

Site Review And Update

DE REWAL CHEMICAL COMPANY

KINGWOOD TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY

CERCLIS NO. NJD980761373

FEBRUARY 7, 1995

REVISED

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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 30333

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
DE REWAL CHEMICAL COMPANY
KINGWOOD TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
CERCLIS NO. NJD980761373

Prepared by:

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

SUMMARY OF BACKGROUND AND HISTORY

The DeRewal Chemical Company (DCC) site is located on 3.7 acres about one-half mile south of Frenchtown, in Kingwood Township, Hunterdon County, New Jersey, between Route 29 and eastern bank of the Delaware River (Figure 1). A bike path, which is part of the Delaware and Raritan Canal State Park, divides the site into eastern and western portions. The population of Kingwood Township is approximately 3,000. The nearest off-site residence is approximately 450 feet to the south.

Approximately 25 years ago part of the site was used as a community dump. Between 1970 and 1973, DeRewal Chemical Company leased an on-site building and manufactured textile preservatives and an agricultural fungicide. The building also served as a warehouse for the storage and resale of chemicals (including metal plating wastes).

The DCC operated without being properly permitted by the New Jersey Department of Environmental Protection (NJDEP).

In 1972, the NJDEP conducted a site investigation of the DCC site in response to reports of improper handling of chemicals at the facility. Numerous chemical spills were reported in 1973, including one incident where a tank truck containing a solution of high acidity and chromium content was allowed to drain onto the soil. Soil samples collected by NJDEP identified the presence of metals (total chromium levels as high as 23,000 mg/kg). In November 1973, DeRewal Chemical Company was ordered by the NJDEP to excavate the contaminated soil. In 1974, the DeRewal Chemical Company filed for bankruptcy.

In 1979, the eastern half of the site was sold. The new owner set up his private residence and honey bee raising operation in this portion of the site. Raising bees has ceased since the initiation of the remedial investigation process.

In 1983, the owner of this operation excavated approximately 30 tons of soil from the top 6 to 8 inches from his property in an effort to improve drainage. This soil was deposited at an open dump (known as the Pinkerton Dump) located about one-quarter mile southeast of the site near the Frenchtown Roller Rink. This soil has since been at least partially buried by construction debris and household wastes. Other excavated on-site soil was placed along the north walls of the on-site resident's house and garage. There is no restricted access to either on-site areas or to the Pinkerton Dump.

In 1986, the United States Environmental Protection Agency (USEPA) completed a Preliminary Assessment (PA) of the Pinkerton Dump which confirmed that soil contamination was present (heavy metals and PAHs). However, analyses of groundwater samples from residential wells in the vicinity of Pinkerton Dump and the Roller Rink did not show any contamination except for one residential well near the Pinkerton Dump (lead-8 ppb and sodium-37,800 ppb).

The DCC site was listed on the National Priorities List (NPL) in September 1984.

In 1985, soil samples from DCC site were collected and analyzed by NJDEP showed the presence of chromium, lead, cadmium, copper, polycyclic aromatic hydrocarbons (PAHs), and nickel. The USEPA began a remedial investigation and feasibility study (RI/FS) to determine the nature and extent of contamination at the DeRewal Chemical Company. The site related contamination was detected in soils and the shallow groundwater above bedrock. The soil was contaminated with volatile organic compounds (VOC's) and metals. No groundwater monitoring wells have been installed at the Pinkerton Dump site to characterize the groundwater medium. Metals frequently detected include chromium, copper, lead and zinc. Groundwater was sampled from the on-site monitoring wells and nearby residential wells. Two water-bearing zones were identified at the site: a shallow water-bearing zone and a bedrock aquifer. The shallow water-bearing zone is not a source of potable water in the area, and flows to the west towards the Delaware River. The shallow groundwater zone is contaminated with VOC's and metals. Organic contaminants of concern include trichloroethene, tetrachloroethene, 1,2-dichloroethene, methylene chloride and 1,1,1-trichloroethane. Metals of concern include chromium, copper, lead, nickel and zinc. The bedrock aquifer showed low level of contamination with VOC's. The direction of groundwater flow in the deep aquifer (bedrock aquifer) is estimated to be southwesterly (Figure 2).

Surface water runoff from the site does not appear to affect the water quality of the Delaware River. Surface water samples taken near northern and southern boundaries, including a ditch which drains the site, contain approximately the same concentrations as background samples taken upstream.

Groundwater samples were collected on September 30, and October 1, 1986 from five residential wells. The well water samples were analyzed for volatile organics and heavy metals. On-site residential well (RW-2) contained 3 ppb of hexavalent chromium (below ATSDR comparison value and not detected during subsequent well sampling). Sample taken from a residential well (RW-5) located approximately 375 feet south of the site, contained 1.6 ppb trichloroethene.

A second round of groundwater sampling was conducted on May 5, 1987. No organic contaminants were detected in any of the five residential wells sampled.

The Record of Decision (ROD) was signed in September 1989. It documents the selected remedies for the remediation of the soil and shallow water-bearing zone.

In 1991, USEPA installed a water treatment system on the residential well at the site. Beginning in October 1992, structures with private water supply wells within 1000 feet of the site were identified. During the survey a total of 22 off-site wells were identified within 1000 feet of the site (Figure 3). Sampling of the wells identified in the off-site well survey started in November 1992. Low level volatile organic compounds were found throughout the study area.

In June 1994, USEPA collected and analysed additional residential tap samples for VOC's near the DCC site. Only one residential well out of fourteen wells sampled showed low levels of VOC's including 1,1-dichloroethene (0.2 ppb), chloroform (0.8 ppb), 1,1,1-trichloroethane (0.2 ppb), trichloroethene (1.4 ppb) and tetrachloroethene(0.4 ppb).

The Agency for Toxic Substances and Disease Registry (ATSDR) completed a Preliminary Health Assessment for the DeRewal site in April 1989. The Preliminary Health Assessment noted that contaminated groundwater and soils were the identifiable human exposure pathways associated with the site. Contaminants of concern at the site consisted of Volatile Organic Compounds (VOC's) and heavy metals in groundwater, and heavy metals and Polycyclic Aromatic Hydrocarbons (PAHs) in soils.

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) The residents using private potable well water have probably been exposed to site related contaminants in the groundwater. Residential wells in the vicinity of DCC site showed low levels of VOC's in the past, but the most recent sampling of the wells in July, 1994 did not show any contamination with VOC's except one well.
- 3) Direct contact and incidental ingestion of contaminated soil by area residents is the most likely route of exposure. Intermittent exposure to children who play on the site may occur when soils are disturbed. This pathway is not substantiated in the light of current site data and information. In July and November 1993, ATSDR reviewed soil sampling data from the DCC site. ATSDR concluded that analytical results of soil sampling taken do not indicate a health threat based upon reported concentrations.
- 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.

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.

Recommendations were made to conduct the following activities:

- 1) Periodic monitoring of water from residential and municipal wells;

- 2) Exposure point ambient air monitoring for particulates at the Pinkerton Dump site, in order to evaluate the potential for inhalation of heavy metal contaminated fugitive dusts;
- 3) Performing a wildlife consumption survey;
- 4) No crops or gardens (i.e., containing edible plants) should be grown on-site;
- 5) Institutional controls to prevent installation of new water supply wells within the contaminated portion of the aquifer;
- 6) Obtain additional information on contaminants to further characterize the site and characterization of the hydrogeology of the area and;
- 7) Additional information on potential environmental pathways through which the contaminants can reach the residents living near the site.

In addition to the 1989 Preliminary Health Assessment, the Agency for Toxic Substances and Disease Registry (ATSDR) has prepared two separate public health consultations on the DCC (Appendix A). These reports are summarized as follows:

- 1) In July 1993, USEPA requested ATSDR to review the soil sampling data collected from DCC site. USEPA had requested that ATSDR review the soil data and determine if the concentrations of contaminants detected present a health hazard. Soil samples were collected at a depth of 0 to 2 feet. Based upon the reported maximum concentrations of contaminants ATSDR recommended that soil with elevated metals concentration located in bare nonvegetated areas should be removed or covered. Soil with elevated metals concentration of metals near the river in nonvegetated areas should be removed.
- 2) In November 1993, ATSDR reviewed soil sampling data from DCC site. Sampling was conducted at a depth of 0 to 3 inches along a bike path which runs north to south down the center of the DeRewal site. ATSDR concluded that analytical results of soil sampling taken on the bike path do not indicate a health threat based upon reported concentrations. ATSDR recommended that the contaminated areas of the site should be removed or covered and access to site should remain restricted. In general, the site is well vegetated.

PUBLIC HEALTH IMPLICATIONS

For an undetermined period of time, residents living near the DCC site were exposed to various volatile organic compounds (VOC's) in their private potable wells. Residents with contaminated private wells may have been exposed to benzene, trichloroethene (TCE), tetrachloroethene (PCE), chloroform, methylene chloride, 1,1,1 trichloroethane (TCA), 1,1- and 1,2 dichloroethene (DCE), 1,2,3 and 1,2,4 trichlorobenzene (TCB), 1,2-,1,3- and 1,4

dichlorobenzene (DCB), and 1,1 and 1,2-dichloroethane (DCA) in their drinking water for an unknown period of time until 1992, when contamination were detected. Residents were not provided with bottled water and they do not have water filtration system installed to their affected potable wells.

The DCC began operation in 1970. Although exposure to various VOC's could have occurred for up to approximately 24 years (1970 to 1994), the levels of contamination prior to 1992 are not known.

In this section, NJDOH will discuss the 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 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.

Private Potable Well Pathways

The toxicological evaluation of the completed exposure pathway at the DCC site is based upon a duration of twenty-four (24) years for the ingestion pathway. The use of a 24 year exposure duration represents the time from the beginning of operations at the site (1970) to the present time (1994).

The toxicological effects of the contaminants detected in private potable wells in the vicinity of the DCC 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 adult. 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 is no data available to estimate the exposure doses to these secondary routes of exposure at the DCC 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 a lifetime (70) years. Since exposure to most residents near the DCC site would likely have occurred during the period from 1970 to 1994. An exposure duration of 24 years was used to estimate exposure doses and resultant lifetime excess cancer risk estimates.

Toxicological evaluation was completed for most frequently detected chemicals in private potable wells near the site and exposure dose calculations were based upon the maximum concentrations detected, thus representing a worse case exposure scenario.

Benzene

Presently there is no MRL or RfD for chronic oral exposure to benzene. However, exposure doses calculated from the maximum reported levels of benzene (0.5 ppb) in 1992 near the site were below the No Observed Adverse Effect Level (NOAEL) for animal studies presented in the ATSDR Toxicological Profile for Benzene. At such concentrations, it is not likely that non-carcinogenic adverse health effects would occur. Benzene is considered by the USEPA to be a known human carcinogen. The Lifetime Excess Cancer Risk (LECR) associated with the chronic oral exposure route for benzene at the site for a duration of 24 years would result in insignificant or no increased cancer risk.

Trichloroethene (TCE)

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 (35 ppb) in 1992 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. TCE is considered by the USEPA to be a possible human carcinogen based on limited animal studies. Chronic oral exposure to TCE at maximum concentrations found in potable wells for a duration of 24 years would result in insignificant or no increased cancer risk.

Tetrachloroethene (PCE)

Based upon maximum reported levels of tetrachloroethene (4.5 ppb) detected in private potable wells in 1992 near the DCC site, 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 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.

Tetrachloroethene is considered as a probable human carcinogen by USEPA. Chronic oral exposure to tetrachloroethene at maximum concentrations found in private potable wells for a duration of 24 years would result in insignificant or no increased cancer risk.

Chloroform

Based upon maximum concentrations of chloroform (0.4 ppb) detected in private potable wells in 1992 near the site, calculated exposure doses are significantly below the ATSDR

Minimum Risk Level (MRL) of 0.01 mg/kg/day for chronic oral exposure. At such concentrations, it is not likely that non-carcinogenic adverse health effects would occur. Chloroform is considered by the USEPA to be a probable human carcinogen. Chronic oral exposure to chloroform at maximum concentrations found in private potable wells for a duration of 24 years would result in insignificant or no increased cancer risk.

Methylene Chloride

Based upon maximum levels of methylene chloride (2 ppb) detected in private potable wells in 1992 near the DCC site, estimated exposure doses (EED) were below the USEPA chronic oral RfD of 0.06 mg/kg/day. EED were also well below the Minimum Risk Level (MRL) for chronic oral exposure represented in the ATSDR Toxicological Profile for methylene chloride. At such concentrations, it is not likely that adverse health effects would occur. USEPA considers methylene chloride to be a probable human carcinogen. Calculated Lifetime Excess Cancer Risk (LECR) shows that chronic oral exposure to methylene chloride at maximum concentrations found in private potable wells for a duration of 24 years would be expected to result in insignificant or no increased cancer risk.

1,1,1-trichloroethane (TCA)

Estimated Exposure Doses (EED) calculated from the maximum reported concentration (2.9 ppb) of 1,1,1-trichloroethane 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 from exposure to 1,1,1-trichloroethane. No information is available to indicate that 1,1,1-trichloroethane causes cancer. The USEPA has determined that 1,1,1-trichloroethane is not classifiable as to its human carcinogenicity.

1,1 dichloroethene (DCE)

Site data indicate that exposure to 1,1-dichloroethene is occurring among residents in the area of the DCC site through the ingestion pathway, by using contaminated residential well water for drinking and other domestic purposes. Based upon maximum reported concentration (0.5 ppb) of 1,1-dichloroethene detected in residential wells at the site, exposure dosages are well 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 adverse health effects would occur. 1,1-dichloroethene is considered by the USEPA to be a possible human carcinogen. Animals fed food that contained 1,1-dichloroethene developed liver and kidney disease. These amounts, however, are very much higher than those detected in residential wells. The calculated Lifetime Excess Cancer Risk (LECR) associated with the chronic oral exposure for 1,1-dichloroethene indicates that exposure to 1,1-dichloroethene at maximum concentrations found in residential wells for a duration of 24 years would result in insignificant or no increased cancer risk.

1,2-dichloroethane (DCA)

No MRL or RfD is available for 1,2-dichloroethane to evaluate the potential for non-cancer health effects. However, Estimated Exposure Doses (EED) calculated from the maximum reported concentration (21 ppb) of 1,2-dichloroethane 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. USEPA considers 1,2-dichloroethane as a probable human carcinogen. The calculated Lifetime Excess Cancer Risk (LECR) associated with chronic oral exposure to 1,2-dichloroethane at maximum concentrations found in residential wells for a duration of 24 years would result in no apparent increased cancer risk.

Table 1. Chemicals of Public Health Concern in Residential Well Water Samples.

CHEMICAL	MAX. CONC.. (ppb)	COMPARISON VALUE (ppb)	BASIS	ESTIMATED EXPOSURE DOSE (mg/kg/d)
benzene	0.5	1.0	CREG	0.000014
trichloroethene (TCE)	35.0	3.0	CREG	0.001
tetrachloroethene (PCE)	4.5	0.7	CREG	0.00012
chloroform	0.4	6.0	CREG	0.000011
methylene chloride	2.0	5.0	CREG	0.000057
1,1,1 trichloroethane (TCA)	2.9	200	LTHA	0.000082
1,1 dichloroethene (DCE)	0.5	0.06	CREG	0.000014
1,2-dichloroethane (DCA)	21.0	0.40	CREG	0.0006

CURRENT CONDITIONS OF SITE

On May 12, 1994, James Pasqualo and N.P. Singh of the New Jersey Department of Health (NJDOH) visited the DCC site accompanied by the USEPA Remedial Project Manager and representatives of the Hunterdon County Health Department. The site visit included a formal presentation by the USEPA, and an on-site tour. The following observations were made during the site visit:

- A bike path, divides the site into eastern and western portions.

- Three buildings are located on the eastern half of the site: a private residence, a building formerly occupied by the DeRewal Chemical Company, and a garage.
- On-site groundwater monitoring wells were observed.
- The site is posted with signs reading " Hazardous Waste Area, Remain on Bikepath, Digging Prohibited". Signs are also posted throughout the property indicating that the area contains hazardous waste and that digging is prohibited.
- There is a private residence at the site. The occupants include the owner and his family. In general, the site is well vegetated.

Conditions at the DCC, since the 1989 Preliminary Health Assessment, have not changed. The conclusion in the Preliminary Health Assessment that the site poses a potential public health concern was accurate in the context of the data and information available at the time the site was first evaluated, but will be reevaluated for this Site Review and Update.

CURRENT ISSUES

Based on the Remedial Investigation, site related contamination is present in groundwater, and soil. The primary public health issue associated with the DCC site pertains to the potential impact of the groundwater contamination on existing private potable wells. The shallow water-bearing zone is not a source of potable water in the area, and flows to the west towards the Delaware River. The shallow groundwater zone is contaminated with VOC's and metals. Organic contaminants of concern include trichloroethene, tetrachloroethene, 1,2-dichloroethene, methylene chloride and 1,1,1-trichloroethane. The bedrock aquifer showed low level of contamination with VOC's.

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.

Two water-bearing zones were identified at the DCC site: a shallow water-bearing zone and a bedrock aquifer. The shallow water-bearing zone is not a source of potable water in the surrounding area. The primary source of drinking water in the site vicinity consists of one or more aquifers developed within the Passaic Formation, which provides well water for municipal, private, and industrial use. The hydrogeology of the Passaic Formation is highly complex, due primarily to its occurrence as a fractured shale formation. The Passaic Formation is probably a multiaquifer unit with several water-bearing zones. Other complicating factors include influences exerted by local high capacity water well production. The direction of groundwater flow in the deep aquifer (bedrock aquifer) is estimated to be southwesterly based on water-level measurements for the deep monitoring wells for a period of limited groundwater withdrawals.

Groundwater samples were collected in 1986 from the five residential wells. All the five residential wells were sampled and analyzed for volatile organics, metals, and hexavalent chromium. On-site residential well, RW-2, contained 3 ppb of hexavalent chromium. Sample RW-5, taken from a residential well located approximately 375 feet south of the site, contained 1.6 ppb trichloroethene. The distance from the site and the potential use of trichloroethene as a household solvent and as a septic tank cleaner in the past make the DeRewal site a questionable source of this contamination.

A second round of groundwater sampling was conducted on May 5, 1987. No organic contaminants were detected in any of the five residential well sampled on May 5, 1987.

Beginning in October 1992, structures with private water supply wells within 1000 feet of the site were identified. The general area was also searched for commercial/industrial wells which may influence groundwater flow in the site area. During the survey a total of 22 off-site wells were identified within 1000 feet of the site (Figure 3). Sampling of the wells identified in the off-site well survey started in November 1992. Low level volatile organic compounds were found throughout the study area. Given the effects that area production wells have on groundwater flow direction, one would expect that the contaminants have been dragged back and forth with changes in pumping regime and resulting changes in groundwater flow direction (Figure 4).

In June 1994, USEPA collected and analysed additional residential tap samples for VOC's near the DCC site. Only one residential well out of fourteen wells sampled showed low levels of VOC's including 1,1-dichloroethene (0.2 ppb), chloroform (0.8 ppb), 1,1,1-trichloroethane (0.2 ppb), trichloroethene (1.4 ppb) and tetrachloroethene(0.4 ppb).

Most of the Kingwood Township residents use private wells for their water supply needs while a portion of Township is served by the public water supply system. The production wells of the public water supply system are not affected by the contamination.

Many private wells in Kingwood Township have been affected by contaminants though it is not clear whether these are site related or not. The private potable wells south of the site, along Route 29 have already been contaminated with various chemicals.

The ATSDR/NJDOH have public health concerns regarding resident's on-going exposures to the contaminated private well water because the levels of contaminants have fluctuated. The levels of contamination may increase to constitute a public health hazard. Residents have expressed concerns about residential well sampling. They would like more frequent well testing and a greater total number of residential wells sampled. USEPA is now sampling approximately 15 residential wells in the area every 6 months.

Public health consultations were conducted to evaluate toxicological implications of the soil contamination at the DCC site. These health consultations by ATSDR concluded that there is a low probability that persons living near or at the DCC site could ingest sufficient quantity of contaminated soils to constitute a toxicologically significant exposure dose.

A secondary concern was associated with Pinkerton Dump site. Presently the soil at the Pinkerton Dump has been buried by construction debris and household wastes. There is no restricted access to the Pinkerton Dump. However, the area is well vegetated. There is little probability that persons living near the site could ingest soils sufficient quantity to constitute a toxicologically significant exposure dose.

CONCLUSIONS

1. Based on the Remedial Investigation, site-related contamination is present in groundwater and on-site soil. After a review of the most recent documents and the current site conditions for the DCC site, the ATSDR and the NJDOH have determined that, current human exposures are occurring at the present time. There are current completed exposure pathways (private potable wells) in the vicinity of the DCC site. In the light of current site data and two separate public health consultations by ATSDR, there is a low probability that persons living near the site could ingest sufficient quantity of contaminated soils to constitute a toxicologically significant exposure dose.
2. No data are available indicating the nature and extent of contaminants from which to evaluate the public health significance of potential exposures prior to 1992. This information is needed to completely evaluate the community health concerns about past exposures to contaminated drinking water. However, the most conservative estimate of the duration of exposure to the VOC's via drinking water from private potable wells would be approximately 24 years. Based on a worse case scenario of exposure dose and duration, the residents would not experience any adverse health effects from the past exposure to contaminants in their private potable wells. Thus the ATSDR/NJDOH has determined that the site posed no apparent public health hazard in the past. The former conclusions that the site being of potential public health concern has been reevaluated and revised. The ATSDR and the NJDOH currently consider the site to pose an indeterminate public health hazard because of changing concentrations of contaminants in the private potable wells in the vicinity of DCC site.
3. The recommendation from the 1989 ATSDR Preliminary Health Assessment for periodic monitoring of contaminant levels in the residential well water has been satisfied. EPA is sampling about 15 private well in the area every 6 months.
4. As recommended in the 1989 ATSDR Preliminary Health Assessment institutional controls does exist to prevent the installation of new water supply wells within the contaminated portion of the aquifer.

5. The recommendation from the 1989 Preliminary Health Assessment that the well survey in the vicinity of the site be conducted was satisfied.
6. The recommendations from the 1989 Preliminary Health Assessment that the exposure point ambient air monitoring for particulates at the Pinkerton Dump site, in order to evaluate the potential for inhalation of heavy metal contaminated fugitive dusts and performing a wildlife consumption survey in the vicinity of the site be conducted are not valid under current site conditions or in light of current information.
7. Recommendations in the public health consultations to remove the soil with elevated metals concentration onsite have not been satisfied. However, it has been specified in the ROD that remedial activities at the DCC site will include removal of contaminated soils. Furthermore, the contaminated area which was not vegetated was covered with gravel pending final remediation.
8. Groundwater contamination has been found at and in the vicinity of DCC site. However, contaminant distributions do not clearly indicate the site to be the likely source of contamination. At present it is not clear whether deep aquifer contamination, due entirely to the DCC site or other sources contributing to the contamination.
9. There is no immediate need to perform additional evaluation of the data and information presently available regarding the DCC site.

RECOMMENDATIONS

There are no outstanding recommendations from the preliminary health assessment which remain valid and unsatisfied.

After a review of the most recent documents and the current site conditions for the DCC site, the ATSDR and the NJDOH have concern about on-going exposure to the contaminated groundwater. It is therefore recommended that monitoring of the private potable wells continue to evaluate trends in contaminant concentrations and distributions.

Information should be gathered about local waste generators and disposal sites to assist in identifying additional sites which may be impacting deep aquifer water quality. During most recent residential well sampling in November 1992, low level of volatile organic compounds were detected throughout the study area (within 1000 feet of site).

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

Based upon current site data and information no further health assessment evaluation or follow-up activities are recommended for the DCC site.

Remedial activities specified in the ROD, when implemented, are sufficient to address remaining concerns of the ATSDR, the NJDOH, and the community regarding the site and are consistent with protection of the public health.

RECOMMENDATIONS OF THE HEALTH ACTIVITIES RECOMMENDATIONS PANEL (HARP)

The data and information developed in the Site Review and Update for the DeRewal Chemical Company, Kingwood Township, Hunterdon County, New Jersey, has been evaluated by ATSDR's Health Activities Recommendation Panel (HARP) for appropriate follow-up with respect to health activities. Because of exposures to site-related groundwater contaminants, the panel determined that community health education is indicated. Specifically, the NJDOH will coordinate this educational activity through the local health department.

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.

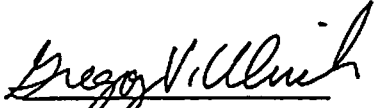
Actions Planned by ATSDR/NJDOH:

1. ATSDR and the NJDOH will evaluate subsequent environmental monitoring reports for changes in site conditions and possible public health implications.
2. ATSDR will provide an annual follow up to this PHAP, outlining the actions completed and those in progress.
3. NJDOH will coordinate with the local health department to perform community health education.

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.

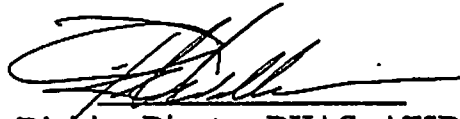
CERTIFICATION

The Site Review and Update for the Derewal Chemical Company 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.



Division Director, DHAC, ATSDR

DOCUMENTS REVIEWED

1. DeRewal Chemical Company - Residential Well Sampling Report, Kingwood Township, Hunterdon County, New Jersey. USEPA. 1994.
2. DeRewal Chemical Company - Residential Well Sampling Report, Kingwood Township, Hunterdon County, New Jersey. USEPA. 1992.
3. CDM, Inc., Final Remedial Investigation Report for the DeRewal Chemical Company, Kingwood Township, Hunterdon County, New Jersey. October 1988.
4. Health Assessment for the DeRewal Chemical Company , Kingwood Township, Hunterdon County, New Jersey. ATSDR. April 1989.
5. Record of Decision, DeRewal Chemical Company Site, Kingwood Township, Hunterdon County, New Jersey. USEPA. September 29, 1989.
6. ATSDR Health Consultation, November, 1993.
7. ATSDR Health Consultation, July, 1993.
8. Law Environmental, Inc., Final Deep Aquifer Study Plan at the DeRewal Chemical Company Site, Kingwood Township, Hunterdon County, New Jersey. August 1993.

INTERVIEWS/PERSONAL COMMUNICATIONS:

1. Emergency & Remedial Response Division/USEPA:
Remedial Project Manager
2. Site Remediation Program/NJDEPE:
Remedial Project Manager
3. Community Relations Coordinator/NJDEPE:
4. Hunterdon County Health Department:
Principal Sanitarian
5. Hunterdon County Health Department:
Senior Sanitarian

PREPARERS OF REPORT

Preparer of Report:

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Office of the Assistant Administrator

ATSDR Technical Project Officer:

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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

ATSDR Record of Activity

UID #: i d 1 0 Date: 7/29/93 Time: 1123 am pm

Site Name: DeRawal Chemical Co. City: Kingwood Township Cnty: Hunterdon
State: NJ

CERCLIS #: NJD980761373 Cost Recovery #: _____ Region: 2

Site Status (1) NPL Non-NPL RCRA Non-Site specific Federal
(2) Emergency Response Remedial Other

Activities

- Incoming Call
- Outgoing Call
- Conference Call
- Incoming Mail
- Public Meeting
- Other Meeting
- Data Review
- Health Consult
- Health Referral
- Written Response
- Site Visit
- Info Provided
- Training
- Other

Requester and Affiliation: (2) Nick Magriples, EPA OSC
Phone: 908/906-6930
Address: 2890 Woodbridge Ave.
City: Edison State: NJ Zip Code: 08837

Contacts and Affiliation

- (1) Artis Block () _____
- (1) Scott Wright () _____

- 1=ATSDR 2=EPA 3=Other Fed 4=State Health 5=State Environment
- 6=Local Health 7=Elected Official 8=Private Co 9=Private Citizen
- 10=News Media 11=Citizen Group 12-USCG 13=Natl Respsn Cntr 14=Other

Program Areas

- Health Assessment
- Petition Assessment
- Emergency Response
- Health Consultation
- Health Studies
- Health Survellnc
- Disease Registry
- Exposr Registry
- Tox Info-profile
- Tox Info-Nonprofil
- Subst-Spec Resch
- Health Education
- Worker Hlth
- Admin
- Other

Narrative Summary:

I contacted Nick Magriples, EPA OSC, at 1123 hours on 7/29/93 to discuss soil sampling results at the DeRawal Chemical Co. site, which is located in Kingwood Township, NJ. EPA had requested that ATSDR review the soil data and determine if the concentrations of contaminants detected present a health hazard. Scott Wright, ERCB, was also on the conference call. The soil sampling results were dated 6/24/93. Soil samples were collected at a depth of 0-2 feet. The maximum concentration of contaminants of concern detected in soil included cadmium at 199 mg/kg, chromium at 3,400 mg/kg, lead at 28,100 mg/kg. Other contaminants analyzed for were below levels of concern. Sampling of soil from the dirt floor of the Flower and Sun Honey Co. building detected chromium at 2,300 mg/kg and lead at 3,800 mg/kg. The maximum concentration of chromium and cadmium detected in soil between the buildings and the bike path was 3,400 mg/kg and 199 mg/kg respectively. The maximum concentration of lead detected in soil in the area between the bike path and the river was 28,100 mg/kg. All other soil samples

throughout the site detected lead $\leq 5,300$ mg/kg. Access to the site is not restricted. There is one residence located on-site. Two adults and 2 children approximately 10-12 years live in the a residence. The site, in general, is well vegetated.

Action Required/Recommendations/Info Provided:

Soil with elevated metals concentration located in bare nonvegetated areas should be removed or covered. Soil with high metals concentrations detected under the gravel road can be left alone, provided dust production is not a problem. Soil with elevated concentrations of metals near the river in nonvegetated areas should be removed if the area is prone to flooding. The two areas with elevated metals concentrations in the dirt floor of the Flower and Sun Honey Co. building should be removed.

Signature: *Joseph A. Little* Date: 8/9/93

Concurrence: *Don Wright* Date: 8/9/93

Enclosures: Yes () No (); MIS entered: Yes () No ()

cc: ERCE File
RIMB

- Author Information -

Author: Steven Jones
User ID: SXJ6

Action Date: 11/15/93
Time: 09:00 AM

- Site Specific Information -

Name: DEREWAL CHEMICAL CO.
Address: DELAWARE RIVER DR City: KINGWOOD TOWNSHIP
County: HUNTERDON State: NJ Zip Code: 08825
CERCLIS #: NJD980761373 CRS #: 20H3 Region: 02 Congr. District: 12

- Site Status -

(1): X NPL Non-NPL RCRA Non-Site Specific SACM Federal*
(2): Emergency Response Remedial X Removal Other:

- Activities -

Incoming Call Public Meeting* Health Consult* Site Visit*
Outgoing Call 1 Other Meeting Health Referral 1 Info Provided
Confrence Call 1 Data Review Written Respons Training
Incoming Mail Other Activity:

- Requestor and Affiliation -

Requestor: GAD TAWADROS
Affiliation: EPA, ERRD-RAB
Work Phone: (908)321-6648 Other Phone: () -
Address:

County: Congressional District: 00

- Contacts and Affiliations -

Program Area: Health Consult

Enclosures: Y

Date: 11/22/93

CC: A. Block
G. Buynoski

DEREWAL CHEMICAL CO.

Action Date: 11/15/93

- Narrative Summary -

Gad Tawadros, EPA On-Scene Coordinator for the DeRewal Chemical Co. site in Kingwood Township, New Jersey, contacted ATSDR on 11/15/93 with reference to the site. EPA had conducted soil sampling on 9/30/93 along a bike path which runs north to south down the center of the DeRewal site. Sampling was conducted at a depth of 0 to 3 inches. Analytical results of the sampling were provided for ATSDR review.

As recommended in a 7/29/93 ATSDR Record of Activity, contaminated soil areas east of the bike path, and west of the path between the Delaware River, will be removed or covered. The current analytical results were for samples taken on the bike path, and the results do not reflect any contaminants above a level of concern. Access to the site is not restricted. In general, the site is well vegetated.

- Action Required/Recommendations/Info Provided -

As previously recommended, the contaminated areas of the site will be removed or covered. The analytical results taken on the bike path do not indicate a health threat which would require action specifically along the path.

Signature: 

Date: 11-22-93

Concurrence: _____

Date: _____

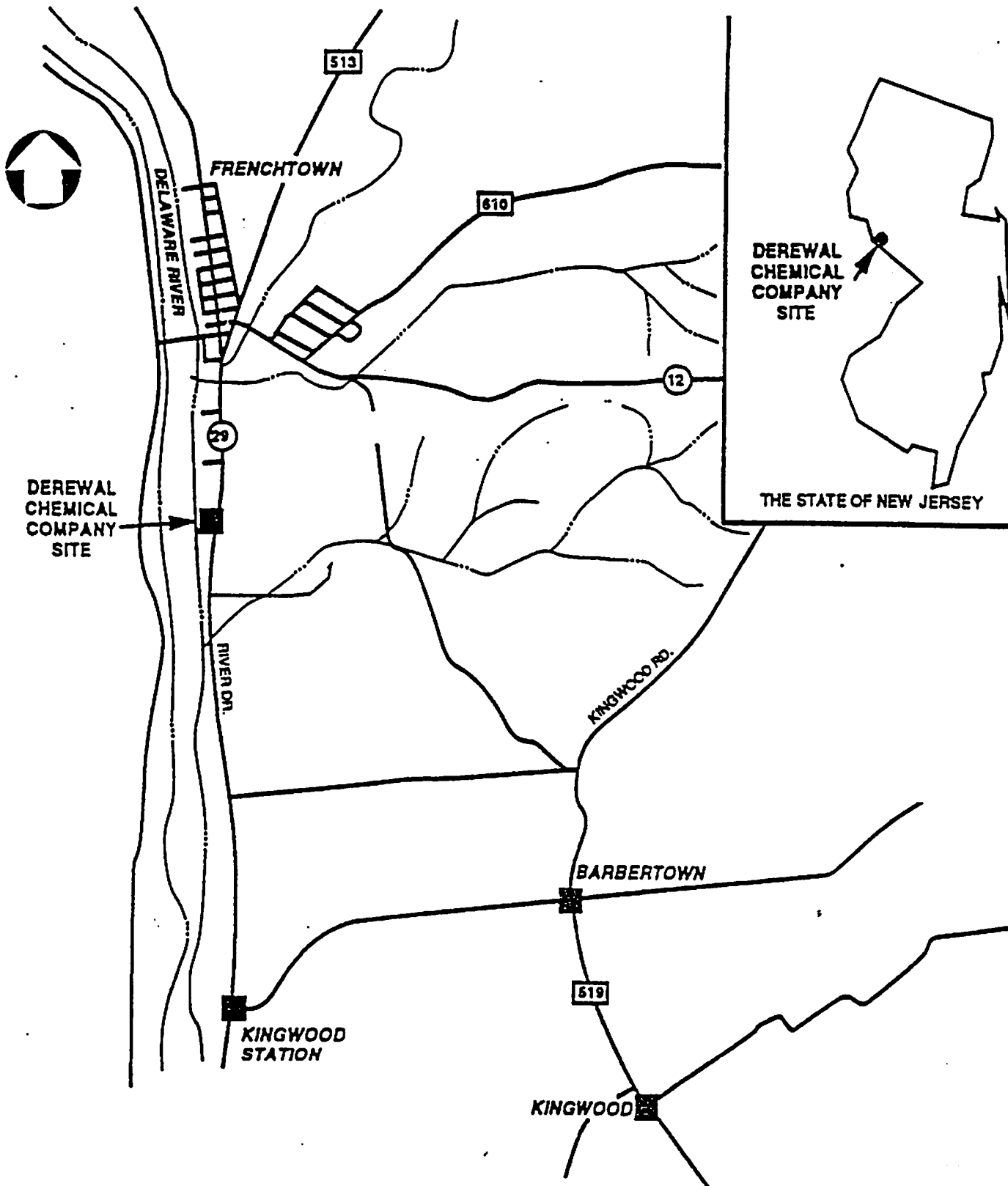
**DEREWAL CHEMICAL COMPANY SITE
KINGWOOD TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
SAMPLE OF BIKE PATH WEST OF THE DELAWARE RIVER**

METALS/CN (mg/kg)

ANALYTE	DR01	DR02	DR03	DR04	DR05	DR06	DR07	DR08	DR09	DR10	DR11	DR12	DRFB	DR
ALUMINUM	3620.0	4580.0	4690	4600	3930	4900	4140	1150	1060	4500	3780	4040	U	83.7
ANTIMONY	6.2 UNJ	UNJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	56.3 B	U
ARSENIC	3.5	2.8	3.0	3.1	7.000	4.52	3.52	1.3	1.4	4.3	2.7	3.9	U	U
BARIUM	18.1 E	R	21.0 E	22.0 E	20.3 E	22.2 E	22.7 E	4.9 E	6.1 E	R	18.0 E	19.5 E	U	U
BERYLLIUM	0.31 BNJ	0.36 BNJ	0.34 BNJ	0.39 BNJ	0.30 BNJ	0.38 BNJ	0.36 BNJ	0.20 BMJ	0.21 BNJ	0.41 BMJ	0.30 BMJ	0.33 BMJ	U	U
CADMIUM	U	U	U	U	U	U	U	U	U	U	U	U	3.6 B	U
CALCIUM	3990 EJ	5050EJ	4950 EJ	5170 EJ	5230 EJ	11200 EJ	10900 EJ	230000 EJ	260000 EJ	6020 EJ	5240 EJ	5370 EJ	424 B	349
CHROMIUM	U	U	U	U	1.2	4.5	3.5	U	U	1.1 B	U	U	U	U
COBALT	R	R	R	R	R	R	R	2.2 B	2.3 B	R	R	R	U	U
COPPER	142	163	180	171	128	174	144	12.8	10	173	136	168	87.9 B	U
CYANIDE														
IRON	17300 EJ	21500 EJ	21600 EJ	21600 EJ	18600 EJ	23000 EJ	19400 EJ	6000 EJ	6270 EJ	21600 EJ	18800 EJ	20300 EJ	UW	65.7
LEAD	U	U	U	U	U	U	U	U	U	11.8	U	U	U	.98
MAGNESIUM	1240 EJ	1470 EJ	1620 EJ	1550 EJ	1390 EJ	2000 EJ	1940 EJ	9070 EJ	11900 EJ	1810 EJ	1360 EJ	1480 EJ	U	U
MANGANESE	203 EJ	248 EJ	264 EJ	276 EJ	223 EJ	273 EJ	236 EJ	207 EJ	210 EJ	326 EJ	216 EJ	245 EJ	U	U
MERCURY	U	U	U	U	U	U	0.12	U	U	U	U	U	U	U
NICKEL	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	UMJ	2.4 BMJ	UMJ	UMJ	UMJ	U	U
POTASSSIUM	1170.0	1460	1480	1520	1190	1500	1220	U	U	1200	1190	1050	U	U
SELENIUM	0.15 B	UW	UW	0.13 B	0.26 B	0.23 B	0.32 B	UWJ	UWJ	0.24 B	UW	0.21 B	U	U
SILVER	U	U	U	U	U	U	U	U	U	U	U	0.58 B	U	U
SODIUM	56.2 B	79.4 B	80.4 B	70.9 B	58.0 B	91.8 B	93.8 B	25.2 B	23.5 B	85.1 B	73.6 B	64.9 B	873 B	845
THALLIUM	0.29 B	0.31 B	U	UW	U	UW	U	U	U	U	0.27 B	U	U	U
VANADIUM	3.6B	4.8 B	4.5 B	4.9 B	4.1 B	6.0	5.7	1.9 B	2.8 B	6.3	3.7 B	4.8 B	U	U
ZINC	R	R	R	R	R	R	R	R	R	R	R	R	224	10.3
% SOLIDS	88.2	89.7	90.6	90.2	88.4	85.1	87.0	93.8	94.6	85.2	85.3	88.5		

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FIGURE 1
SITE LOCATION MAP
DEREWAL CHEMICAL CO. SITE
KINGWOOD TOWNSHIP, NJ



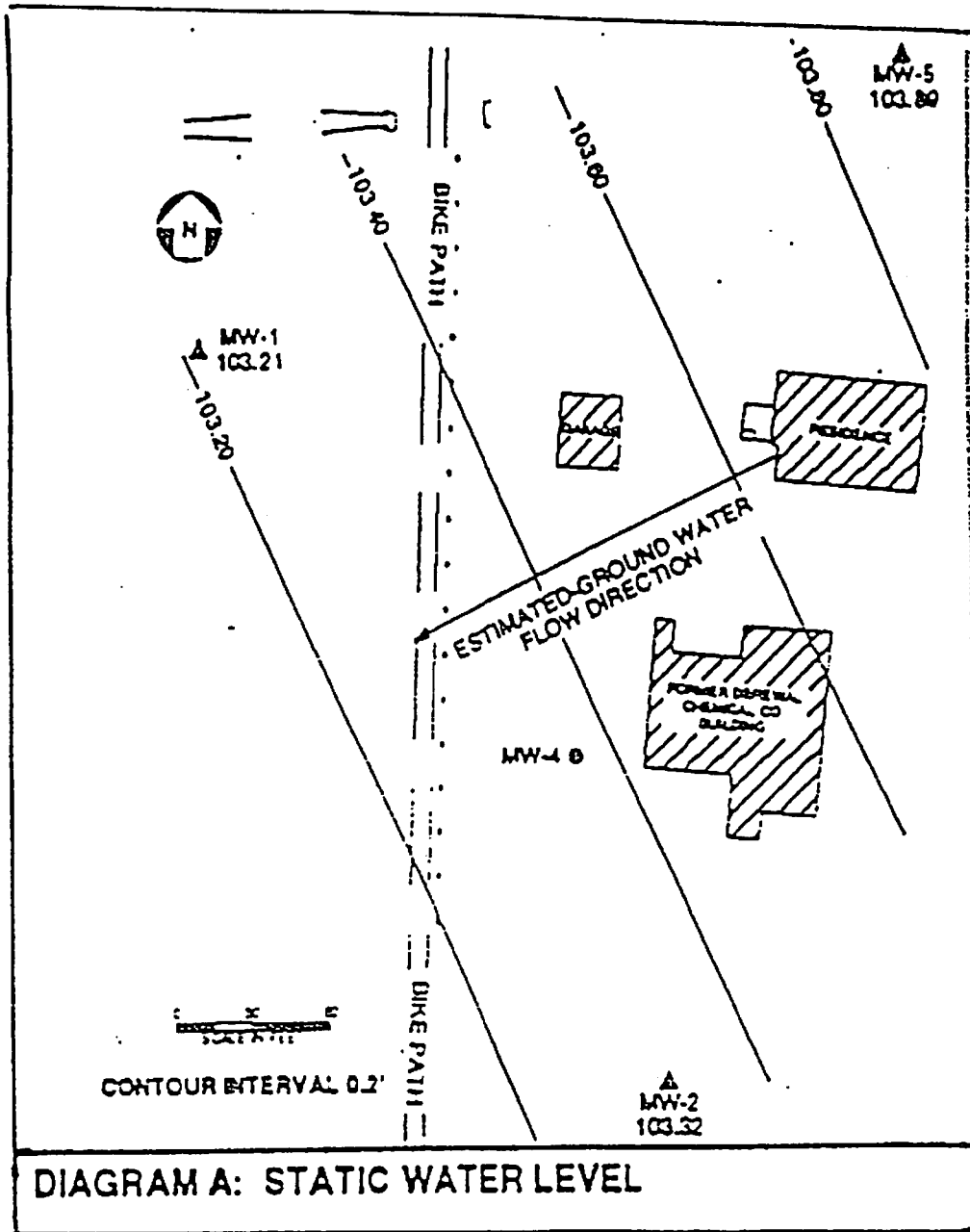
ADAPTED FROM MAP PREPARED FOR COM
FEDERAL PROGRAMS CORPS., JUNE 1969



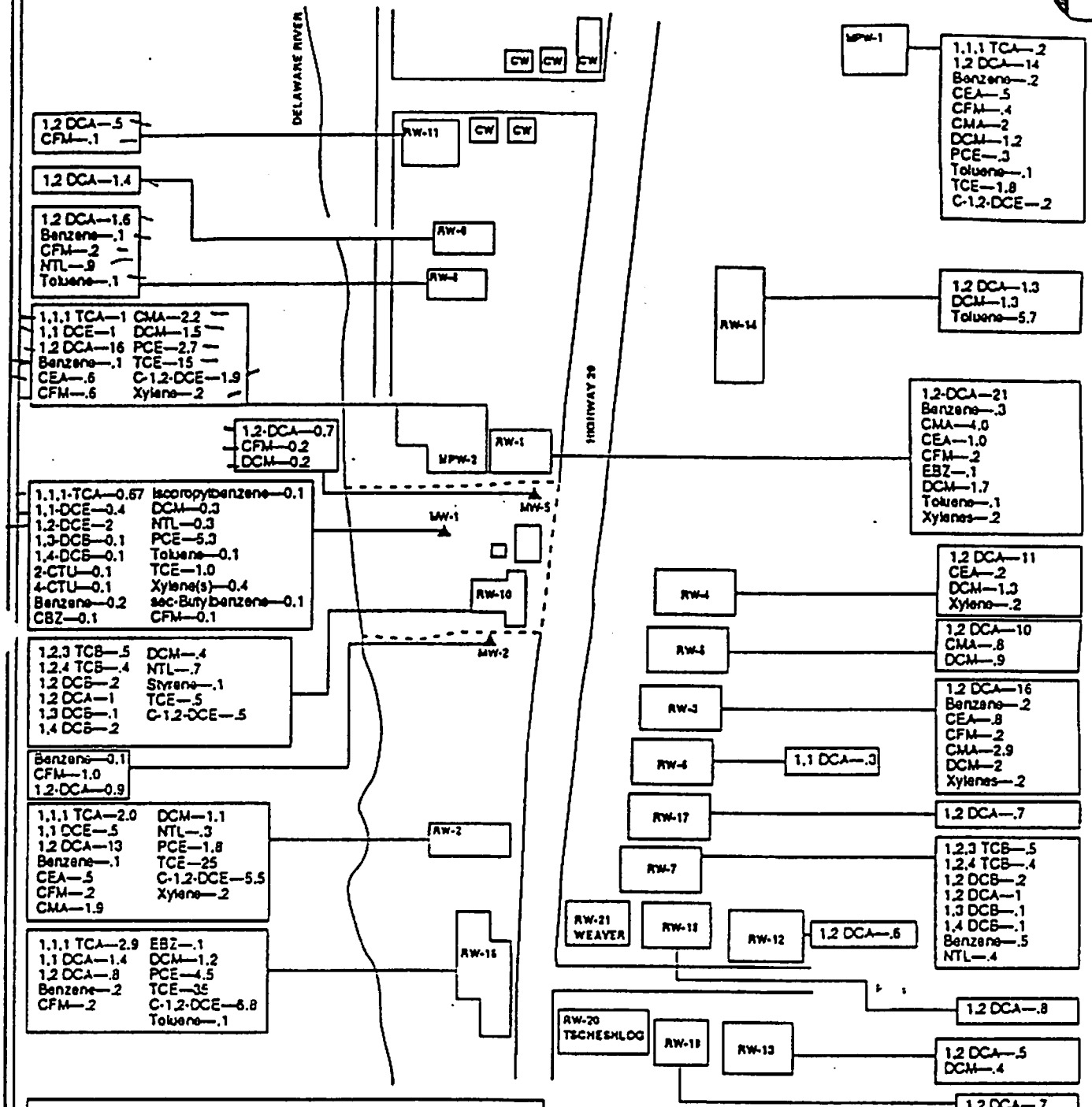
LAW ENVIRONMENTAL, INC.
GOVERNMENT SERVICES DIVISION

1500.53

FIGURE 2
 CONTOURED WATER LEVELS IN DEEP AQUIFER
 DEREWAL CHEMICAL COMPANY SITE
 KINGWOOD TOWNSHIP, NJ



ORGANIC COMPOUNDS DETECTED IN OFF-SITE WELLS DEREWAL CHEMICAL COMPANY SITE KINGWOOD TOWNSHIP, NJ



CHEMICAL LEGEND	
1,2-DCA—Dichloroethane	NTL—Naphthalene
PCE—Tetrachloroethane	TCE—Trichloroethane
TCB—Trichlorobenzene	C-1,2-DCE—C-1,2-Dichloroethane
DCM—Dichloromethane	1,1 DCA—1,1 Dichloroethane
CMA—Chloromethane	1,2,3-TCB—1,2,3 Trichlorobenzene
CEA—Chloroethane	1,2,4-TCB—1,2,4 Trichlorobenzene
CFM—Chloroform	1,2 DCB—1,2 Dichlorobenzene
EBZ—Ethylbenzene	1,3 DCB—1,3 Dichlorobenzene
DCM—Dichloromethane (methylene chloride)	1,4 DCB—1,4 Dichlorobenzene
1,1,1 TCA—1,1,1, Trichloroethane	2-CTU—2-Chlorotoluene
1,1 DCE—1,1 Dichloroethane	4-CTU—4-Chlorotoluene
CMA—Chloromethane	CBZ—Chlorobenzene

LEGEND

- RW—STRUCTURE WITH RESIDENTIAL WELL
- MPW—STRUCTURE WITH MUNICIPAL WELL
- MW—MONITORING WELL
- CW—STRUCTURE WITH CITY WATER
- ▲ —SITE BOUNDARY
- NOT TO SCALE
- ALL UNITS IN UoL (PPB)



LAW ENVIRONMENTAL, INC.
GOVERNMENT SERVICES DIVISION

FIGURE 4
CONTOURED WATER LEVELS IN DEEP AQUIFER
DEREWAL CHEMICAL COMPANY SITE
KINGWOOD TOWNSHIP, NJ

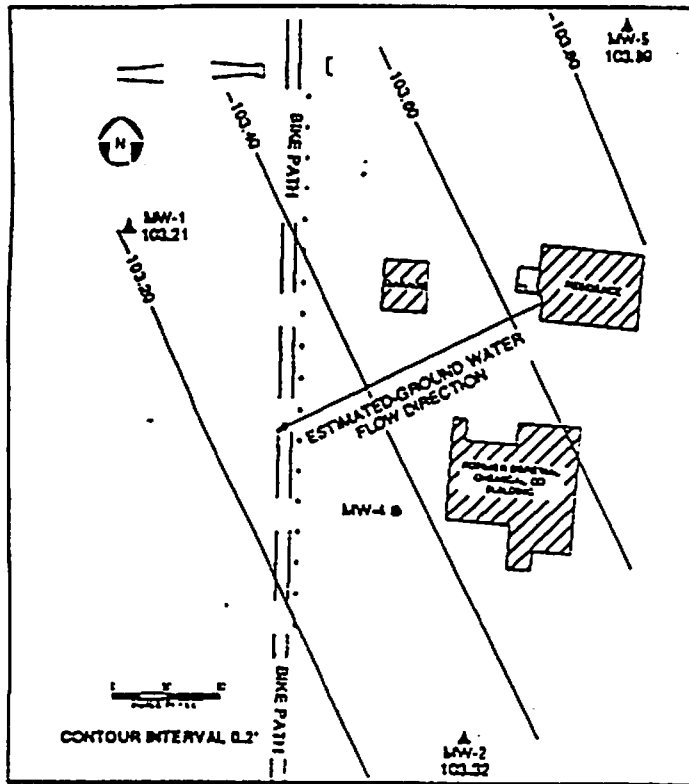


DIAGRAM A: STATIC WATER LEVEL

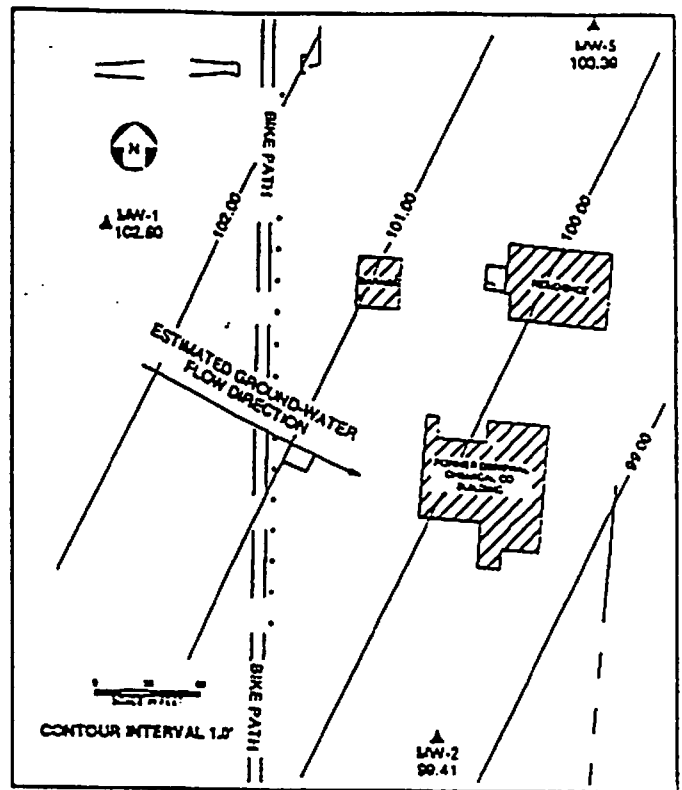


DIAGRAM B: HIG WELL PUMPING

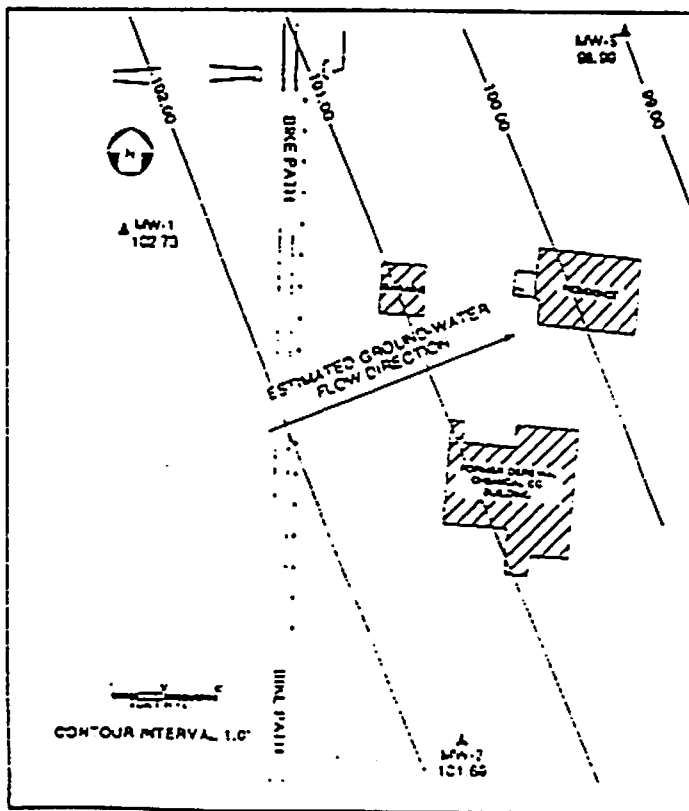


DIAGRAM C: TRENTON WELL PUMPING

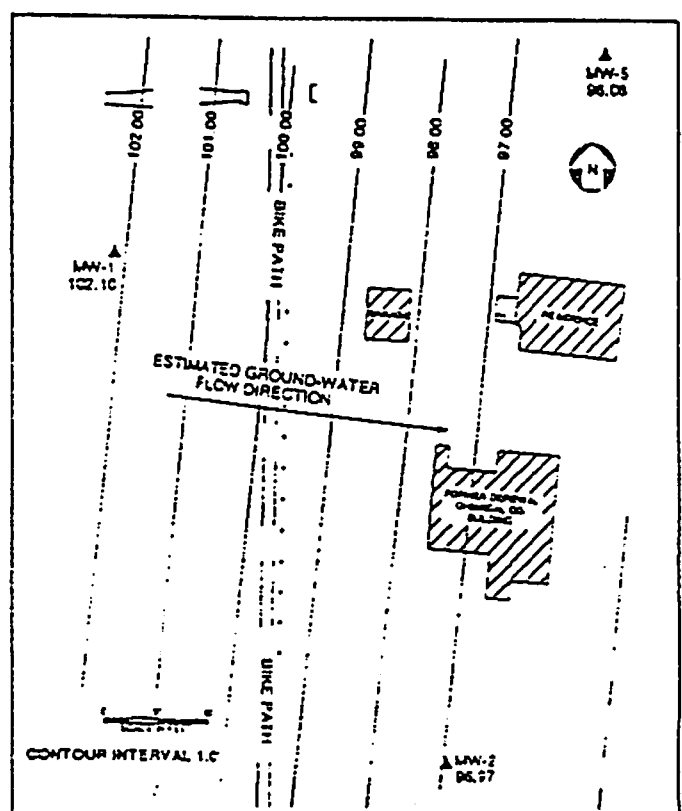


DIAGRAM D: HIG AND TRENTON WELLS PUMPING