REVISED

SITE REVIEW AND UPDATE

CONKLIN DUMPS

Broome County

Conklin, New York

CERCLIS NO. NYD981486947

March 1994

Prepared By

New York State Department of Health

Under a Cooperative Agreement With

U.S. Department of Health & Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

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.

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ATSDR and its Public Health Assessment

ATSDR is the Agency for Toxic Substances and Disease Registry, a federal public health agency. ATSDR is part of the Public Health Service in the U.S. Department of Health and Human Services. ATSDR is not a regulatory agency. Created by Superfund legislation in 1980, ATSDR's mission is to prevent or mitigate adverse human health effects and diminished quality of life resulting from exposure to hazardous substances in the environment.

The Superfund legislation directs ATSDR to undertake actions related to public health. One of these actions is to prepare public health assessments for all sites on or proposed for the Environmental Protection Agency's National Priorities List, including sites owned or operated by the federal government.

During ATSDR assessment process the author reviews available information on

- the levels (or concentrations) of the contaminants,
- how people are or might be exposed to the contaminants, and
- how exposure to the contaminants might affect people's health

to decide whether working or living nearby might affect peoples' health, and whether there are physical dangers to people, such as abandoned mine shafts, unsafe buildings, or other hazards.

Four types of information are used in an ATSDR assessment.

1) environmental data; information on the contaminants and how people could come in contact with them

2) demographic data; information on the ethnicity, socioeconomic status, age, and gender of people living around the site,

3) community health concerns; reports from the public about how the site affects their health or quality of life

4) health data; information on community-wide rates of illness, disease, and death compared with national and state rates

The sources of this information include the Environmental Protection Agency (EPA) and other federal agencies, state, and local environmental and health agencies, other institutions, organizations, or individuals, and people living around and working at the site and their representatives.

ATSDR health assessors visit the site to see what it is like, how it is used, whether people can walk onto the site, and who lives around the site. Throughout the assessment process, ATSDR health assessors meet with people working at and living around the site to discuss with them their health concerns or symptoms.

A team of ATSDR staff recommend actions based on the information available that will protect the health of the people living around the site. When actions are recommended, ATSDR works with other federal and state agencies to carry out those actions.

A public health action plan is part of the assessment. This plan describes the actions ATSDR and others will take at and around the site to prevent or stop exposure to site contaminants that could harm peoples' health. ATSDR may recommend public health actions that include these:

- restricting access to the site,
- monitoring,
- surveillance, registries, or health studies,
- environmental health education, and
- applied substance-specific research.

ATSDR shares its initial release of the assessment with EPA, other federal departments and agencies, and the state health department to ensure that it is clear, complete, and accurate. After addressing the comments on that release, ATSDR releases the assessment to the general public. ATSDR notifies the public through the media that the assessment is available at nearby libraries, the city hall, or another convenient place. Based on comments from the public, ATSDR may revise the assessment. ATSDR then releases the final assessment. That release includes in an appendix ATSDR's written response to the public's comments.

If conditions change at the site, or if new information or data become available after the assessment is completed, ATSDR will review the new information and determine what, if any, other public health action is needed.

For more information about ATSDR's assessment process and related programs please write to:

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SUMMARY OF BACKGROUND AND HISTORY

The Conklin Dumps site is in the Town of Conklin, Broome County, New York. The site consists of two inactive municipal landfills referred to as the upper and lower landfills (refer to Figure 1, Attachment A). The 37-acre site is 10 miles southeast of Binghamton, about 1 mile north of the Kirkwood Interchange of Route 81. The two landfill properties are divided by County Route 322, also known as Broome Parkway, which runs in a north-south direction. The site was listed on the National Priorities List (NPL) in March of 1989.

The lower landfill (28.5 acres) was operated by the Town of Conklin for the disposal of municipal refuse between 1964 and 1969 and received about 34,000 cubic yards of fill. The lower landfill is one-half mile east of the 100 year flood plain of the Susquehanna River and borders a New York State Department of Environmental Conservation (NYS DEC) designated wetland area, which surrounds a large portion of the lower landfill. A Delaware & Hudson railroad track borders the eastern perimeter of the lower landfill disposal area. Access to the lower landfill is by a dirt road on the east side of County Route 322.

The upper landfill was operated by the Town of Conklin for the disposal of municipal wastes from 1969 to 1975. Most of the wastes were disposed in unlined cells and reportedly, some industrial and chemical wastes may have also been disposed at the upper landfill. The upper landfill (8.5 acres) contains about 72,000 cubic yards of fill and is situated on a hillside on the west side of County Route 322, almost directly across the entrance to the lower landfill.

The population within one mile of the site is about 700. The closest residents live along Route 7, about one-quarter mile from the lower landfill boundary. The area immediately surrounding the upper and lower landfills is proposed to be developed as an industrial park. The potential for residential development of this area does not exist. The predominant land use in the Town of Conklin is agricultural, with other land either vacant or forested. The Town of Conklin public water supply well number (No.) 3 is 2,000 feet northeast of the site. Carlin Creek, north of the site, drains the area to several wetlands and may also contribute to local recharge of groundwater.

Since 1983, field investigations have been conducted both on- and off-site and have included sampling of leachate seeps, groundwater and drinking water supplies. In October 1983, the Broome County Health Department (BCHD) requested sampling of six private water supplies near the site.

Between 1983 and 1985 a two-phase hydrogeologic investigation was conducted for the Broome County Industrial Development Agency who were considering putting a corporate industrial park in the area. This investigation included sampling of 17 private drinking water supplies near the site (refer to Figure 2, Attachment A). All of the private wells were sampled in November 1983 for analyses of inorganic parameters, including metals. Twelve wells were sampled by the

consultant for the Broome County Industrial Development Agency in November 1983 for volatile organic compounds (VOCs) and 5 wells were sampled by the BCHD one year later (November 1984), for VOCs. Chloroform was detected in two private wells at 2.0 micrograms per liter (mcg/L); toluene and trichloroethene were detected in another well at 10 mcg/L and 9 mcg/L, respectively; trans-1,3-dichloropropene and trichloroethene were detected in a fourth well at 2 mcg/L and 4 mcg/L, respectively. Results of the metals analyses showed arsenic at levels ranging from 10 mcg/L to 110 mcg/L in 5 private wells; copper was detected in 7 wells at levels ranging from 10 mcg/L to 330 mcg/L; iron was detected in 9 wells at 10 mcg/L to 8,400 mcg/L; manganese was detected in 15 wells at levels ranging from 10 mcg/L to 1,900 mcg/L; zinc was detected in 14 wells at levels ranging from 10 mcg/L to 260 mcg/L. Groundwater from on-site monitoring wells at both the upper and lower landfill sites (refer to Figure 2, Attachment 1) contained elevated levels of several volatile organic compounds (VOCs). Leachate from seeps at both the upper and lower landfill contained VOCs.

In October 1984, the New York State Department of Health (NYS DOH) inspected the site and collected water samples from nearby private wells. One residential well contained trichloroethene at levels ranging from 2 micrograms per liter (mcg/L) to 5 mcg/L. Methylene chloride was also detected at 35 mcg/L; however, this finding was not confirmed in subsequent sampling. Based on these results and the 1984 sampling results, NYS DOH recommended that public water be extended to the residents downgradient of the site to eliminate exposure to contaminants in drinking water. Public water was extended to this area in 1985 as part of anticipated industrial and commercial development in the area. NYS DOH advised those residents near the site to be connected to public water to eliminate exposures to contaminants in drinking water.

In 1986, the BCHD released a report on cancer incidence in areas of the county where organic chemical contamination of a water supply had occurred or where there was a public perception that contamination had occurred. Cancer cases diagnosed during 1976-1980, as reported to the New York State Cancer Registry, were included in the study. One 1980 census tract in Conklin (127.01) was in the study because it corresponded to the area served by the Conklin public water supply Well #1. No statistically significant results or unexpected cancer rates were found ("Cancer Occurrence by Common Drinking Water Source - Broome County, NY: 1976-1980").

A work plan for a remedial investigation (RI) and feasibility study (FS) was submitted to the NYS DEC and field investigations were completed in June 1986. A consent order was signed in June 1987 and the initial RI report was submitted to the United States Environmental Protection Agency (US EPA) in 1988. The report was reviewed by the US EPA, NYS DOH and NYS DEC.

A preliminary health assessment was completed for the site in June 1989 by the NYS DOH through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The potential human exposure routes that were identified in the health assessment

included direct contact, inhalation and inadvertent ingestion of contaminants in leachate seeps, surface water and sediments. Exposure to site contaminants in groundwater via inhalation, ingestion and dermal contact were also identified as potential human exposure pathways, as groundwater from the aquifer beneath the site is used for both public and private drinking water supplies. The potential for soil vapors to migrate off-site was not evaluated as part of the preliminary health assessment as soil gas data were not available when the health assessment was prepared. Conclusions in the health assessment were that additional data were needed to develop a final health assessment for the site and that provision of a public water supply to residences with private water supplies near the site would eliminate the potential for exposure to contaminated groundwater. No specific conclusions were made in the preliminary health assessment about the degree of public health hazard posed by the site; however, based on the insufficient data available at the time when the health assessment was prepared, ATSDR considers this site to be an indeterminate public health hazard. Recommendations were to monitor groundwater contaminant migration and develop remedial alternatives for leachate and groundwater. No community health concerns were identified in the health assessment for the site.

A soil gas investigation was conducted at both the upper and lower landfills in the spring of 1990 to evaluate methane migration. Soil gas samples were collected along the site perimeters of both landfills at six inches below ground surface; methane was not detected at the site. A supplemental RI/FS was completed in the fall of 1990 and findings indicated that the majority of site-related contamination was directly downgradient of the upper landfill. Leachate samples from the upper landfill contained iron, manganese, cadmium, copper, trichloroethene, tetrachloroethene, 1,1-dichloroethane, 1,2-dichloroethane, ethylbenzene, benzene and ketones. Leachate from the lower landfill contained iron, manganese and benzene. Groundwater samples taken near the upper landfill had elevated concentrations of iron, manganese, sulfate, toluene, vinyl chloride, 1,1-dichloroethane, 1,2-dichloroethane, benzene, methylene chloride, 1,2-dichloropropane, methyl isobutyl ketone, and chloroethane. Some compounds in the groundwater and leachate exceeded New York State drinking water or groundwater standards. Chloroethane, 1,2-dichloropropane, and xylene have been detected at concentrations above these standards at the upper landfill. Xylene was detected at 7 mcg/L, just above the standard of 5 mcg/L. The concentration of 1,2-dichloropropane was 9 mcg/L in 1990 and has been decreasing over the past three years and was just recently detected slightly above the standard of 5 mcg/L. Chloroethane was detected at a concentration of 68 mcg/L in 1990. Sediment and surface water from Carlin Creek and the adjacent wetlands did not contain elevated levels of site contaminants.

In 1990, NYS DOH learned that some residences near the site were not connected to public water. The BCHD sampled 4 residential wells near the site and the private well serving the Conklin Town Hall in March 1991. The residential water supply samples were analyzed for VOCs, lead and arsenic and the water supply sample for the Town Hall was analyzed for VOCs. No VOCs were detected in any of the samples collected. Arsenic was detected at 16 mcg/L and 25 mcg/L in two residential water supplies. These concentrations are below the NYS DOH

maximum contaminant level of 50 mcg/L for arsenic in drinking water. The BCHD recommended to each homeowner whose drinking water was sampled, that they connect their homes to the existing public water supply serving the area.

A public meeting was held by US EPA on February 25, 1991 to present findings of the RI and the proposed plan for site remediation. Community concerns at this meeting were about the remedial alternatives, their costs and implementability of the proposed alternative. No specific or community health concerns were identified. A record of decision (ROD) was signed on March 29, 1991. The major components of the selected remedy included:

- Containment through installation of caps over both landfills, with leachate collection and treatment and discharge to the Binghamton - Johnson City Joint Sewage Treatment Plant. If the treatment plant is not available, leachate will be treated on site using air stripping and discharged to Carlin Creek.

- Fencing, deed restrictions, groundwater monitoring and five year reviews.

In June 1992, the US EPA modified the final remedy selected in the March 1991 ROD. The proposed modification was to consolidate waste materials and soil at the lower landfill with the upper landfill. The proposed modification was supported by NYS DEC, NYS DOH and US EPA and included the following provisions:

- Excavation of materials from the lower landfill, with transport and consolidation on the upper landfill;

- Installation of a cap over the consolidated material.

- Leachate collection with on-site treatment via air stripping and discharge of the treated effluent to Carlin Creek; and

- Groundwater monitoring, fencing, deed restrictions and five year reviews.

A public meeting was held on July 14, 1992 at the Conklin Town Hall by US EPA and representatives of NYS DOH and NYS DEC were present. The purpose of this meeting was to present the proposed modification to the remedy. The primary community concerns related to operation and maintenance costs of the modified remedy. No specific or community health concerns were raised at this meeting.

In January 1993, Phase I remediation activities were initiated at the site. The Phase I activities included excavation, transport and placement of wastes from the lower landfill to the upper landfill. Air sampling occurred during Phase I remediation and included particulate monitoring and sampling of volatile emissions along the site perimeter. Air monitoring did not detect site-

related contaminants during excavation of the lower landfill and the lack of emissions was attributed to the extremely cold temperatures and the advanced decomposed state of the buried wastes. As a result, air sampling was suspended along the site perimeter. However, real-time monitoring of particulates and volatile emissions in the work zone continued with a contingency to reinitiate air sampling along the site boundary if changes were observed in the waste composition and detectable levels of VOCs or particulates were recorded in the work zone. No additional air monitoring was required along the site perimeter of the lower landfill during Phase I remediation.

Excavation of the lower landfill and consolidation with the upper landfill was completed in July 1993. The Town of Conklin will complete remediation activities at the lower landfill which will include regrading of the lower landfill area using clean fill, as needed. These activities are expected to be completed by September 1993. Phase II remediation activities at the upper landfill are expected to be initiated by September 1993. Phase II activities will include installation of a leachate collection system and landfill cap on the upper landfill and these activities are expected to be completed by November 1993.

Past public health concerns included potential human exposure to contaminated leachate seeps, surface water and sediments, via direct contact, inhalation and incidental ingestion and the possibility of contaminants migrating to basements of nearby homes in soil gas and groundwater. Inhalation of volatile contaminants and contaminated air particulates during site remediation activities was a public health concern; however, monitoring of air quality during excavation of the lower landfill did not detect site-related contaminants. Exposure to contaminants in groundwater was also a human exposure pathway of concern because public and private water supplies obtain water from the same aquifer which has shown evidence of contamination near the upper landfill site. Because of this concern the NYS DOH recommended extension of the Conklin public water supply to homes along Route 7 and nearby subdivisions. There are no known past or present community health concerns for this site.

PUBLIC HEALTH IMPLICATIONS

For an undetermined period of time, some residents living near the Conklin Dumps site have been exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in their private well drinking water. Trichloroethene and trans-1,3-dichloropropene cause cancer in laboratory animals exposed to high levels over their lifetimes (ATSDR, 1991b, 1992). Whether or not these compounds cause cancer in humans is not known. Studies of people exposed to high levels of arsenic in drinking water in foreign countries suggest an association between arsenic ingestion and skin cancer. To date, however, studies in the United States of exposure to arsenic in drinking water have not shown an increased risk of cancer (ATSDR, 1991a). Toluene, trichloroethene and trans-1,3-dichloropropene produce noncarcinogenic toxic effects (primarily damage to the nervous system, liver, and kidneys) at exposures several orders of magnitude greater than those estimated for past and present exposures to the highest levels

of these contaminants in private water supply wells. Chronic (long-term) exposure to arsenic is associated with effects on the skin (growths on hands and feet and darkening of the skin), with nerve, liver, and blood vessel damage, and with behavioral problems including learning and hearing deficiencies (ATSDR, 1991a). Arsenic and manganese produce these effects at exposures less than one order of magnitude greater than those estimated for past and present exposures to the highest levels of these metal contaminants found in private water supply wells. Chemicals that cause cancer or other adverse effects in humans and/or animals after high levels of exposure may also pose a risk to humans who are exposed to lower levels over long periods of time.

Operation of the lower Conklin Dumps landfill began in 1964. Residents with private water supply wells may have been exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in their drinking water for an unknown period of time since then. Although many affected and potentially affected residences were connected to the Town of Conklin public water supply in 1985, some residents may still be using contaminated private water supply wells. Although exposure to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese could be up to about 29 years, the levels of contamination prior to 1983 are not known. Based on the results of animal studies and limited sampling of the private water supply wells, it is estimated that the increased risk of developing cancer could be high from past and continuing exposure to arsenic in drinking water, and low from past and continuing exposure to trichloroethene and trans-1,3-dichloropropene. Although the risks of noncarcinogenic effects from past and continuing exposures to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese are not completely understood, the existing data suggest that they could be high for arsenic and manganese, and minimal for toluene, trichloroethene, and trans-1,3-dichloropropene in private water supply wells.

CURRENT CONDITIONS OF SITE

On July 14, 1992, Claudine Jones Rafferty of the NYS DOH met with representatives of the US EPA, the NYS DEC, the Town of Conklin and their consultant at the lower landfill site. The lower landfill is accessed by a dirt road, south of County Road 322. Vehicular access is prevented by a locked gate. The area surrounding the lower landfill is densely vegetated, which limits unauthorized entry to the site. The dirt road passes two large water bodies on the southern portion of the site and extends to the embankment of the Delaware and Hudson Railroad tracks, which run along the eastern perimeter of the lower landfill site. A large horseshoe-shaped berm extends along the southern, eastern and northern site boundaries and is about the limit of waste disposal. The berm is approximately fifteen feet high. The upper landfill is situated north of County Road 322, near the top of a hillside, across from the access road to the lower landfill. Due to the extremely dense vegetation, the upper landfill property was not walked. A site visit was not conducted for preparation of the 1989 health assessment and a comparison of how site conditions have changed cannot be made.

The conclusions of the 1989 health assessment were complete based upon information available at that time. Remediation of the lower landfill is essentially complete; the lower landfill wastes have been excavated and consolidated with the upper landfill. Remediation of the upper landfill is underway and expected to be completed in the summer of 1994. Once these remediation activities are completed, many of the past potential human exposure pathways to site contaminants will be eliminated.

CURRENT ISSUES

The only past public health concern which needs additional follow-up is to review any new monitoring data related to the quality of drinking water in nearby and downgradient private drinking water supplies. If the industrial park is developed and water supply wells are installed, then potable water use should be evaluated to ensure that groundwater extraction does not pick up residual contamination from the site. The BCHD occasionally receives queries from nearby residents and individuals wishing to purchase or build housing near the site about possible off-site impacts from the Conklin Dumps site, including surface water runoff and groundwater contamination. Currently, it is not known how many residents with contaminated water supplies, if any, are still using their private wells for potable water. Presently, there are no known community health concerns associated with this site.

CONCLUSIONS

The site posed a public health hazard in the past because some residents near the site were exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in drinking water at concentrations that may cause adverse health effects. Human exposure to these contaminants occurred via ingestion, inhalation, and dermal contact for a period of up to 29 years. The extension of the public water supply to affected and potentially affected residences in 1985 eliminated exposures for those residents who connected to the public water supply. Currently, the site poses an indeterminate public health hazard. Some residents who did not connect their homes to the public water supply, may still be exposed to contaminated water from continued use of their private wells. Currently, it is not known how many residents with contaminated water supplies, if any, are still using their private wells.

The conclusions from the 1989 health assessment were valid based on the information available at the time when the health assessment was prepared.

- As recommended in the 1989 health assessment, the remedy for the site includes installation of a leachate collection trench with on-site treatment via air stripping prior to discharge to Carlin Creek.

- As recommended in the 1989 health assessment, the physical boundaries of the original landfills were clearly delineated to develop remediation goals for the site.

- Additional data have been collected since the 1989 health assessment to characterize contamination and to develop the final remedy for the site.

- The final remedy for the site does not provide for collection and treatment of groundwater; however, it does provide for routine monitoring of groundwater quality at the site.

- The potential for commercial development of the immediate area still exists.

- Past investigations of methane in soil gas did not detect methane at elevated levels or migrating off-site.

- Past sampling of nearby residential wells has shown elevated levels of VOCs and metals in private drinking water supplies along Route 7. Past exposures to these contaminants have been evaluated as part of this site review and update and public water is available to residential areas along Route 7.

- Past sampling of surface water and sediment in Carlin Creek did not detect site contaminants.

- Routine monitoring of the Town of Conklin No. 3 public water supply well, 2,000 feet northeast of the site, has not detected contaminants from the site.

- There are some homes near the site which are not connected to public water.

- Sampling and air monitoring activities during Phase I remediation activities did not detect site contaminants.

- Leachate collection at the upper landfill will reduce the potential for further contamination of groundwater underlying the site.

- Elevated levels of VOCs have been detected in groundwater near the upper and lower landfill sites in the past.

- The potential for exposure to contaminants in leachate will be eliminated once the final remedy has been completed.

- Other than the proposed five year reviews and monitoring activities presented in the final ROD for the site, additional evaluation of the site is not needed at this time.

RECOMMENDATIONS

A public health assessment is not needed for the Conklin Dumps site. Past public health concerns have been addressed by the extension of the public water supply to residential areas along Route 7. However, homes near the site, where it is determined are not connected to public water supplies, should be sampled to determine current drinking water quality. Potential public health concerns will be addressed by the proposed remedy for the site which has been implemented and is expected to be completed in the summer of 1994.

The five year reviews should continue as planned and monitoring of groundwater quality at the downgradient site perimeter should occur in conjunction with long-term operation and maintenance of the final remedy. The groundwater monitoring data should be reviewed to determine the need for sampling downgradient residential wells near the site or any other appropriate follow-up public health actions.

If the industrial park is developed, water use should be evaluated, to ensure that pumping wells do not draw residual contamination from the site. In addition, construction activities should not adversely affect drainage at the site or the remedial measures.

The data and information developed in the Site Review and Update for the Conklin Dumps site in Conklin, Broome County, New York, has been reviewed by ATSDR's Health Activities Recommendations Panel (HARP) to determine appropriate follow-up actions. Because of past exposure to contaminated drinking water the panel recommended this site for follow-up health activities. Specifically, those persons exposed in the past should be considered for inclusion in the NYS DOH's registry being developed for VOC exposures from drinking contaminated water. The HARP also determined that community health education is needed. Specifically, the panel determined that residents and/or their physicians should be provided information regarding their past exposures. In addition, the panel determined that the NYS DOH should consider including this site in their update of cancer incidence in Broome County. No other follow-up activities were recommended by HARP at this time.

PUBLIC HEALTH ACTIONS

The Public Health Action Plan (PHAP) for the Conklin Dumps site contains a description of actions to be taken by ATSDR and/or the NYS DOH at and near the site, following completion of this Site Review and Update. For those actions already taken at the site, please refer to the Summary of Background and History section of this Site Review and Update. The purpose of the PHAP is to ensure that this Site Review and Update not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from past, present and/or future exposures to hazardous substances at or near the site. Included, is a commitment on the part of ATSDR and/or the NYS DOH to follow-up on this plan to ensure that it is implemented.

The public health actions planned for the Conklin Dumps site are as follows:

1. ATSDR and NYS DOH will coordinate with the appropriate environmental agencies to develop plans to implement the recommendations contained in this Site Review and Update.

2. ATSDR will provide an annual follow-up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this Site Review and Update, and will be provided to persons who request it.

3. NYS DOH is developing a registry of persons exposed to VOCs in drinking water. Residents who were exposed in the past to VOCs in drinking water, will be considered for inclusion to this registry.

4. NYS DOH will request that the 1986 study of cancer incidence conducted by the Broome County Health Department be updated through 1990 to determine whether the cancer incidence patterns seen for 1976-1980 are also found for 1981-1990.

5. NYS DOH will provide health education materials to those persons enrolled in the VOC registry. In addition, information will be provided to the registrant's physicians as indicated.

6. Through the NYS DOH, homes near the site, where it is determined are not connected to public water supplies, will be sampled to determine current drinking water quality. NYS DOH will provide homeowners, whose water supplies are sampled, with copies of the analytical results of their water sample as well as an explanation of the results.

ATSDR will re-evaluate and expand the Public Health Action Plan when needed. New environmental, toxicological, or 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 Conklin Dumps site was prepared by the New York State 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, RPB, 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

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ATTACHMENT 1

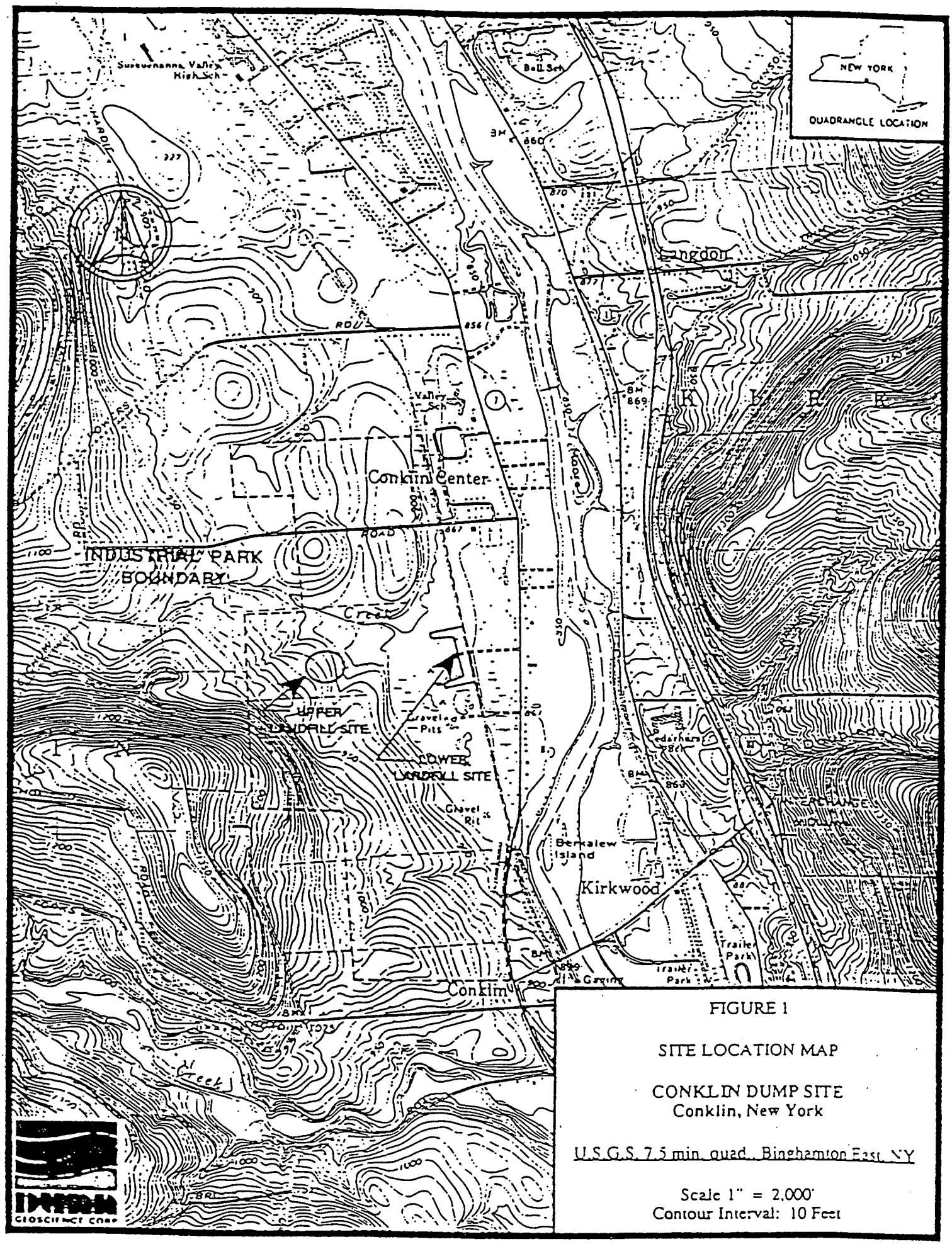


FIGURE 1

SITE LOCATION MAP

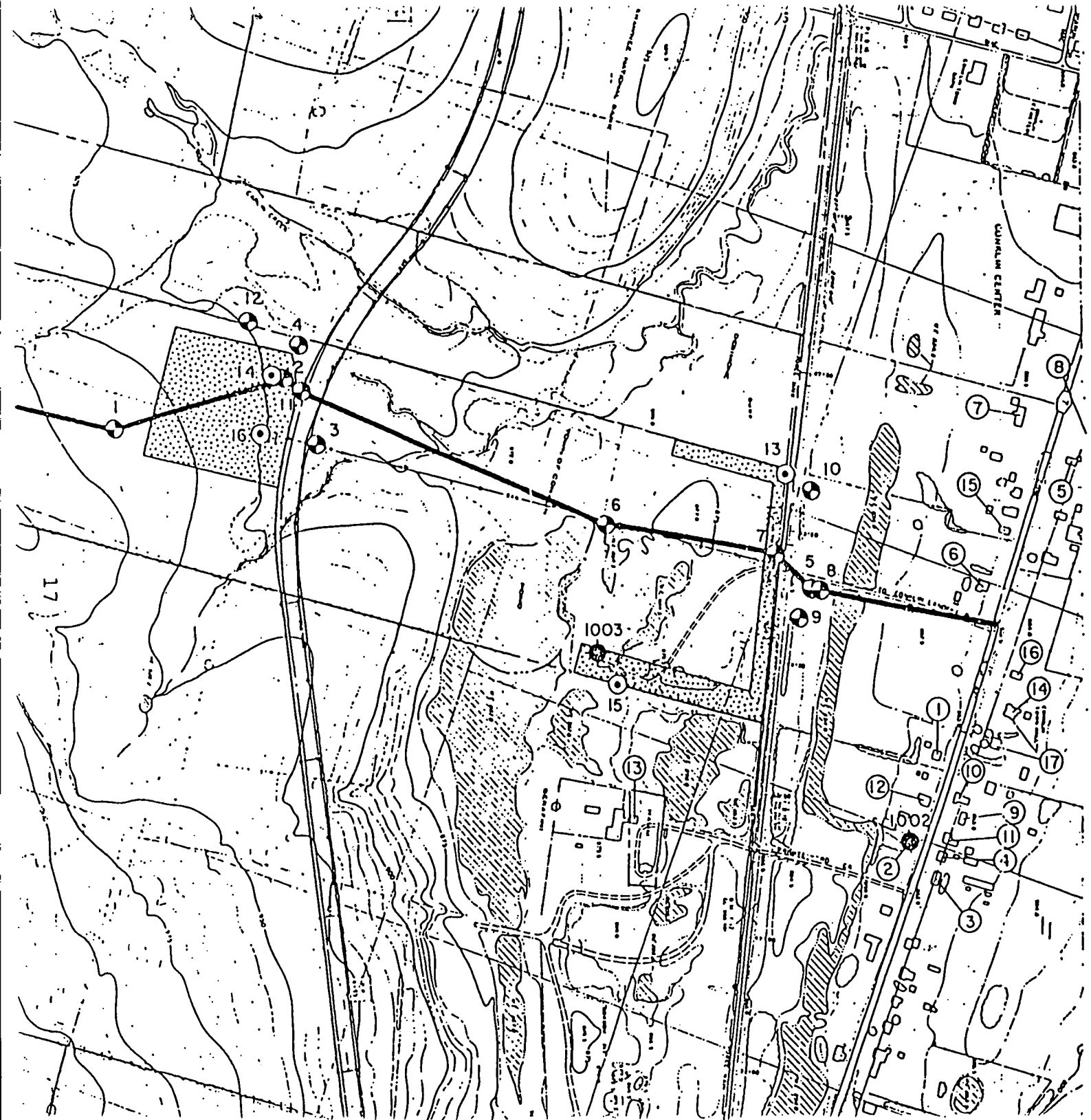
CONKLIN DUMP SITE
Conklin, New York

U.S.G.S. 7.5 min. quad., Binghamton East, NY

Scale 1" = 2,000'
Contour Interval: 10 Feet

Adapted from: Dunn Geoscience Engineering Co., P.C., January 1992

FIGURE 2



LEGEND

- GROUNDWATER MONITORING WI
- LEACHATE / METHANE GAS MONITORING WELL
- WELLS BY OTHERS
- LITHOLOGIC CROSS SECTION I
- AREAL EXTENT OF LAND FILL
- (5) HOMEOWNER WELL

BROOME COUNTY INDUSTRIAL DEVELOPMENT AGENCY

MONITORING WELL LOCATION MAP

SCALE IN FEET

O'BRIEN & GERE

Site Review And Update

CONKLIN DUMPS

CONKLIN, BROOME COUNTY, NEW YORK

CERCLIS NO. NYD981486947

SEPTEMBER 23, 1993

REVISED

MARCH 2, 1994

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 REVIEW AND UPDATE

CONKLIN DUMPS

CONKLIN, BROOME COUNTY, NEW YORK

CERCLIS NO. NYD981486947

Prepared by:

New York State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Conklin Dumps site is in the Town of Conklin, Broome County, New York. The site consists of two inactive municipal landfills referred to as the upper and lower landfills (refer to Figure 1, Attachment A). The 37-acre site is 10 miles southeast of Binghamton, about 1 mile north of the Kirkwood Interchange of Route 81. The two landfill properties are divided by County Route 322, also known as Broome Parkway, which runs in a north-south direction. The site was listed on the National Priorities List (NPL) in March of 1989.

The lower landfill (28.5 acres) was operated by the Town of Conklin for the disposal of municipal refuse between 1964 and 1969 and received about 34,000 cubic yards of fill. The lower landfill is one-half mile east of the 100 year flood plain of the Susquehanna River and borders a New York State Department of Environmental Conservation (NYS DEC) designated wetland area, which surrounds a large portion of the lower landfill. A Delaware & Hudson railroad track borders the eastern perimeter of the lower landfill disposal area. Access to the lower landfill is by a dirt road on the east side of County Route 322.

The upper landfill was operated by the Town of Conklin for the disposal of municipal wastes from 1969 to 1975. Most of the wastes were disposed in unlined cells and reportedly, some industrial and chemical wastes may have also been disposed at the upper landfill. The upper landfill (8.5 acres) contains about 72,000 cubic yards of fill and is situated on a hillside on the west side of County Route 322, almost directly across the entrance to the lower landfill.

The population within one mile of the site is about 700. The closest residents live along Route 7, about one-quarter mile from the lower landfill boundary. The area immediately surrounding the upper and lower landfills is proposed to be developed as an industrial park. The potential for residential development of this area does not exist. The predominant land use in the Town of Conklin is agricultural, with other land either vacant or forested. The Town of Conklin public water supply well number (No.) 3 is 2,000 feet northeast of the site. Carlin Creek, north of the site, drains the area to several wetlands and may also contribute to local recharge of groundwater.

Since 1983, field investigations have been conducted both on- and off-site and have included sampling of leachate seeps, groundwater and drinking water supplies. In October 1983, the Broome County Health Department (BCHD) requested sampling of six private water supplies near the site.

Between 1983 and 1985 a two-phase hydrogeologic investigation was conducted for the Broome County Industrial Development Agency who were considering putting a corporate industrial park in the area. This investigation included sampling of 17 private drinking water supplies near the site (refer to Figure 2, Attachment A). All of the private wells were sampled in November 1983 for analyses of inorganic parameters, including metals. Twelve wells were sampled by the

consultant for the Broome County Industrial Development Agency in November 1983 for volatile organic compounds (VOCs) and 5 wells were sampled by the BCHD one year later (November 1984), for VOCs. Chloroform was detected in two private wells at 2.0 micrograms per liter (mcg/L); toluene and trichloroethene were detected in another well at 10 mcg/L and 9 mcg/L, respectively; trans-1,3-dichloropropene and trichloroethene were detected in a fourth well at 2 mcg/L and 4 mcg/L, respectively. Results of the metals analyses showed arsenic at levels ranging from 10 mcg/L to 110 mcg/L in 5 private wells; copper was detected in 7 wells at levels ranging from 10 mcg/L to 330 mcg/L; iron was detected in 9 wells at 10 mcg/L to 8,400 mcg/L; manganese was detected in 15 wells at levels ranging from 10 mcg/L to 1,900 mcg/L; zinc was detected in 14 wells at levels ranging from 10 mcg/L to 260 mcg/L. Groundwater from on-site monitoring wells at both the upper and lower landfill sites (refer to Figure 2, Attachment 1) contained elevated levels of several volatile organic compounds (VOCs). Leachate from seeps at both the upper and lower landfill contained VOCs.

In October 1984, the New York State Department of Health (NYS DOH) inspected the site and collected water samples from nearby private wells. One residential well contained trichloroethene at levels ranging from 2 micrograms per liter (mcg/L) to 5 mcg/L. Methylene chloride was also detected at 35 mcg/L; however, this finding was not confirmed in subsequent sampling. Based on these results and the 1984 sampling results, NYS DOH recommended that public water be extended to the residents downgradient of the site to eliminate exposure to contaminants in drinking water. Public water was extended to this area in 1985 as part of anticipated industrial and commercial development in the area. NYS DOH advised those residents near the site to be connected to public water to eliminate exposures to contaminants in drinking water.

In 1986, the BCHD released a report on cancer incidence in areas of the county where organic chemical contamination of a water supply had occurred or where there was a public perception that contamination had occurred. Cancer cases diagnosed during 1976-1980, as reported to the New York State Cancer Registry, were included in the study. One 1980 census tract in Conklin (127.01) was in the study because it corresponded to the area served by the Conklin public water supply Well #1. No statistically significant results or unexpected cancer rates were found ("Cancer Occurrence by Common Drinking Water Source - Broome County, NY: 1976-1980").

A work plan for a remedial investigation (RI) and feasibility study (FS) was submitted to the NYS DEC and field investigations were completed in June 1986. A consent order was signed in June 1987 and the initial RI report was submitted to the United States Environmental Protection Agency (US EPA) in 1988. The report was reviewed by the US EPA, NYS DOH and NYS DEC.

A preliminary health assessment was completed for the site in June 1989 by the NYS DOH through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The potential human exposure routes that were identified in the health assessment

included direct contact, inhalation and inadvertent ingestion of contaminants in leachate seeps, surface water and sediments. Exposure to site contaminants in groundwater via inhalation, ingestion and dermal contact were also identified as potential human exposure pathways, as groundwater from the aquifer beneath the site is used for both public and private drinking water supplies. The potential for soil vapors to migrate off-site was not evaluated as part of the preliminary health assessment as soil gas data were not available when the health assessment was prepared. Conclusions in the health assessment were that additional data were needed to develop a final health assessment for the site and that provision of a public water supply to residences with private water supplies near the site would eliminate the potential for exposure to contaminated groundwater. No specific conclusions were made in the preliminary health assessment about the degree of public health hazard posed by the site; however, based on the insufficient data available at the time when the health assessment was prepared, ATSDR considers this site to be an indeterminate public health hazard. Recommendations were to monitor groundwater contaminant migration and develop remedial alternatives for leachate and groundwater. No community health concerns were identified in the health assessment for the site.

A soil gas investigation was conducted at both the upper and lower landfills in the spring of 1990 to evaluate methane migration. Soil gas samples were collected along the site perimeters of both landfills at six inches below ground surface; methane was not detected at the site. A supplemental RI/FS was completed in the fall of 1990 and findings indicated that the majority of site-related contamination was directly downgradient of the upper landfill. Leachate samples from the upper landfill contained iron, manganese, cadmium, copper, trichloroethene, tetrachloroethene, 1,1-dichloroethane, 1,2-dichloroethane, ethylbenzene, benzene and ketones. Leachate from the lower landfill contained iron, manganese and benzene. Groundwater samples taken near the upper landfill had elevated concentrations of iron, manganese, sulfate, toluene, vinyl chloride, 1,1-dichloroethane, 1,2-dichloroethane, benzene, methylene chloride, 1,2-dichloropropane, methyl isobutyl ketone, and chloroethane. Some compounds in the groundwater and leachate exceeded New York State drinking water or groundwater standards. Chloroethane, 1,2-dichloropropane, and xylene have been detected at concentrations above these standards at the upper landfill. Xylene was detected at 7 mcg/L, just above the standard of 5 mcg/L. The concentration of 1,2-dichloropropane was 9 mcg/L in 1990 and has been decreasing over the past three years and was just recently detected slightly above the standard of 5 mcg/L. Chloroethane was detected at a concentration of 68 mcg/L in 1990. Sediment and surface water from Carlin Creek and the adjacent wetlands did not contain elevated levels of site contaminants.

In 1990, NYS DOH learned that some residences near the site were not connected to public water. The BCHD sampled 4 residential wells near the site and the private well serving the Conklin Town Hall in March 1991. The residential water supply samples were analyzed for VOCs, lead and arsenic and the water supply sample for the Town Hall was analyzed for VOCs. No VOCs were detected in any of the samples collected. Arsenic was detected at 16 mcg/L and 25 mcg/L in two residential water supplies. These concentrations are below the NYS DOH

maximum contaminant level of 50 mcg/L for arsenic in drinking water. The BCHD recommended to each homeowner whose drinking water was sampled, that they connect their homes to the existing public water supply serving the area.

A public meeting was held by US EPA on February 25, 1991 to present findings of the RI and the proposed plan for site remediation. Community concerns at this meeting were about the remedial alternatives, their costs and implementability of the proposed alternative. No specific or community health concerns were identified. A record of decision (ROD) was signed on March 29, 1991. The major components of the selected remedy included:

- Containment through installation of caps over both landfills, with leachate collection and treatment and discharge to the Binghamton - Johnson City Joint Sewage Treatment Plant. If the treatment plant is not available, leachate will be treated on site using air stripping and discharged to Carlin Creek.

- Fencing, deed restrictions, groundwater monitoring and five year reviews.

In June 1992, the US EPA modified the final remedy selected in the March 1991 ROD. The proposed modification was to consolidate waste materials and soil at the lower landfill with the upper landfill. The proposed modification was supported by NYS DEC, NYS DOH and US EPA and included the following provisions:

- Excavation of materials from the lower landfill, with transport and consolidation on the upper landfill;

- Installation of a cap over the consolidated material.

- Leachate collection with on-site treatment via air stripping and discharge of the treated effluent to Carlin Creek; and

- Groundwater monitoring, fencing, deed restrictions and five year reviews.

A public meeting was held on July 14, 1992 at the Conklin Town Hall by US EPA and representatives of NYS DOH and NYS DEC were present. The purpose of this meeting was to present the proposed modification to the remedy. The primary community concerns related to operation and maintenance costs of the modified remedy. No specific or community health concerns were raised at this meeting.

In January 1993, Phase I remediation activities were initiated at the site. The Phase I activities included excavation, transport and placement of wastes from the lower landfill to the upper landfill. Air sampling occurred during Phase I remediation and included particulate monitoring and sampling of volatile emissions along the site perimeter. Air monitoring did not detect site-

related contaminants during excavation of the lower landfill and the lack of emissions was attributed to the extremely cold temperatures and the advanced decomposed state of the buried wastes. As a result, air sampling was suspended along the site perimeter. However, real-time monitoring of particulates and volatile emissions in the work zone continued with a contingency to reinitiate air sampling along the site boundary if changes were observed in the waste composition and detectable levels of VOCs or particulates were recorded in the work zone. No additional air monitoring was required along the site perimeter of the lower landfill during Phase I remediation.

Excavation of the lower landfill and consolidation with the upper landfill was completed in July 1993. The Town of Conklin will complete remediation activities at the lower landfill which will include regrading of the lower landfill area using clean fill, as needed. These activities are expected to be completed by September 1993. Phase II remediation activities at the upper landfill are expected to be initiated by September 1993. Phase II activities will include installation of a leachate collection system and landfill cap on the upper landfill and these activities are expected to be completed by November 1993.

Past public health concerns included potential human exposure to contaminated leachate seeps, surface water and sediments, via direct contact, inhalation and incidental ingestion and the possibility of contaminants migrating to basements of nearby homes in soil gas and groundwater. Inhalation of volatile contaminants and contaminated air particulates during site remediation activities was a public health concern; however, monitoring of air quality during excavation of the lower landfill did not detect site-related contaminants. Exposure to contaminants in groundwater was also a human exposure pathway of concern because public and private water supplies obtain water from the same aquifer which has shown evidence of contamination near the upper landfill site. Because of this concern the NYS DOH recommended extension of the Conklin public water supply to homes along Route 7 and nearby subdivisions. There are no known past or present community health concerns for this site.

PUBLIC HEALTH IMPLICATIONS

For an undetermined period of time, some residents living near the Conklin Dumps site have been exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in their private well drinking water. Trichloroethene and trans-1,3-dichloropropene cause cancer in laboratory animals exposed to high levels over their lifetimes (ATSDR, 1991b, 1992). Whether or not these compounds cause cancer in humans is not known. Studies of people exposed to high levels of arsenic in drinking water in foreign countries suggest an association between arsenic ingestion and skin cancer. To date, however, studies in the United States of exposure to arsenic in drinking water have not shown an increased risk of cancer (ATSDR, 1991a). Toluene, trichloroethene and trans-1,3-dichloropropene produce noncarcinogenic toxic effects (primarily damage to the nervous system, liver, and kidneys) at exposures several orders of magnitude greater than those estimated for past and present exposures to the highest levels

of these contaminants in private water supply wells. Chronic (long-term) exposure to arsenic is associated with effects on the skin (growths on hands and feet and darkening of the skin), with nerve, liver, and blood vessel damage, and with behavioral problems including learning and hearing deficiencies (ATSDR, 1991a). Arsenic and manganese produce these effects at exposures less than one order of magnitude greater than those estimated for past and present exposures to the highest levels of these metal contaminants found in private water supply wells. Chemicals that cause cancer or other adverse effects in humans and/or animals after high levels of exposure may also pose a risk to humans who are exposed to lower levels over long periods of time.

Operation of the lower Conklin Dumps landfill began in 1964. Residents with private water supply wells may have been exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in their drinking water for an unknown period of time since then. Although many affected and potentially affected residences were connected to the Town of Conklin public water supply in 1985, some residents may still be using contaminated private water supply wells. Although exposure to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese could be up to about 29 years, the levels of contamination prior to 1983 are not known. Based on the results of animal studies and limited sampling of the private water supply wells, it is estimated that the increased risk of developing cancer could be high from past and continuing exposure to arsenic in drinking water, and low from past and continuing exposure to trichloroethene and trans-1,3-dichloropropene. Although the risks of noncarcinogenic effects from past and continuing exposures to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese are not completely understood, the existing data suggest that they could be high for arsenic and manganese, and minimal for toluene, trichloroethene, and trans-1,3-dichloropropene in private water supply wells.

CURRENT CONDITIONS OF SITE

On July 14, 1992, Claudine Jones Rafferty of the NYS DOH met with representatives of the US EPA, the NYS DEC, the Town of Conklin and their consultant at the lower landfill site. The lower landfill is accessed by a dirt road, south of County Road 322. Vehicular access is prevented by a locked gate. The area surrounding the lower landfill is densely vegetated, which limits unauthorized entry to the site. The dirt road passes two large water bodies on the southern portion of the site and extends to the embankment of the Delaware and Hudson Railroad tracks, which run along the eastern perimeter of the lower landfill site. A large horseshoe-shaped berm extends along the southern, eastern and northern site boundaries and is about the limit of waste disposal. The berm is approximately fifteen feet high. The upper landfill is situated north of County Road 322, near the top of a hillside, across from the access road to the lower landfill. Due to the extremely dense vegetation, the upper landfill property was not walked. A site visit was not conducted for preparation of the 1989 health assessment and a comparison of how site conditions have changed cannot be made.

The conclusions of the 1989 health assessment were complete based upon information available at that time. Remediation of the lower landfill is essentially complete; the lower landfill wastes have been excavated and consolidated with the upper landfill. Remediation of the upper landfill is underway and expected to be completed in the summer of 1994. Once these remediation activities are completed, many of the past potential human exposure pathways to site contaminants will be eliminated.

CURRENT ISSUES

The only past public health concern which needs additional follow-up is to review any new monitoring data related to the quality of drinking water in nearby and downgradient private drinking water supplies. If the industrial park is developed and water supply wells are installed, then potable water use should be evaluated to ensure that groundwater extraction does not pick up residual contamination from the site. The BCHD occasionally receives queries from nearby residents and individuals wishing to purchase or build housing near the site about possible off-site impacts from the Conklin Dumps site, including surface water runoff and groundwater contamination. Currently, it is not known how many residents with contaminated water supplies, if any, are still using their private wells for potable water. Presently, there are no known community health concerns associated with this site.

CONCLUSIONS

The site posed a public health hazard in the past because some residents near the site were exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in drinking water at concentrations that may cause adverse health effects. Human exposure to these contaminants occurred via ingestion, inhalation, and dermal contact for a period of up to 29 years. The extension of the public water supply to affected and potentially affected residences in 1985 eliminated exposures for those residents who connected to the public water supply. Currently, the site poses an indeterminate public health hazard. Some residents who did not connect their homes to the public water supply, may still be exposed to contaminated water from continued use of their private wells. Currently, it is not known how many residents with contaminated water supplies, if any, are still using their private wells.

The conclusions from the 1989 health assessment were valid based on the information available at the time when the health assessment was prepared.

- As recommended in the 1989 health assessment, the remedy for the site includes installation of a leachate collection trench with on-site treatment via air stripping prior to discharge to Carlin Creek.

- As recommended in the 1989 health assessment, the physical boundaries of the original landfills were clearly delineated to develop remediation goals for the site.

- Additional data have been collected since the 1989 health assessment to characterize contamination and to develop the final remedy for the site.

- The final remedy for the site does not provide for collection and treatment of groundwater; however, it does provide for routine monitoring of groundwater quality at the site.

- The potential for commercial development of the immediate area still exists.

- Past investigations of methane in soil gas did not detect methane at elevated levels or migrating off-site.

- Past sampling of nearby residential wells has shown elevated levels of VOCs and metals in private drinking water supplies along Route 7. Past exposures to these contaminants have been evaluated as part of this site review and update and public water is available to residential areas along Route 7.

- Past sampling of surface water and sediment in Carlin Creek did not detect site contaminants.

- Routine monitoring of the Town of Conklin No. 3 public water supply well, 2,000 feet northeast of the site, has not detected contaminants from the site.

- There are some homes near the site which are not connected to public water.

- Sampling and air monitoring activities during Phase I remediation activities did not detect site contaminants.

- Leachate collection at the upper landfill will reduce the potential for further contamination of groundwater underlying the site.

- Elevated levels of VOCs have been detected in groundwater near the upper and lower landfill sites in the past.

- The potential for exposure to contaminants in leachate will be eliminated once the final remedy has been completed.

- Other than the proposed five year reviews and monitoring activities presented in the final ROD for the site, additional evaluation of the site is not needed at this time.

RECOMMENDATIONS

A public health assessment is not needed for the Conklin Dumps site. Past public health concerns have been addressed by the extension of the public water supply to residential areas along Route 7. However, homes near the site, where it is determined are not connected to public water supplies, should be sampled to determine current drinking water quality. Potential public health concerns will be addressed by the proposed remedy for the site which has been implemented and is expected to be completed in the summer of 1994.

The five year reviews should continue as planned and monitoring of groundwater quality at the downgradient site perimeter should occur in conjunction with long-term operation and maintenance of the final remedy. The groundwater monitoring data should be reviewed to determine the need for sampling downgradient residential wells near the site or any other appropriate follow-up public health actions.

If the industrial park is developed, water use should be evaluated, to ensure that pumping wells do not draw residual contamination from the site. In addition, construction activities should not adversely affect drainage at the site or the remedial measures.

The data and information developed in the Site Review and Update for the Conklin Dumps site in Conklin, Broome County, New York, has been reviewed by ATSDR's Health Activities Recommendations Panel (HARP) to determine appropriate follow-up actions. Because of past exposure to contaminated drinking water the panel recommended this site for follow-up health activities. Specifically, those persons exposed in the past should be considered for inclusion in the NYS DOH's registry being developed for VOC exposures from drinking contaminated water. The HARP also determined that community health education is needed. Specifically, the panel determined that residents and/or their physicians should be provided information regarding their past exposures. In addition, the panel determined that the NYS DOH should consider including this site in their update of cancer incidence in Broome County. No other follow-up activities were recommended by HARP at this time.

PUBLIC HEALTH ACTIONS

The Public Health Action Plan (PHAP) for the Conklin Dumps site contains a description of actions to be taken by ATSDR and/or the NYS DOH at and near the site, following completion of this Site Review and Update. For those actions already taken at the site, please refer to the Summary of Background and History section of this Site Review and Update. The purpose of the PHAP is to ensure that this Site Review and Update not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from past, present and/or future exposures to hazardous substances at or near the site. Included, is a commitment on the part of ATSDR and/or the NYS DOH to follow-up on this plan to ensure that it is implemented.

The public health actions planned for the Conklin Dumps site are as follows:

1. ATSDR and NYS DOH will coordinate with the appropriate environmental agencies to develop plans to implement the recommendations contained in this Site Review and Update.

2. ATSDR will provide an annual follow-up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this Site Review and Update, and will be provided to persons who request it.

3. NYS DOH is developing a registry of persons exposed to VOCs in drinking water. Residents who were exposed in the past to VOCs in drinking water, will be considered for inclusion to this registry.

4. NYS DOH will request that the 1986 study of cancer incidence conducted by the Broome County Health Department be updated through 1990 to determine whether the cancer incidence patterns seen for 1976-1980 are also found for 1981-1990.

5. NYS DOH will provide health education materials to those persons enrolled in the VOC registry. In addition, information will be provided to the registrant's physicians as indicated.

6. Through the NYS DOH, homes near the site, where it is determined are not connected to public water supplies, will be sampled to determine current drinking water quality. NYS DOH will provide homeowners, whose water supplies are sampled, with copies of the analytical results of their water sample as well as an explanation of the results.

ATSDR will re-evaluate and expand the Public Health Action Plan when needed. New environmental, toxicological, or 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 Conklin Dumps site was prepared by the New York State 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.

Gregory V. Ulirsh
Technical Project Officer, SPS, RPB, 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

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ATTACHMENT 1

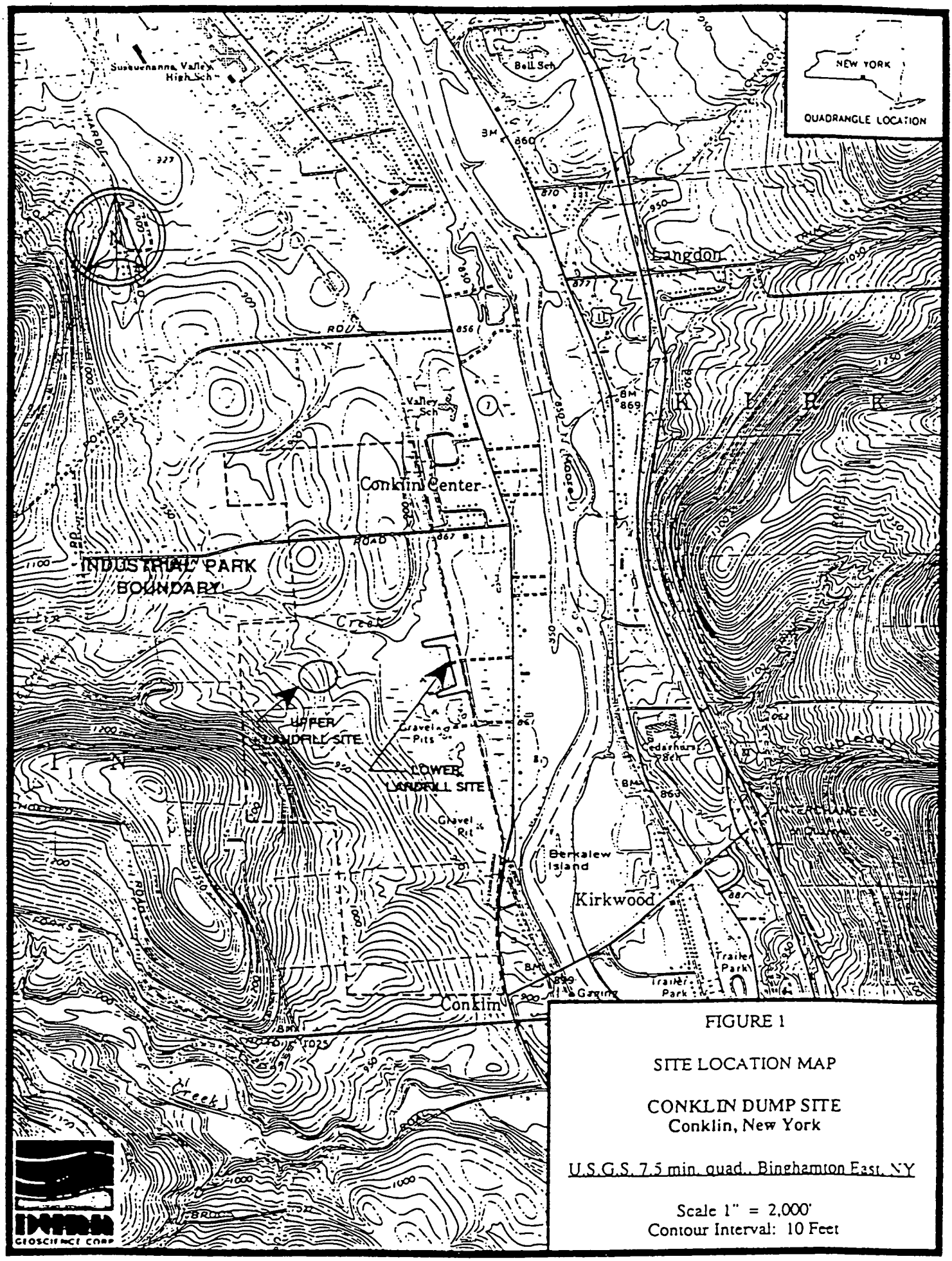

FIGURE 1

SITE LOCATION MAP

CONKLIN DUMP SITE
Conklin, New York

U.S.G.S. 7.5 min. quad., Binghamton East, NY

Scale 1" = 2,000'
Contour Interval: 10 Feet

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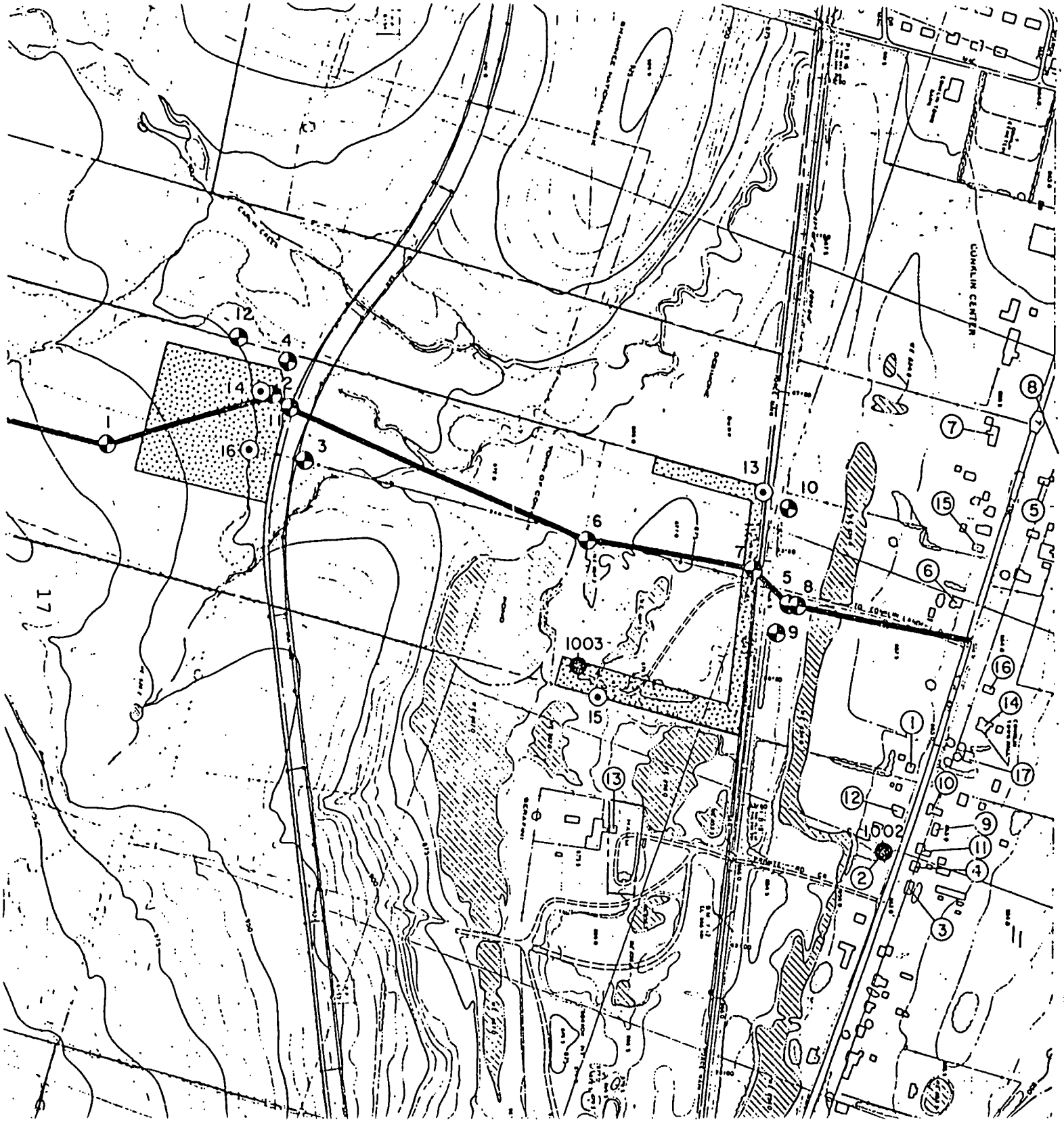

FIGURE 2

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Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Conklin Dumps site is in the Town of Conklin, Broome County, New York. The site consists of two inactive municipal landfills referred to as the upper and lower landfills (refer to Figure 1, Attachment A). The 37-acre site is 10 miles southeast of Binghamton, about 1 mile north of the Kirkwood Interchange of Route 81. The two landfill properties are divided by County Route 322, also known as Broome Parkway, which runs in a north-south direction. The site was listed on the National Priorities List (NPL) in March of 1989.

The lower landfill (28.5 acres) was operated by the Town of Conklin for the disposal of municipal refuse between 1964 and 1969 and received about 34,000 cubic yards of fill. The lower landfill is one-half mile east of the 100 year flood plain of the Susquehanna River and borders a New York State Department of Environmental Conservation (NYS DEC) designated wetland area, which surrounds a large portion of the lower landfill. A Delaware & Hudson railroad track borders the eastern perimeter of the lower landfill disposal area. Access to the lower landfill is by a dirt road on the east side of County Route 322.

The upper landfill was operated by the Town of Conklin for the disposal of municipal wastes from 1969 to 1975. Most of the wastes were disposed in unlined cells and reportedly, some industrial and chemical wastes may have also been disposed at the upper landfill. The upper landfill (8.5 acres) contains about 72,000 cubic yards of fill and is situated on a hillside on the west side of County Route 322, almost directly across the entrance to the lower landfill.

The population within one mile of the site is about 700. The closest residents live along Route 7, about one-quarter mile from the lower landfill boundary. The area immediately surrounding the upper and lower landfills is proposed to be developed as an industrial park. The potential for residential development of this area does not exist. The predominant land use in the Town of Conklin is agricultural, with other land either vacant or forested. The Town of Conklin public water supply well number (No.) 3 is 2,000 feet northeast of the site. Carlin Creek, north of the site, drains the area to several wetlands and may also contribute to local recharge of groundwater.

Since 1983, field investigations have been conducted both on- and off-site and have included sampling of leachate seeps, groundwater and drinking water supplies. In October 1983, the Broome County Health Department (BCHD) requested sampling of six private water supplies near the site.

Between 1983 and 1985 a two-phase hydrogeologic investigation was conducted for the Broome County Industrial Development Agency who were considering putting a corporate industrial park in the area. This investigation included sampling of 17 private drinking water supplies near the site (refer to Figure 2, Attachment A). All of the private wells were sampled in November 1983 for analyses of inorganic parameters, including metals. Twelve wells were sampled by the

consultant for the Broome County Industrial Development Agency in November 1983 for volatile organic compounds (VOCs) and 5 wells were sampled by the BCHD one year later (November 1984), for VOCs. Chloroform was detected in two private wells at 2.0 micrograms per liter (mcg/L); toluene and trichloroethene were detected in another well at 10 mcg/L and 9 mcg/L, respectively; trans-1,3-dichloropropene and trichloroethene were detected in a fourth well at 2 mcg/L and 4 mcg/L, respectively. Results of the metals analyses showed arsenic at levels ranging from 10 mcg/L to 110 mcg/L in 5 private wells; copper was detected in 7 wells at levels ranging from 10 mcg/L to 330 mcg/L; iron was detected in 9 wells at 10 mcg/L to 8,400 mcg/L; manganese was detected in 15 wells at levels ranging from 10 mcg/L to 1,900 mcg/L; zinc was detected in 14 wells at levels ranging from 10 mcg/L to 260 mcg/L. Groundwater from on-site monitoring wells at both the upper and lower landfill sites (refer to Figure 2, Attachment 1) contained elevated levels of several volatile organic compounds (VOCs). Leachate from seeps at both the upper and lower landfill contained VOCs.

In October 1984, the New York State Department of Health (NYS DOH) inspected the site and collected water samples from nearby private wells. One residential well contained trichloroethene at levels ranging from 2 micrograms per liter (mcg/L) to 5 mcg/L. Methylene chloride was also detected at 35 mcg/L; however, this finding was not confirmed in subsequent sampling. Based on these results and the 1984 sampling results, NYS DOH recommended that public water be extended to the residents downgradient of the site to eliminate exposure to contaminants in drinking water. Public water was extended to this area in 1985 as part of anticipated industrial and commercial development in the area. NYS DOH advised those residents near the site to be connected to public water to eliminate exposures to contaminants in drinking water.

In 1986, the BCHD released a report on cancer incidence in areas of the county where organic chemical contamination of a water supply had occurred or where there was a public perception that contamination had occurred. Cancer cases diagnosed during 1976-1980, as reported to the New York State Cancer Registry, were included in the study. One 1980 census tract in Conklin (127.01) was in the study because it corresponded to the area served by the Conklin public water supply Well #1. No statistically significant results or unexpected cancer rates were found ("Cancer Occurrence by Common Drinking Water Source - Broome County, NY: 1976-1980").

A work plan for a remedial investigation (RI) and feasibility study (FS) was submitted to the NYS DEC and field investigations were completed in June 1986. A consent order was signed in June 1987 and the initial RI report was submitted to the United States Environmental Protection Agency (US EPA) in 1988. The report was reviewed by the US EPA, NYS DOH and NYS DEC.

A preliminary health assessment was completed for the site in June 1989 by the NYS DOH through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The potential human exposure routes that were identified in the health assessment

included direct contact, inhalation and inadvertent ingestion of contaminants in leachate seeps, surface water and sediments. Exposure to site contaminants in groundwater via inhalation, ingestion and dermal contact were also identified as potential human exposure pathways, as groundwater from the aquifer beneath the site is used for both public and private drinking water supplies. The potential for soil vapors to migrate off-site was not evaluated as part of the preliminary health assessment as soil gas data were not available when the health assessment was prepared. Conclusions in the health assessment were that additional data were needed to develop a final health assessment for the site and that provision of a public water supply to residences with private water supplies near the site would eliminate the potential for exposure to contaminated groundwater. No specific conclusions were made in the preliminary health assessment about the degree of public health hazard posed by the site; however, based on the insufficient data available at the time when the health assessment was prepared, ATSDR considers this site to be an indeterminate public health hazard. Recommendations were to monitor groundwater contaminant migration and develop remedial alternatives for leachate and groundwater. No community health concerns were identified in the health assessment for the site.

A soil gas investigation was conducted at both the upper and lower landfills in the spring of 1990 to evaluate methane migration. Soil gas samples were collected along the site perimeters of both landfills at six inches below ground surface; methane was not detected at the site. A supplemental RI/FS was completed in the fall of 1990 and findings indicated that the majority of site-related contamination was directly downgradient of the upper landfill. Leachate samples from the upper landfill contained iron, manganese, cadmium, copper, trichloroethene, tetrachloroethene, 1,1-dichloroethane, 1,2-dichloroethane, ethylbenzene, benzene and ketones. Leachate from the lower landfill contained iron, manganese and benzene. Groundwater samples taken near the upper landfill had elevated concentrations of iron, manganese, sulfate, toluene, vinyl chloride, 1,1-dichloroethane, 1,2-dichloroethane, benzene, methylene chloride, 1,2-dichloropropane, methyl isobutyl ketone, and chloroethane. Some compounds in the groundwater and leachate exceeded New York State drinking water or groundwater standards. Chloroethane, 1,2-dichloropropane, and xylene have been detected at concentrations above these standards at the upper landfill. Xylene was detected at 7 mcg/L, just above the standard of 5 mcg/L. The concentration of 1,2-dichloropropane was 9 mcg/L in 1990 and has been decreasing over the past three years and was just recently detected slightly above the standard of 5 mcg/L. Chloroethane was detected at a concentration of 68 mcg/L in 1990. Sediment and surface water from Carlin Creek and the adjacent wetlands did not contain elevated levels of site contaminants.

In 1990, NYS DOH learned that some residences near the site were not connected to public water. The BCHD sampled 4 residential wells near the site and the private well serving the Conklin Town Hall in March 1991. The residential water supply samples were analyzed for VOCs, lead and arsenic and the water supply sample for the Town Hall was analyzed for VOCs. No VOCs were detected in any of the samples collected. Arsenic was detected at 16 mcg/L and 25 mcg/L in two residential water supplies. These concentrations are below the NYS DOH

maximum contaminant level of 50 mcg/L for arsenic in drinking water. The BCHD recommended to each homeowner whose drinking water was sampled, that they connect their homes to the existing public water supply serving the area.

A public meeting was held by US EPA on February 25, 1991 to present findings of the RI and the proposed plan for site remediation. Community concerns at this meeting were about the remedial alternatives, their costs and implementability of the proposed alternative. No specific or community health concerns were identified. A record of decision (ROD) was signed on March 29, 1991. The major components of the selected remedy included:

- Containment through installation of caps over both landfills, with leachate collection and treatment and discharge to the Binghamton - Johnson City Joint Sewage Treatment Plant. If the treatment plant is not available, leachate will be treated on site using air stripping and discharged to Carlin Creek.

- Fencing, deed restrictions, groundwater monitoring and five year reviews.

In June 1992, the US EPA modified the final remedy selected in the March 1991 ROD. The proposed modification was to consolidate waste materials and soil at the lower landfill with the upper landfill. The proposed modification was supported by NYS DEC, NYS DOH and US EPA and included the following provisions:

- Excavation of materials from the lower landfill, with transport and consolidation on the upper landfill;

- Installation of a cap over the consolidated material.

- Leachate collection with on-site treatment via air stripping and discharge of the treated effluent to Carlin Creek; and

- Groundwater monitoring, fencing, deed restrictions and five year reviews.

A public meeting was held on July 14, 1992 at the Conklin Town Hall by US EPA and representatives of NYS DOH and NYS DEC were present. The purpose of this meeting was to present the proposed modification to the remedy. The primary community concerns related to operation and maintenance costs of the modified remedy. No specific or community health concerns were raised at this meeting.

In January 1993, Phase I remediation activities were initiated at the site. The Phase I activities included excavation, transport and placement of wastes from the lower landfill to the upper landfill. Air sampling occurred during Phase I remediation and included particulate monitoring and sampling of volatile emissions along the site perimeter. Air monitoring did not detect site-

related contaminants during excavation of the lower landfill and the lack of emissions was attributed to the extremely cold temperatures and the advanced decomposed state of the buried wastes. As a result, air sampling was suspended along the site perimeter. However, real-time monitoring of particulates and volatile emissions in the work zone continued with a contingency to reinitiate air sampling along the site boundary if changes were observed in the waste composition and detectable levels of VOCs or particulates were recorded in the work zone. No additional air monitoring was required along the site perimeter of the lower landfill during Phase I remediation.

Excavation of the lower landfill and consolidation with the upper landfill was completed in July 1993. The Town of Conklin will complete remediation activities at the lower landfill which will include regrading of the lower landfill area using clean fill, as needed. These activities are expected to be completed by September 1993. Phase II remediation activities at the upper landfill are expected to be initiated by September 1993. Phase II activities will include installation of a leachate collection system and landfill cap on the upper landfill and these activities are expected to be completed by November 1993.

Past public health concerns included potential human exposure to contaminated leachate seeps, surface water and sediments, via direct contact, inhalation and incidental ingestion and the possibility of contaminants migrating to basements of nearby homes in soil gas and groundwater. Inhalation of volatile contaminants and contaminated air particulates during site remediation activities was a public health concern; however, monitoring of air quality during excavation of the lower landfill did not detect site-related contaminants. Exposure to contaminants in groundwater was also a human exposure pathway of concern because public and private water supplies obtain water from the same aquifer which has shown evidence of contamination near the upper landfill site. Because of this concern the NYS DOH recommended extension of the Conklin public water supply to homes along Route 7 and nearby subdivisions. There are no known past or present community health concerns for this site.

PUBLIC HEALTH IMPLICATIONS

For an undetermined period of time, some residents living near the Conklin Dumps site have been exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in their private well drinking water. Trichloroethene and trans-1,3-dichloropropene cause cancer in laboratory animals exposed to high levels over their lifetimes (ATSDR, 1991b, 1992). Whether or not these compounds cause cancer in humans is not known. Studies of people exposed to high levels of arsenic in drinking water in foreign countries suggest an association between arsenic ingestion and skin cancer. To date, however, studies in the United States of exposure to arsenic in drinking water have not shown an increased risk of cancer (ATSDR, 1991a). Toluene, trichloroethene and trans-1,3-dichloropropene produce noncarcinogenic toxic effects (primarily damage to the nervous system, liver, and kidneys) at exposures several orders of magnitude greater than those estimated for past and present exposures to the highest levels

of these contaminants in private water supply wells. Chronic (long-term) exposure to arsenic is associated with effects on the skin (growths on hands and feet and darkening of the skin), with nerve, liver, and blood vessel damage, and with behavioral problems including learning and hearing deficiencies (ATSDR, 1991a). Arsenic and manganese produce these effects at exposures less than one order of magnitude greater than those estimated for past and present exposures to the highest levels of these metal contaminants found in private water supply wells. Chemicals that cause cancer or other adverse effects in humans and/or animals after high levels of exposure may also pose a risk to humans who are exposed to lower levels over long periods of time.

Operation of the lower Conklin Dumps landfill began in 1964. Residents with private water supply wells may have been exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in their drinking water for an unknown period of time since then. Although many affected and potentially affected residences were connected to the Town of Conklin public water supply in 1985, some residents may still be using contaminated private water supply wells. Although exposure to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese could be up to about 29 years, the levels of contamination prior to 1983 are not known. Based on the results of animal studies and limited sampling of the private water supply wells, it is estimated that the increased risk of developing cancer could be high from past and continuing exposure to arsenic in drinking water, and low from past and continuing exposure to trichloroethene and trans-1,3-dichloropropene. Although the risks of noncarcinogenic effects from past and continuing exposures to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese are not completely understood, the existing data suggest that they could be high for arsenic and manganese, and minimal for toluene, trichloroethene, and trans-1,3-dichloropropene in private water supply wells.

CURRENT CONDITIONS OF SITE

On July 14, 1992, Claudine Jones Rafferty of the NYS DOH met with representatives of the US EPA, the NYS DEC, the Town of Conklin and their consultant at the lower landfill site. The lower landfill is accessed by a dirt road, south of County Road 322. Vehicular access is prevented by a locked gate. The area surrounding the lower landfill is densely vegetated, which limits unauthorized entry to the site. The dirt road passes two large water bodies on the southern portion of the site and extends to the embankment of the Delaware and Hudson Railroad tracks, which run along the eastern perimeter of the lower landfill site. A large horseshoe-shaped berm extends along the southern, eastern and northern site boundaries and is about the limit of waste disposal. The berm is approximately fifteen feet high. The upper landfill is situated north of County Road 322, near the top of a hillside, across from the access road to the lower landfill. Due to the extremely dense vegetation, the upper landfill property was not walked. A site visit was not conducted for preparation of the 1989 health assessment and a comparison of how site conditions have changed cannot be made.

The conclusions of the 1989 health assessment were complete based upon information available at that time. Remediation of the lower landfill is essentially complete; the lower landfill wastes have been excavated and consolidated with the upper landfill. Remediation of the upper landfill is underway and expected to be completed in the summer of 1994. Once these remediation activities are completed, many of the past potential human exposure pathways to site contaminants will be eliminated.

CURRENT ISSUES

The only past public health concern which needs additional follow-up is to review any new monitoring data related to the quality of drinking water in nearby and downgradient private drinking water supplies. If the industrial park is developed and water supply wells are installed, then potable water use should be evaluated to ensure that groundwater extraction does not pick up residual contamination from the site. The BCHD occasionally receives queries from nearby residents and individuals wishing to purchase or build housing near the site about possible off-site impacts from the Conklin Dumps site, including surface water runoff and groundwater contamination. Currently, it is not known how many residents with contaminated water supplies, if any, are still using their private wells for potable water. Presently, there are no known community health concerns associated with this site.

CONCLUSIONS

The site posed a public health hazard in the past because some residents near the site were exposed to toluene, trichloroethene, trans-1,3-dichloropropene, arsenic, and manganese in drinking water at concentrations that may cause adverse health effects. Human exposure to these contaminants occurred via ingestion, inhalation, and dermal contact for a period of up to 29 years. The extension of the public water supply to affected and potentially affected residences in 1985 eliminated exposures for those residents who connected to the public water supply. Currently, the site poses an indeterminate public health hazard. Some residents who did not connect their homes to the public water supply, may still be exposed to contaminated water from continued use of their private wells. Currently, it is not known how many residents with contaminated water supplies, if any, are still using their private wells.

The conclusions from the 1989 health assessment were valid based on the information available at the time when the health assessment was prepared.

- As recommended in the 1989 health assessment, the remedy for the site includes installation of a leachate collection trench with on-site treatment via air stripping prior to discharge to Carlin Creek.

- As recommended in the 1989 health assessment, the physical boundaries of the original landfills were clearly delineated to develop remediation goals for the site.

- Additional data have been collected since the 1989 health assessment to characterize contamination and to develop the final remedy for the site.

- The final remedy for the site does not provide for collection and treatment of groundwater; however, it does provide for routine monitoring of groundwater quality at the site.

- The potential for commercial development of the immediate area still exists.

- Past investigations of methane in soil gas did not detect methane at elevated levels or migrating off-site.

- Past sampling of nearby residential wells has shown elevated levels of VOCs and metals in private drinking water supplies along Route 7. Past exposures to these contaminants have been evaluated as part of this site review and update and public water is available to residential areas along Route 7.

- Past sampling of surface water and sediment in Carlin Creek did not detect site contaminants.

- Routine monitoring of the Town of Conklin No. 3 public water supply well, 2,000 feet northeast of the site, has not detected contaminants from the site.

- There are some homes near the site which are not connected to public water.

- Sampling and air monitoring activities during Phase I remediation activities did not detect site contaminants.

- Leachate collection at the upper landfill will reduce the potential for further contamination of groundwater underlying the site.

- Elevated levels of VOCs have been detected in groundwater near the upper and lower landfill sites in the past.

- The potential for exposure to contaminants in leachate will be eliminated once the final remedy has been completed.

- Other than the proposed five year reviews and monitoring activities presented in the final ROD for the site, additional evaluation of the site is not needed at this time.

RECOMMENDATIONS

A public health assessment is not needed for the Conklin Dumps site. Past public health concerns have been addressed by the extension of the public water supply to residential areas along Route 7. However, homes near the site, where it is determined are not connected to public water supplies, should be sampled to determine current drinking water quality. Potential public health concerns will be addressed by the proposed remedy for the site which has been implemented and is expected to be completed in the summer of 1994.

The five year reviews should continue as planned and monitoring of groundwater quality at the downgradient site perimeter should occur in conjunction with long-term operation and maintenance of the final remedy. The groundwater monitoring data should be reviewed to determine the need for sampling downgradient residential wells near the site or any other appropriate follow-up public health actions.

If the industrial park is developed, water use should be evaluated, to ensure that pumping wells do not draw residual contamination from the site. In addition, construction activities should not adversely affect drainage at the site or the remedial measures.

The data and information developed in the Site Review and Update for the Conklin Dumps site in Conklin, Broome County, New York, has been reviewed by ATSDR's Health Activities Recommendations Panel (HARP) to determine appropriate follow-up actions. Because of past exposure to contaminated drinking water the panel recommended this site for follow-up health activities. Specifically, those persons exposed in the past should be considered for inclusion in the NYS DOH's registry being developed for VOC exposures from drinking contaminated water. The HARP also determined that community health education is needed. Specifically, the panel determined that residents and/or their physicians should be provided information regarding their past exposures. In addition, the panel determined that the NYS DOH should consider including this site in their update of cancer incidence in Broome County. No other follow-up activities were recommended by HARP at this time.

PUBLIC HEALTH ACTIONS

The Public Health Action Plan (PHAP) for the Conklin Dumps site contains a description of actions to be taken by ATSDR and/or the NYS DOH at and near the site, following completion of this Site Review and Update. For those actions already taken at the site, please refer to the Summary of Background and History section of this Site Review and Update. The purpose of the PHAP is to ensure that this Site Review and Update not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from past, present and/or future exposures to hazardous substances at or near the site. Included, is a commitment on the part of ATSDR and/or the NYS DOH to follow-up on this plan to ensure that it is implemented.

The public health actions planned for the Conklin Dumps site are as follows:

1. ATSDR and NYS DOH will coordinate with the appropriate environmental agencies to develop plans to implement the recommendations contained in this Site Review and Update.

2. ATSDR will provide an annual follow-up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this Site Review and Update, and will be provided to persons who request it.

3. NYS DOH is developing a registry of persons exposed to VOCs in drinking water. Residents who were exposed in the past to VOCs in drinking water, will be considered for inclusion to this registry.

4. NYS DOH will request that the 1986 study of cancer incidence conducted by the Broome County Health Department be updated through 1990 to determine whether the cancer incidence patterns seen for 1976-1980 are also found for 1981-1990.

5. NYS DOH will provide health education materials to those persons enrolled in the VOC registry. In addition, information will be provided to the registrant's physicians as indicated.

6. Through the NYS DOH, homes near the site, where it is determined are not connected to public water supplies, will be sampled to determine current drinking water quality. NYS DOH will provide homeowners, whose water supplies are sampled, with copies of the analytical results of their water sample as well as an explanation of the results.

ATSDR will re-evaluate and expand the Public Health Action Plan when needed. New environmental, toxicological, or 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 Conklin Dumps site was prepared by the New York State 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, RPB, 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

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ATTACHMENT 1

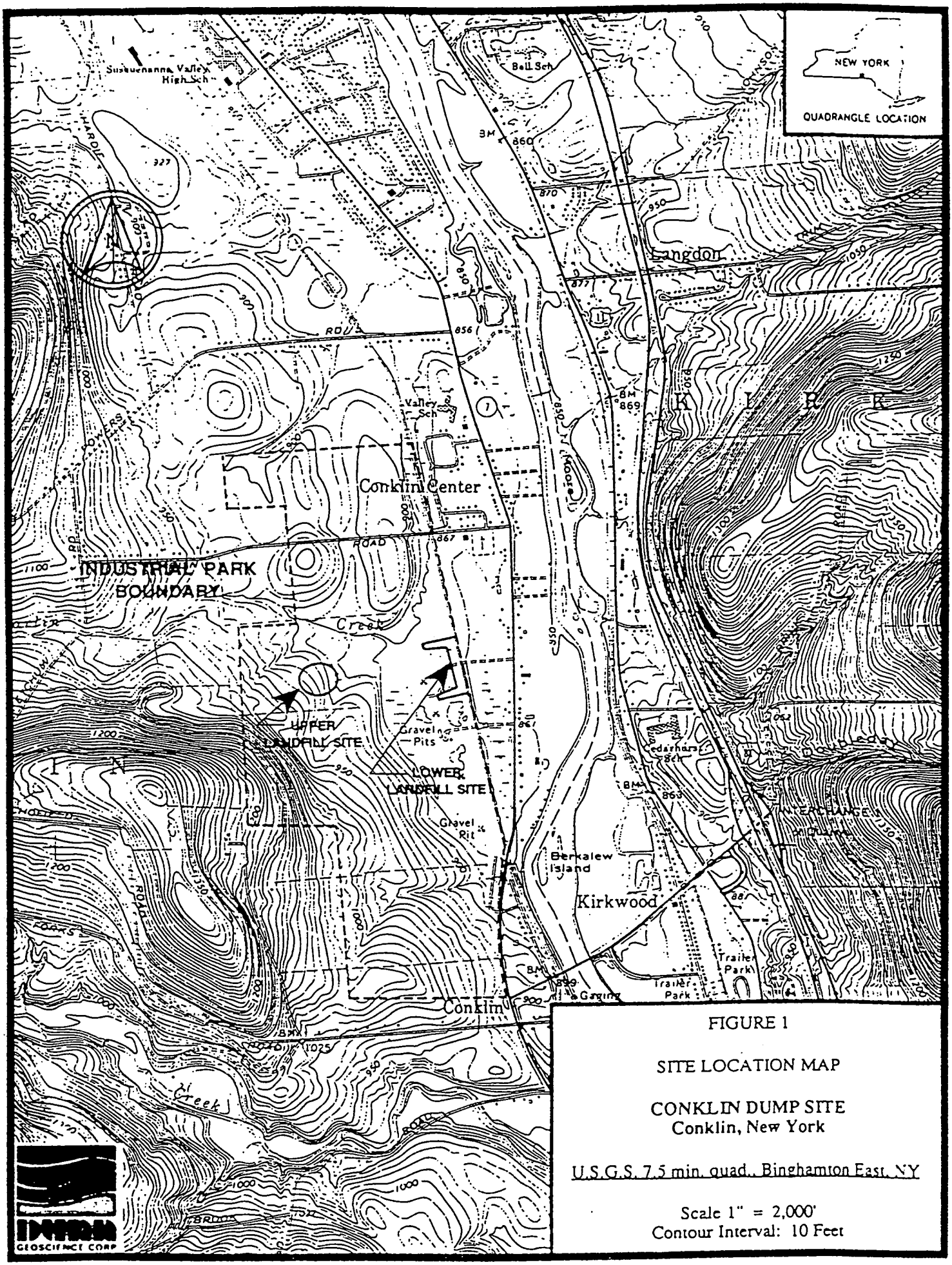

FIGURE 1

SITE LOCATION MAP

CONKLIN DUMP SITE
Conklin, New York

U.S.G.S. 7.5 min. quad., Binghamton East, NY

Scale 1" = 2,000'
Contour Interval: 10 Feet

Adapted from: Dunn Geoscience Engineering Co., P.C.; January 1992.

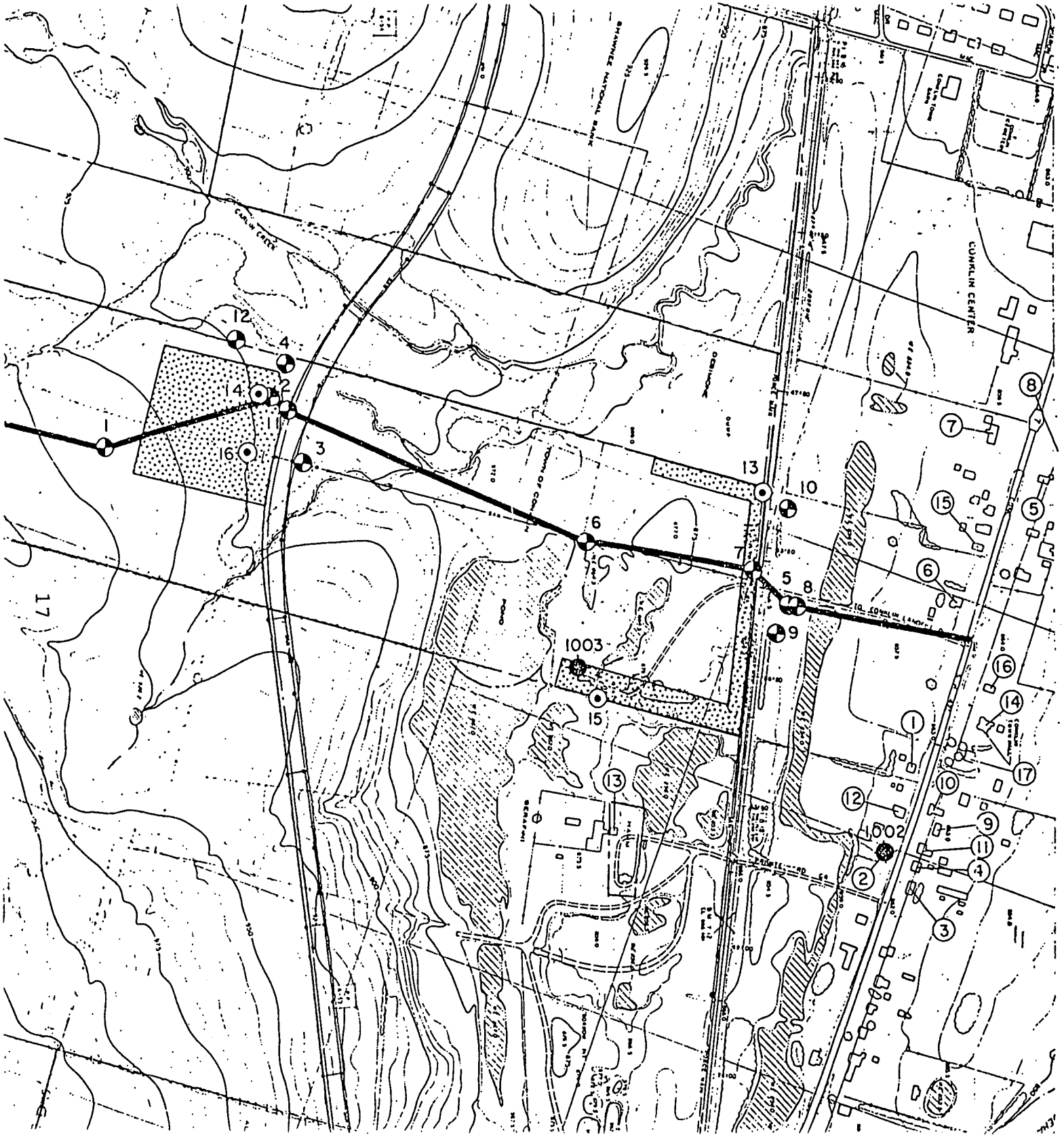

FIGURE 2

LEGEND

- GROUNDWATER MONITORING WEI
- LEACHATE / METHANE GAS MONITORING WELL
- WELLS BY OTHERS
- LITHOLOGIC CROSS SECTION LINI
- AREAL EXTENT OF LAND FILLS
- (5) HOMEOWNER WELL

BROOME COUNTY INDUSTRIAL DEVELOPMENT AGENCY

MONITORING WELL LOCATION MAP

SCALE IN FEET

200 0 200 400

1" = 400' 400'

O'BRIEN & GERE

File on eDOCs X Yes ____ No
Site Name Conklin
Site No. 704013
County Broome
Town Conklin
Foilable X Yes ____ No
File Name 1994-03-01 Site Review and Update