SUMMARY

The Varsol Spill (Varsol) National Priorities List (NPL) Site is located in Miami, Dade County, Florida. The site is located at the Miami International Airport. Although the varsol-like contaminant from the spill can no longer be identified in the groundwater, it is believed that the contamination from the spill has contributed to the regional volatile organic compound (VOC) groundwater contamination present in the Biscayne Aquifer. The Record of Decision for Varsol alone, signed March 1985 mandated a no action alternative. However, a study of the Biscayne Aquifer (which included Varsol) conducted to determine the extent of the regional VOC contamination recommended air stripping towers to remove the contamination present in the groundwater. The project for the Biscayne Aquifer is currently in the design phase.

BACKGROUND

A. SITE DESCRIPTION

The Varsol NPL Site is located in Miami, Dade County, Florida. Varsol is located at the Miami International Airport. A large underground leak of a varsol-like substance was found in 1970, at the Eastern Airlines maintenance base in the northeast section of the airport. It was estimated that 1.6 million gallons of the substance had been released.

All recent sampling results of the aquifer for varsol-like compounds were negative. Oils and greases, although specifically sampled for, were not detected in the monitoring wells near the airport. It has been assumed that the contamination, which is known to have been present in the early 1970's, has become part of the elevated background VOC contamination present in the Biscayne Aquifer.

The Biscayne Aquifer, which lies 1 to 5 feet below the site, has a regional VOC contamination problem. In an attempt to determine the extent of the contamination of the aquifer, a study was conducted by the Environmental Protection Agency of four sites in the Miami area. These sites were the Northwest 58th Street Landfill, the Miami Drum Services, the Unsewered Industrial Area (Towns of Medley and Hialeah Gardens), and the Miami International Airport. This study also included four municipal wellfields which are: Medley Wellfield, Miami Springs Wellfield (just to the north of the airport), Preston Wellfield, and Northwest Wellfield.

The chosen alternative for Varsol is the no action alternative. It is believed that the contamination from the Varsol spill can no longer be distinguished from background VOC contamination in the aquifer and can best be addressed with regional groundwater clean-up.

The recommended alternative described in the Biscayne Aquifer Phase III report includes the construction of two pre-treatment systems. The Hialeah system will treat the water from the Upper Miami Springs Wellfield. During peak demand periods, raw water from the Lower Miami Springs Wellfield will be added to that from the Upper Miami Springs Wellfield. This is only to occur if the concentration of contamination in the resulting water is below contaminant assessment criteria. The Preston pretreatment system will treat the water from the Preston Wellfield. The treated water will then be combined with the pre-treated water from the Northwest Wellfield.

B. SITE VISIT

ATSDR has not made a site visit to date.

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

A. ON-SITE CONTAMINATION AND OFF-SITE CONTAMINATION

As stated previously, the contamination from the varsol spill no longer exists in a definitive form. Any remaining contamination from the spill

may be contributing to the background VOC contamination in the Biscayne Aquifer in the area near the Miami International Airport. No specific data exists on the contribution from Varsol to the regional groundwater contamination. A detailed discussion of the VOC contamination present in the Biscayne Aquifer is beyond the scope of this Health Assessment.

B. PHYSICAL HAZARDS

There do not appear to be any physical hazards present at this site.

DEMOGRAPHICS OF POPULATION NEAR SITE

The spill was located on the north side of the airport. Immediately north of the airport on the north side of 36th street, is a densely populated area. The population within a 3-mile radius is 10,000 people. The number or type of sensitive populations present is unknown. The well nearest to the site is located in the Lower Miami Springs Wellfield approximately 2,000 feet from the site.

EVALUATION

A. SITE CHARACTERIZATION (DATA NEEDS AND EVALUATION)

1. Environmental Media

The information reviewed by ATSDR did not include sampling of soil, air, surface water, or biota. Since the groundwater results indicate that the varsol-like substance spilled approximately 20 years ago is not detectable in the groundwater which is 1 to 5 feet below ground surface, the sampling of these other media does not appear to be necessary for the characterization of this site.

2. Land Use and Demographics

The land use and demographic information provided to ATSDR was adequate.

3. Quality Assurance/Quality Control

Conclusions contained in this Health Assessment are based on the information received by ATSDR. The accuracy of these conclusions is determined by the availability and reliability of the data.

B. ENVIRONMENTAL PATHWAYS

Results from the groundwater sampling indicate that the contamination from the spill is no longer identifiable. Therefore, there appear to be no environmental pathways directly attributable to Varsol. However, the spill may have mixed with contaminants from other sources to contribute to the regional groundwater contamination. This regional groundwater contamination has migrated to and contaminated three Miami wellfields, the Upper and Lower Miami Springs Wellfield, the Medley Wellfield, and Preston Wellfield. The majority of the water used in the city is produced by the Northwest Wellfield which is not contaminated. The water produced by two

of the three contaminated wellfields is used to supplement the Northwest Wellfield in peak need periods (Medley Wellfield was closed permanently). The recommended alternative for the remediation of the Biscayne Aquifer discussed in the Background Section should remove the potential for further migration of groundwater contamination.

C. HUMAN EXPOSURE PATHWAYS

There are no apparent human exposure pathways directly related to Varsol. However, without continued remediation of the aquifer (treatment and institutional controls), ingestion, inhalation, and dermal contact with the contaminated groundwater is a potential human exposure pathway. VOC's have been detected in area wellfields at concentrations of health concern.

PUBLIC HEALTH IMPLICATIONS

The Varsol site, itself, is not of public health concern. However, in the interest of public health it is important to note that without continued remedial activity in this area, there is a potential public health threat to individuals exposed to VOC's through ingestion, inhalation, and dermal absorption of contamination from environmental media. Some VOC's are known to cause central nervous system depression at high concentrations. Also, some VOC's cause liver and kidney toxicity as well as damage to the pulmonary and hematopoietic systems. In addition, there is evidence that some VOC's are carcinogenic in laboratory animals.

CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Varsol Spill NPL Site is not of public health concern, however, the regional contamination of the Biscayne Aquifer (which Varsol may have contributed to) is of potential 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. As noted in the Environmental Pathways and Human Exposure Pathways Sections, human exposure to contaminated groundwater may have occurred in the past or may be occurring now. The action recommended as a result of the study of the Biscayne Aquifer will effectively preclude potential exposures to the contamination present in the groundwater.

B. RECOMMENDATION

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended, the Varsol Spill NPL Site, Miami, Dade County, Florida, has been evaluated for appropriate follow-up with respect to health effects studies. Although there are indications that human exposure to off-site contaminants may have occurred in the past, this site is not being considered for follow-up health studies at this time because the level and extent of possible human exposure to site chemicals has not been defined and it is unclear that current exposure is occurring.

PREPARERS OF REPORT

Environmental Reviewer: Susan L. Mueller, Environmental Health Specialist, Health Sciences Branch.

Regional Representative: Chuck Pietrosewicz, ATSDR Regional Representative, Region IV.

REFERENCES

1. Final Report, Phase II, Volume I and II, Biscayne Aquifer, Dade County, Florida, February 1984.

2. Final Report, Phase III, Biscayne Aquifer, Dade County, Florida, May 1985.

3. Record of Decision, Varsol Spill Site, Miami, Dade County, Florida, March 1985.

4. ATSDR File.

5. Casarett and Doull's Toxicology, The Basic Science of Poisons, Ed. 3, Curtis D. Klaassen, Ph.D. et al., Macmillan Publishing Company, New York, 1986.

APPENDIX

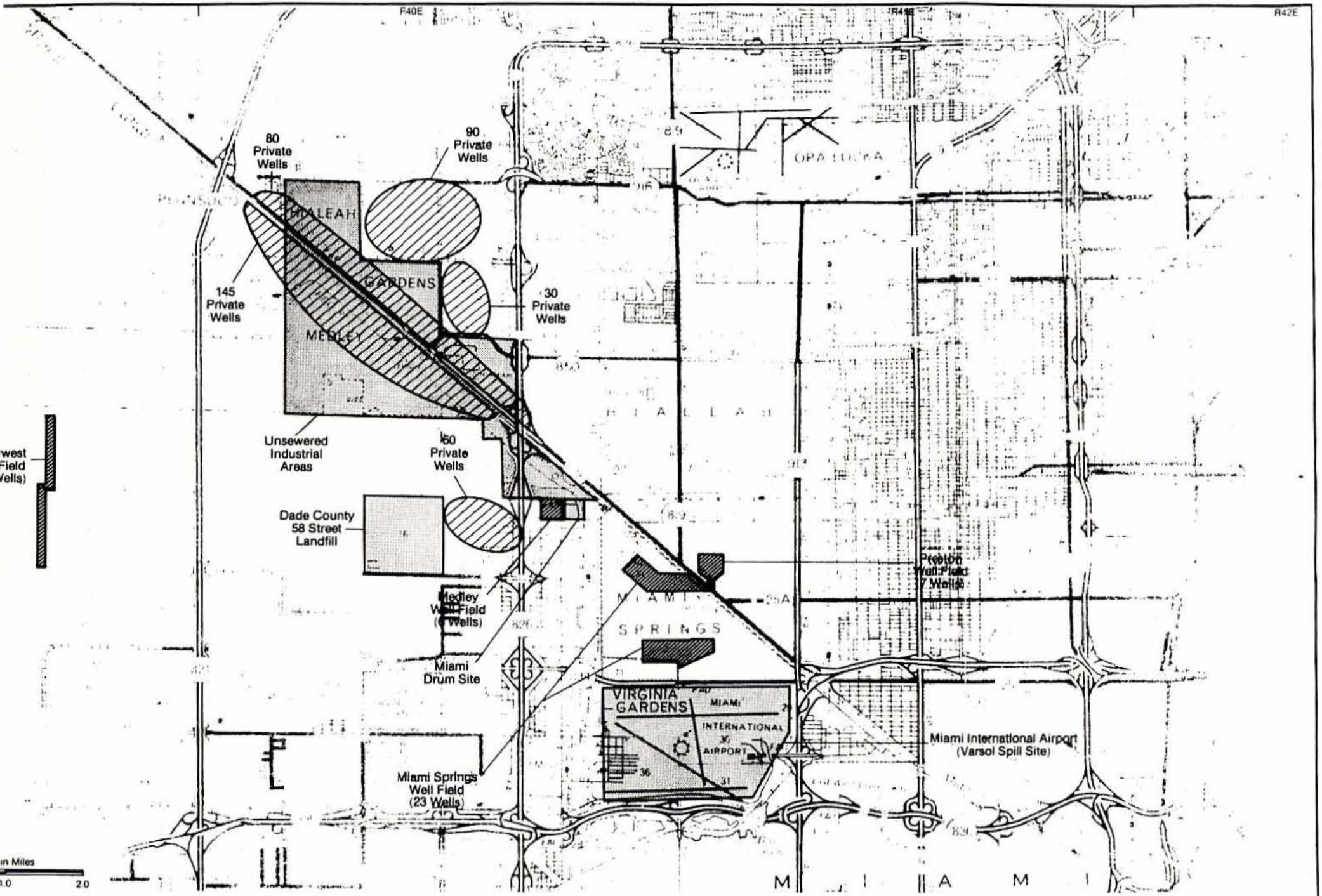

FIGURE 1-2.
Location of potential contamination sites, public well fields, and private wells in the study area.