogenic adverse health effects would occur. Dichloroethene (1,1-DCE) is considered by the USEPA to be a possible human carcinogen. Chronic oral exposure to 1,1-dichloroethene at the maximum concentration found in private potable wells for a duration of 45 years would be expected to result in insignificant or no increased cancer risk.

1,1,2,2-tetrachloroethane

Site data indicate that exposure to 1,1,2,2-tetrachloroethane has occurred among residents in the Nova Ukraine area of the Piscataway Township through the ingestion pathway, by using contaminated residential well water for drinking and other domestic purposes. No MRL or RfD is available for 1,1,2,2-tetrachloroethane to evaluate the potential for non-cancer health effects. However, Estimated Exposure Doses (EED) calculated from the maximum reported concentration (560 ppb) of 1,1,2,2-tetrachloroethane were below the No Observed Adverse Effects Level (NOAEL) for animal studies presented in the ATSDR Toxicological Profile for this chemical. At such concentrations, it is unlikely that non-carcinogenic adverse health effects would occur. Tetrachloroethane (1,1,2,2-TCA) is considered a probable human carcinogen by USEPA. Chronic oral exposure to 1,1,2,2-tetrachloroethane at maximum concentrations found in private potable wells for a duration of 40 years would result in moderate increased cancer risk.

CURRENT CONDITIONS OF SITE

On November 29, 1994, Narendra P. Singh of the New Jersey Department of Health (NJDOH) visited the Chemsol, Inc. site accompanied by the USEPA Remedial Project Manager. The site visit included a formal presentation by the USEPA, and a tour of the area surrounding the site.

The Chemsol, Inc. site is fenced and signs are posted along the fence line indicating that this is a Superfund site. There no evidence of any trespassing on the site.

As noted in the site documents, the surrounding area is residential and commercial. Conditions at the site have changed since the 1989 preliminary health assessment. Installation of a groundwater collection and extraction system for removal of contaminated groundwater from the perched zone and upper bedrock aquifer and an on-site treatment plant to treat the groundwater was completed and became fully operational in September 1994.

The second phase consists of a comprehensive RI/FS to address deeper and off-site groundwater contamination, as well as air and soil contamination is currently on-going and is expected to be completed in 1996.

CURRENT ISSUES

Based on the Remedial Investigation, site related contamination is present in groundwater, and soil. The primary public health issue associated with the Chemsol site pertains to the potential impact of the groundwater contamination on existing private potable wells.

At the time the original ATSDR preliminary health assessment was written, there was a great deal of concern regarding off-site groundwater contamination and it was noted that the full extent of the off-site groundwater contamination was not known.

Groundwater at the site occurs in two zones: a weathered bedrock water-bearing zone (formerly identified as a perched zone) exists in the weathered bedrock and the upper bedrock aquifer exists in the competent bedrock. The weathered bedrock water-bearing zone exists below the overburden at depths of approximately 10 feet. Groundwater flow in this zone is to the northeast. The upper bedrock aquifer occurs in interconnected fractures in the bedrock. The fractures of the bedrock provide flow paths though which the water moves. Historically, groundwater in this zone was found to flow to the southeast. This flow pattern may have resulted from the influence of a nearby production well. The weathered bedrock water bearing zone may be hydraulically connected to the water in the competent bedrock by low primary porosity and fractures through the weathered bedrock zone. As a result, the weathered bedrock is not expected to act as a barrier to the downward migration of contaminants (Figure 1.3, 2, and 3).

During the FFS, samples were taken from 22 existing groundwater monitoring wells: five in the perched groundwater (weathered bedrock) zone and sixteen in the upper bedrock aquifer (water table). Sampling results from the wells demonstrated severe contamination of both the perched groundwater (weathered bedrock) and the upper bedrock aquifer **(Figure 4, 5, and 6)**. Metals in the groundwater (such as barium at a maximum concentration of 2,830 ug/L and lead at a maximum concentration of 33.4 ug/L) were also detected.

Between January and March 1990, sampling was conducted by Tang Realty and the Middlesex County Health Department at private residential wells located downgradient of the site in the Nova Ukraine area of Piscataway Township. The results of sampling indicated the presence of organic contaminants in residential wells. The Township extended municipal water service into the Nova Ukraine area during the fall of 1990. In February 1991, USEPA sampled residences in the Nova Ukraine area that were known not to have requested connection to the public water supply. The analytical results from this sampling indicated the presence of organic contaminants in two of three wells. In coordination with USEPA, the Piscataway Township had recommended to the remaining three private well users in the Nova Ukraine area that they connect to the public water supply. These wells may currently be in use for potable purposes. In November 1992, USEPA collected and analyzed additional residential tap samples for VOC's near the site. The sampling results indicated that of the twelve residences sampled, two had no VOC's detected. Ten residential wells out of twelve wells sampled showed contamination with VOC's.

Most of the Piscataway Township residents are served by the public water supply system. The production wells of the public water supply system are not affected by the contamination. A portion of Township residents use private potable wells for their water supply needs. The ATSDR/NJDOH have public health concerns regarding resident's on-going exposures to the contaminated private well water because a few residences with contaminated private wells are not connected to municipal waterlines. However, private potable wells are being monitored periodically for the presence of site related contaminants.

Most of the residents in the Nova Ukraine area which had contaminated private wells are connected to municipal waterlines. NJDOH has not identified any additional community health concerns.

CONCLUSIONS

1. Based upon current site data and information, site-related contamination is present in groundwater and on-site soils at levels of public health concern. However, no one is currently exposed to on-site soil contamination as Lot 1-B of site is fenced (the portion of the site exhibiting the highest levels of contamination) and unauthorized access is not likely. Thus ATSDR/NJDOH consider the site to pose no immediate public health hazard to current off-site residents.

2. Data from the 1992 sampling event (Table 2) indicate potable wells (located immediately west and southwest of the site) are exhibiting VOC contamination; 1,1-dichlorothene and tetrachloroethene were detected above ATSDR health comparison values.

3. The ATSDR and the NJDOH have determined that a completed human exposure pathway (ingestion of contaminated groundwater via private potable wells located immediately west and southwest of the site) exists at the site. However, based on a worse case scenario of exposure dose and duration, the residents would not experience any adverse

health effects from the exposure to contaminants in their private potable wells. Thus, ATSDR/NJDOH currently consider the site to pose no apparent public health hazard.

4. Potable wells of the Nova Ukraine area sampled in 1990 (Table 1) exhibited VOC contamination at or in excess of ATSDR health comparison values. The ATSDR and NJDOH have determined that the completed human exposure pathway which existed until 1990 may have constituted a public health hazard due to past exposures to residents. Public water supplies have been made available to residents of this area. However, it is possible that residences continue to utilize wells contaminated above ATSDR health comparison levels.

5. Results from the 1990 sampling event (Table 1) indicate contaminated potable wells in the Nova Ukraine section; Trichloroethene and 1,1,2,2-tetrachloroethane were detected above ATSDR health comparison values. Toxicologic evaluation does not indicate a likelihood of non-cancer health effects at the maximum levels detected. A moderate increased risk of cancer was associated with ingestion of 1,1,2,2-tetrachloroethane. However, the cancer risk may be less as the actual length of exposure could have been less than 40 years as indicated.

6. Conclusions that were made in the 1989 preliminary health assessment regarding the site being of potential public health concern are valid. Off-site migration of site related contaminants in groundwater may have contaminated many private potable wells. However, extension of municipal waterlines to all but three (3) residences with contaminated wells has interrupted this exposure pathway.

7. The recommendation from the 1989 ATSDR preliminary health assessment for periodic monitoring of contaminant levels in the residential well water has been partially satisfied.

8. The recommendation from the 1989 preliminary health assessment that the well survey in the vicinity of the site be conducted has been satisfied.

RECOMMENDATIONS

1. Any residence not currently connected to the municipal water supply should be strongly encouraged to do so by the municipality/local Health department and/or the USEPA. If necessary, health education/risk communication should be provided by NJDOH in coordination with local health department to affected residents to insure comprehension of the potential health risk with continued use of contaminated groundwater.

2. Continued monitoring of private potable wells is indicated to evaluate trends in contaminant concentrations and distributions.

3. Results of periodic environmental monitoring programs for groundwater quality should be reviewed for public health significance when available. Should the data indicate a change in site conditions, a health consultation should be performed to evaluate potential toxicological implications.

RECOMMENDATIONS OF THE HEALTH ACTIVITIES RECOMMENDATIONS PANEL (HARP)

The data and information developed in the Site Review and Update for the Chemsol, Inc., site, Piscataway Township, New Jersey, has been evaluated by ATSDR's Health Activities Recommendation Panel (HARP) for appropriate follow-up with respect to health activities. The panel determined that community health education and health professions education are indicated.

PUBLIC HEALTH ACTION PLAN

The purpose of the public health action plan (PHAP) is to ensure that this Site Review and update not only identifies public health hazards but also provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment.

Actions Undertaken by ATSDR/NJDOH:

1. Environmental data and proposed remedial activities have been evaluated within the context of human exposure pathways and relevant public health issues.

Actions Planned by ATSDR/NJDOH:

1. The NJDOH will work with the Piscataway Township Health Department to perform community education and specifically urge all affected residences to connect to municipal water supplies.

2. ATSDR and the NJDOH will evaluate all future data regarding potable wells in the area of the Chemsol site for public health implications.

3. NJDOH will develop and provide a newsletter to area physicians on this site.

4. ATSDR will provide an annual follow up to this PHAP, outlining the actions completed and those in progress.

ATSDR will reevaluate and expand the Public Health Action Plan (PHAP) when needed. New environmental , toxicological, health outcome data, or the results of implementing the above proposed actions may determine the need for additional actions at this site.

CERTIFICATION

The Site Review and Update for the Chemsol, Inc., site was prepared by the New Jersey Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the site review and update was initiated.

Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Site Review and Update and concurs with its findings.

for Division Director, DHAC, ATSDR

DOCUMENTS REVIEWED

1. Site Visit Report, Chemsol, Inc. Site, Piscataway Township, Middlesex County, New Jersey. Environmental Health Service, NJDOH July, 1994.

2. Explanation of Significant Differences (ESD), Chemsol, Inc. Site, Piscataway Township, Middlesex County, New Jersey. USEPA July 1994.

3. Residential Well Sampling Report, Chemsol, Inc., Piscataway Township, Middlesex County, New Jersey. USEPA. 1992.

4. Residential Well Sampling Report, Chemsol, Inc., Piscataway Township, Middlesex County, New Jersey. USEPA. 1991.

5. Residential Well Sampling Report, Chemsol, Inc., Piscataway Township, Middlesex County, New Jersey. 1990.

6. Malcolm Pirnie, Inc. - Focussed Feasibility Study Report for the Chemsol, Inc. Site, Piscataway Township, Middlesex County, New Jersey. July 1991.

7. Record of Decision, Chemsol, Inc., Piscataway Township, Middlesex County, New Jersey. USEPA. September, 1991.

8. Preliminary Health Assessment for the Chemsol, Inc., Piscataway Township, Middlesex County, New Jersey. ATSDR. April 1989.

9. Ram, N.M., Christman, R.F., and Cantor, K.P., Eds., "Significance and Treatment of VOC's in Water Supplies", Chelsea, Maine, Lewis Publishers, pp.485-504.

10. Agency for Toxic Substances and Disease Registry. Toxicological Profile for 1,1-Dichloroethene, Atlanta. ATSDR, 1993.

11. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Tetrachloroethylene, Atlanta. ATSDR, 1994.

12. Agency for Toxic Substances and Disease Registry, Toxicological Profile for 1,1,2,2-tetrachloroethane, Atlanta. ATSDR, 1994.

13. Agency for Toxic Substances and Disease Registry, Toxicological Profile for 1,1,1-trichloroethane, Atlanta. ATSDR, 1993.

14. Agency for Toxic Substances and Disease Registry, Toxicological Profile for Trichloroethylene, Atlanta. ATSDR, 1993.

15. Agency for Toxic Substances and Disease Registry, Toxicological Profile for Chloroform, Atlanta. ATSDR, 1993.

INTERVIEWS/PERSONAL COMMUNICATIONS:

1. Emergency & Remedial Response Division/USEPA:
   Remedial Project Manager

2. Community Relations Coordinator/NJDEP:

3. Piscataway Township Health Department:
   Health Officer

PREPARERS OF REPORT

Preparer of Report:

Narendra P. Singh, M.D., C.I.H.
Research Scientist
ATSDR Health Assessment Project
Environmental Health Service
New Jersey Department of Health

ATSDR Regional Representative:

Arthur Block
Senior Regional Representative; Region II
Regional Operations
Office of the Assistant Administrator

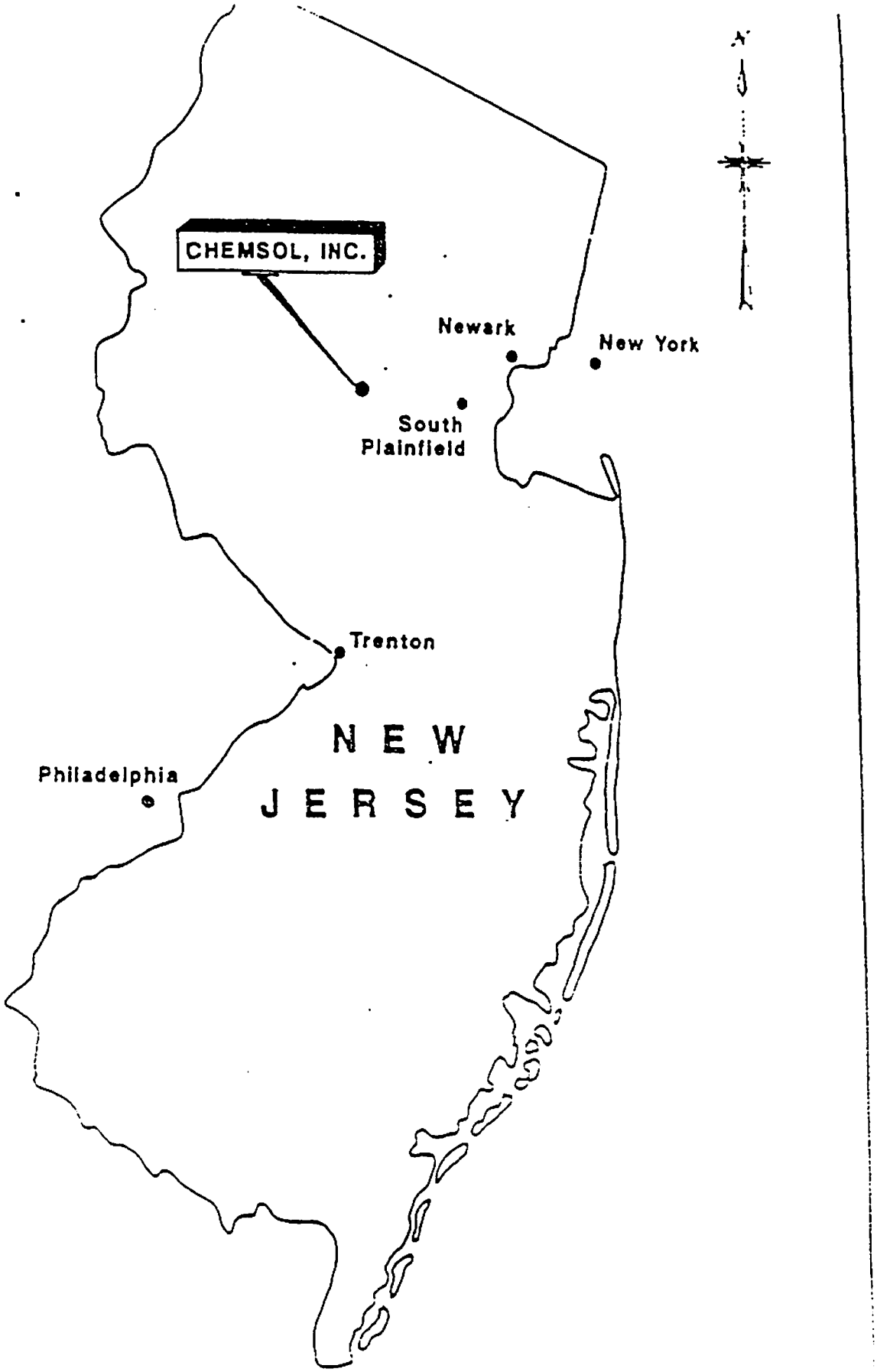
ATSDR Technical Project Officer:

Gregory V. Ulirsch
Environmental Health Engineer
Superfund Site Assessment Branch
Division of Health Assessment and Consultation

Any questions concerning this document should be directed to:

ATSDR Project Manager
Environmental Health Service
New Jersey Department of Health
210 South Broad Street
CN 360
Trenton, NJ 08625-0360

Appendix - A



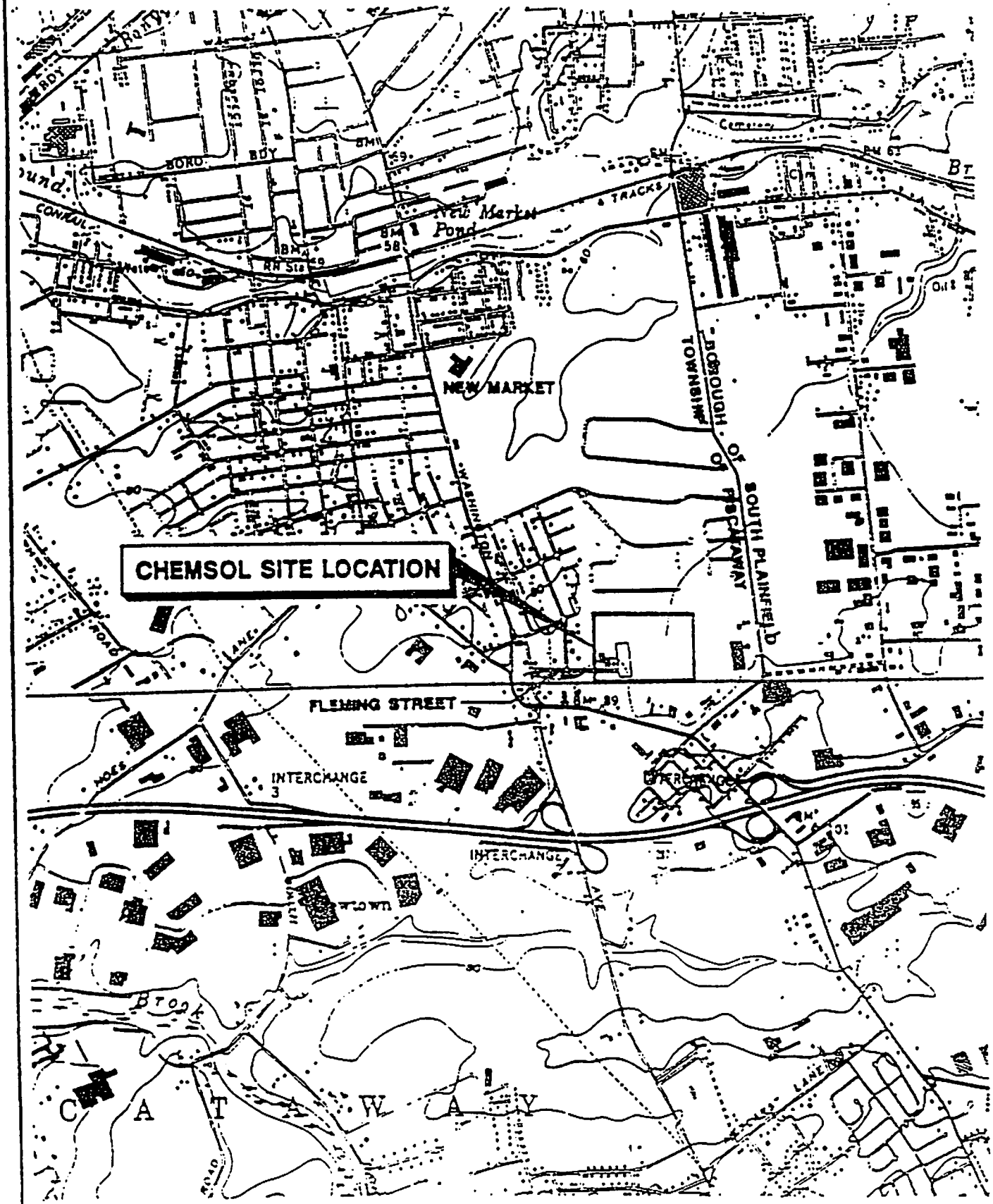
NOT TO SCALE

MALCOLM PIRNIE

CHEMSOL, INC.
PISCATAWAY TWP., N.J.
REGIONAL MAP

MALCOLM PIRNIE, INC.

FIGURE 1-1



SOURCE: USGS TOPOGRAPHIC MAP, PLAINFIELD, NEW JERSEY, 1981.

1000 0 1000 2000

SCALE IN FEET

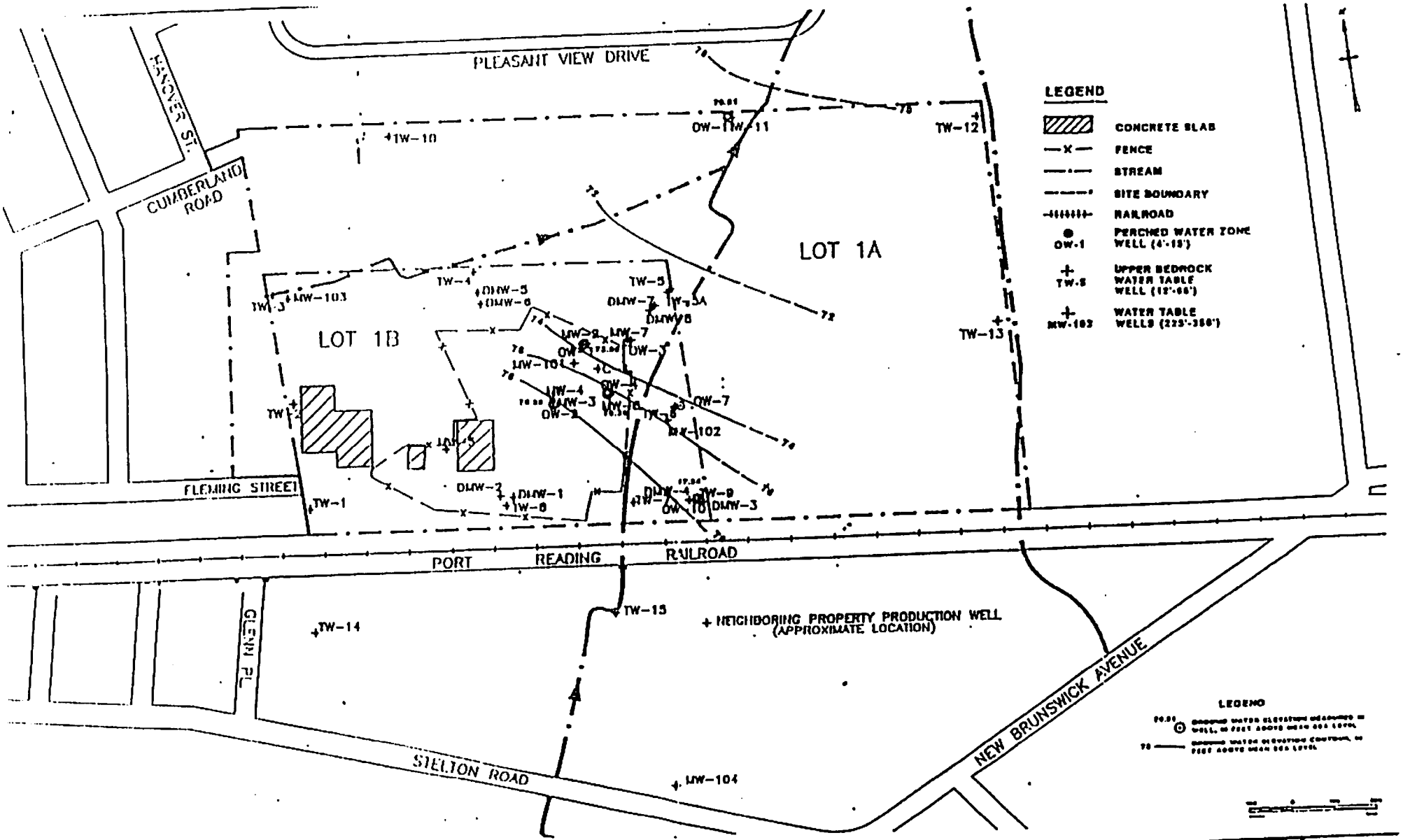
MALCOLM PIRNIE

CHEMSOL INCORPORATED (TANG REALTY) SITE
PISCATAWAY TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY

SITE LOCATION MAP

MALCOLM PIRNIE, INC.

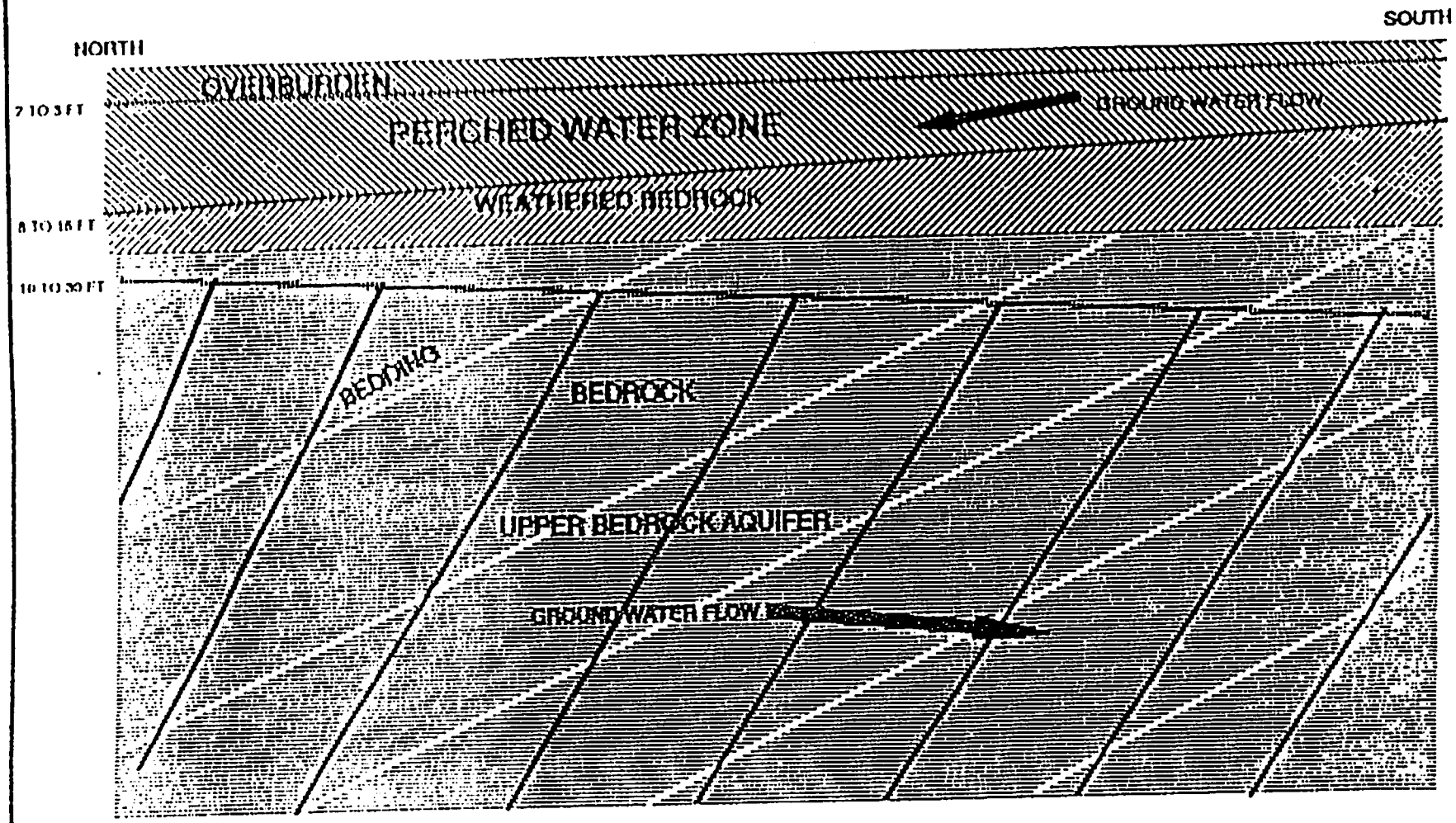
FIGURE 1.2



CHEMSOL, INC.
PISCATAWAY, NEW JERSEY

WATER TABLE CONTOUR MAP - PERCHED ZONE 3/13/91

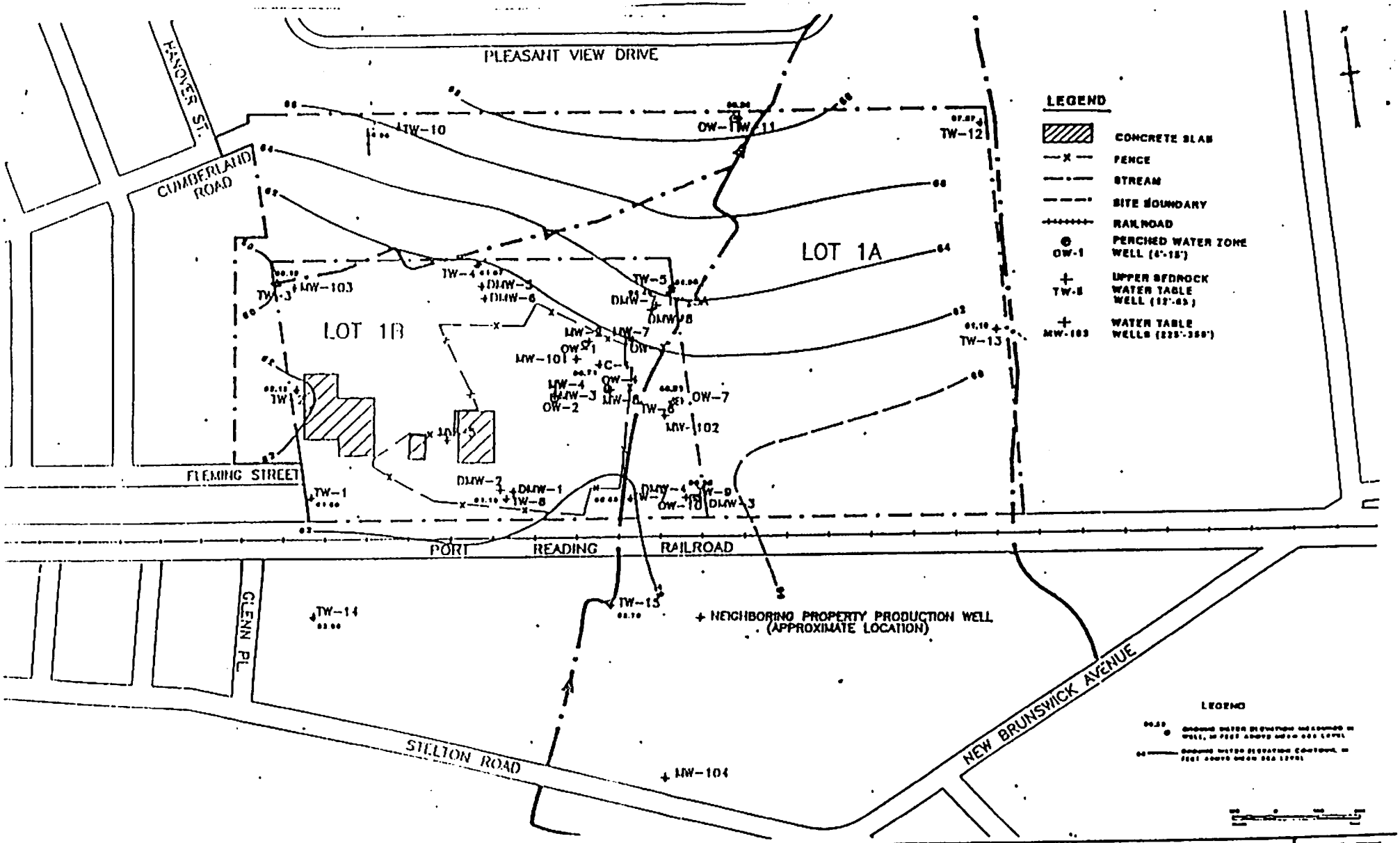
FIGURE 2



MALCOLM PIRNIE

SCHEMATIC GEOLOGIC CROSS SECTION
CHEMSOL, INC.

FIGURE 1.3



MALCOLM PIRNIE

CHEMSOL, INC.
PISCATAWAY, NEW JERSEY

POTENTIOMETRIC SURFACE IN THE UPPER BEDROCK ZONE (WATER TABLE) 3/13/91

FIGURE

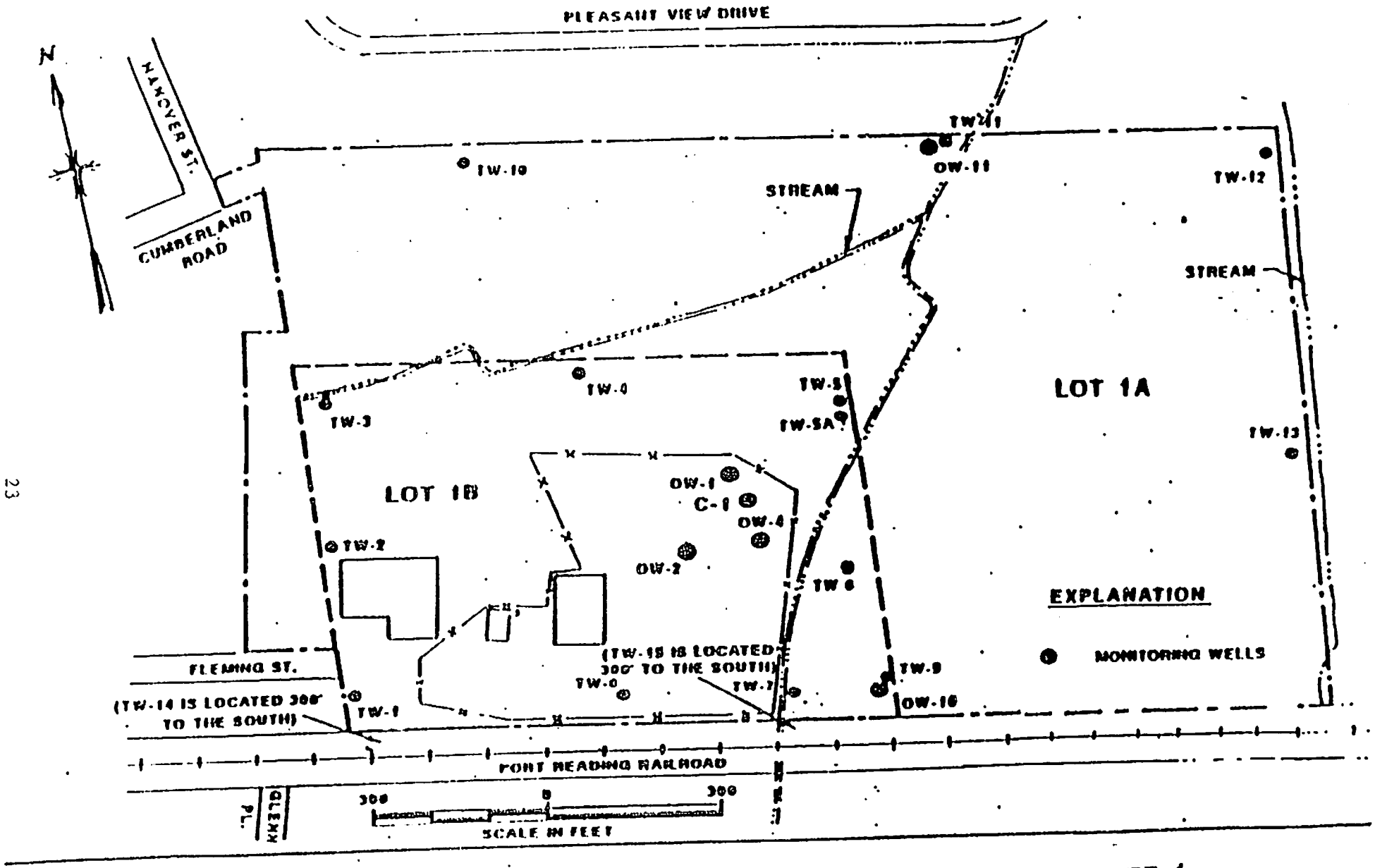
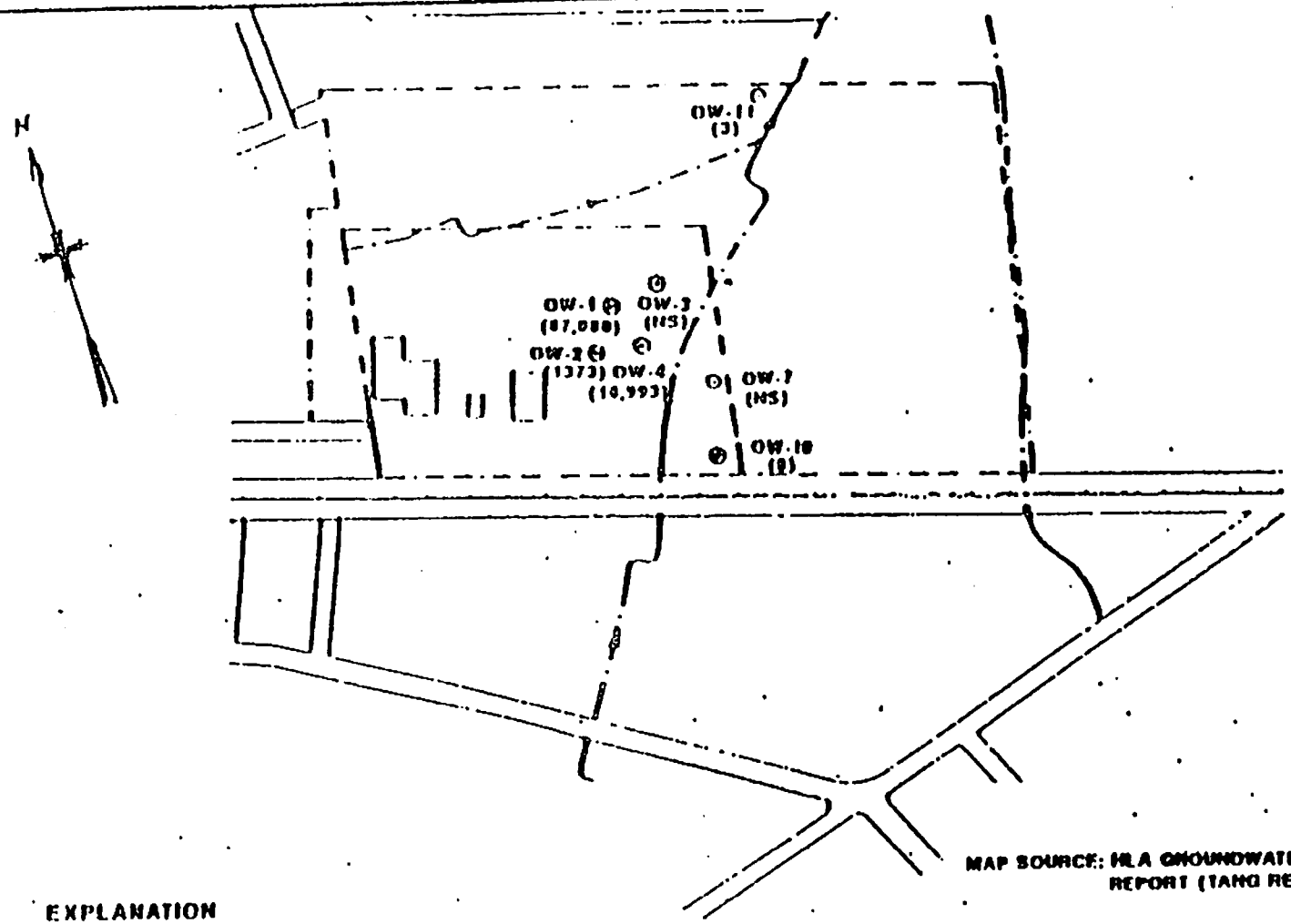


FIGURE 4

GROUND WATER SAMPLING LOCATIONS



MAP SOURCE: HLA GROUNDWATER CHARACTERIZATION REPORT (TANO REALTY) SEPT 1990

EXPLANATION

⊖ EXISTING PERCHED WATER (4-15') MONITORING WELL

(741) CONCENTRATION OF TOTAL VOLATILE ORGANICS IN ug/L FROM SAMPLES TAKEN IN APRIL, 1991 BY MALCOLM PIRNIE, INC.

(NS) NOT SAMPLED

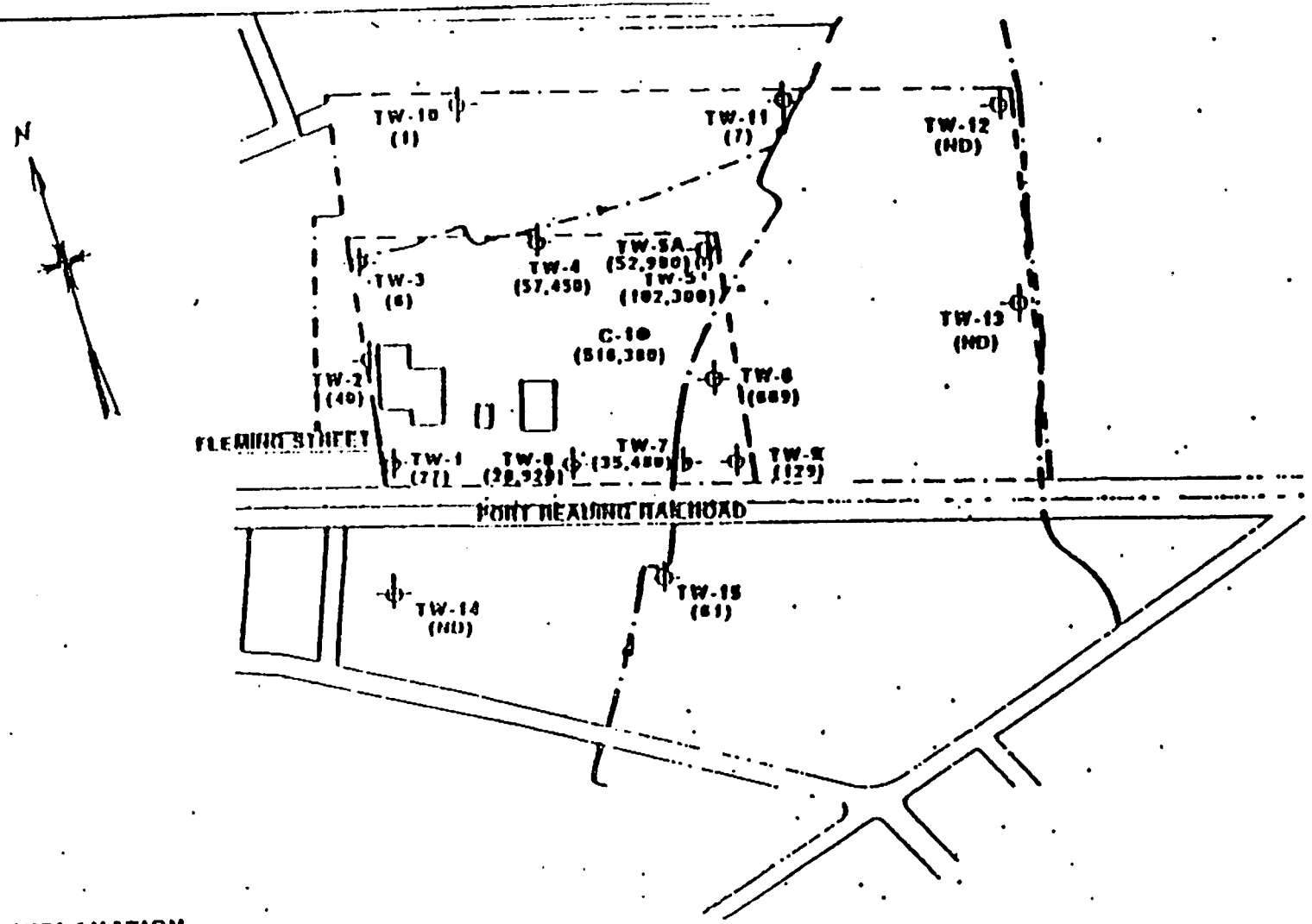
0 100 200

SCALE IN FEET

CHEMSOL, INC
PISCATAWAY, NEW JERSEY

CONCENTRATIONS OF VOLATILE ORGANICS IN PERCHED WATER TABLE

FIGURE 5



EXPLANATION

- ⊕ EXISTING WATER TABLE MONITORING WELL
- (2) CONCENTRATION OF TOTAL VOLATILE ORGANICS IN ug/L FROM SAMPLES TAKEN IN APRIL 1991 BY MALCOLM PIRNIE, INC.
- C-1 ● WELL IS SCREENED FROM 50'-135'
- (ND) NO CONTAMINANTS DETECTED

0 100 200

SCALE IN FEET

MAP SOURCE: IRA ASSOCIATES GROUNDWATER CHARACTERIZATION REPORT TANG REALTY, SEP. 1990

CHEMSOL, INC.
PISCATAWAY TOWNSHIP, NEW JERSEY

CONCENTRATIONS OF VOLATILE ORGANICS IN UPPER BEDROCK AQUIFER

FIGURE 6

State of New Jersey
DEPARTMENT OF HEALTH
CN 360
TRENTON, N.J. 08625-0360

CHRISTINE TODD WHITMAN
GOVERNOR

LEN FISHMAN
COMMISSIONER OF HEALTH

MEMORANDUM

TO: Greg Ulirsch; ATSDR, Technical Project Officer

FROM: James Pasqualo; NJDOH, ATSDR Project Manager

DATE: September 30, 1994

SUBJECT: Site Visit Report; **Chemsol Incorporated**

Attached please find a site visit report package on the Chemsol site. Included in this package are:

1) A site summary checklist.
2) A narrative memo with site observations.
3) A remedial site status report.
4) A site location map.

c/with attachments

File

CERCLIS NO. NJD980258889

Date Prepared 9/26/94

Preparer PASQUALO, NJDOH

ATSDR SITE SUMMARY

I. GENERAL INFORMATION

Site Name: CHEMSOL (AKA TANG REALITY)
(Include other names by which site is known.)

Region: 2 City: PISCATAWAY County: MIDDLESEX State: NJ

Site Management Responsibility
[X] Fund Lead (USEPA) [ ] Enforcement Lead (PRP)
[ ] State Lead [ ] Federal Facility

Remedial Schedule Status
[ ] PA/SI
[ ] Workplan Development
[ ] RI scheduled/under way
[ ] Other SEE ATTACHED

II. DATA/INFORMATION REVIEW

(Review of EPA Site File(s) and, where appropriate, include State monitoring information)

II.A. Bibliography of Data/Information Sources:

	Document	Date of Document
1	N/A	
2	RESIDENTIAL WELL SAMPLES	JAN 19 1993
3		
4		
5		
6		

II.E. Site Access Restrictions

1. [ ] Unrestricted Access
2. [X] Restricted Access (Explain Below)

COMMENTS: (e.g., type of restrictions, restricting authority, etc.)

SITE IS FENCED + SITE CONTROLS IN PLACE

SECURITY + COLD + HOT ZONES

II.F. Removal Actions

1. Have removal actions occurred? [X] Yes [ ] No
2. Describe the removal actions:

SEE ATTACHED

II.G. Population

1. Distance to closest residence: 1/4 MILE
2. Size of population within a ____ mile radius of the site: ?
3. Special population concerns: [ ] Yes [?] No
   (Are there schools, nursing homes, hospitals, parks, playgrounds, etc., within the radius?)

COMMENTS:

II.H. Environmental/Exposure Pathways

II.H.1. Groundwater

Private Wells

a. There are private wells in use within the vicinity of the site.
[X] Yes [ ] No [ ] No data/information available within a radius of _____ miles.

b. Private well is used for:

1.	[Y] Drinking	4.	[ ] Livestock
2.	[✓] Cooking	5.	[ ] Irrigation of crops
3.	[✓] Other domestic uses	6.	[ ] Other

c. There is reason to believe that the private wells are _____ are not _____ contaminated because of:

1. [X] Private well data
2. [ ] Monitoring well data
3. [ ] Public system data
4. [ ] Other _____

d. The earliest documented date of private well contamination is:
UNKNOWN DATA FROM 1993

Public Wells

a. There are public/municipal wells in use within the vicinity of the site.
[ ] Yes [✓] No [ ] No data/information available within a radius of _____ miles.

b. Public well water is used for:

1.	[ ] Drinking	4.	[ ] Livestock
2.	[ ] Cooking	5.	[ ] Irrigation of crops
3.	[ ] Other domestic uses	6.	[ ] Other

c. There is reason to believe that the public wells are _____ are not _____ contaminated because of:

1. [ ] Private well data
2. [ ] Monitoring well data
3. [ ] Public system data
4. [ ] Other _____

d. The earliest documented date of well contamination is:

Comments on private/public/irrigation well contamination:

DATA WILL BE REVIEWED IN FFY 1995 SRU

II.H.2. Surface Water

a. Are any of the following categories of surface water located on-site (or passing through the site):
[ ] Drainage ditch (or intermittent stream)
[X] Stream or creek
[ ] River
[ ] Wetlands, pond, or lake

Surface water is used for:
[ ] Drinking [ ] Cooking [ ] Fishing
[ ] Livestock [ ] Swimming [ ] Irrigation
[X] Other NO OBVIOUS USES

Surface water treated prior to use:
[ ] unknown [ ] no [ ] yes
Name of system owner: _____

b. Are any of the following categories of surface water adjacent to (bordering) the site:
[ ] Drainage ditch (or intermittent stream)
[X] Stream or creek
[ ] River
[ ] Wetlands, pond, or lake

Surface water is used for:
[ ] Drinking [ ] Cooking [ ] Fishing
[ ] Livestock [ ] Swimming [ ] Irrigation
[ ] Other NO OBVIOUS USES

Surface water treated prior to use:
[ ] unknown [ ] no [ ] yes
Name of system owner: _____

c. Are any of the following categories of surface water impacted by the site:
[ ] Drainage ditch (or intermittent stream): Distance to ___
[X] Stream or creek: Distance to ___
[ ] River: Distance to ___
[ ] Wetlands, pond, or lake: Distance to ___

Surface water is used for:
[ ] Drinking [ ] Cooking [ ] Fishing
[ ] Livestock [ ] Swimming [ ] Irrigation
[ ] Other _____

Surface water treated prior to use:
[ ] unknown [ ] no [ ] yes
Name of system owner: _____

d. Summary of documentation of surface water contamination (include earliest date of contamination, discuss potential for contamination, discuss sampling that indicates surface waters may be contaminated):

WILL NEED TO SEE RI/FS TO ASCERTAIN IMPACT.

SOURCE(s): _____

II.H.3. Soil

a. Off-site soil contamination confirmed: [ ] Yes [X] No
Confirmed by: [ ] Sampling [ ] Visible evidence

b. On-site soil contamination confirmed: [X] Yes [ ] No
Confirmed by: [ ] Sampling [ ] Visible evidence

c. The public is likely to come in contact with contaminated soil:
[ ] Yes Contact will occur: [ ] Off-site [ ] On-site
Explain in Comments Section
[X] No SITE RESTRICTED

d. On-site employees are likely to come in contact with contaminated soil: [ ] Yes [X] No NO EMPLOYEES

e. The earliest documented data of soil contamination is:
[ ] Off-site ___/___/___
[ ] On-site ___/___/___

f. Comments: SEE ATTACHED

SOURCE(s): _____

II.H.4. Ambient Air

a. Release of volatiles or gases has been measured:
[X] Yes [ ] No

Measurements were taken: [X] On-site [ ] Off-site [ ] In Residence

SOURCE(s): _____

There is a history of odor complaints in the vicinity of the site:
[ ] Yes [X] No Explain: _____

_____

_____

SOURCE(s): _____

b. A release of airborne particulates has occurred:
[ ] Yes Release confirmed by: [ ] Air sampling
[ ] physical evidence
[X] No

SOURCE(s): _____

c. Comments on Ambient Air:
AIR PATHWAY NOT CONFIRMED AT THIS SITE.

_____

_____

SOURCE(s): _____

II.H.5. Food Chain

a. Crops
1. Are grown in the vicinity of the site: [ ] Yes [X] No
Type [ ] Commercial agriculture [ ] Residential gardens

2. Crops likely to be contaminated: [ ] Yes [ ] No

3. Verified by [ ] Sampling
[ ] Observation (evidence of migration or stressed vegetation)

4. Crops (list) _____

COMMENTS: _____

_____

_____

_____

VI. HUMAN EXPOSURE PATHWAYS

A. Opportunity for human exposure to groundwater contamination:
1. [X] has occurred [X] is occurring [ ] is not occurring
[ ] is potentially occurring

2. If exposure occurred:
[ ] >10 yrs ago [ ] 1-10 yrs ago [ ] <1 yr ago [ ] unknown

3. Route of exposure:
[Y] ingestion
[Y] inhalation
[Y] dermal contact

B. Opportunity for human exposure to surface water contamination:
1. [ ] has occurred [ ] is occurring [ ] is not occurring
[X] is potentially occurring

2. If exposure occurred:
[ ] >10 yrs ago [ ] 1-10 yrs ago [ ] <1 yr ago [X] unknown

3. Route of exposure:
[ ] ingestion
[ ] inhalation
[ ] dermal contact

C. Opportunity for human exposure to soil contamination:
1. [ ] has occurred [ ] is occurring [X] is not occurring
[ ] is potentially occurring

2. If exposure occurred:
[ ] >10 yrs ago [ ] 1-10 yrs ago [ ] <1 yr ago [X] unknown

3. Route of exposure:
[ ] ingestion
[ ] inhalation
[ ] dermal contact

D. Opportunity for human exposure to airborne contamination:
1. [ ] has occurred [ ] is occurring [X] is not occurring
[ ] is potentially occurring

2. If exposure occurred:
[ ] >10 yrs ago [ ] 1-10 yrs ago [ ] <1 yr ago [ ] unknown

3. Route of exposure:
[ ] inhalation
[ ] dermal contact

E. Opportunity for human exposure to food that has been contaminated through the food chain or by exposure to the site:

1. [ ] has occurred [ ] is occurring [Y] is not occurring
   [ ] is potentially occurring

2. If exposure occurred:
   [ ] >10 yrs ago [ ] 1-10 yrs ago [ ] <1 yr ago [ ] unknown

3. Route of exposure:
   [ ] ingestion

F. Any other relevant human exposure information (historical exposure)?

EPA HAS PROVIDED G.W. DATA (POTABLE WELLS) FOR EVALUATION.

VII. General Comments (optional):

SITE WILL BE THE SUBJECT OF SRU IN FFY 1995

IV. INTERVIEWS: PERSONS KNOWLEDGEABLE ABOUT THE SITE

The interview objectives are:

1. to verify information found in the site file review and
2. to acquire essential information not found in the site file(s).

A. Name: JAMES HAKLAR Organization USEPA Date 7/15/94

Comments: _____

B. Name: _____ Organization _____ Date _____

Comments: _____

C. Name: _____ Organization _____ Date _____

Comments: _____

Site Visit Notes

Chemsol Inc.

Chemsol site was former solvent recovery facility which contained numerous drums, tankers, other containers etc. Presently USEPA is at end of groundwater construction phase, all buildings and containers gone.

Site is secured and divided into traditional cold and hot zones while deep aquifer and soil RI is ongoing.

Site has surface water features (creek) which may be impacted by contaminants.

USEPA has provided potable well sampling data with request ATSDR/NJDOH perform consultation or other appropriate evaluation of possible exposures. Local Health Department (Piscataway HD; Andrew Simph: Health Officer) is aware of situation. Copies of data provided to ATSDR. Site will be included on NJDOH workplan for FFY 1995 as SRU with groundwater evaluation.

Site is level C protection during soil disturbance activities.

Chemsol Incorporated

Fleming Street Piscataway Township Middlesex County

CATEGORY: Superfund
Federal Lead

TYPE OF FACILITY: Manufacturing-Chemical/ Solvent Recovery

OPERATION STATUS: Ceased

PROPERTY SIZE: 12 Acres

SURROUNDING LAND USE: Residential

MEDIA AFFECTED	CONTAMINANTS	STATUS
Ground Water	Volatile Chlorinated Compounds	Further Delineation Required
Soil	Volatile Chlorinated Compounds Polychlorinated Biphenyls (PCBs)	Further Delineation Required

FUNDING SOURCE(S): Federal

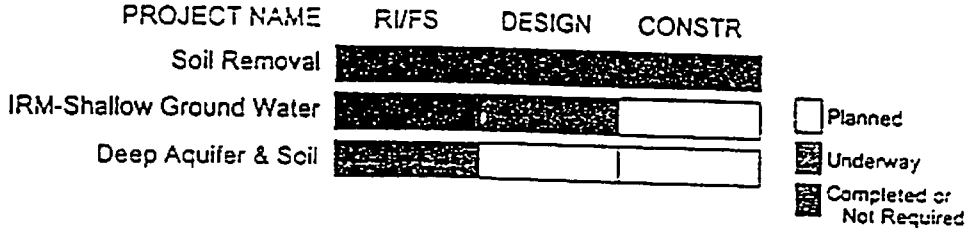
ACO SIGNED: 07/09/84

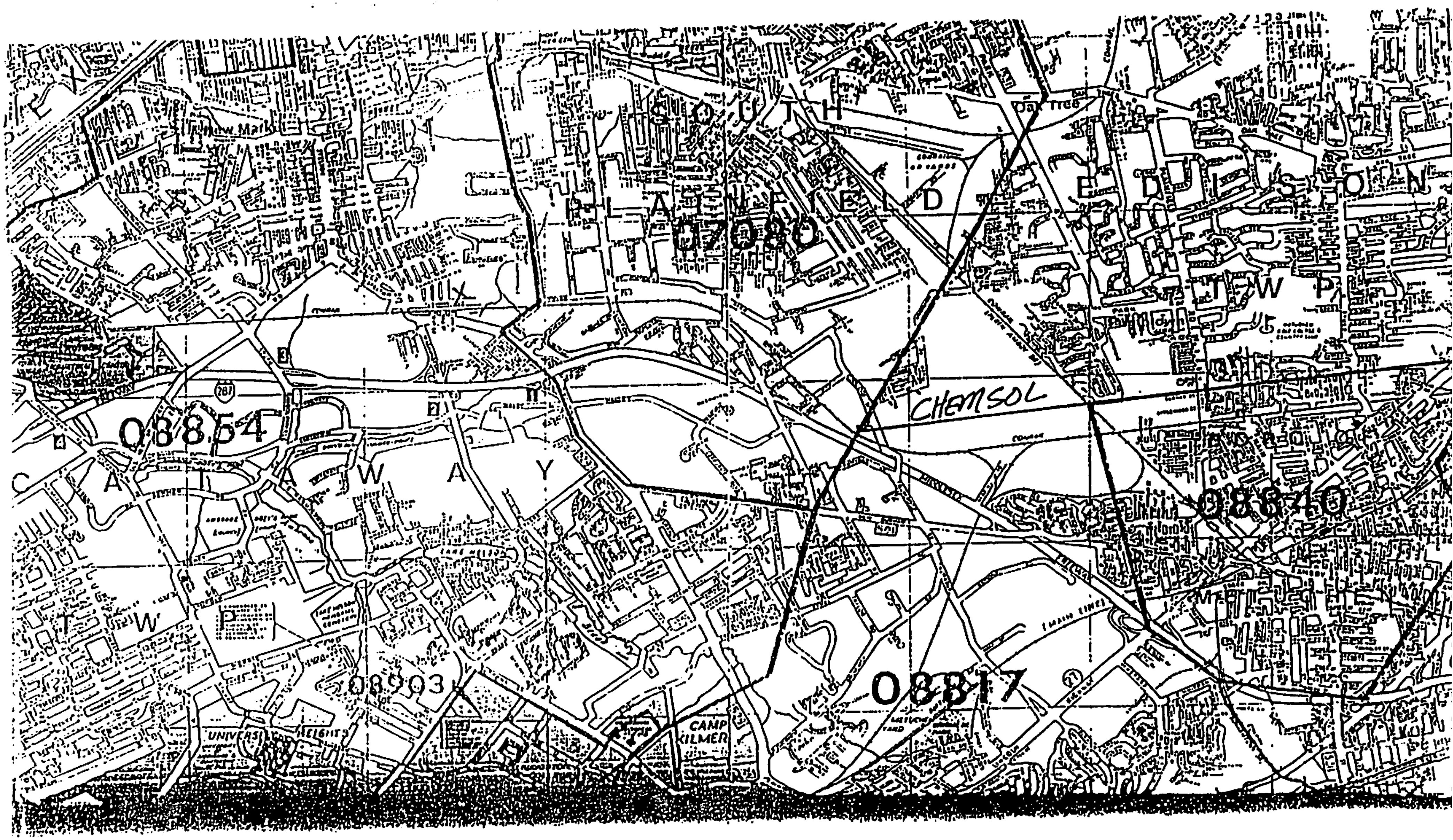
FINANCIAL ASSURANCE: None

SITE DESCRIPTION/RESOLUTION OF ENVIRONMENTAL CONCERNS:

The site was been used by Chemsol Incorporated as a chemical manufacturing and solvent recovery facility. The owner, Tang Realty, has since razed the site with the intention of subdividing the property for a housing development. Investigations revealed approximately 40 drums containing hazardous waste, as well as evidence of spills and leakage. The site was placed on the National Priorities List (NPL a.k.a. Superfund) in September 1983. An Administrative Consent Order (ACO), signed in July 1984, required the owner to complete an investigation and perform any required remedial actions. Tang initiated the soil and ground water investigation, and a removal action, including drums and lab packs uncovered during the investigation. Additionally, in June 1988, a plan was submitted to initiate ground water decontamination in the shallow aquifer. The final plans for this project and post-excavation soil sampling were to be submitted to the New Jersey Department of Environmental Protection and Energy (NJDEPE) by the end of 1990. The United States Environmental Protection Agency (USEPA) assumed oversight for this case for the Remedial Investigation/Feasibility Study (RI/FS) because it was determined that Tang was unable to complete it. A Focused Feasibility Study (FFS) of the shallow aquifer was completed in July 1991. A Record of Decision (ROD) was signed in September 1991 for an interim pump and treat system to decontaminate the shallow aquifer. Design of this system is scheduled to be completed by the Potential Responsible Parties (PRPs) in March 1993. Then the PRPs will construct the pump and treat system. The USEPA issued an Administrative Order (AO) to the PRPs ordering them to implement the ROD. An RI/FS will be conducted by a USEPA contractor to examine the entire site, including the deep aquifer and soil, for contamination. Field activities are expected to begin in the summer 1992.

FOR FURTHER INFORMATION CONTACT: Site Remediation Program
Bureau of Federal Case Management
609-633-1455




SOUTH PLAINFIELD
EDISON TWP
PISCATAWAY TWP
07080
08820
08817
08854
08903
CHEMSOL
CAMP KILMER
UNIVERSITY HEIGHTS
287
27