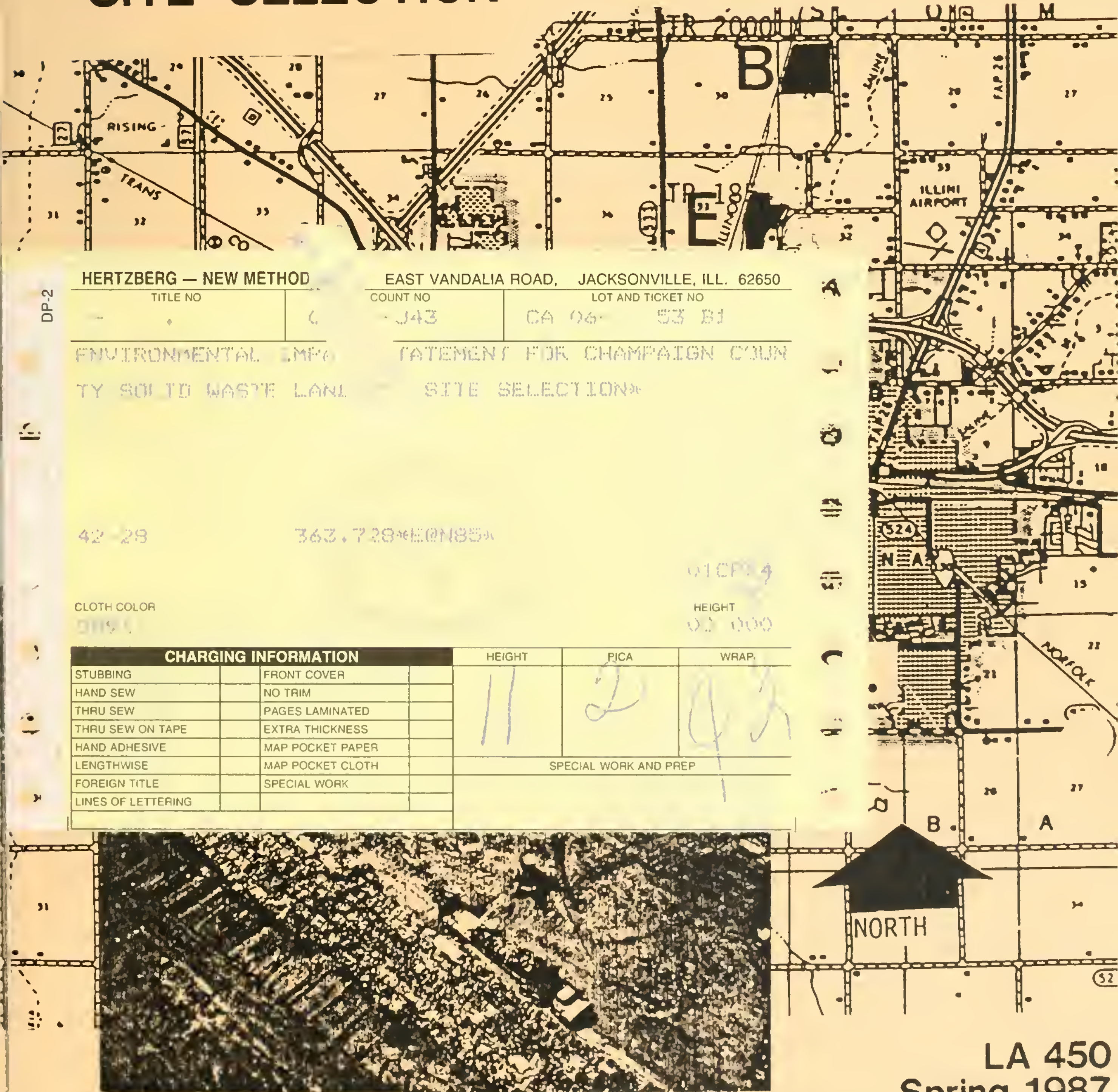
ENG5 J4353

Environmental Impact Statement for CHAMPAIGN COUNTY SOLID WASTE LANDFILL SITE SELECTION



LA 450
Spring 1987
University of Illinois
at Urbana-Champaign

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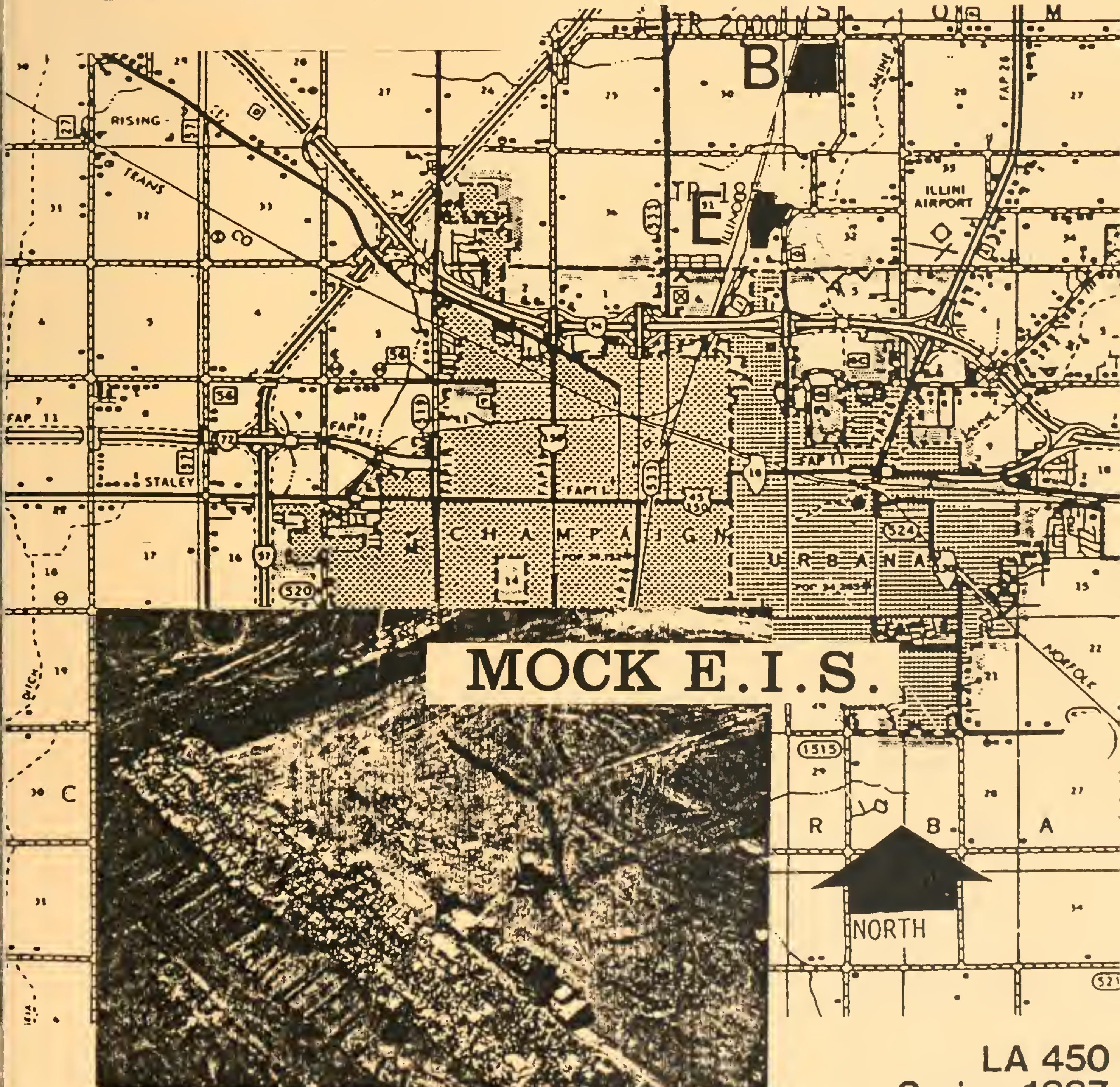

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A note concerning this document:

This "mock" environmental impact statement was a class project written in partial fulfillment of the LA 450 course (Environmental Impact Statements).

For the sake of this "mock" impact statement, site 'E' was selected as the proposed site for the construction of the new Champaign County landfill. Landfill development at site 'B' (the actual proposed county landfill site) was considered as the alternative action.

Information used in this statement was extracted from over 1500 pages of actual information produced for the Intergovernmental Solid Waste Disposal Association.

Although this is a "mock" EIS, the issues considered are real for the most part. I believe this statement can serve as a reference to help citizens of Champaign County understand the issues surrounding the development of the proposed landfill.

We thank the members of the Intergovernmental Solid Waste Disposal Association for their help.

David A. Kovacic
Instructor LA 450

PROPOSED ACTION TITLE: Environmental Impact Statement For Champaign County Solid Waste Landfill Site Selection

LOCATION: Champaign - Urbana, Champaign County, Illinois

ENVIRONMENTAL Impact Statement: Draft

LEAD AGENCY: LA 450, Spring 1987

COOPERATING AGENCIES: City of Urbana, City of Champaign, Champaign County Regional Planning Commission, Illinois Environmental Protection Agency, Illinois Geologic Survey

POINT OF CONTACT: Dave Kovacic, Landscape Architecture, University of Illinois

DATE FOR RECEIPT OF COMMENTS: Jan. 2010

ABSTRACT: There are three alternative actions proposed.

Alternative 1. Construct and operate a Landfill at site E.

Alternative 2. Construct and operate a Landfill at site B.

Alternative 3. (No Action) Transport waste to other landfills via a transfer station

DATE: 5 May 1987

LIST OF PREPARERS

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PREFACE

In the Spring of 1984, the Intergovernmental Task Force on Solid Waste Management (ITF) was formed to identify the best alternatives to land filling and to prepare a long term solid waste plan for the community. The ITF was confronted with the need for an interim facility to span the period between the autumn of 1987 when the current landfill will close and the earliest possible start-up date of a waste facility. Two options were available: 1) Construct a waste transfer station, or 2) Construct a new regional landfill in Champaign County. After reviewing different variations and combinations of these alternatives, the ITF recommended development of a new landfill in October of 1985. In the Spring of 1987 Site E was chosen for the next landfill site.

This is an Environmental Impact Statement in response to ITF's decision to choose site E as the next landfill. There are many environmental and social impacts associated with landfills such as water contamination, unseemly odors, noise, incompatible land use, decreasing property values, and safety hazards. This EIS will identify the environmental, economic, and social consequences of placing a landfill at site E and compare the consequences to other alternative waste disposal options discussed by ITF.

I. SUMMARY

I. SUMMARY

A. Purpose of project

The purpose of this action is to develop a new landfill to replace the old Champaign-Urbana Solid Waste District's Landfill. The proposed location of the new landfill is site E located on Lincoln Avenue north of I-74 (Figure I.1).

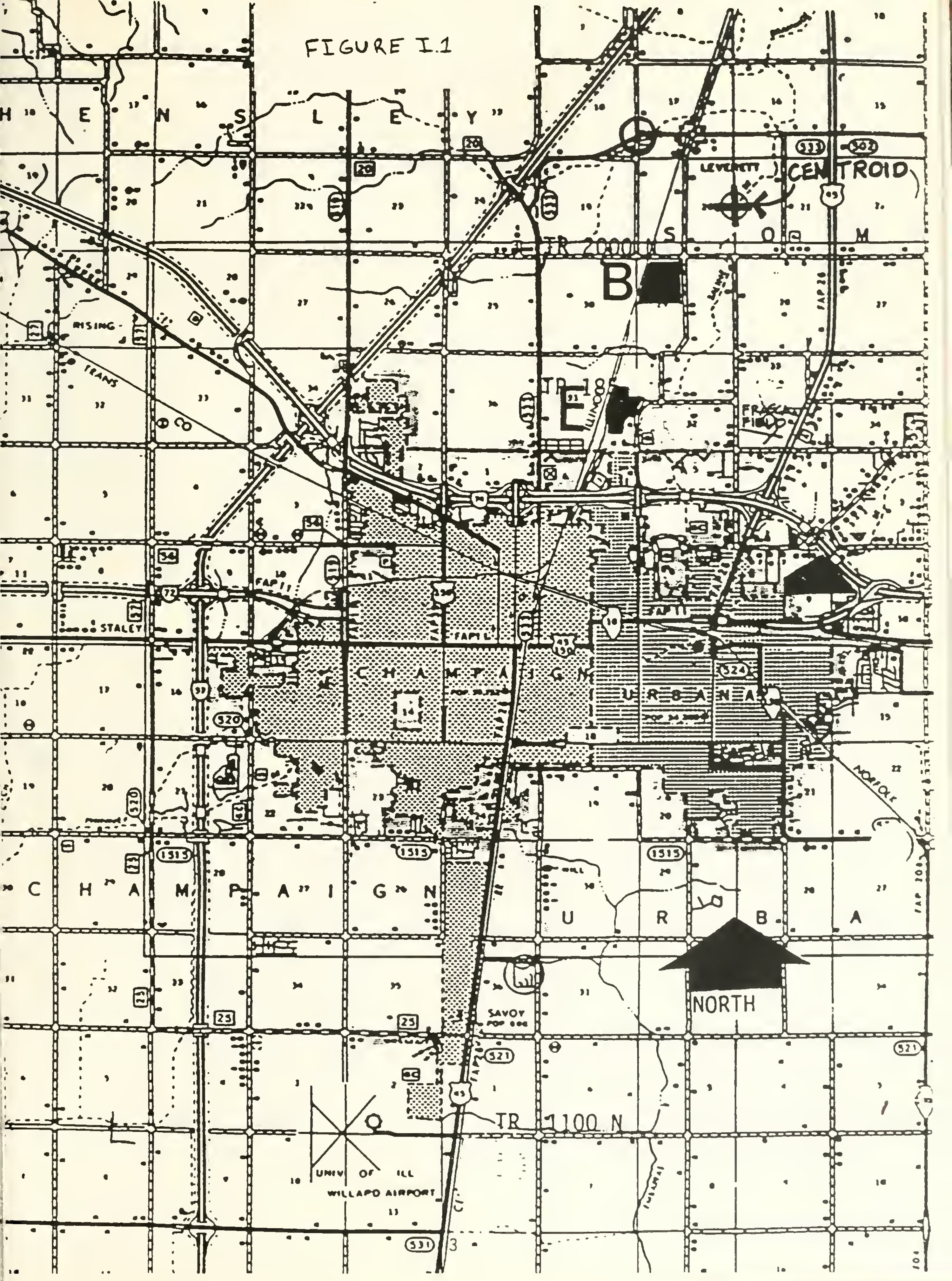
B. Description of project

Figure I.2 shows the proposed design of the landfill. The landfill would be 31.75 acres (in area) and would be designed in a manner that would avoid construction in the 100-year flood plain of the Saline Branch Drainage Ditch located to the immediate east of the site. With a depth of 22 feet and a height of 30 feet above grade it would have a proposed site life of 20 years.

Construction would follow state of the art techniques in landfill construction. The landfill will be lined with 10 feet of compacted clay. Sumps and collection lines would be placed on top of the liner for removal of leachate. Passive gas vents would be installed below the cover to allow methane gas to escape. A ground water monitoring as well as gas monitoring system would be installed on site and in the site periphery. A high density bailing plant would reduce volume and reduce the problems of blowing debris. An on site water treatment facility would process any leachates before disposing them in the municipal sewage system. Slurry walls would prevent the lateral flow of water. Surface drainage would be diverted to the Saline Ditch Floodplain and a retention basin would be designed to accommodate surface drainage. Daily cover would be placed on top of all landfill materials and upon closure 2 feet of compacted soil and 6 inches of top soil would be placed over the daily cover. At final closure the site would be vegetated to stabilize the cover.

In addition to the on site facilities, access roads must be constructed, existing roads widened and paved, a bridge constructed over the Saline Branch Drainage Ditch, and an alternate water source provided to residents within a one mile radius of the site.

FIGURE I.1


H E N S L E Y
S O M
CENTROID
LEVERETT
TR 2000 N
RISING
STALEY
C H A M P A I G N
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NORTH
SAVOY
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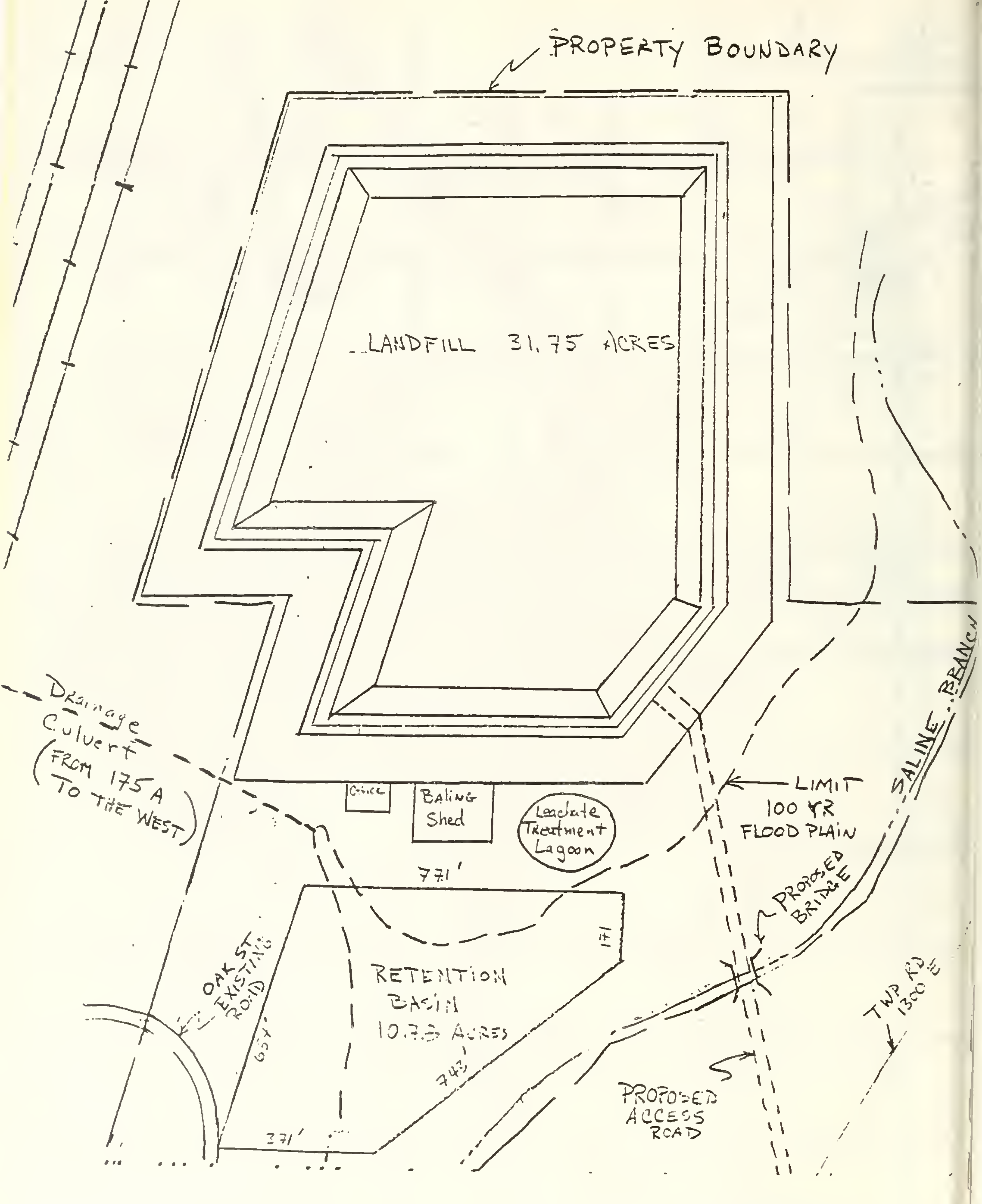
UNIV OF ILL
WILLARD AIRPORT
NORFOLK



PROPERTY BOUNDARY
LANDFILL 31.75 ACRES
Drainage Culvert (FROM 175A TO THE WEST)
Office
Baling Shed
Leachate Treatment Lagoon
LIMIT 100 YR FLOOD PLAIN
SALINE BRANCH
PROPOSED BRIDGE
771'
171'
RETENTION BASIN 10.73 ACRES
OAK ST EXISTING ROAD
657'
743'
371'
TWP RD 1300 E
PROPOSED ACCESS ROAD

FIGURE I.2

C. Alternatives

Two alternative waste disposal plans were examined. The first involved placing a 137-acre landfill at an alternate site B. The second alternative involved long hauling wastes to other municipality's dump sites. In this case a transfer station would be required.

D. **Description of existing environment**

Both sites E and B are currently devoted to agricultural purposes (primarily the cultivation of row crops). The sites are located on the transition zone between agricultural and rural homesite. No important vegetation or wildlife is located on or near either area and the sites do not represent known critical habitat elements for any species of plant or animal. At site E, however, the presence of the Saline Branch Drainage Ditch to the east prompts consideration of aquatic habitat/wildlife concerns within the ditch as well as connecting waterways. The Drainage Ditch is located in the Vermilion River Sub-basin, a rich and diverse aquatic system which supports a variety of fish, recreational and municipal uses.

In general, existing hydrogeologic conditions of site E and B are very similar. Both sites are located in a hydrogeologically diverse region. The sites are located in the southern reaches of the Wisconsin glacial flow which gives the region a diversified mix of morainic ridges, till deposits, aquifers, surficial hydrogeologic patterns, and soil compositions. One critical difference is the presence of the Saline Branch Drainage Ditch just east of site E and its adjoining flood plain.

Land use around site E is agricultural, industrial and commercial. The population is relatively sparse with 75 dwelling units within one-half mile of the impact zone. Fewer than 70 wells are drilled within one mile of the site. Traffic volume is moderate around the site with 8500-11000 vehicle trips per day (according to traffic counts taken at one of the access roads). Land use around site B is agricultural. The population is less than that of site E with 10 dwelling units within one-half mile of the impact zone. There are only 40 wells drilled within one mile of the site and traffic volume is less than that at site E.

E. **Impacts/Mitigations**

Hydrogeologic impacts on site E and B range from groundwater and surfacewater contamination to topographic destruction. The initial impact is the removal of the geologic column and the deposition of solid wastes. Additional impacts are associated with the seepage and flow of leachates throughout the surface and groundwater environment. There is also concern for overburden erosion, post-closure topography erosion, and mismanagement of excess overburden. Mitigations for these impacts range from overburden management plans consisting of vegetative control or polyethylene seals to post-closure reclamation programs to manage the site after closure.

Visual and aesthetic impacts at sites E and B would be insignificant. The area surrounded by site E is light industrial, thus a landfill would not detract from the current visual quality of the area. The topography of site B is very flat and it has no vegetative or man made cover except commercial crops. The visual impact of site B would be greater than site E because there is no buffer to obstruct view of the site. During the operational phase of sites E or B the aesthetic impacts would be at their greatest level. There would be a continuous flow of traffic to and from the site. The garbage trucks and the operation of the landfill would generate more dust, litter, and noise in the surrounding area. In general, visual and aesthetic impacts may be reduced by providing natural landscaping to buffer the site from the surrounding residences.

Environmental impacts are quite varied. Since site B is not located on a flood plain, many of the aquatic impacts associated with site E would not be realized here. Modification of the drainage network, as proposed in the plan for site E, increases the potential for flooding of downstream sites. Several sites of recreational and ecological importance exist downstream. Where required, the facility would be designed to control flooding problems and arrangements made for compensatory agreements for drainage system failure.

At site E immediate on-site impacts on aquatic communities associated with bridge construction, and landfill development and operation are negligible in comparison to current land uses. The potential for downstream impacts associated with leachate contamination is a concern for which preventative/precautionary measures must be implemented. Such measures have been incorporated in the project design as stated previously, however additional precautions are suggested. Drainage ditch water samples would be periodically collected and analyzed for contamination and resident fish populations would be monitored as natural indicators of toxic contamination.

It is unavoidable that 57 acres of prime agricultural land be permanently removed from production in placement of the landfill at site E and 137 acres removed at site B. Air quality would not be significantly affected at either site. There is concern for the impact of excessive numbers of pests, insects, and birds potentially attracted to a landfill site. Utilizing daily cover and implementing pest control measures significantly reduces these concerns which are common to any landfill location.

The potential for leachate seepage initiates a real concern for drinking water well contamination in the impact zone. For sites E and B the replacement of existing wells with new wells would maintain water quality at less cost than extending the existing distribution system. In the long run, though, a distribution system may provide higher quality water than wells in the impact area which may be subject to contamination.

Fuel consumption for truck traffic to site E is 68,250 gallons less than for site B for a site life of 20 years. Therefore, site E would present less of an impact on energy resources than site B.

In relation to transportation, site E would require the construction of a bridge over the saline ditch. Also, being closer to commercially developed areas, there would be less of an impact on agricultural traffic at site E than site B. Site B would require the most off-site traffic improvements which includes railroad crossing improvements.

Since population levels around site E are greater than site B, the impacts on migration rates and community arrangements including health and safety are greater. Also, J. M. Jones food distribution plant just south of site E is planning to expand its location to the north and hire an additional 200 workers. If site E is chosen they would not be able to expand and employment opportunities would be lost.

Several economic impacts would be realized in selecting site E or B. First, site development costs for site B are less than half as much as those at site E. Second, the impact on surrounding property values may be more at site B. While the property adjacent to site E has an assessed value that is 10 times higher than at site B, land uses at site E are perhaps more compatible than some at Site B. It is difficult to determine exactly what the difference in property value impact would be. Third, the site life of site B would be nearly three times as long as that at site E.

F. Conclusions

The cost associated with a transfer station precludes this alternative from being among the recommended courses of action. Although outside the scope of this study, the adverse impacts realized outside the study area would still need to be mitigated. In comparing sites E and B a list of five most salient criteria upon which to base the location of a landfill is proposed by the preparers. These are: 1) Site development costs, 2) Site life, 3) Risk to downstream surface water quality, 4) Impact on surrounding property values, and 5) Risk to sub-surface aquifers. Based on these criteria the preferred alternative is site B. A combination of less risk to the aquifer and surface water, lower site development costs, less potential impact on surface drainage network, and a much longer site life outweigh, in the minds of the preparers, the impact on surrounding property values.

G. Remaining areas of controversy

Sites E and B are both geologically insufficient locations to place a landfill. Although engineering precautions will be taken to make these locations environmentally sound, the risk of high level soil erosion, and ground and surface water contamination is still great and should be considered in the decision making process. Mitigation measures, in many cases, are not solutions to the problem but are impact delay measures. The hydrogeologic sensitivity of both sites deserves closer consideration and a review of the initial site selection process is recommended.

II. STATEMENT OF PURPOSE

II. STATEMENT OF PURPOSE

A. Goal and objectives of project

The overall goal of the project is to provide an environmentally and economically sound solution to meet the waste disposal needs of Champaign-Urbana. The objectives of this EIS are to assess current conditions on and around the proposed landfill sites, predict environmental impacts of a landfill, and determine feasible methods to mitigate any significant impacts.

B. Purpose of Project:

The purpose of this action is to develop a new landfill that will serve as a replacement for the old Champaign-Urbana Solid Waste Disposal System (CUSWDS) on East University Avenue (figure I.1). The proposed location of the new landfill is site E on Lincoln Avenue north of I-74. The existing landfill on East University was scheduled to close in 1985. An additional 10 acres added in 1984 was expected to extend the life-time of this landfill by 14 months. In 1986 the IEPA allowed CUSWDS to increase the height of the landfill from 30 to 45 feet. This action would further extend the life of the landfill until the end of 1987.

Establishing a local landfill site is desirable for three reasons. First, if a new landfill site is not secured the only alternative for Champaign-Urbana would be to transport waste to another municipality's landfill. The cost associated with transporting wastes would significantly increase the cost of waste disposal for individual households. Second, the present Champaign-Urbana recycling program depends on revenues from the landfill to subsidize operating costs. Without revenues from the operation of a local landfill, the recycling program would cease operation. Third, dependence on another municipality's landfill is undesirable since they could deny access to their landfill or substantially increase tipping fees to outside haulers in the future.

III. DESCRIPTION OF PROJECT

III. DESCRIPTION OF THE PROJECT

A. Study methodology:

CEQ guidelines were used in the development of the Champaign Urbana Solid Waste Disposal Plan EIS. Three stages of analysis were carried out to determine the feasibility of a landfill at a particular site. First a site analysis was carried out to determine the existing conditions and land use in and around the site. Second, from base line data collected on the site, impacts and possible consequences were determined. Third, it was determined what mitigation techniques could be implemented to prevent significant environmental impacts. Seven major criteria were use to evaluate the suitability of a site for a landfill:

1) Size and capacity of site, ie project life,
2) Ground and surface water contamination,
3) Health and safety hazard,
4) Surrounding land use,
5) Acquisition, construction, and operation costs,
6) Visual/Aesthetic impact,
7) Flora and fauna impact, and
8) Transportation impact.

B. Alternatives:

Three alternative waste disposal plans were examined. Alternative 1 (Proposed Action) involved placing a 31.75 acre landfill at Site E. Alternative 2 involved placing a 137 acre landfill at site B. Alternative 3 was to long haul waste to Danville, Villa Grove, Mattoon and Charleston. This alternative would involve the construction of a transfer station where haulers would deposit the collected waste at a central location. It would then be transported in large trucks to non - local municiple landfills.

There were over 64 sites initially reviewed as potential landfills. Sites were eliminated for the following reasons:

1) they could not be acquired without use of eminent domain,
2) size of the parcel was not large enough,
3) incompatible surrounding land use,
4) high potential for water contamination, and
5) high environmental impact.

C. Landfill and transfer station general descriptions

For the purposes of this EIS a sanitary landfill shall be described as follows: A method of on-land disposal of municipal waste generated by households and area businesses not to include the disposal of hazardous or toxic waste. This waste is to be collected by and hauled to the site by private haulers. At the landfill site the refuse would be placed into a bailing operation to compact and bundle the garbage. After bailing the waste would be transferred to the fill site.

The site is an open excavation that is then layered with the refuse. The site must be prepared in accordance with Federal, State and Local requirements to prevent environmental degradation of the area. This preparation can include the use of a clay liner, leachate collection system, and sufficient daily cover of the waste with soil. The landfill when at capacity would then be sealed with additional cover and vegetated to prevent the potential of soil erosion and water infiltration.

When assessing the impacts of a potential landfill the typical concerns include: contamination due to the escape of leachate, the accumulation of methane gas and the settling of the landfill site over time. Leachate is formed from the various decomposing wastes. The liquid composition can vary not only from site to site but within the actual individual site. Methane gas is also formed in the decomposition process. Entrapment of methane in pockets created by the settling process can lead to potentially dangerous explosions. Overtime as the waste deteriorates it will decrease in size. Sinking will occur in a random manner. The problem of settling is reduced with the compaction of the garbage, but it is still a problem and therefore this along with the previously mentioned impacts common to landfill sites renders them useless for building purposes following site closure.

A transfer station will be considered for the purposes of this EIS as a method of moving locally generated waste to an outside landfill or incinerator site. The method would consist of the pick up of home and business waste by the private haulers. Waste would be hauled to the local transfer facility. This facility would take this waste bale it and load it into larger truck which would haul it to outside landfill sites.

The impacts created by the operation of a transfer station would be minimal in terms of environmental degradation to the local area, because there would be no local burial of waste. The only possible impact of a transfer station would be blowing trash, the residues left over from the transfer and increased risk of a large spill or explosion within a concentrated area or with in a truck in transit to the site of transfer.

There currently exist four sites within hauling distance for the private entrepreneur that make a transfer station infeasible.

D. Site description

Alternative 1 or site "E" is located in the Eastern Half of Section 31,Township 20 North, Range 9 East, 4th Principle Meridian, Somer Township, Champaign County, Illinois. The nearest roads to the site are Oak Street and Lincoln Ave. The site is bordered by the Illinois Central Gulf Railroad on the west side and by the Saline Branch on the east. A 100 year flood plain is also located between the site and the Saline Branch. Within a half mile of the project borders exist 75 residences (Primary impact zone). Within a mile perimeter of "E" there are an additional 180 residences (Secondary Impact Zone) (Figure III.1). Other existing uses located in the area include a grocery warehouse, UPS service facility and a Junk Yard (An inventory of these uses is given in Table III.2).

Alternative 2 or site "B" is located at Junction 29, Township 20 North, Range 9 East in Somer Township. It is bounded the Illinois Central Gulf Railroad track on the west, by 2000N on the north, and by 1320E on the east side. No natural or man made boundaries are found on its south perimeter. The site is located on prime agricultural land. Population density is very low in the area with only 10 residences living within a half mile of the site and 34 residences living within a mile of the site. Growth between 1972 and 1986 was minimal with only 4 houses being built within a mile of the site.

E. Phases of project actions

Project Actions can be placed into 5 phases:

1) Initial construction,
2) Operational phase,
3) Closure,
4) Immediate post closure monitoring and use (closure +20 years), and
5) Long Range monitoring and use (20 years +).

In the initial construction of the site impacts are temporary. Included in these actions are the construction of roads to access the site, excavation and layout of the fill area, and the construction of a leachate collection lagoon. Structures that will be built on the site include the Bailer Shed and some equipment storage sheds. Once the landfill is constructed and the disposal process begins the impacts to the area will become permanent in nature. Impacts of the final stages of the landfill will not be intensive as initial actions. They will focus on maintaining the site to prevent leakage.

FIGURE III.1
SITE "E"

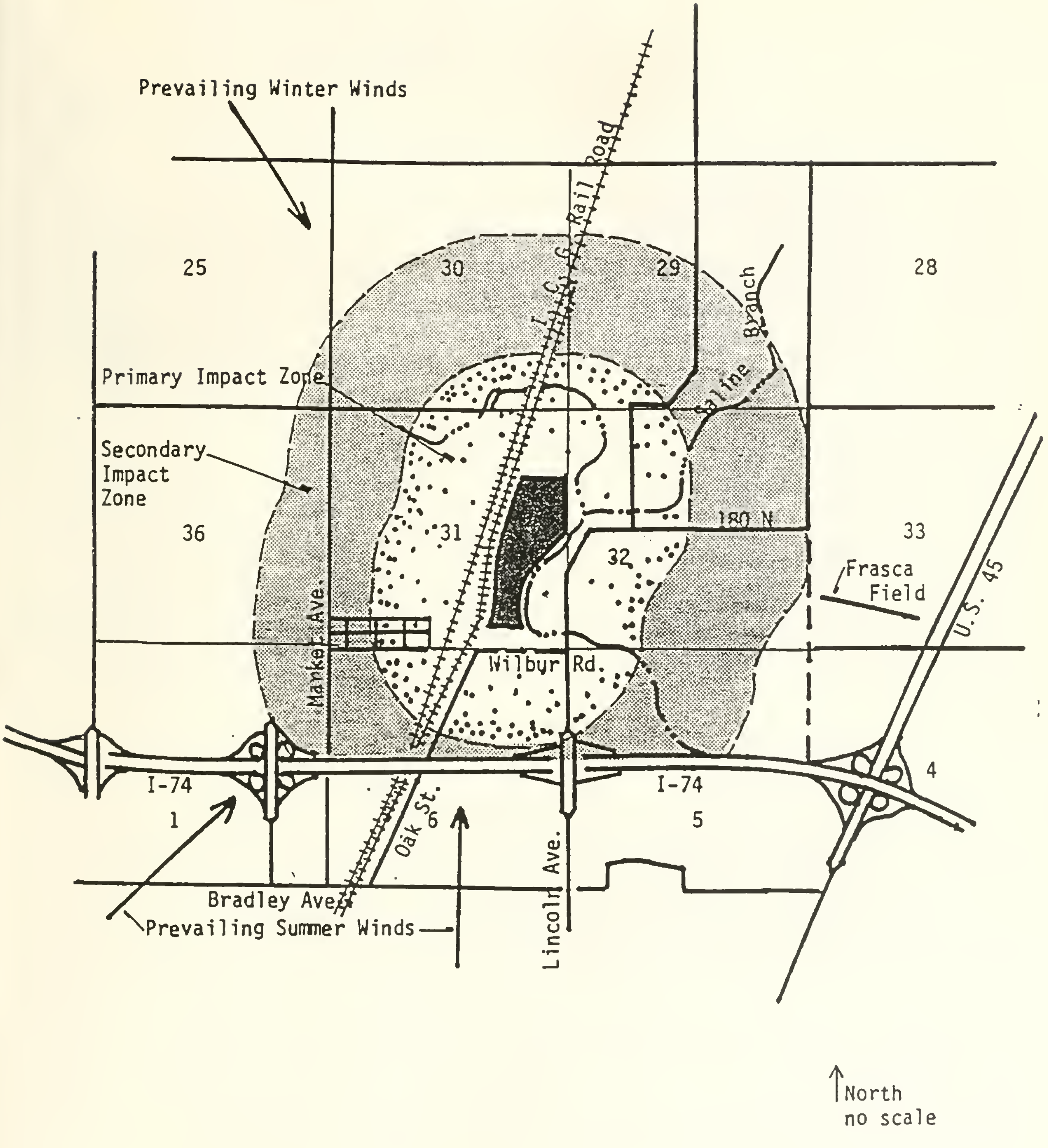


FIGURE III 2

Commercial and Industrial Use Surrounding
Potential Landfill Site "E"

Wholly or partly within 1000 feet:

- J. M. Jones Co.
- Illini Fire Equipment
- United Parcel Service
- Central State Distributors
- IMU Transportation
- Lincolnwood Warehouse Systems
- Twin City Recycling
- Clifford Jacobs Forging Co.
- Illinois Central Gulf Railroad Engine House & Maintenance of Way Facility

Over 1000 feet but within primary impact zone:

- Mobile Oil Station
- Hart Automotive Parts
- Grider Auto and Truck Repair
- ARA Services
- Urbana Electrical Supply Co.
- Yellow Freight System
- Modern Electric Co.
- Lanq Distributing South, Inc.

- Sherman Burkland Co.
- Roadway Transfer Co.
- Illinois Power Co.
- Multipak Plastics, Inc.
- A commercial office building
- Seward Electronics
- A vacant bakery/warehouse (Eisner)
- Archer Daniels Midland Elevator
- A vacant warehouse/lumber yard

F. **Events leading to action**

In 1940 the city of Urbana with the University of Illinois purchased a 135 acre site located north of University Avenue behind Woodland Park (Figure I.1). The city of Champaign has an agreement with Urbana to use the site for their waste disposal. In 1975 the Champaign Urbana Solid Waste Disposal System (CUSWDS) was established to provide solid waste disposal facilities and long range plans of waste disposal for the county. In 1976 CUSWDS began operation of a 24 acre site adjacent to the old Urbana site on East University. An additional 17 acres were purchased in 1982.

The landfill is owned by the city of Urbana and leased to Weston Lion Ltd to handle disposal operation through 1985. At this time the site was to be closed out. In 1984 the Intergovernmental Waste Task Force was formed to find a new landfill site for Champaign-Urbana. Only sites that were in a 10 mile radius from Neil and Springfield (the of centroid of Champaign were considered. Also, only sites that had willing sellers were considered since it was decided that the power of eminent domain was not to be used. In February of 1987 the Intergovernmental Waste Task Force chose site E as the next landfill for Champaign County.

G. **Permits and legal considerations for landfills:**

1. Federal laws and guidelines

Legal reference: Solid Waste Disposal, Code of Federal Regulations, Title 40, Protection of the Environment, Chap. 1, Environmental Protection Agency: Part 24.1, Sec. 40.241.100

This piece of legislation regulated by the EPA sets specific standards for location and operation of landfills.

Guideline 1: Acceptability of Wastes

a) Only waste for which facilities have been specifically designed may be accepted,

b) Hazardous waste may not be deposited at municipal landfills unless specific approval is given.

Guideline 2: Planning the facility

a) Ground water pollution must not occur,
b) Adequate cover material must be available,
c) Birds attracted to the site will not be a hazard to aircraft,

d) Design plans of site must by approved by a professional engineer,
e) Must have zoning 1/4 mile around a site,
f) Inventory all utilities within 500 feet from site.

Guideline 3: Operation of facility

a) Emissions of air contaminants must be controlled,
b) Water pollution must not occur: surface water courses and runoffs should be diverted from the site and not permitted to cause erosion,
c) Decomposition gases must be vented to the atmosphere,
d) Litter must be controlled,
e) Daily compacted cover of a least 6 inches must be applied,
f) 2 feet of cover after area use is completed.

Guideline 4: Records must be kept of

a) Operations, problems or complaints,
b) Leachate, gas and water quality,
c) Description of deposited waste.

Legal Reference: Criteria For Classification of Solid Waste Disposal Facilities and Practices, Code of Federal Regulations: Title 40, Protection of the Environmental Part 247, Sec. 40257.1

Guidelines:

1) Should not reduce temporary water storage capacity of floodplain or restrict the flow of its base flood,
2) Facilities should not contribute to the taking of endangered or threatened plants, fish or wildlife species,
3) Facilities shall not violate the requirements of the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act. (Refer to table 3.2 for maximum contaminant levels for organic and inorganic chemicals),
4) A facility shall not contaminate an underground drinking water source beyond the solid waste boundaries,
5) Public access should be controlled for 12 months after closure,
6) Explosive gases generated by a facility shall not exceed 25% of the lower explosive concentration,
7) Bird hazard to aircraft shall be prohibited (No landfill may be within 10,000 feet of any airport runway used by turbojet aircraft or within 5,000 feet of a runway used by piston type aircraft).

TABLE III.2
Maximum Contaminant Levels for Inorganic Chemicals

Contaminant	Level (mil. per liter)
arsenic	.05
barium	1.00
cadmium	0.01
chromium	.05
lead	.05
mercury	0.002
nitrate	10.00
selenium	0.01
silver	0.05

Enforcement of Federal Regulations:

Any local municipality not adhering to federal guidelines could be denied federal funding. Also, in some cases action to comply could be required by a court mandate.

2. Illinois State Law:

Senate Bill 172, Section 39.2 Location and Operation of Landfills

This piece of legislation sets out several guidelines that are directly applicable to the site choice of landfills.

1) Landfills must be located outside the boundary of the 100 year flood plain as determined by the Illinois Department of Transportation or the site shall be flood-proofed.

2) The traffic patterns to or from the facility are so designed as to minimize the impact on existing traffic flows.

3) The facility is located so as to minimize the incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding property.

3. IEPA permit procedure

For a new landfill the Agency has a two-stage permit review process. Applicants must first obtain a development permit which allows only the construction of the proposed landfill facility. Application must show that facility will not cause a pollution problem or violate environmental laws or regulations.

If the applicant obtains a development permit an operation permit is then applied. Operating permits allow the permitted area to be land filled until it reaches the final contours specified in the development permit.

IV. DESCRIPTION OF ENVIRONMENT

IV. DESCRIPTION OF EXISTING ENVIRONMENT

A. Physical environment

1. Hydrogeologic (Site E)

Site E is located within a very hydrogeologically diverse region. Topography at the site is relatively flat to gently rolling. As a whole, the site has a high point in the center from which the ground slopes both southward and westward toward the Saline Branch.

Site E lies on the Champaign ground moraine which is composed of the Batestown Till Member of the Wisconsinan Wedron Formation. Underlying till members of that formation include the Piatt and Fairgrange tills. In addition to the Champaign ground moraine surrounding the site, Urbana and Rantoul morainic ridges have been found to be adjacent to the proposed location.

The Wedron Formation overlies silts and clays deposited during the Sangamonian Interglacial Stage which in turn overlie outwash and glacial till of the Illinoian Glasford Formation. Outwash included in this formation forms the Middle Aquifer. Any sand and/or gravel seams contained within the Wedron Formation which supply water to wells are considered as part of the upper aquifer.

The lower aquifer, which consists primarily of pre-Illinoian outwash in buried bedrock valleys, is present locally, but may not be present below site E.

Figure IV.1 and shows the location of Site E with respect to alternative site B and regional geologic features. Figure IV.2 shows the site location, the location of on-site borings, and the locations of selected local drinking water wells which were used to generate the cross section displayed in figure IV.3.

Site E is located in the river valley of the Saline Branch Drainage Ditch. Because of this, some alluvium may be present in the uppermost portion of the geologic column. The Illinois Geological Survey map (Berg, Kempton, and Cartwright, 1984) shows this area in the E category, indicating the possibility of low potential for shallow groundwater contamination.

Bedrock surface in this area has been mapped between approximate elevations of 500 and 550 feet (Daily and Associates, Jan. 87). Local water well 11 shown on the cross section of figure IV.3 encountered shale bedrock at an approximate elevation of 495 feet, which is generally consistent with regional mapping.

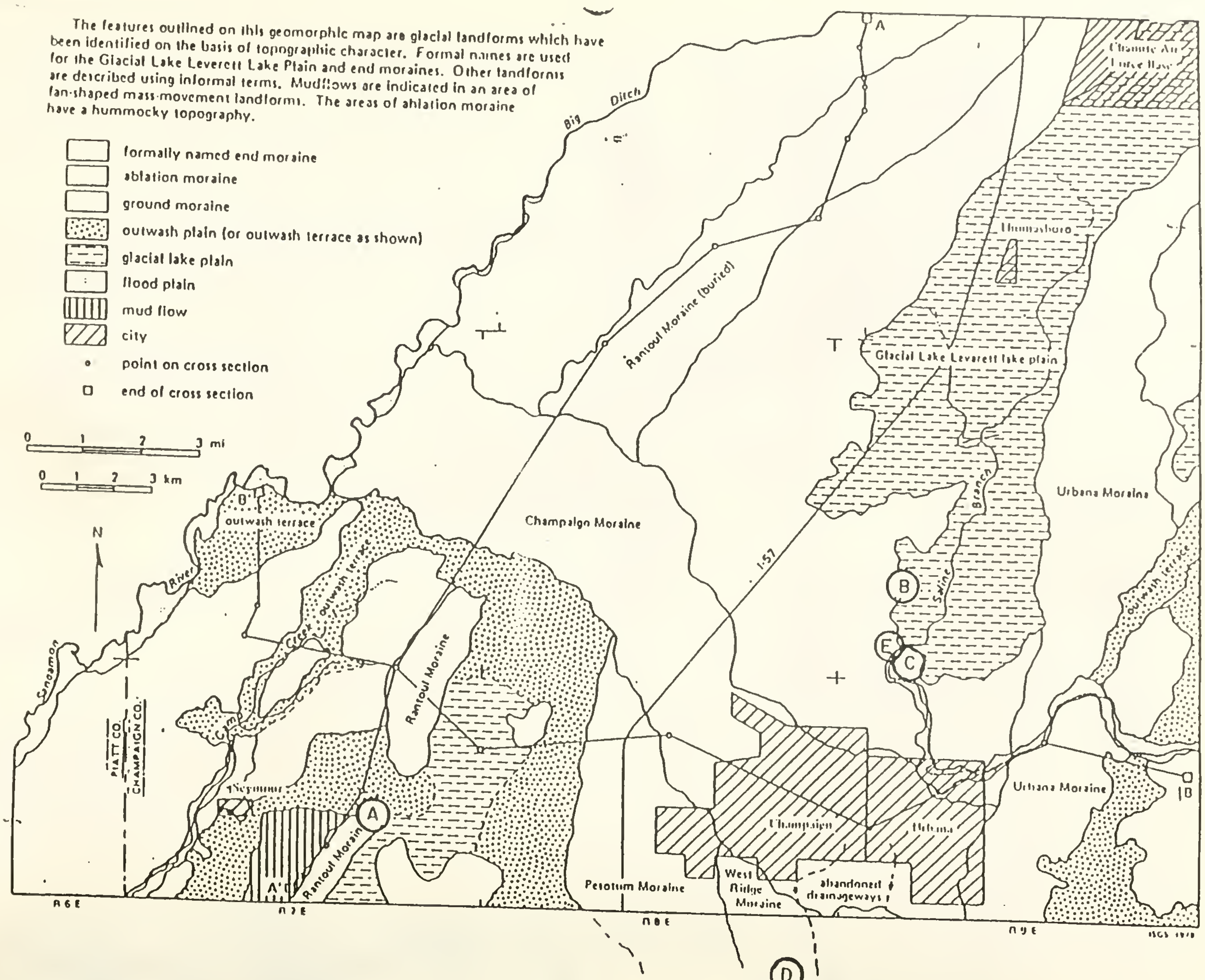


FIGURE IV.1: GEOLOGIC FEATURES NEAR SITE SELECTION AREA

(WICKHAM, 1979, FIGURE 6)

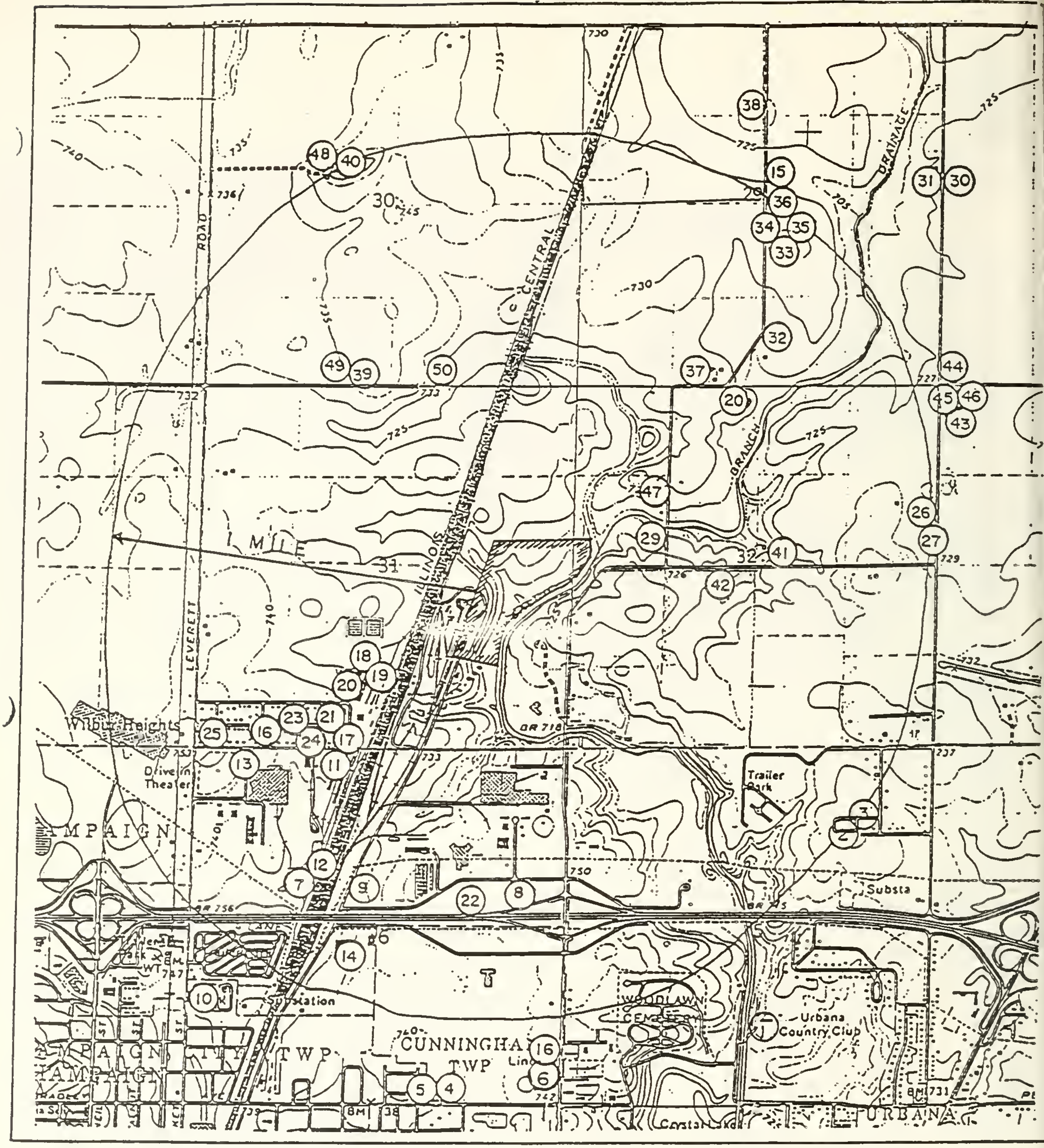
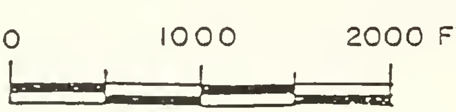
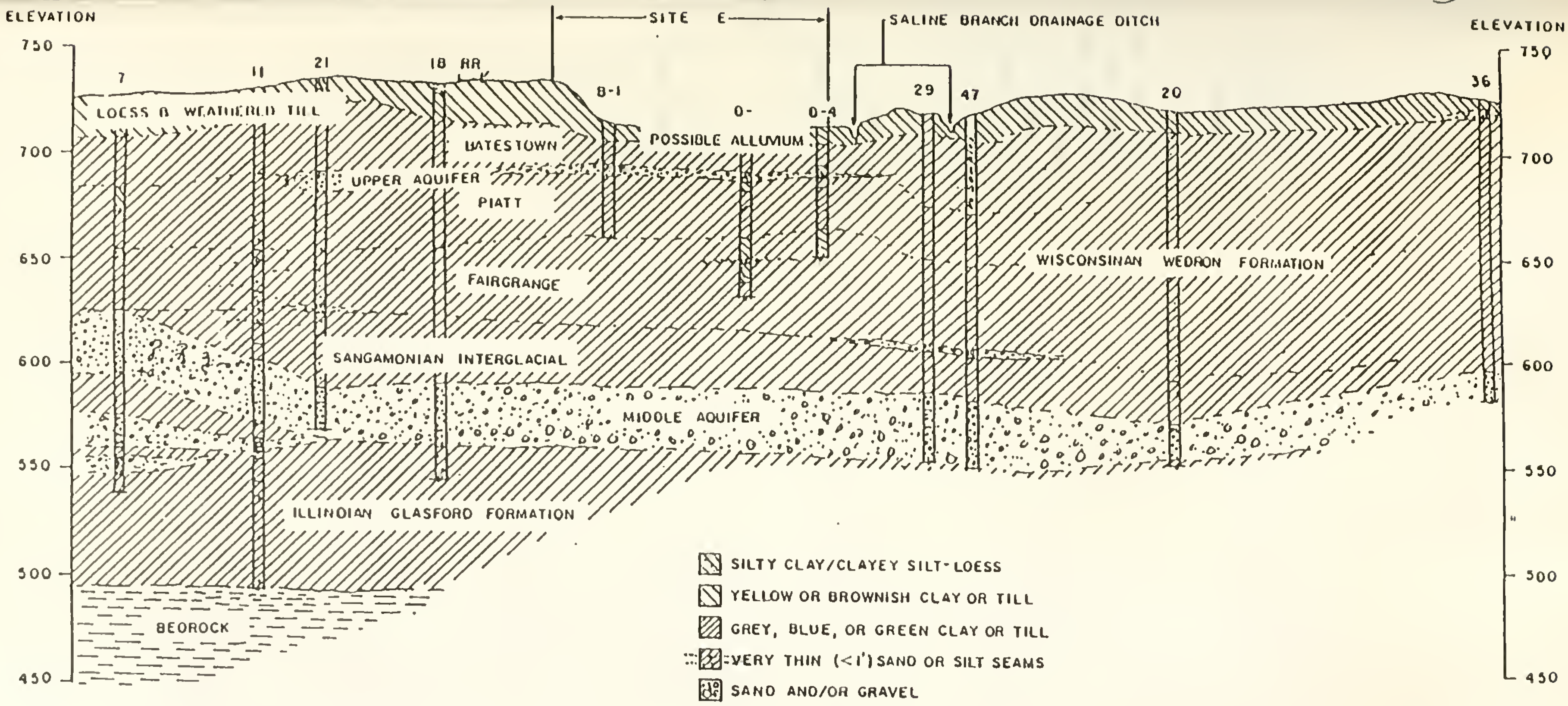


FIGURE IV 2: LOCAL WATER WELL LOCATIONS-SITE E





B-4 ONSITE PRELIMINARY BORINGS

4 LOCAL WATER WELLS

FIGURE IV.3: SITE E CROSS SECTION

0 1000 2000 FT.

SCALE

NOTE: CROSS SECTIONS REPRESENT GEOLOGICAL INTERPRETATION OF, AND BETWEEN BORINGS.

The upper bedrock formations beneath site E consist of Pennsylvanian Age deposits associated with the Spoon Formation. This formation generally includes interbedded limestone, shale, coal and sandstone overlain by approximately 200 to 250 feet of unconsolidated deposits.

There are 100 to 125 feet of Wedron Formation tills below the site, interrupted by minor lenses of sand. The most significant sand lens in this sequence occurs in thicknesses averaging seven feet, at an average depth of 25 to 30 feet below ground surface. The greatest depth of the base of this seam is at 38 feet in boring number 5, seen in figure IV.2. The seam appears to be of limited extent. Sand seams at similar levels were encountered at site B, but had greater extent and thickness at site E.

Below the Wedron Formation are approximately 25 feet of Sangamonian interglacial sediments, and approximately 100 feet of Illinoian till and outwash. The total sequence of unconsolidated deposits is approximately 240 feet thick above the shale bedrock.

The surficial geology at site E consists of a thin mantle of wind deposited and water worked loessial material overlying extensive deposits of glacial drift. The drift is composed primarily of glacial till, a heterogeneous mixture of sand and pebbles bound in a compact clay to silt matrix, but can contain inclusions of granular or silty outwash materials. The granular inclusions are generally not continuous over a large areal extent. Figure IV.4. provides a descriptive soil profile of the site E strata to a depth of 102 feet.

Hydrologically, any sand or gravel seams contained within the Wedron Formation which supply water to wells are considered as part of an upper aquifer which has been recorded as being located 25-38 feet below the surface. The middle aquifer is approximately 30 feet thick and begins approximately 140 feet below ground surface. No lower aquifer appears to be present below the site.

Based on groundwater flow towards the Saline Branch Ditch, flow through the upper aquifer is calculated to be toward the east, and flow through the middle aquifer is calculated to be to the southwest.

TABLE IV 4

Depth (ft.)	Description
0-5	Surficial soil consisting of 1 to 2-feet of dark brown SILTY LOAM overlying brown to gray and brown mottled SILTY LOAM to SILTY CLAY LOAM of loessial origin.
5-9	Weathered glacial till consisting of gray and brown mottled SILTY CLAY LOAM containing small gravel.
9-14	Glacial till stratum consisting of grayish-brown LOAM containing small gravel and occasional sand partings.
14-30	Glacial till stratum consisting predominantly of gray LOAM containing small gravel. Borings 7 and 10, however, both encountered a lense approximately 2-feet in thickness near elevation 710 in which there were some thin, waterbearing sand seams.
30-45	Variably textured strata of waterbearing glacial outwash consisting of gray LOAMY SANDS, SANDY LOAMS, and SANDS containing silt seams. Shallow wells in the area draw water from these strata.
45-65	Glacial till strata consisting of brownish-gray and gray LOAM containing small gravel and sand partings.
65-85	Glacial till stratum consisting of very dense brownish-gray LOAM containing small gravel and occasional sand partings. The sand partings in this stratum were not waterbearing.
85-90	Dark brown LOAMY SAND to sandy SILT LOAM containing some organic matter. This appears to be a wind and/or water deposited transitional layer formed during an inter-glacial period.
90-102	Gray sandy SILT LOAM with sand seams. Although this layer has an appreciable amount of sand, it was not waterbearing.

Figure IV.2 shows the locations of local drinking water wells in the vicinity of site E. All but four of these wells draw water from the middle aquifer. The four exceptions are wells 3, 33, 43 and 6, which are seated at depths of 87 feet, 40 feet, 65 feet and 270 feet, respectively. Only well 33 derives water from a depth equivalent to the shallow sand seam located below the site. All three shallow wells are approximately one mile distant from the site, and the deep well is over a mile distant from the site.

Surface drainage enters the site in three locations. There are two 36 inch culverts under the Illinois Central Gulf Railroad on the west side of site E. The southernmost of the two appears to be nearly completely blocked. The third location is approximately 200 feet east of the Illinois Central Gulf Railroad right-of-way where the drainage is through a partially crushed 12 inch culvert under township road, TR2000N. The drainage from these locations flow across the site in broad shallow cultivated swales south and then east across the site and leaves the site at a point approximately 600 feet north of the southeast corner of the site, where it flows through an 18 inch culvert beneath Lincoln Avenue, TR135E. Approximately 428 acres drain from west of the Railroad tracks and north of TR2000N onto the site. Approximately 565 total acres drain to the southeast corner of the site. East of Lincoln Avenue, the surface drainage flows through a broad shallow swale approximately 1/4 mile to the Saline Branch.

Subsurface drainage enters and leaves the site in very nearly the same locations as the surface drainage. There are both private and drainage district maintained tiles on the site. The Beaver Lake Drainage District records show a 10 inch tile from beneath the ICGRR to the west at a point approximately 350 feet south of township road TR2000N. Crossing TR2000N from the north approximately 175 feet east of the ICGRR right-of-way is a 12 inch tile. The two tiles join at a point 450 feet south of TR2000N and 250 feet east of the ICGRR, where a 14 inch tile continues along the shallow swale to a point approximately 600 feet north of the southeast corner of the site.

2. <u>Hydrogeologic description (Site B)</u>

Hydrogeologic features characteristic of site B are very similar to those of site E. This is primarily due to the fact that both sites are within a 2 mile radius of each other. Topographically, the two sites are similar in that they are flat to gently rolling. The Saline Branch Drainage Ditch flows a greater distance away from site B and much closer to site E.
The geology of the area consists of Wisconsinan Wedron Formation clay-rich glacial tills and associated sand and gravel outwash;

Illinoian Glasford Formation sandy clay glacial till and associated sand and gravel outwash; and Kansan Banner Formation tills and associated outwash, overlying shale and limestone bedrock.

The uppermost Wedron Formation tills are generally clay-rich and rarely contain joints or fractures except in the weathered zone, and thus provide the most suitable medium for waste disposal which occurs locally. Older tills are harder, sandier, deeply weathered and may contain joints.

Three significant aquifers, called the upper, middle and lower aquifers occur regionally. Each of these is associated with outwash of the three formations. Although the lower aquifer is limited regionally within the confines of the buried Mahomet bedrock valley, where it is not present, bedrock may act as a lower aquifer. Consequently, it is likely that site B overlies a middle or lower aquifer.

The upper aquifer, located 35 - 60 feet below the surface, includes any sand and/or gravel seams associated with the Wedron Formation. These typically occur between separate till members of that formation, or at the base of the formation, and may have limited areal extent. The middle aquifer, located 125 feet below the surface is approximately 30 feet thick, whereas the lower aquifer which was not present at site E is located at site B at a depth of 260 feet.

Another permeable zone of concern is the weathered zone. This usually consists of the upper ten to twelve feet of the geologic column wherein soil formation and possible jointing occurs. Loess is also present at the surface and is more permeable than underlying glacial tills. Figure IV.5 shows the cross section in which 160 feet of predominantly glacial till material, the upper 85 feet consisting of the generally clay-rich Wedron Formation tills. Drinking water wells have been identified on site B which may draw water from each of the various sand layers. Two wells are located in the upper most layer and are adjacent to the site.

These various layers and sand lenses, which may supply water to wells, are not expected to be hydraulically connected, due to the clayey till which separates them. The lower layer at the base of the Wedron Formation, approximately 85 feet below ground surface, may have limited connection to the middle aquifer if joints are present in the Illinoian tills. However, the uppermost layers should be vertically isolated by Wedron Formation tills.

Groundwater flow in the shallow aquifer is to the east. Twelve wells shown on figure IV.6 are logged in shallow aquifers.

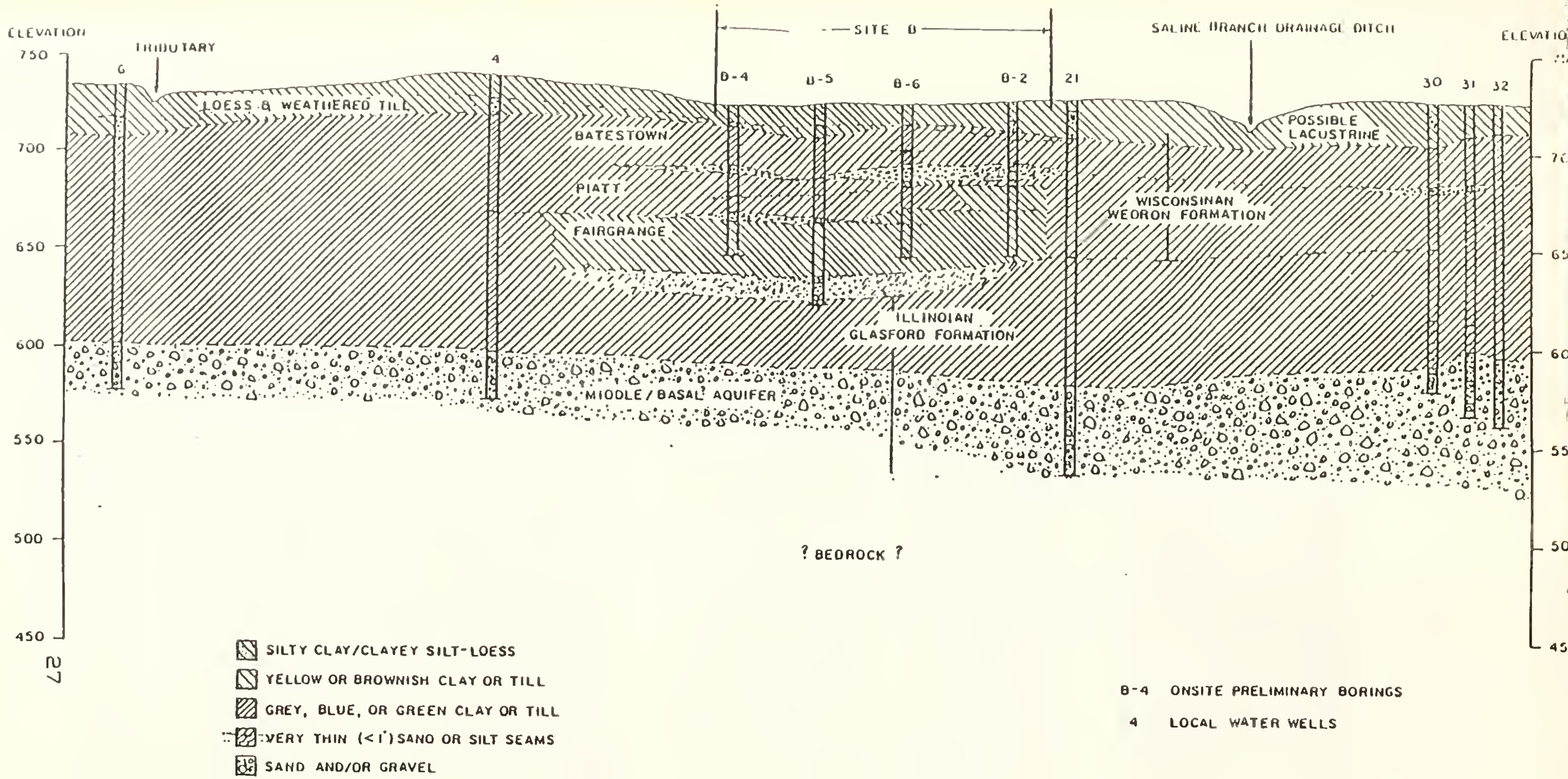


FIGURE IV.5 : SITE B CROSS SECTION

0 1000 2000 FT.

SCALE

NOTE: CROSS SECTIONS REPRESENT GEOLOGICAL INTERPRETATION OF, AND BETWEEN BORINGS.

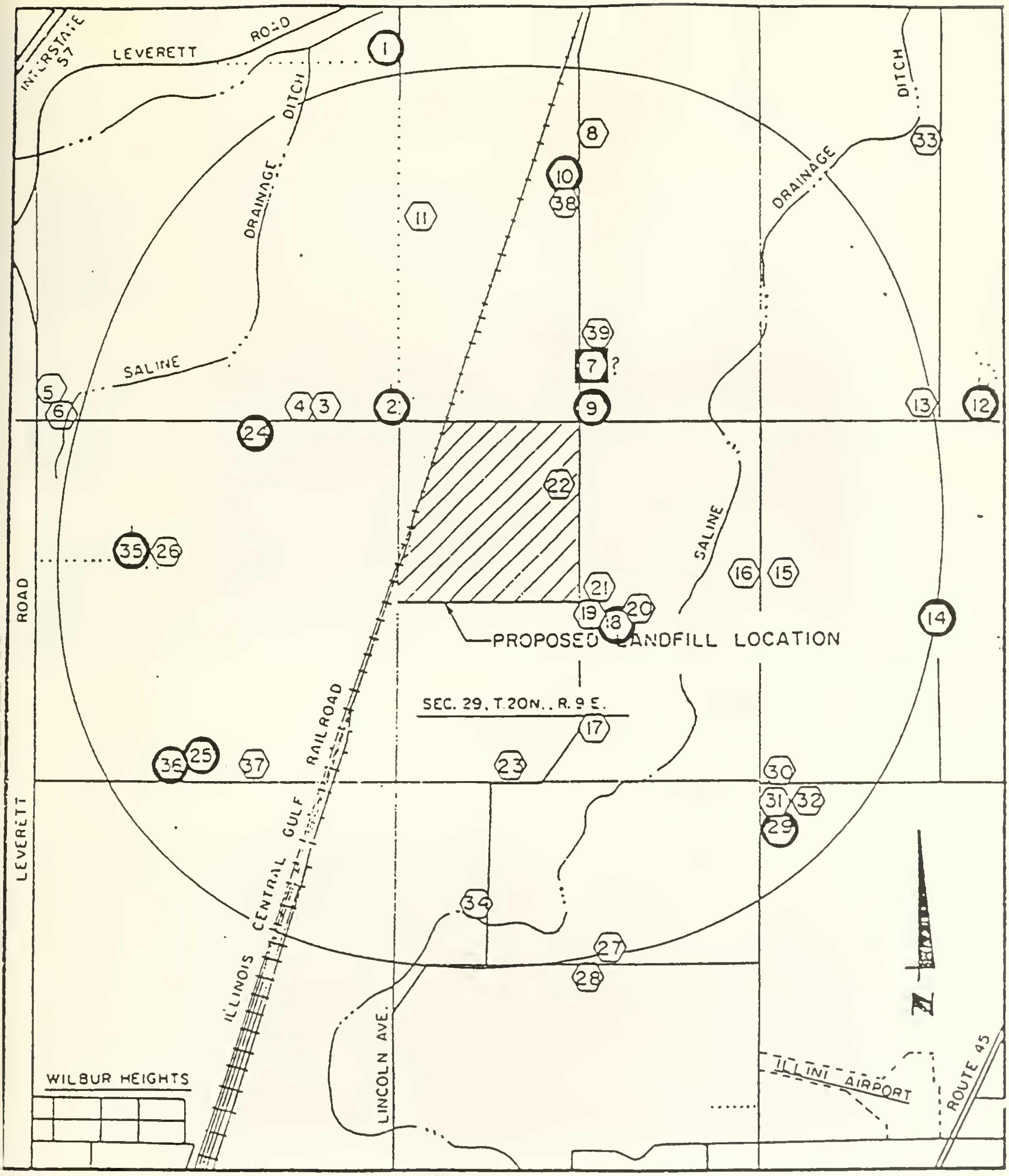


FIGURE IV 5.: LOCAL WATER WELL LOCATIONS - SITE B

(DAILY & ASSOCIATES, 1986)

Wells 1, 9, 10, 14, 18, 24, 25, and 36 are at depths ranging from 30 to 46 feet. Well 29 is at 65 feet, and wells 2, 12, 35, and 40 are between 80 and 93 feet at the base of the Wedron Formation. Of the twelve shallow wells, five are potentially down gradient, three of which are almost a mile or more distant from the site. Two appear to be within a thousand feet of the site.

Surface water enters site B from the north and west sides and leaves the site in an easterly direction. It appears that approximately 575 acres, including the site, drain to the southeast corner of the site and then another quarter mile to the Saline Branch. The northeast and southeast corners of the site slope to a swale which crosses the site. The site is not located within the 100 year flood plain as is site E.

The site also contains subsurface drainage tiles, belonging to the Beaver Lake Drainage District, which follow the natural drainage through the site. These tiles which are ten to twelve inches in diameter, extend through the northern and western part of the site and combine into a larger tile before leaving the site to the east.

3. <u>Visual description - SITE E:</u>

(See figures IV.7 - 12)

4. <u>Aesthetic/Amenity conditions</u>

Current conditions existing for site E are haphazard. The mix of the land uses on site E as viewed previously are not of high aesthetic quality in terms of line, color,texture, and form. View to the site is restricted because of the buildings, roadways and the topography of the area. The site lies in close proximity to the Saline Drainage Ditch which has water in it year round (a positive visual feature to the area). The area in which site E is located is industrial in nature. The proposed site is an irregular shaped parcel with the only amenities being road access to the site and rail access. Site B, the alternative site, is flat with no surrounding topography. The site is currently worked as a farm and is visible for several miles due to the region's contours. Amenities available to Site B include the ease of access through township roads and the site topography for ease of landfill operation.

DESCRIPTION OF VISUAL CHARACTER - SITE E:

(South of Site E along the Saline)

(Site E looking west towards rail road tracks)

Site E has little asthetic or visual value. The site itself consists of shrubs, weeds, construction debri, and garbage. Directly to the south of the site there is a uncontrolled dump area and to the east of the site there is a automotive junk yard.

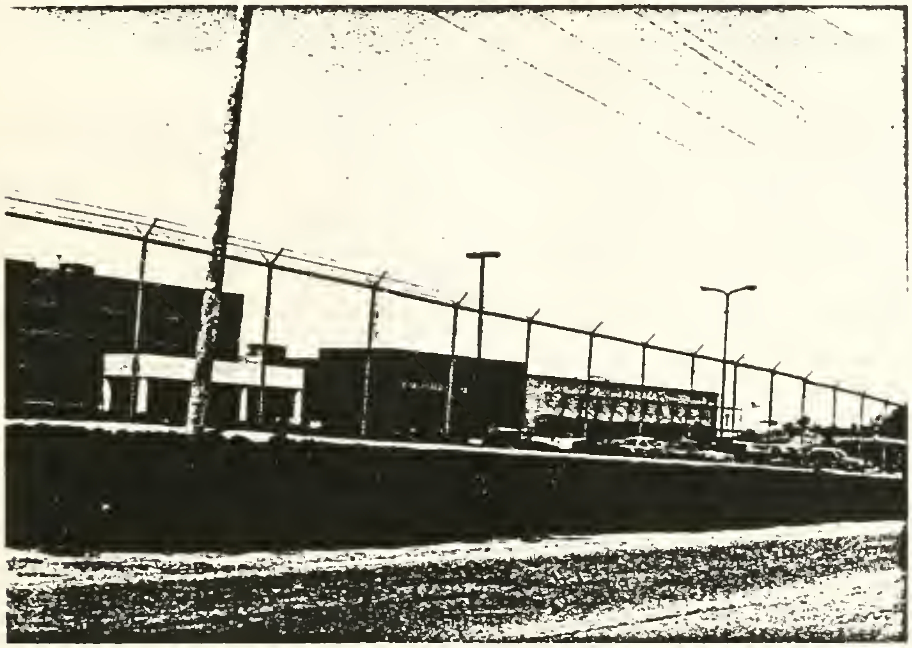
VISUAL DESCRIPTION - SITE B

(Site B looking from the northeast)

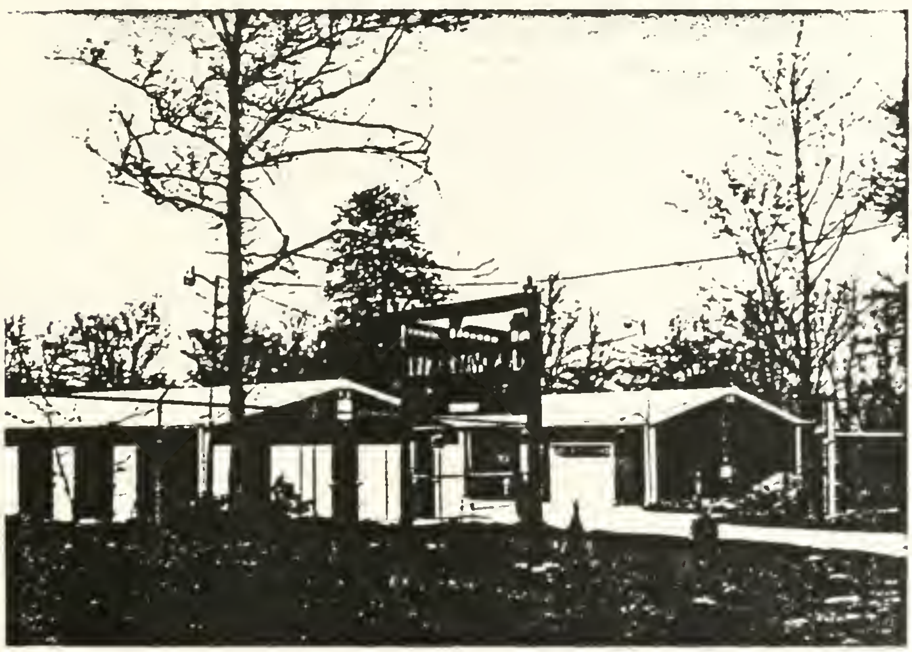
(House south of site B)

Site B consist of flat commercial agriculture land. A landfill at site B would create large mounts of dirt where once flat farm land existed. There are four residences that would be in view of site B who would experiene a negetive visual impact from the site.

VISUAL DESCRIPTION - SITE E: SURROUNDING LIGHT INDUSTRY



(J.M. Jones just south of site E)



(Ware House just east of site E)

5. Wildlife and habitat description

Both sites B and E are currently devoted to agricultural purposes, primarily the cultivation of row crops. The soil types reflect the soil of the parent material, the drainage, and vegetational history. It is composed primarily of dark upland prairie soils of either Drummer, Flanagan, or Catlin soil types. These soils are loam till covered with 3-5 feet of loess. When properly managed they are the most productive in the country yielding about 100 bushels of corn per year/per acre. The sites are located on the transition between agricultural and rural homesites. The only wildlife habitat in the vicinity, aside from small woodlots in agricultural areas, is a narrow corridor along the Saline Branch Drainage Ditch at site E. The Illinois Natural History Survey has verified that no important bird, mammal, amphibian, or terrestrial plant species occupy or are located in close proximity to either site. Also, the sites do not represent a critical habitat element for any known species of plant or animal. The presence of a drainage ditch at site E, however, prompts consideration of aquatic habitat/wildlife concerns within the ditch as well as the connecting waterways which may be impacted.

The drainage ditch and its influent tributary is of the type that originates at a field tile and has an unusual beginning in the sense that it begins with a large and surprisingly deep hole (kettle hole) scoured out at the base of the tile. In many cases such pools are capable of supporting large concentrations of fish. The ditch consists of a large open channel which flows smoothly over a substrate of clay, silt, or loam. It lacks aquatic vegetation, other than some simple algal growth, but is bordered by grasses, herbs, and shrubs which form a partial buffer zone between the cultivated field.

Water temperatures may approach 100 degrees during the summer months and 32 degrees in winter. The lack of shading bank vegetation permits extreme daily temperature fluctuations of greater than 20 degrees.

The chemistry of the drainage ditch water; while basically related to the mineral composition of the watershed, may be strongly influenced by domestic and industrial pollutants and sub-surface runoff. Typical pH readings are slightly above neutral while dissolved oxygen readings may vary from super-saturated to less than 1 part per million.

Typical pool/riffle sequences are absent, thus distribution of fish when present is relatively uniform throughout. The long open ditch may dry up if precipitation is low during the summer months. In spring, when precipitation is high, it may provide a refuge area for fish from the swift currents of its connecting tributaries.

The small size, instability of flow, and lack of shade generally produce a highly unstable aquatic environment for fish. While no collection records are available for this drainage ditch, it is believed that the fishery of this ditch is of no significant importance in itself. Small muskrat and amphibian populations which utilize such habitats may be present, but undoubtedly in such small numbers as to be relatively insignificant to the overall abundance of such species.

While conditions within the drainage ditch are not conducive to aquatic plant or animal communities, the river continuum concept suggests that changing conditions of an upstream location could have drastic impacts on downstream sections. Therefore, the condition of and effect on the immediate drainage basin of this drainage ditch are described.

The Saline Branch Drainage Ditch is a part of the Vermilion River Sub-basin which extends throughout east-central Illinois. From its point of inception at the site E location it extends southward through the north-east sections of Urbana where it intersects with Crystal Lake Park retention lagoon. The ditch continues eastward where it receives effluent from a local sanitary treatment plant and then joins the West Branch of the Salt Fork River, the Salt Fork River, and ultimately the Vermilion River just west of the town of Danville.

Almost the entire Vermilion watershed has a rolling, hilly terrain. Most of the watershed is classed from 63-87% cropland, 3-9% pasture, and from 1-17% woodland. The water levels vary greatly which is characteristic of most streams in Illinois and the adjoining floodplain are commonly inundated with flood waters during periods of high precipitation occurring mainly in the spring months. The stream banks are usually steep and non-vegetated except for the presence of grasses and forbes on the upper banks.

The uses of water within the watershed include recreation, drinking water supply, stock watering, fur trapping, and industrial water supply. Stock watering is primarily restricted to small tributaries where water quality is unaffected by the conditions in the main stream channel. Drinking water is supplied by municipal reservoirs.

There are four water supply reservoirs for public use in this watershed in addition to many smaller impoundments not designed for municipal use. They are Lake Vermilion (868 acres), Georgetown Lake (68 acres), and two Paris Lakes (60 and 176 acres). Neither of these reservoirs are affected by influents of the Drainage Ditch-Salt Fork system, however.

In general, the Vermilion River watershed and its adjoining tributaries have physical characteristics which indicate suitable conditions for good fish production. Although some pollution occasionally occurs which results in periodic fish kills, no continuous pollution is found in any stream site. Pollution of any source would obviously decrease the recreational potential wherever it occurs and sub-lethal amounts of pollutants entering a stream over a long period of time probably affect fish populations more than a lethal dose over a short period of time due to a continuous reduction of food organisms and destruction of spawn.

The watershed supports a heterogeneous mixture of fish species and therefore provides a variety of fishing opportunities. Game fish make up 29%, commercial fish 3.1% and forage fish 68 % of the number of species sampled in the Salt Fork River. While fishing pressure is limited by unavailable public access along most of the drainage system, fishing pressure is evident and it appears that a moderate sport fishery is developed. The river area around Danville receives a majority of the fishing pressure. Although the commercial fishery is not developed, a small commercial fishery could exist in this area by harvesting of commercial fish which make up to one third of the total poundage of fish collected in recent surveys.

In general, the Vermilion River Sub-basin is a rich and diverse aquatic system as compared to other local drainage basins. It supports 51 species of fish (Appendix 1), several of which occur only in this drainage. None are expected to be affected by the flow regime and conditions of the Saline Branch Drainage Ditch, however. Tributaries likely to be affected by the effluent from the drainage ditch, such as the Salt Fork, already exhibit reduced populations of fish species, as their natural populations are ephemeral, consisting of occasional immigrants of the more sensitive species and local populations of the more ecologically tolerant species. Reduced populations are probably a result of current levels of sewage treatment plant effluents which mandate unavoidable impacts on natural populations.

7. <u>Infrastructure</u>

a. Water Supply - Site E:

Currently, around 70 wells are drilled within one mile of the site, most 150 to 200 feet deep (Figure IV.2). These deep wells may cut across the shallower sand zones. A significant number of these wells are not in service, as treated water is available to residents located in the west, south and eastern areas of the site.

b. Water Supply - Site B:

There are 40 private wells within one mile of site boundaries, 15 within 1/2 mile of the center of the site, 12 less than 65 feet deep and 5 less than 110 feet deep. There are 23 drilled and finished wells between 120 and 266 feet deep (Figure IV.6).

B. Access - circulation patterns

1. Site E

Road access is quite good from everywhere in the county, very good from Champaign-Urbana. Two primary access routes go to site E (Figure IV.13).

1) Lincoln Avenue: I-74 to North Lincoln Avenue to Wilbur Road and Oak Street.

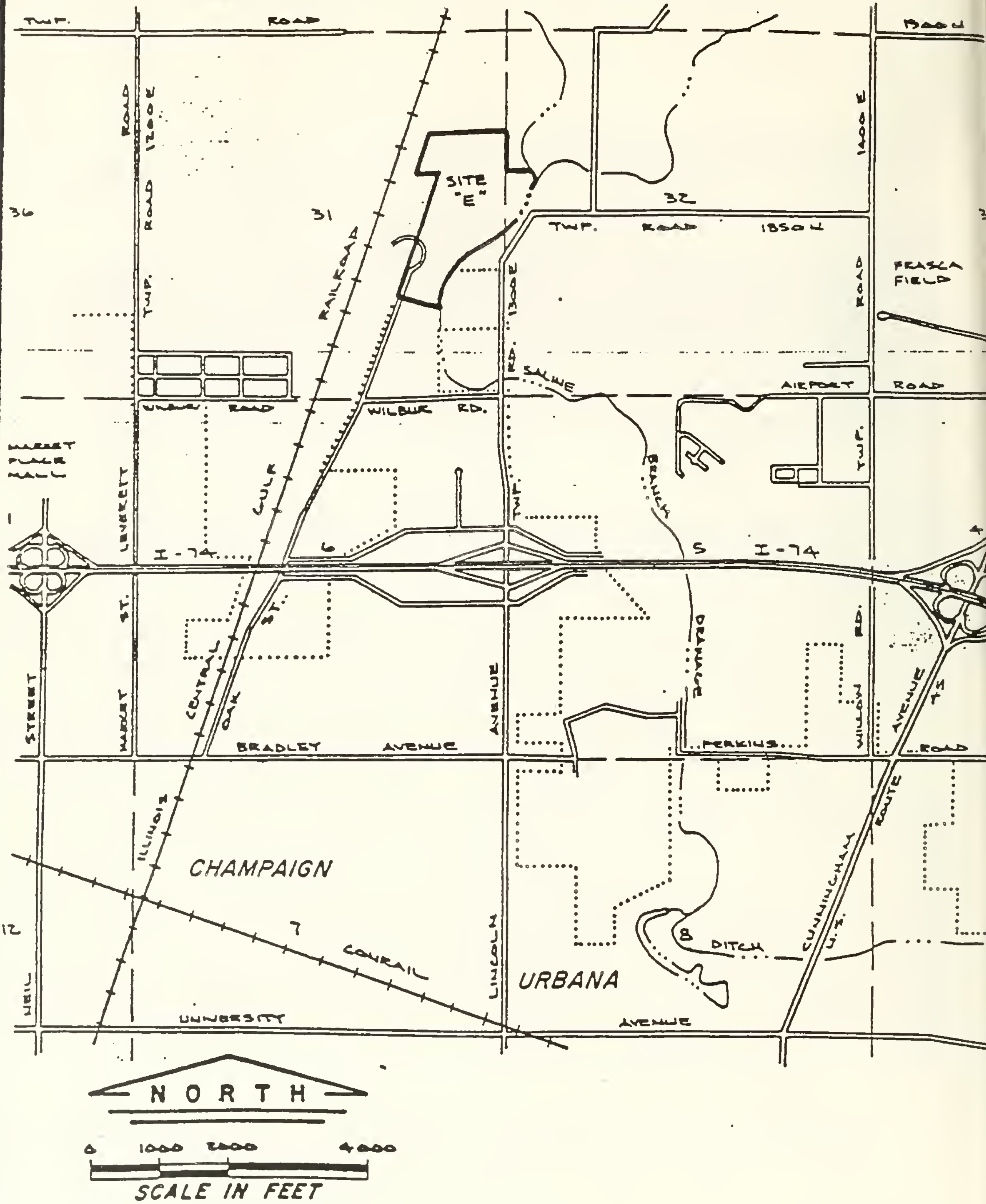
Access from Lincoln Avenue: Oak Street north of I-74 is 16 feet wide, has oil and chip surface in bad condition, and no shoulders or roadside ditches. Wilbur Road is a narrow mud road, has aggregate surface, and neither shoulders nor roadside ditches. North Lincoln Avenue south of Wilbur is wide, has two lanes, asphalt pavement with aggregate shoulders and deep roadside ditches.

2) Bradley Avenue: Bradley Avenue along Oak Street (not a public street) to the site.

Access from Bradley Avenue: Oak Street south of I-74 is 22 feet wide, has oil and chip surface, no shoulders and roadside ditches, and shows signs of base failure. Bradley is a major arterial street with four lanes and is in good condition.

Traffic Volume:

8500 to 11000 vehicle trips per day were counted at the access from Lincoln Avenue to Wilbur Road and Oak Street. For further traffic volume information refer to Figure IV.14.


TWP. ROAD
ROAD 1200 E
TWP. ROAD
SITE "E"
31
32
36
RAILROAD
TWP. ROAD 1850 N
1400 E ROAD
FRASCA FIELD
TWP. RD. 1300 E
SALINE
AIRPORT ROAD
WILBUR ROAD
WILBUR RD.
MARKET PLACE MALL
LEVERETT ST.
GULF
BRANCH
TWP. RD.
I-74
6
5
CENTRAL
OAK ST.
DRAINAGE
STREET
MARKET ST.
BRADLEY AVENUE
AVENUE
PERKINS ROAD
WILLOW RD.
AVENUE
45
ILLINOIS
CHAMPAIGN
12
7
CONRAIL
LINCOLN
URBANA
8 DITCH
CUNNINGHAM
U.S. ROUTE
NEIL
UNIVERSITY AVENUE
NORTH
0 1000 2000 4000
SCALE IN FEET

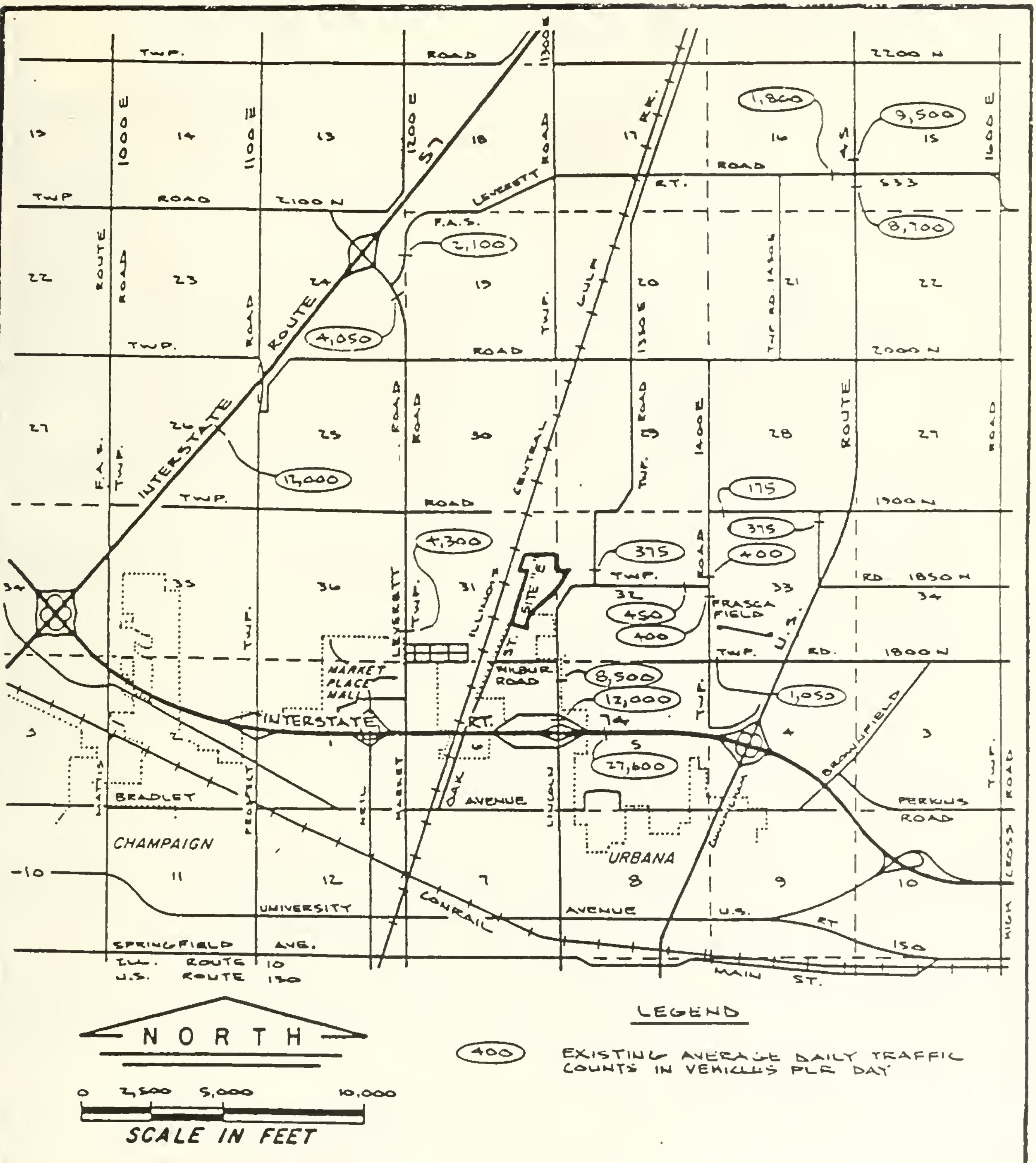


FIGURE III.14

EXISTING TRAFFIC COUNTS SITE "E"	DATE 9-13-87
BERNS, CLANCY & ASSOCIATES, P.C. CONSULTING ENGINEERS · LAND SURVEYORS · PLANNERS 405 East Main Street – P.O. Box 755 Urbana, Illinois 61801 Phone 217-384-1140	SHEET ___ OF ___
	JOB NO. 1574

AVERAGE DAILY TRAFFIC FIGURES TAKEN FROM THE 1986 PROVISIONAL TRAFFIC MAP FOR CHAMPAIGN COUNTY

2. Site B

Access to site B is very good from all parts of the County and available from all four directions via highway (Figures I.1 and IV.15):

1) North: from U.S. Route 45 and I-57 to Leverett Road which connects to Township Road (TR) 1350 E.
2) South: from I-74 to Lincoln Avenue and TR 1350 E
3) East: from U.S. Route 45 to TR 2000
4) West: from I-57 to Leverett Road and Market Street to TR 2000 North

1. North-Approach: TR 1350 E is an 18-foot wide road with oil and chip surface and earth shoulders and a shallow roadside ditch. A sharp curve south of the Leverett elevator and sight restrictions represent a safety problem. The 40-foot Township Road right-of-way seems too narrow.

2. South-Approach: TR 1350 E is an 18-foot wide road with oil and chip surface and earth shoulders. A sharp curve and right-angle turn about 1/2 mile south of the site and sharp curves and embankments at the intersection of TR 1850 and TR 1300 E represent severe safety problems due to visibility limitations. The 40-foot Township right-of-way seems too narrow for a minimum of a mile south of the site.

3. West-Approach: TR 2000 N is a 16-foot wide road with oil and chip surface and shallow earth shoulders and shallow roadside ditches, the Township Road right-of-way seems too narrow (50 feet wide), roadway improvements would require additional right-of-way, and a 5 ton load limit for the winter suggests an unstable road base. The usable at-grade crossing with the Illinois Central Gulf Railroad track is only 15 feet wide and in bad condition and protected by cross-back signs only. Leverett Road is 18 feet wide, has concrete pavement with roadside ditches and aggregate shoulders.

4. East-Approach: TR 2000 is a 15 feet wide road with oil and chip surface, earth shoulders and profound ditches at some locations. A five ton load limit for the winter is indicative of an unstable road base. An 18-foot wide concrete bridge over the Saline Ditch about 1/2 mile east of the site has no weight restrictions, is in good condition but might represent a safety problem. The 1/2 mile section of TR 2000 N directly west of U.S. 45 has experienced flooding problems.

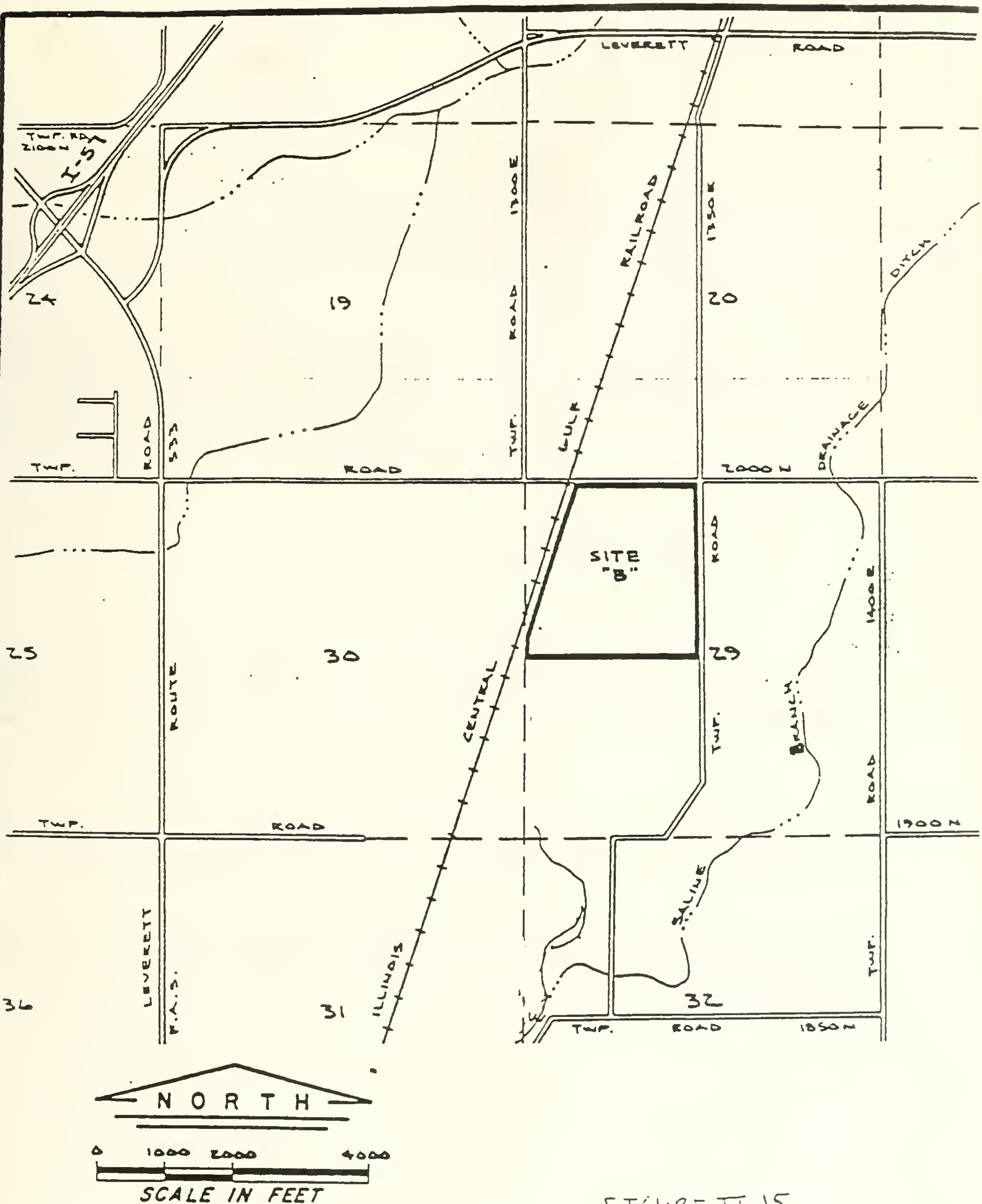

LEVERETT ROAD
TWP. RD. 2100 N
I-57
TWP. ROAD 1300 E
TWP. ROAD 1350 E
ILLINOIS CENTRAL GULF RAILROAD
TWP. ROAD 2000 N
TWP. ROAD 1900 N
TWP. ROAD 1850 N
TWP. ROAD 1400 E
LEVERETT ROUTE F.A.S.
DRAINAGE DITCH
SALINE BRANCH
SITE "B"
19
20
24
25
30
29
36
31
32
NORTH
0
1000
2000
4000
SCALE IN FEET

FIGURE IV.15

Traffic Volume:

On Leverett, 1.25 miles west of the site ADT is 4050 vehicles per day. On U.S.Route 45 1 1/2 mile east of site ADT is about 8700 vehicles per day.

On Leverett, 1.25 miles west of the site ADT is 4050 vehicles per day. On U.S.Route 45 1 1/2 mile east of site ADT is about 8700 vehicles per day. For other traffic counts around site B please refer to Figure . On Leverett, 1.25 miles west of the site ADT is 4050 vehicles per day. On U.S.Route 45 1 1/2 mile east of site ADT is about 8700 vehicles per day. For other traffic counts around site B please refer to Figure IV.13.

E. Socioeconomic Setting

1. Population characteristics

Site E:

75 dwellings house approximately 165 individuals within 1/2 mile, and 180 dwellings house 396 individuals within 1 mile of the impact zone. Land use around the site is agricultural, industrial and commercial. The site itself is potential agricultural land.

Site B:

10 dwellings house approximately 22 individuals within 1/2 mile, and 34 dwellings house approximately 75 individuals within 1 mile of the impact zone. Land use around the site is agricultural.

The 1980 Census indicates that Census Tract 106, Blockgroup 105 where both sites are located consists mainly of owner occupied housing with a mean value of $ 60 000 (1980 $). 12 % of the population is black.

V. ENVIRONMENTAL IMPACTS

V. ENVIRONMENTAL IMPACTS

A. Preemption or denial of use existing on project site or desired project

Site E

Utilizing site E as a landfill would forego the existing agricultural use. The land evaluation score relative to soil productivity which was conducted earlier in the site selection process rated site E as having a low productivity.

Site B

Development of Site B into a landfill would forever end the use of it for agricultural purposes. The land evaluation score given to site B was one of high productivity.

B. Relocation of uses preempted from project site, or denied future use of project.

Notable preemptions primarily affect site E. The degree of impact in terms of dollar values for each preemption has not been determined. Utilizing site E as a landfill would forego any possibility of further industrial development on the site proper. This development would most likely be an expansion of the food processing operations that are to the immediate east of the site. Landfill development now would also exclude the possibility of future construction of railroad spurs to areas that are east of the site. No future uses other than agriculture were projected for site E

C. Impact on environmental conditions

1. Geologic impacts

Site E

From a geologic standpoint, the most drastic impact of a landfill locating at Site E is the removal of 20-40 feet from the geologic column. In the case of site E, this means the removal of the entire topsoil layer or 'A' horizon consisting of 1-2 feet of dark brown silty loam overlying brown to gray and brown mottled silty loam of loessal origin. Also removed will be the lower layers of glacial till consisting of silty clay loam and gravel, a glacial till stratum consisting of grayish brown loam, gravel and occasional sand lenses. A sand lens may also be removed in the process, the impact of which will be referred to in hydrologic impacts. The final layer removed from site E will be a variable textured strata of water bearing glacial outwash which consists of loamy sands, sandy loams and sands containing silt seams. Three shallow wells do draw water from this strata.

The removal of the above strata will eliminate the existing topography. Productive topsoil of the 'A' horizon will be stripped from the site and stored as overburden in large stock piles. This soil will then be used as the landfill is put into operation. The topography during the fills expected lifespan will change periodically as the large stock piles of overburden are shifted from one area on the site to another.

Given that the various strata will be removed to a depth of 20-40 feet, there will be additional adverse impacts on the area. The primary impact will be that of erosion of the overburden. Since the nutrient rich topsoil will be stored in stock piles, their susceptibility to the elements, mainly wind and precipitation, will greatly increase as more and more overburden is excavated. The topsoil may move, via overland flow, to the Saline Branch ditch and, over time, begin a silting process which would require extra expense and manpower to alleviate. Leaving the topsoil exposed to the elements also reduces the productivity of that soil through leaching of valuable nutrients during each rainfall.

Wind erosion will seriously affect surrounding environments. Freshly stocked overburden is highly susceptible to high winds or sporadic gusts of wind. Dust from overburden piles can be carried long distances in winds as low as twenty miles per hour. This dust proves harmful to surrounding industries, farms and the general welfare and health of neighbors in the region.

In addition to the erosion of overburden stock piles, post closure topography may also cause problems with the surrounding lowlands and waterways. As previously mentioned, the overburden stockpiles will become exposed to the erosive and leaching impacts of wind and precipitation. Because of this, nutrient conditions of the soil may be reduced when the reclamation process begins during the post-closure process. On site E, the post-closure topography will be highlighted by a massive 20-30 foot high hill which is a result of piling waste and covering it with the stockpiled overburden. Because of the fact that reclaiming the hill with a stabilizing vegetative ground cover could take up to a month, the susceptibility of the hill to erosive activity is greatly increased. If erosion begins, either through the ripple effect or more drastically through the gullying effect, controlling erosion could be extensive both in terms of cost and manpower.

The next significant impact is that of excess geologic materials. The fertile topsoil is the only geologic feature which is saved by the landfill process. The remaining 10-30 feet of removed strata is loaded and shipped to a common dumping site. Often times, this common site is non-existent, in which case, the unused material is dispensed of in areas often incompatible with the surrounding land uses. This may prove harmful if not placed under some controls. Not only is such material aesthetically displeasing, but can also be damaging to nearby streams and canals as it too falls subject to the elements and erodes into the surrounding environments.

There are no non-renewable resources that will be excavated and removed from site E during the landfill development process. Large amounts of gravel, sand and silty materials will be removed and will never be replaced, yet these are not considered non-renewable resources.

Site B

Because of the similar locality to site E, site B has many of the same geologic impacts to be considered. Due to the removal of 20-40 feet of geologic column for the construction of a suitable landfill, many of the various surface and subsurface soils will be excavated. The area will be cleared of the Drummer-Flannigan association which comprises the majority of nutrient rich topsoil. Along with this association will be lost the consortium of eroded glacial till, alluvium and loess which can all be found at depths of up to 40 feet. The various strata removed from site B will be excavated and the fertile topsoil will be stored as overburden on large stock piles.

Following the initial stages of landfill development, the topography of the area will be altered drastically. The rolling to flat terrain will be stripped away to make room for the 20-40 foot deep pit which will be used to dump the collected municipal waste. Large stock piles of overburden will mark the topography of the area and will stand out from a greater distance than does the present topography.

Two additional impacts will exist as a result of the landfill locating at site B. The first impact is that of erosive activity caused by wind and precipitation on the large piles of raw overburden. Unlike site E, the saline branch ditch is located one quarter mile from the site, but drainage from the site could feasibly carry sediments from the unprotected piles to the saline branch ditch causing eventual siltation of the ditch and the need for possible dredging.

Overburden piles when exposed to the elements can transform quickly from nutrient rich topsoil to nutrient deficient topsoil as a result of continuous rainfall and the affects of leaching action. This would adversely impact post-closure topography and site condition because of less productive vegetative growth due to the use of leached topsoil from the overburden supply.

In addition to the erosion of overburden stock piles, post-closure topography may cause problems with surrounding lowlands and waterways. As previously mentioned, the overburden stockpiles become exposed to the erosive and leaching impacts of wind and precipitation. Because of this, nutrient content of the soil may be reduced when the reclaiming process begins during the post-closure process. In site B, the post-closure topography will be highlighted by a massive 20-30 foot high hill which is a result of piling waste and covering it with the topsoil overburden. Because of the fact that reclaiming the hill with a stabilizing vegetative ground cover could take up to a month, the susceptibility of the hill to erosive activity would be greatly increased. If erosion begins, either through the ripple effect or more drastically the gullying effect, the process of controlling that erosion could prove extensive in terms of both cost and manpower.

Because wind is not uncommon in the Champaign-Urbana area, the piles of overburden will be exposed to gusts if wind and continued blowing. Overburden supplies are often moved from place to place in the fill area so frequently that vegetation may never be able to grow on the piles, thus exposing them to the wind. Wind erosion will cause dust to be churned into the air and transported as far as twenty miles or more down wind. This dust pollution is a negative impact for neighboring developments as well as aesthetic features of the area.

The other significant impact is that of excess non-usable geologic overburden. Overburden piles consist of primarily productive topsoil, thus leaving the remaining strata layers to be disposed of. Much will be used in the landfill process while still other material will be disposed of elsewhere in the immediate region. This disposal will have a negative impact on the area and surrounding locations of the materials destination dump. Often times, such material is dumped and left in large piles where it is overgrown with weeds and remains in an unnatural state. In its initial raw stages, these material dumps can fall victim to erosive activity and substantially pollute local streams and environments with sedimentation.

2. Mitigating measures

The removal of the existing topography at both site E and alternative site B can be mitigated easily by storing the topsoil overburden in piles during the landfill operation. However, upon completion of the landfill, the stored overburden can be used to redevelop a landscape similar to that before landfill development.

The loss of overburden from the piles as a result of erosion by wind and precipitation can be mitigated by the use various management techniques. The first technique to be considered is that of physically covering the piles of overburden with a polyethylene based seal. This would prevent rain and wind from loosening the raw surface particles on the pile and would prevent the movement of those particles via overland flow or air transport.

The second technique is the implementation of a management plan which would use natural vegetative cover to stabilize the overburden piles and at the same time revitalize the nutrient content of the soil. This particular plan would require the planting of various grasses and nitrogen fixing legumes which provide the nutrients in the soil. The root and ground cover from the plants would sufficiently stabilize the soil so as to prevent the transport of surface materials.

The impact of unwanted excavated material from the landfill can be mitigated by direct policy measures. In many cases, permits are required for the dumping of such material. Before the landfill process is begun, however, a plan for the disposal of the material must be adopted. Such a plan may include the contracting of the material as fill for other construction projects in the area. If properly managed, the excess material can be disposed of in a productive manner which would minimize the possibility of erosion by wind or precipitation.

3. <u>Groundwater impacts</u>

There is a concern that unknown pollutants which originate from the landfill may make their way into subsurface water aquifers and contaminate underground water supplies. The uppermost aquifer is utilized by three local drinking wells, while over 70 wells utilize adjoining aquifers. The uppermost aquifer will be isolated from the landfill site by engineered barriers, such as a slurry wall which will serve to grout any aquifers and prevent lateral flow of water, and lining the landfill with 10 feet of compacted clay to prevent seepage. By designing the groundwater gradient toward the direction of the landfill, leachates may be directed to an area where they may be monitored and withdrawn for treatment. Sumps and collection liners may be placed on top of the clay liner for removal of leachates. Leachate withdraw, however, while effective during the life of the site, is a temporary measure which can not be adequately regulated throughout the post-closure period of the site. Therefore, the intersected aquifer will be eliminated as a water supply for residents within a one mile radius of the site. An alternate source of water will be provided with new well systems or extensions of Northern Illinois Water Company service to the affected residences.

4. <u>Surface water impacts (see aquatic communities section)</u>

D. Aesthetic impacts:

Site E

Phase 1: Impacts will include use of the existing roads to transport heavy machinery to construct the site and the buildings. The impacts will take the form of noise and general dust created by the increased load on the transportation network.

Phase 2: During the operational phase of site E the impacts will be at their heaviest level the traffic will become a more continuous flow of heavy trucks transporting garbage to the site. Residences and businesses in the area will be subject to increase in traffic noise and pollution. An increase will occur in litter because of it blowing from the site. This will be minimized through the use of the bailer.

Phase 3: When the site has been used to its capacity the third phase will be invoked. This will require a continuation of the use of heavy machinery. The removal of the bailer will positively impact the area as will the cessation of the garbage trucks to and from the site. The surrounding area will possibly be impacted by the grading of the site at closure. If the placement of ground cover is not done properly siltation may show up in Saline Drainage Ditch. It will be possible during this stage of the sites life to make adjustments in the landscaping of the site to allow for a more aesthetically pleasing area.

Phase 4: The cities and the county will be responsible for maintenance and monitoring of the site for twenty years following official closure. Area impacts will be minor in terms of traffic and noise generation. Potential hazards even after closure will exist in terms of leachate leakage, methane gas generation and settlement of the fill. These impacts will effect the attractiveness of the area

Phase 5: After twenty years of monitoring the site will have relatively little impact on the area. If, however, there is discussion of converting the fill to a new land use such as an industrial park or a recreation park caution must be taken. Essentially, once the site is closed out there is no use for the parcel of land. It has simply been taken out of circulation due to the nature of its previous land use

This project will have a few indirect impacts to the surrounding area as proposed at site E. The property will be rezoned from its current light industry status. This change will eliminate the feasibility of any expansion by J.M. Jones to this site. General aesthetic values to the surrounding area may decrease as a result of the operation of a landfill. Because of the industrial nature of the surrounding land uses this overall impact will be minimal.

Site B

There is not much difference in the aesthetic impacts created by choosing site B over site E . In site B there will be a longer haul route and a different population of individuals effected. The issue of the closeness of the Frasca Airfield is one additional consideration in choosing site B over Site E. The existence of a site in such proximity to the airport may cause some displeasure to those who use the field. The use of a no action alternative will lessen the amount of aesthetic impacts in that the action will call for a transfer station where garbage is either dumped into a larger truck within a containment building or hauled directly by the carrier to an outside location.

Mitigation

In providing for mitigation to minimize aesthetic impact to the surrounding area,a comprehensive program of site design and operation are the overall key. The proper placement of berms on the site is one such mitigation another is to consider placing wind breaks along key areas of the landfill site to block prevailing winds in the summer and in general to provide a better view to those living, working or driving by the area. Site B would also call for this type of mitigation. Mitigation for a transfer station would also be in the form of some type of landscaping and structure design if a building is used.

E. Visual impact:

The visual impacts are assessed on the visibility of the site from surrounding land uses and roads. The character of the surrounding land is used to determine its compatibility with a landfill. For instance are there residential areas, parks, or quiet and serene areas near the site. Also the potential of the site to provide either a natural or a man made buffer is considered.

Neither sites E or B are near a residential area or other sensitive land use. Sites E and B also would not be visible from a major transportation artery. Site E is in an industrial area and B in an agricultural area. The visual impact of alternative 3 is difficult to access since its location can not be determined. A transfer station would require a substantially smaller area than a landfill although a high volume of traffic would be associated with its use.

F. Environmental impacts (biotic):

1. Site E

Flooding

The Commissioners of the Beaver Lake Drainage District are concerned with the potential impacts of modifying the current drainage network as proposed in the plan for site E. Examination of topographical maps of this area indicates that 20 acres of the proposed landfill would be located in the floodplain of the Saline Branch Drainage Ditch. In addition, there is a 175-acre area of Illinois Central tracks which drains into a tile that passes under the railroad through a private tile into the ditch. Obviously, modifications to the drainage network would have to be made to eliminate any potential for flooding of the landfill.

Flooding would cause serious problems for downstream land owners. Of main concern would be the potential damage to Crystal Lake Park several mile downstream from site E. Crystal Lake Park Lagoon has recently been renovated by the Urbana Park District at a cost of over 2 million dollars. Recreational facilities have been improved, banks stabilized, the lagoon dredged and deepened, and game fish stocked to encourage sport fishing opportunities. Although severe flooding would impact all the amenities of this facility, it is expected that competent engineering decisions in floodplain modification will not increase the risk of flooding beyond current levels. The surface area drained will not be increased by addition of a landfill and landfill surface runoff will be collected in a retention basin and released moderately to eliminate a sudden influx of surface water into the Saline Drainage Ditch.

Detention/Retention structures have been successfully utilized to mitigate the adverse impact of development on down gradient landowners. On-site surface and subsurface drainage facilities would be designed to handle and control those upgradient and on-site generated flows for a given design rainfall event of either 10,25,50, or 100 years. That rainfall event would be defined by local drainage district or state requirements. Failure of the on-site system which might cause drainage failures off-site would potentially occur when that event is exceeded. It would be difficult to approximate the location or magnitude of those potential failures. It is anticipated that as part of the site development, written guarantees would be provided for drainage districts and adjacent land owners such that compensation might be dispensed for failures or damage to drainage systems caused by the failure of on-site controls to operate properly within the defined design parameters.

Terrestrial Wildlife and Vegetation

Urban areas and agricultural sites have limited value to unusual or unique plant or animal species, however, some small mammals and birds which are extremely tolerant and adapted to human activity would be found on these sites. Due to the absence of critical species in the immediate vicinity of site E, no impact is expected.

Aquatic Communities

Potential impacts on the aquatic communities can be classified as: 1) those which occur in the immediate vicinity of the Saline Branch Drainage Ditch; and 2) those which occur at downstream sites resultant of the influence of the landfill location or operation.

Drainage ditches, by nature, are extremely harsh and unstable environments which tend to support few aquatic species or small numbers of transient aquatic species. Routine maintenance activities supervised by the Regional Drainage District (Beaver Lake Drainage District) are conducted on various sections of the Saline Ditch as required. The elimination of excess debris and vegetative growth along the channel, and continuous excavation of steep-banked and deep-bedded channels facilitates the flow of water. Such maintenance activities routinely disrupt established aquatic communities. Therefore, the potential aquatic impacts associated with bridge construction over the Saline Ditch at TR 1300 E, and construction activities associated with modification of the floodplain are expected to result in no additional impact at the immediate site as compared to those impacts already associated with routine maintenance activities.

There is a concern that unknown pollutants which originate from the landfill may make their way to the Saline Ditch and alter water quality to the extent that it has adverse impacts on the aquatic system. These pollutants may take the form of sub-surface leachates or surface runoff. Toxic substances would not only have an impact in the immediate area, but would also have the potential to impact downstream sites in the drainage basin. As previously described, the downstream drainage basin is a rich and diverse system which supports numerous vitally important components. Reductions in water quality could impact aquatic communities, area water uses such as recreation, drinking water supply, stock watering, and game and commercial fish production.

To avoid potential contamination, any rainfall that comes into contact with the landfill waste area will be collected in the leachate collection system, removed from the site for treatment and discharged at the treatment site. Therefore, any runoff that would even have a chance of contamination would be collected, treated, and disposed of elsewhere and not find its way into the Saline Ditch. System breakdowns and engineering flaws can not always be anticipated, however, and efforts will be made to detect and remedy toxic discharges at their earliest onset to reduce the potential for long term or extensive damages. Drainage Ditch water samples will be periodically collected and analyzed for contamination. By enhancing fish communities and aquatic habitat in the Saline Ditch, the resident fish populations may be used as natural indicators for toxic contamination.

Agriculture

The soils present on over 96% of the land in Champaign County are considered "prime" agricultural soils. Approximately 2.9% contain "non-prime" soils and an additional 0.6% are occupied by soils of "state-wide importance". The non-prime soils are made up of small areas with steep slopes, found along stream banks or are soils that have been disturbed for development of gravel pits, highway and railroad embankments, or developed urban land. The soils of state-wide importance generally occupy very small areas and are found in or on floodplains or lie over areas with sandy or loamy subsoil. Consequently, the prospects of finding a suitable landfill site in the Champaign County area that is not occupied by prime soil is extremely small. Therefore, it is unavoidable that 57 acres of prime agricultural farmland be permanently removed from production in placement of the landfill at site E.

Air

Methane gas is typically produced within the inner layers of the landfill. Gas vents will be installed below the cover to allow methane to escape from the site and dissipate into the atmosphere. Increased diesel exhaust fumes are also expected due to transport truck and heavy equipment operation. The impact of air pollution from methane gas and diesel exhaust fumes will be largely contained on site, but will likely impact eight residences within the primary impact zone to the northeast. Most residences in the impact zone are located up wind of the site under prevailing southerly winds, and will not be significantly affected.

Pests

There is concern that a landfill located at site E would serve as a harborage site for rats, mice, and insects. The presence of such pests in close proximity to a food warehouse such as J.M. Jones would make it impossible to comply with Federal Regulations regarding sanitation. In the code of Federal

Regulations, Title 21, part 110, Current Good Manufacturing Practice in Manufacturing, Processing, Packing, or Holding Human Food, subpart B it states:

> "(a)Grounds. The grounds about a food plant under the control of the operator shall be free from any conditions which may result in the contamination of the food including, but not limited to, the following: (1)Improperly stored equipment, litter, waste, refuse and uncut weeds or grass in the immediate vicinity of the plant buildings or structures that may constitute an attractant, breeding place or harborage for rodents, insects, or other pests. (2)Excessively dusty roads, yards, or parking lots that may constitute a source of contamination in areas where food is stored. (3)If the plant grounds are bordered by grounds not under the operators control of the kind described in paragraphs (a) (1) and (2) of this section, care must be exercised in the plant inspection, extermination, or other means to effect exclusion of pests, dirt, and other filth that may be a source of food contamination."

The effects of rodents on nearby farms is also of some concern. Rodents spread many human and animal diseases, kill baby chicks, start fires by gnawing through insulation wires, weaken foundations by burrowing, and consume stored feed. Care must be taken to control excessive rodent populations whenever possible through preventative measures or extermination programs.

Birds

There is concern that birds attracted to the landfill may pose a potential public safety concern due to the close proximity of Frasca Field just west of the site. Birds are often attracted to landfills because of the potential food resources available and may often congregate in large flocks in the area. To reduce the possibility of aircraft-bird collisions, the FAA drafted orders concerning landfills summarized as follows:

Federal Aviation Administration Order No. 5200.5, dated October 16, 1974 is advisory in nature and not a federal regulation or law. It is intended to provide guidance to airport owners and managers and urges them to do whatever is possible to control or eliminate landfills and open dumps that are considered incompatible with safe airport operation. The FAA assumes that landfills create a greater probability of bird strikes if they are located within 10,000 feet of a runway for turbo jet aircraft or 5,000 feet for piston aircraft of if the runway is located within a known bird flight rout created by the presence of a landfill.

Site E is directly in line of the flight path of Frasca Field and the secondary impact zone is within 5,000 feet of the runway, however it should be noted that this order was drafted in 1974. Since then considerable changes have been made in the design and operation of sanitary landfills including the banning of open dumps and inclusion of daily cover.

2. <u>Site B</u>

Flooding

Unlike site E, site B is not located on a flood plain, thus no downstream impacts are expected.

Terrestrial Wildlife and Vegetation

Since on-site land use is similar, as described for site E, no impact is expected for site B.

Aquatic Communities

Unlike site E, a drainage ditch is not located on site B, thus no impact is expected within the drainage basin.

Agriculture

The soil types and land use is similar to site E, thus similar impacts are expected for site B. It is unavoidable that 137 acres of prime agricultural farmland be permanently removed from production in placement of the landfill at site B.

Air

The air impacts are essentially the same as site E except fewer residences are located in the primary impact zone for site B. The principal incidence of air pollution will fall on four residences within 1000 feet of the landfill and seven residences within 200 feet of the principal access, 2000 North.

Pests

A similar impact and mitigation measures are expected for site B as for site E.

Birds

A similar impact and mitigation measures are expected for site B as for site E.

3. <u>Transfer Station</u>

A transfer station would eliminate the impacts associated with flooding, terrestrial wildlife and vegetation, aquatic communities, agriculture, pests, and birds in the immediate vicinity of the Champaign-Urbana area. The non-location of a dump site would eliminate most air impacts except those associated with a significant increase in diesel emissions from haul trucks. While an increase in diesel fumes and particulates is expected, such an impact will be less localized as it is dispersed over the site of the transfer station as well as the haul truck route.

4. <u>Mitigation Measures Air/Rodents/Birds</u>

In the past open land fills have been noted to attract increased numbers of rodents, insects, and birds and have excessive odor associated with them. The proposed design for this landfill, however, calls for state-of-the-art design techniques which overcome many of the drawbacks of past landfill operations. In this case daily cover will be placed on all landfill materials to control for odors, reduce windblown refuse, and prevent the attraction of undesirable birds and harboring rodents. Where livestock operations are located in close proximity to the landfill, special care in design and operation can minimize problems related to litter, vermin, and contamination but not eliminate them entirely. Measures which can be taken include: 1) Expanding the 200 foot buffer zone; 2) Providing additional screen plantings or fencing; 3)expanding pest control measures; and 4) Providing personnel and equipment to clean up problems when appropriate. Since the measures aren't foolproof, the Association may enter into contractual agreements with farming and livestock operators specifying the terms and conditions of guarantees or compensation for any damage in addition to the mitigation measures noted above. Such measures should insure that the impact of such events remains negligible and are of no great concern. It should be noted that the potential for these conditions already exist due to the presence of a refuse or junk yard just southeast of the proposed landfill site and the railroad yards on the west boarder of the proposed site.

G. Impact on public services

1. <u>Water supply</u>

Site E

An extension of the existing distribution systems for treated water (owner: Northern illinois Water Company) requires the installation of an 8-inch main connecting at Market Place and

North Lincoln Avenue. A total of 7000 feet of water main may service the area within 1/2 mile of the site, another 12000 feet are required to service area to one mile. Water might become stagnant in the main due to insufficient demand.

This option provides for replacement of existing wells (private owners) with deeper ones that are founded in deeper aquifers and are grouped to seal off the shallower zones. All abandoned wells will be sealed to prevent cross contamination of aquifers. Existing wells serve 9 residences within 1/2 mile and 22 additional residences within the 1 mile service zone. In case there is more than one well per residency only one well will be provided. Unused wells served by Northern Illinois Water Company will be sealed off.

Site B

The extension of the existing Northern Illinois Water Company water distribution system requires 21600 feet of water-main for providing service within 1/2 mile of the site, and an additional 37300 feet to extend the service to the 1-mile zone. Considering demand, supply and potential development an 8-inch main would have to be installed (Figure V.1). With a turnover time of 15-20 days water might be of reduced quality.

The replacement of existing wells involves 10 residences within 1/2 mile and 28 additional residences within the 1 mile zone. Even if there is more than one well per residency, only one well would be provided. About 8800 feet of pipe would be needed to service 11 residences, five of them within 1/2 mile of the site.

2. <u>Energy Resources</u>

Site E

Site E is located 1.5 miles from the waste centroid. Once south of site B consumption of nonrenewable resources (gas) for site E becomes higher than consumption for site B. Trucks transporting waste to the landfill roughly consume one gallon of fossil fuel per 8 miles. With an average of 175 trips Monday through Friday and 88 trips on Saturdays, this yields an additional fuel consumption of 66 gallons per week, 3413 gallons per year, and 68250 gallons over the site life of 20 years.

Site B

Nonrenewable energy resource consumption for site B will be roughly 66 gallons per week and 3413 gallons per year lower than for site E. Yet, depending on excavation depth, site E is expected to last up to 39 years less than site B.

H. Adverse impacts that the environment would have on the landfill.

Site E

Flooding at site E poses the only known adverse impact which the environment might have at either proposed site. See the discussion of flooding in Indirect Impacts (page 49). Portions of site E fall within the boundary of the 100 year floodplain. The leachate treatment pond at site E, a feature of the landfill which should not be exposed to a danger of flooding, is outside of the 100 year floodplain. Of significance, however, is the location of the retention basin within the 100 year floodplain. The purpose of a retention basin is to slowly release excess storm waters. Placing a retention basin within a floodplain allows excess storm water to enter directly into the flood waters rather than to be released slowly (which is intended by law). Effectively this is the same as having no retention basin during the 100 year storm.

I. Public service facility requirements (costs of providing additional or new infrastructure or services).

1. Water supply

Site E

Location of the landfill at site E creates possible conflicts with wells that are known to exist within a 1/2 mile and a 1 mile radius of the site. It is not known how many of the existing wells are in use presently. Costs resulting from this site specific concern are due to provision of new water sources and the closure of the existing wells. There are two possible methods of providing water to the residences. All of the residences currently rely on wells. Total system costs for the two methods discussed below are given in Table V.1. The costs of providing new sources of water to the existing residences in the vicinity is divided into the two service areas.

Table V.1 Site E Water Infrastructure Costs

Item	Costs
Water Supply (a) or (b):	
(a) New water mains-	
within 1/2 mile	117,250
within 1 mile	318,250
(b)Protected wells-	
within 1/2 mile	45,000
within 1 mile	120,000

(a). Provision of new public water mains. One method is to extend existing water mains in the surrounding area to the homes located in the affected areas. There is concern over the quality of the water provided in this manner due to the extremely low demand on the mains. Northern Illinois Water Company, the utility which would provide service, is concerned that given the low number of users on the new mains the water might become stagnant due to low demand. This concern requires the consideration of an alternative water supply source.

(b). Replacement with protected wells. As an alternative to the water mains mentioned above, protected wells could be constructed which would replace the existing wells. The costs of providing one well for each affected residence would be approximately $4000.

(c). Sealing existing wells. No matter which method of providing water is used the existing wells need to be sealed to prevent contamination of the aquifers which may be connected. These costs are unavailable but should be considered along with the other costs in the table.

Site B

Location of the landfill at site B creates identical conflicts as at site E with wells that are known to exist within a 1/2 mile and a 1 mile radius of the site. Again, it is not known how many of the existing wells are in use presently nor even how many wells actually exist in the affected area. Costs resulting from this site specific concern are due to provision of new water sources and the closure of the existing wells. As at site E, there are two possible methods of providing water to the residences. All of the residences currently rely on wells. Total system costs for the two methods discussed below are given in Table V.2. The costs of providing new sources of water to the existing residences in the vicinity is divided into the two service areas.

Table V.2. Site B Water Infrastructure Costs

Item		Costs
Water Supply:		
(a) New water mains-		
	to project and 11 residences	147,500
	within 1/2 mile	358,700
	within 1 mile	1,074,200
(b)Protected wells-		
	within 1/2 mile	50,000
	within 1 mile	140,000

(a). Potable water for the project. Site B, unlike site E, does not currently have a potable water supply. The provision of water mains for the project only and protected wells for area residences is an alternative for consideration.

(b). Provision of new public water mains. There are two possible methods of providing water to the residences. All of the residences currently rely on wells. One method is to extend existing water mains in the surrounding area to the homes located in the affected areas. There is the same concern over the quality of the water provided in this manner due to the extremely low demand on the mains. This concern requires the consideration of an alternative water supply source for site B.

(c). Replacement with protected wells. As an alternative to the water mains mentioned above, protected wells could be constructed which would replace the existing wells. The costs of providing one well for each affected residence would be the same as at site E, approximately $4000. Total system costs are given in Table V.2.

(d). Sealing existing wells. No matter which method of providing water is used the existing wells need to be sealed to prevent contamination of the aquifers which may be connected. These costs are, again, unavailable but need to be included with the list of other costs in the table.

2. Storm water drainage.

Site E

Storm drainage costs are site specific and will vary between sites. Portions of the site lie within the 100 year floodplain. See discussions above. The site-specific costs related to site E are given in Table V.3.

(a). Existing. Surface drainage at Site E consists of the drainage from the site itself as well as drainage from neighboring parcels to the west which total 175 acres. Drainage from the western parcels discharges through a 60 inch diameter culvert beneath the ICGRR tracks along the western edge of the site. This discharge then flows through an open ditch across the middle of Site E. Both the on and off site drainage flow east into the Saline Branch.

Table V.3. Site E Storm Drainage Costs

Item	Cost
1. Install two 54-inch subsurface drainage pipes a distance of 1950 feet.......	$...525,000
2. Detention basin excavation....................	161,000
TOTAL COST.......................................	686,000

(b). Proposed. As assumed for purposes of the mock-EIS surface drainage features at this site consist of a 10.78 acre retention basin which receives drainage from a parcel of 175 acres to the west. Site drainage drains directly into the Saline Ditch as well as into the retention basin.

(c). Permit requirements. Drainage District approval is required for the surface drainage design. A Department of Transportation, Division of Water Resources permit is also required due to the size of the drainage area. It is unknown whether or not the retention basin can be designed so that it is not located within the 100 year floodplain as indicated in the proposal. The affect of placing it within the floodplain on issuance of permits is unknown, but considered to be a problem.

Site B

Surface drainage at this site also enters from the west as well as north side and flows easterly to the Saline Branch. None of the site lies within the 100 year floodplain. The site-specific costs related to site B are given in Table V.4.

(a). Existing. A total of 440 acres to the north and west drain across the site. This drainage plus that of the 175 acre site proper drain to the southeast corner of the site and then flows 1/4 mile east to the Saline branch. Subsurface drainage tiles enter the site on the northern and western sides, follow the natural contours across the site, and leave the site on the east.

(b). Proposed. All surface and sub-surface drainage entering the site along the western and northern sides is intercepted into an open channel. On-site drainage is also diverted into the channel. The channel leads to a detention pond to be built in the southeast corner of the site. Drainage from the detention pond will have controlled discharge into the Saline Branch via another open channel or subsurface tile.

Table V.4. Site B Storm Drainage Costs

Item	Cost
1. Open channel excavation (on-site)	$61,800
2. Detention basin excavation	161,000
3. 36 inch culvert under Lincoln Avenue	4,600
4. Open channel excavation (off-site)	20,400
5. Fertilization and seeding (12 acres)	20,400
6. Slope protection	20,400
7. Off-site land cost (assume purchase)	10,000
TOTAL COST	298,200
Adjustment for pipe discharge versus open channel	(4,500)
TOTAL ADJUSTED COST	293,700

J. Socioeconomic impacts.

1. Property values

Site E.

Property values which may be affected by siting the landfill at site E consist of residential properties along North Lincoln Avenue and the adjacent commercial and industrial properties. The effect of the proposed project on any property value in this vicinity is moderated by the presence of existing informal or illegal disposal areas nearby.

(a). Impact on residential properties. There are a total of 180 residences within a 1 mile radius and 75 residences within a 1/2 mile radius of site E. The residential property values would only be affected if access to the landfill is from Lincoln Avenue.

(b). Commercial and industrial. There are 22 parcels with commercial and industrial uses within the primary impact zone of site E. The landfill will probably have more impact on commercial property values than industrial property values.

(c). Total property value impacts. Total assessed value of the properties within 1000' of site E is $4,278,490. Even a small percentage impact on an assessed value of this magnitude totals to a large dollar amount. The Site Finalization Decision Report states a moderate to low impact on existing property values for a landfill at site E. Although the effect is almost certainly negative no matter where the landfill is located the magnitude of the effect on property values is uncertain at this time.

Site B

Within a 1 mile radius of site B there are 39 residences. Land use at the site and within the primary impact zone is agriculture. Values for the land within 1000' of the site which might be affected are for productive acres as well as residential areas. Again, it is unclear to what magnitude the values would be affected. Table V.5 compares the property value impact of sites E and B.

Table V.5. Comparison Of Property Value Impacts

Impact	Site B	Site E
Residences within 1000'	4	3
Number of parcels within 1000'	14	22
Total assessed value, within 1000'(excluding heavy industry and railroad properties)	$439,110	$4,278,490
Relative impact considering existing adjacent land uses	High	Moderate to low

2. Employment

There is a finding of no significant impact on employment All proposed alternatives would employ approximately the same number of staff persons. Although this totals to more employment than that of the existing landfill the net increase in earnings will be negligible. No change in diversity of employment in the region nor change in basic employment is expected.

3. Local governmental revenues affected by the project.

The affected government will vary depending upon where the landfill is sited. Site E is within Urbana city limits and site B is outside of city limits and within the county. Typical revenue affects of using any land for a landfill consist of loss of revenue (real estate taxes lost from previous land use), capital and operating costs incurred, and revenues gained (tipping fees).

(a) Site E. The immediate effect of locating the landfill at site E would be to lose the present real estate taxes generated from present agricultural use. Opportunity costs are also incurred over the long run because of the lost development opportunities there. The amount lost is very uncertain but the fact remains that some of the primary industrial area in the city of Urbana would be taken away from revenue generating purposes.

(b) Site B. Immediate revenue effects of locating at site B are the same as the long term effects. Present and long term uses of site B are agricultural. Lost revenues are based on prime agricultural land values. The primary affected governmental unit would be the Urbana school district.

4. Income to community.

There is a finding of no significant impact on employment.

5. Opportunities provided to socio-economic groups.

There is a finding of no significant impact on employment.

6. Effect on current services.

(a) Public service programs not effected. No significant effect is foreseen on public service programs such as schools or law enforcement.

(b) Fire protection. There will be some demand on fire protection services but there should be no increase over what the existing landfill creates. Fires at landfills are typically small and easily covered with fill material. It is unknown what the incidence of fires in bale fill landfills is.

(c) Site E would likely be annexed by the Urbana Fire Protection District. Urbana is also the fire protection district which currently serves the present landfill. Site E is approximately 1.5 miles from the nearest Urbana fire station.

(d) Site B would be served from Urbana and Thomasboro.

7. <u>Street maintenance.</u>

Some additional street maintenance will be required due to litter and mud from trash hauling vehicles. Also, the amount of new roadway would create a small increase in snow removal. Street maintenance created by site E traffic would be performed by the City of Urbana road maintenance department. The increase in maintenance would not be significant. Street maintenance created by site B would be performed by the county.

K. Transportation

1. <u>Site E</u>

a. Traffic Volume. Assuming similar hours of operation for the proposed landfill as from the existing site (Mo-Fr 1 am to 3.30 pm and Sa 7 am to 11.30 am) peak traffic volumes occur on Mondays, with a maximum weekday volume at about 9 am - to 10 am and around 3 pm. Maximum traffic on Saturdays occurs at about 11 am.

Projected traffic volumes with and without waste shipment to Rantoul are projected as a possible Flow Control Ordinance for Champaign county could prohibit transportation of solid waste out of the county.

Table V.6
Projected Traffic Volumes for Site E

	ADT	PDT	MHT
Without Rantoul Traffic	175	200	30
With Rantoul Traffic	225	260	35

ADT ... Average Daily Traffic in Vehicles per Day (VPD)
PDT ... Peak Daily Traffic in VPD
MHT ... Maximum Hourly Traffic

Access from Lincoln Avenue via Wilbur Road to Oak Street or via a new access point further north would add 4000 to the 8500 to 11000 vehicle trips per day which would constitute an increase of 4-5%. Traffic increase on North Lincoln Avenue north of I-74 is projected as 230 cars per day (320 including Rantoul landfill traffic), and 120 vehicles per day on Oak Street from Bradley Avenue (130 including Rantoul landfill traffic) - see Figure IV.14.

b. Access.

(i) Lincoln Avenue Approach: Portions of Lincoln Ave south of Wilbur Road may have to be improved to four or five lanes to cope with already existing truck traffic. A 22-foot pavement with aggregate shoulders and roadside ditches and 400 lineal feet of site access road are required.

(ii) Bradley Avenue Approach: Access from Oak Street would have the least impact on local traffic and probably a positive effect on North Lincoln Avenue by providing a suitable alternative route for all weather conditions, as well as improvement of access to parcels facing Oak Street. Vehicles turning left from Bradley to Oak Street could cause conflict due to a lack of queuing space and high number of through trains and switching movements on the ICGRR. Left turn movements into the landfill should generally not conflict with existing traffic patterns because the landfill access would be north of most driveway access points. Required improvements are a 22-foot pavement with aggregate shoulders, roadside ditches and 7800 lineal feet of site access road.

(iii) Alternative Lincoln Avenue Approach: A third access could be created along North Lincoln Avenue to Township Road 1850 North, then across the Saline Ditch by right-of-way purchase and construction of a 27-foot wide concrete bridge. This alternative requires a 22-foot wide pavement with aggregate shoulders, roadside ditches and 1/2 mile of access road. These improvements would benefit properties in the area. Yet, landfill traffic would be restricted to Lincoln Avenue which would constitute a significant burden on the capacity due to existing heavy truck traffic caused by the industries in the area (increase of 5%).
The upgrading of all streets involved is necessary for either approach. No extraordinary maintenance would be required if the pavement is properly designed, except for litter collection, dirt or mud control, and snow removal by the City of Urbana or landfill personnel.

c. Recommended access routes. The Lincoln-Wilbur and Bradley Avenue approach are the preferred alternatives as they don't concentrate landfill traffic on Lincoln Avenue.

2. <u>Site 8</u>

a. Traffic volume. Assuming similar hours of operation for the proposed landfill as from the existing site (Mo-Fr 1 am to 3.30 pm and Sa 7 am to 11.30 am) peak traffic volumes occur on Mondays, with a maximum weekday volume at about a am - 10 and 3 pm. Maximum traffic on Saturdays occurs at about 11 am.

Projected traffic volumes with and without waste shipment to Rantoul are projected as a possible Flow Control Ordinance for Champaign county could prohibit transportation of solid waste out of the county.

Table V.7.
Projected Traffic Volumes for Site B

	ADT	PDT	MHT
Without Rantoul Traffic	175	200	30
With Rantoul Traffic	225	260	35

ADT ... Average Daily Traffic in Vehicles per Day (VPD)
PDT ... Peak Daily Traffic in VPD
MHT ... Maximum Hourly Traffic

The increase of ADT without Rantoul Traffic is 145 on TR 2000 N, and 175 including Rantoul Traffic. For further traffic volume increase please refer to Figure IV.14.

b. Access.

1. N-Approach: Necessary improvements are 1.25 miles of access road, a 22-foot wide pavement with roadside ditches and aggregate shoulders that require right-of-way acquisitions. Existing elevator traffic along TR 2000 N entering and exiting TR 1350 E will interfere with landfill traffic and cause congestion.

Mitigation: Improvements of TR 2000 N alleviate but do not prevent congestion.

2. S-Approach: Required improvements are 2.5 miles of site access road, with 22-foot wide pavement with roadside ditches and aggregate shoulders connected with right-of-way acquisitions.

3. W-Approach: Necessary improvements are 1.5 miles of site access road, a 22-foot wide pavement with roadside ditches and aggregate shoulders, the replacement of a drainage structure east of Leverett Road, a railroad grade crossing protection, necessitating right-of-way acquisitions.

4. E-Approach: Needed changes are 1.5 miles of road, a 22-foot wide pavement with roadside ditches and aggregate shoulders, drainage improvements west of U.S. 45 and necessary right-of-way acquisitions.

c. Recommended access routes.

The preferred choice is to use both, the west and east approach as they constitute a direct access to Leverett road and U.S. 45. In order to discourage a projected frequent use of the south approach several alternatives are considered:

i. Closing of TR 1350 E adjoining the site

ii. Locating the entrance to the site on TR 1350 E south of TR 2000 N and preventing northbound traffic from turning left into the site by putting a center median in TR 1350 E. This would allow area traffic to use all existing roads but necessitate an additional right-of-way acquisition from 8 to 18 properties.

K. Infrastructure

1. Site E

Landfill excavation can in the long-run obstruct the logical extension of utilities and streets as development extends to the north. The site does obstruct access to the ICGRR for potential rail spurs to areas immediately east of the site, but rail service to this area is generally blocked by the Saline Branch anyway. Increased traffic volume raises the number of traffic hazards.

2. Site B

An increased traffic volume augments the potential for conflict with farm machines on the road. Traffic interference with farm machines around site B impacts adversely the work of farmers, particularly during planting and harvesting season. An increase in traffic volume raises the number of traffic hazards.

L. Socioeconomic Impacts

1. Population

a. Site E. Land value depreciation barely affects farmers as site E is zoned industrial and annexed to the City. Residential property value will decrease where the view to the landfill is unobstructed, and flowing litter reaches the property. Land value decrease will be relatively high due to the more intensive use of land for residential purposes which causes a higher dependence of residential use on amenities.

Migration around site E may be higher than around site B as there is a relatively large number of residents living in the impact area. The number of people perceiving their neighborhood as friendly will decrease as well as the number of people who experience visual and auditory privacy. This might lead to relocation or migration during construction or/and operation and maintenance.

b. Site B. Traffic to site B interferes with farm related traffic, causes congestion and makes work for farmers more difficult. Land value depreciation affects mostly farmers due to the proximity of their production resources (water, land and air) to the disposal site. Farmland is taken out of use and may force farmers to move out of the area due to a loss of their income source.

c. Mitigation for both sites: Most property owners in the 1/2 mile impact zone will receive financial compensation for the loss of property value.

2. Employment

The current landfill has 6 employees and the selected landfill B or E will employ 10-12 people. Construction will create temporary employment opportunities for around 50 people for a minimum of one year.

3. Health and Safety

a. Site E. Eight dwellings are exposed to air pollution on access routes. Diesel emissions may cause cancer and damage the pulmonary system. Three dwelling units are exposed to noise, but the impact is limited due to already existing traffic. Flowing litter produced by traffic to the site will affect the wellbeing of residents.

b. Site B. Four dwelling units are exposed to air pollution on access routes within 1000' of the landfill. Diesel emissions may cause cancer and damage the pulmonary system. Two residences within 100' of the landfill site would be exposed to a high level of noise. Due to the wind pattern residents directly NW of the site will experience the most negative impact relative to traffic, traffic noise, dust, litter, and odors. Litter produced by site-related traffic will impact seven residences within 200' of TR 2000 N.

Residents around both sites are worried about private well contamination, skunks, vectors, and rats that are potential pest transmitters.

c. Mitigation for both sites. Street cleaning once a week on 2000 N, fencing and screen plantings reduce the movement of litter. Information will help to understand the need for a landfill, clarify health and safety issues and explain safety provisions that will be taken. Also, allowing residents to monitor the site for safety provisions may improve the attitude towards the project.

4. Disruption in daily living and movement patterns

Increased truck traffic and traffic volume in the impact area may reduce the willingness of residents to leave their house for any purpose or to let their children play outside.

a. Mitigation. Fencing and screen plantings around the site.

5. Social networks disruption

Due to the resistance of some people to having a landfill in their neighborhood, conflict between landowners willing to sell their land for the use of a landfill may disrupt the social network of a neighborhood.

6. Leisure opportunities

Negative impacts are the reduced area available for children to play safe from contamination and truck traffic. A positive impact is the recreational use of the site after its closure. Uses considered are motorcycle and snowmobile tracks and nature trails. Recreation opportunities may be decreased with pollution of the Vermillion River subasin.

VI. ECONOMIC IMPACTS

VI. ECONOMIC IMPACTS

A. Employment opportunities

Employment oppportunities. The Champaign-Urbana area typically has the lowest unemployment level, usually less than 5 %, in the State of Illinois. The location of a federal land grant university there has insured continued high levels of employment.

B. Fiscal effects on public service programs

1. Site E. Fiscal effects of the construction and operation of a landfill at Site E, i.e., necessary upgrade of roads (DiNovo), an increased level of street cleaning for litter removal (Toner) as well as mud removal (BCA), and increased need for snow removal (BCA).

2. Site B. Fiscal effects on public service programs at site B are the necessary upgrade of roads and an increased level of street cleaning for litter removal (Toner).

C. Direct impacts of project

1. Preemption or denial of use existing on project site or desired project.

a. Site E. Utilizing site E as a landfill would forego any possibility of further industrial development on the site proper and would also stop the existing agricultural use. Landfill development now would also exclude the possibility of future construction of railroad spurs to areas that are east of the site (DiNovo).

b. Site B. Development of Site B into a landfill would forever exclude the use of it for agricultural (opinion).

2. Relocation of uses preempted from project site, or denied future use of project. (NO RELOCATIONS REQUIRED)

3. Public service facility requirements (costs of providing additional or new services).

a. Water supply. Site E. Location of the landfill at site E creates possible conflicts with wells that are known to exist within the vicinity of both a 1/2 mile and a 1 mile radius of the site. It is not known how many of the existing wells are in use presently. Costs resulting from this site specific concern are due to provision of new water sources and the closure of the existing wells. The costs of providing new sources of water to the existing residences in the vicinity is divided into the two service areas.

Provision of new public water mains. There are two possible methods of providing water to the residences. All of the residences currently rely on wells. One method is to extend existing water mains in the surrounding area to the homes located in the affected areas. There is concern over the quality of the water provided in this manner due to the extremely low demand on the mains. Northern Illinois Water Company, the utility which would provide service, is concerned that given the low number of users on the new mains the water might become stagnant due to low demand. This concern requires the consideration of alternative water supply sources.

Replacement with protected wells. As an alternative to the water mains mentioned above, protected wells could be constructed which would replace the existing wells. The costs of providing one well for each affected residence would be approximately $4000. Total system costs are given in Table V.1.

Sealing of the existing wells. No matter which method of providing water is used the existing wells need to be sealed to prevent contamination of the aquifers which may be connected. These costs are unavailable but should be considered along with the other costs in Table VI.1.

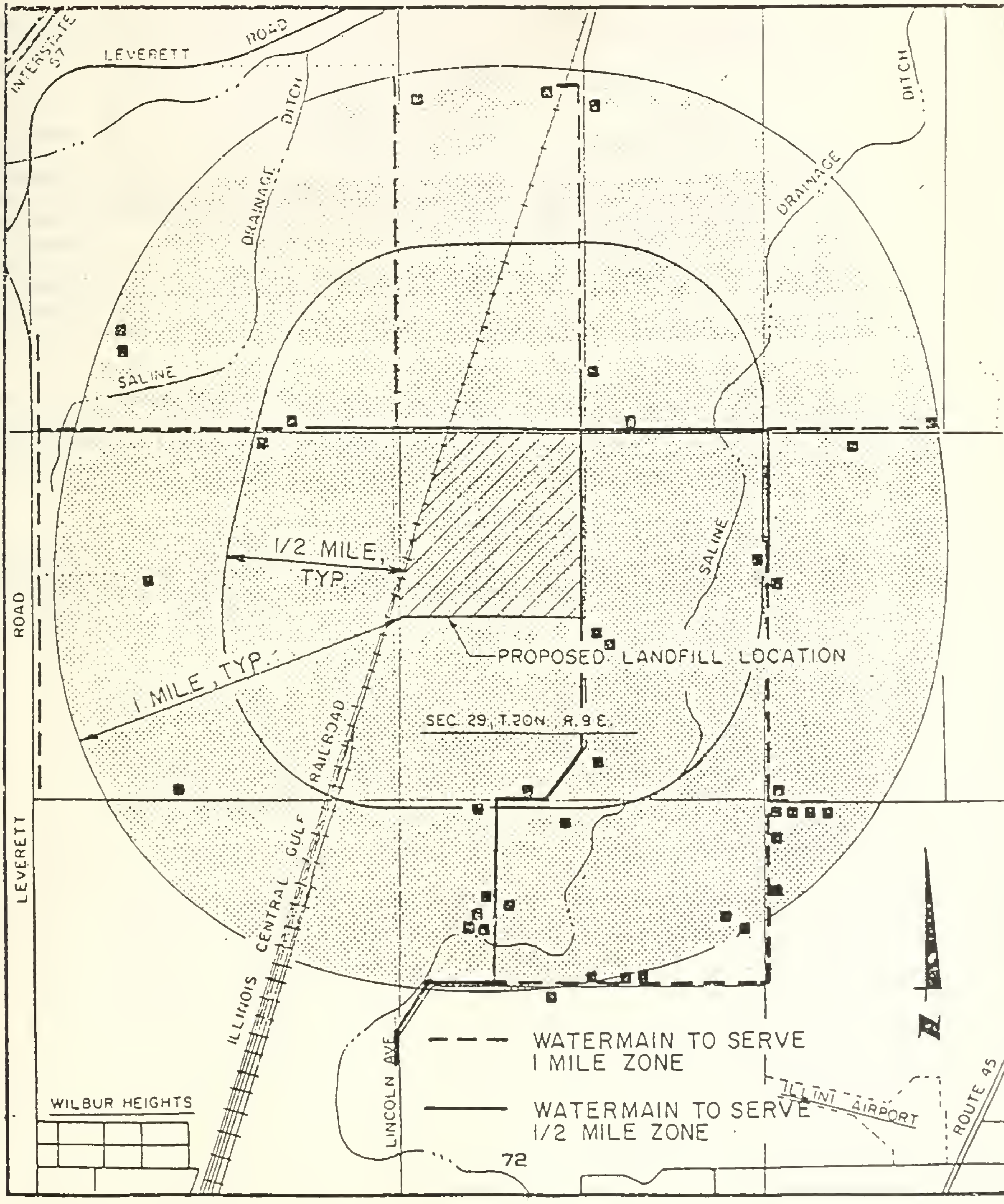
Table VI.1 . Site E Water Infrastructure Costs

Item		Costs
Water Supply (a) or (b):		
(a) New water mains-		
	within 1/2 mile	117,250
	within 1 mile	318,250
(b)Protected wells-		
	within 1/2 mile	45,000
	within 1 mile	120,000

(2). Site B. Location of the landfill at site B creates identical conflicts as at site E with wells that are known to exist within the vicinity of both a 1/2 mile and a 1 mile radius of the site. Again, it is not known how many of the existing wells are in use presently nor even how many wells actually exist in the affected area. Costs resulting from this site specific concern are due to provision of new water sources and the closure of the existing wells. The costs of providing new sources of water to the existing residences in the vicinity is divided into the two service areas.

FIGURE VI.1

HERSHBARGER SITE
DWELLING LOCATIONS & WATERMAIN LAYOUT



Potable water for the project. Site B, unlike site E, does not currently have a potable water supply. The provision of water mains for the project only and protected wells for area residences is an alternative for consideration.

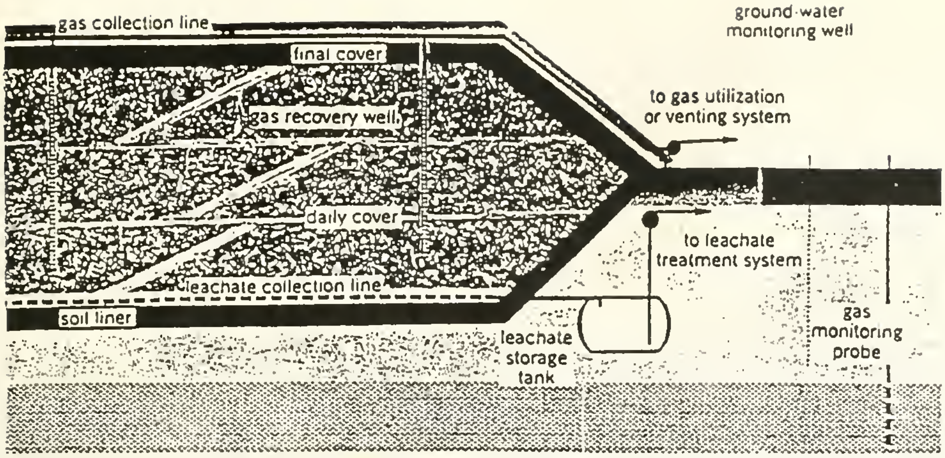
Provision of new public water mains. There are two possible methods of providing water to the residences. All of the residences currently rely on wells. One method is to extend existing water mains in the surrounding area to the homes located in the affected areas. There is concern over the quality of the water provided in this manner due to the extremely low demand on the mains. Northern Illinois Water Company, the utility which would provide service, is concerned that given the low number of users on the new mains the water might become stagnant due to low demand. This concern requires the consideration of alternative water supply sources.

Replacement with protected wells. As an alternative to the water mains mentioned above, protected wells could be constructed which would replace the existing wells. The costs of providing one well for each affected residence would be approximately $4000. Total system costs are given in Table V.2.

Sealing existing wells. No matter which method of providing water is used the existing wells need to be sealed to prevent contamination of the aquifers which may be connected. These costs are unavailable but should be included with the list of other costs in Table VI.2.

Table VI.2 . Site B Water Infrastructure Costs

Item		Costs
Water Supply:		
(a) New water mains-		
	to project and 11 residences	147,500
	within 1/2 mile	358,700
	within 1 mile	1,074,200
(b)Protected wells-		
	within 1/2 mile	50,000
	within 1 mile	140,000



Cross section of a typical sanitary landfill. (From Ref. 3.) : Robinson, 86.

FIGURE VI.1

TABLE VI.2 Priority Pollutant Organics Detected In Municipal Solid Waste Leachate : Robinson, 86.

Parameter[a]	No. of Samples Above D.L.	Analyzed	For Sites Where Detected Range PPB	For Sites Where Detected Median PPB
		Acid Organics (11)		
Phenol	3[b]	5	221–5,790	293
4-Nitrophenol	1	5	17	
Pentachlorophenol	1	6	3	
		Volatile Organics (32)		
Methylene chloride	6	6	106–20,000	2,650
Toluene	5	5	280–1,600	420
1,1-Dichloroethane	3	5	510–6,300	570
trans-1,2-Dichloroethene	3	5	96–2,200	1,300
Ethyl benzene	3	5	100–250	150
Chloroform	3[b]	6	14.8–1,300	71
1,2-Dichloroethane	2[b]	5	13–11,000	
Trichloroethane	2	5	160–600	
Tetrachloroethane	2[b]	5	26–60	
Chloromethane	1	5	170	
Bromomethane	1	5	170	
Vinyl chloride	1[b]	5	61	
Chloroethane	1	5	170	
Trichlorofluoromethane	1[b]	5	15	
1,1,1-Trichloroethane	1	5	2,400	
1,2-Dichloropropane	1[b]	5	54	
1,1,2-Trichloroethane	1	5	500	
cis-1,3-Dichloropropane	1[b]	5	18	
Benzene	1[b]	5	19	
1,1,2,2-Tretrachloroethane	1	5	210	
Acrolein	1	5	270	
Dichlorodifluoromethane	1	5	180	
Bis(chloromethyl) ether	1	5	250	
		Base-Neutral Organics (46)		
Bis(2-ethyl hexyl)phthalate	5[b]	5	34–150	110
Diethylphthalate	4[b]	5	43–300	175
Dibutyl phthalate	3[b]	5	12–150	100
Nitrobenzene	2[b]	5	40–120	
Isophorone	2	5	4,000–16,000	
Dimethyl phthalate	2[b]	5	30–55	
Butyl benzyl phthalate	2	5	125–150	
Naphthalene	1[b]	5	19	
		Chlorinated Pesticides (19)		
Delta-BHC	1	5	4.6	
		PCBs (7)		
PCB–1016	1	5	2.8	

[a] No. in parentheses represents total number of compounds analyzed in category.
[b] Includes suspect value near detection limit.

b. Storm water drainage at Site E. Storm drainage costs are site specific and will vary between sites. Portions of the site lie within the 100 year floodplain.The site-specific costs related to site E are given in Table V.1.

i. Existing. Surface drainage at Site E and consists of the drainage from the site itself as well as drainage from neighboring parcels to the west which total 175 acres. Drainage from the western parcels discharges through a 60 inch diameter culvert beneath the ICGRR tracks along the western edge of the site. This discharge then flows through an open ditch across the middle of Site E. Both the on and off site drainage flow east into the Saline Branch.

ii. Proposed. As assumed for purposes of the mock-EIS surface drainage features at this site consist of a 10.78 acre retention basin which receives drainage from a parcel of 175 acres to the west. Site drainage drains directly into the Saline Ditch as well as into the retention basin.

c.Permit requirements. Drainage District approval is required for the surface drainage design. A Department of Transportation, Division of Water Resources permit is also required due to the size of the drainage area.

Table VI.3. Site E Storm Drainage Costs

Item	Cost
1. Install two 54-inch subsurface drainage pipes a distance of 1950 feet.......	$...525,000
2. Detention basin excavation....................	161,000
TOTAL COST......................................	686,000

d. Site B. Surface drainage at this site also enters from the west as well as north side and flows easterly to the Saline Branch. None of the site lies within the 100 year floodplain. The site-specific costs related to site B are given in Table V.4.

i. Existing. A total of 440 acres to the north and west drain across the site. This drainage plus that of the 175 acre site proper drain to the southeast corner of the site and then flows 1/4 mile east to the Saline branch. Subsurface drainage tiles enter the site on the northern and western sides, follow the natural contours across the site, and leave the site on the east.

ii. Proposed. All surface and sub-surface drainage entering the site along the western and northern sides is intercepted by an open channel. On-site drainage is also diverted into the channel. The channel leads to a detention pond to be built in the southeast corner of the site. Drainage from the detention pond will have controlled discharge into the Saline Branch via another open channel or subsurface tile.

Table VI.4. Site B Storm Drainage Costs

Item	Cost
1. Open channel excavation (on-site)	$61,800
2. Detention basin excavation	161,000
3. 36 inch culvert under Lincoln Avenue	4,600
4. Open channel excavation (off-site)	20,400
5. Fertilization and seeding (12 acres)	20,400
6. Slope protection	20,400
7. Off-site land cost (assume purchase)	10,000
TOTAL COST	298,200
Adjustment for pipe discharge versus open channel	(4,500)
TOTAL ADJUSTED COST	293,700

4. Socioeconomic impacts.

a. Property values.

(1). Site E. There are a total of 180 residences within a 1 mile radius and 75 residences within a 1/2 mile radius of site E. There are numerous commercial and industrial properties within the primary impact zone of site E. Property values which may affected by siting the landfill at site E consist of residential properties along North Lincoln Avenue and the adjacent commercial and industrial properties (DiNovo). The residential property values would only be affected if access to the landfill is from

Lincoln Avenue (DiNovo). The effect of the proposed project on any property value in this vicinity is moderated by the presence of existing informal or illegal disposal areas nearby (see photos). Although the effect is almost certainly negative no matter where the landfill is located the magnitude of the effect on property values is uncertain at this time.

(2). Site B. Within a 1 mile radius of site B there are 39 residences. Land use at and surrounding the site is agriculture. Land values which might be affected are the productive acres as well as the residences. Again, it is unclear to what magnitude the values would be affected. Table VI.5 compares the property value impact of sites E and B.

Table VI.5 Comparison Of Property Value Impacts

Impact	Site B	Site E
Residences within 1000'	4	3
Number of parcels within 1000'	14	22
Total assessed value, within 1000'(excluding heavy industry and railroad properties)	$439,110	$4,278,490
Relative impact considering existing adjacent land uses	High	Moderate to low

b. Employment. (FONSI).

c. Local governmental revenues affected by the project. The affected government will vary depending upon where the landfill is sited. Both sites are outside of city limits and within the county. Typical revenue affects of using any land for a landfill consists of loss of revenue (real estate taxes lost from previous land use), capital and operating costs incurred, and revenues gained (tipping fees).

5. <u>Access</u>

a. Transportation impacts.

(1). Site E transportation infrastructure costs. Site specific transportation costs relative to site E are for capital improvements only and also do not reflect life cycle costs. The alternative traffic routes and roadway improvements are discussed below. Table VI.6 is a comparison of the costs for site E alternatives.

Table VI.6. Site E Transportation Infrastructure Costs

Type of Improvement/Alternatives	Cost
(a) Lincoln Avenue approach.	
1. 4000 foot site access road	250,000
TOTAL COSTS	$...250,000
(b) Oak Street approach.	
1. 5,800 site access road	330,000
TOTAL COSTS	$...330,000
(c) TR 1300 E approach.	
1. Concrete bridge over Saline Drainage Ditch	100,000
2. 1/2 mile access road	150,000
3. New right of way	5,000
TOTAL COSTS	$...255,000

(a). Lincoln Avenue approach. Residential property values might be affected by using this approach.
(b). Oak Street approach.
(c). TR 1300 E approach.

(2). Site B transportation infrastructure costs. Site specific transportation costs relative to site E are for capital improvements only and do not reflect life cycle costs. The alternative traffic routes and roadway improvements are discussed below. Table VI.7 is a listing of the costs for each alternative

Table VI.7. Site B Transportation Infrastructure Costs

Type of Improvement/Alternatives	Cost
(a) West approach	
1. 1 1/2 miles site access road	$450,000
2. Drainage structure east of Leverett road	10,000
3. Railroad grade crossing protection	100,000
4. Additional earthwork for crossing protection	10,000
5. Right of way acquisitions	6,000
TOTAL COST	$576,000
(b) South approach	
1. 2 1/2 miles of site access road	$750,000
2. Right of way acquisitions	8,000
TOTAL COST	$758,000
(c) East approach	
1. 1 1/2 miles site access road	$450,000
2. Additional drainage improvements west of U.S. route 45	24,000
3. Right of way acquisitions	6,000
TOTAL COST	$480,000
(d) North approach	
1. 1 1/4 miles site access road	$375,000
2. Right of way acquisitions	10,000
TOTAL COST	$385,000

(a). West approach (preferred).
(b). South approach.
(c). East approach (preferred).
(d). North approach

VII. ADVERSE IMPACTS THAT MAY BE PREVENTED OR REDUCED BY MITIGATION MEASURES

VII. ADVERSE IMPACTS THAT MAY BE PREVENTED OR REDUCED BY MITIGATION MEASURES

A. Adverse impacts on environmental systems.

1. Air. Air pollution is generated by landfills as a result of two processes- the fill operations associated with day to day operations and the decomposition of the waste in the landfill. Air pollutants associated with landfill operations are vehicle exhausts and dust. These include vehicles hauling trash to the landfill and the landfill vehicles.. Dust from fill operations has already been mentioned in other sections. The primary impact of dust is as a nuisance to land uses within the primary impact zone.

2. Gas Formation. Decomposition of fill materials creates two principle gases- carbon dioxide and methane, along with other gases. Carbon dioxide is created primarily during the operational phase. It is a product of both aerobic decomposition, which can only occur in the presence of oxygen, and the early stage of anaerobic decomposition. Anaerobic decomposition occurs after all available oxygen is consumed by aerobic decomposition. Carbon dioxide gas generated in the landfill poses little threat to the environment or to human activities. Methane gas is the principal gas product of the later stages of anaerobic decomposition and poses several dangers to the environment and, ultimately, to the humans using that environment. Methane gas can cause explosions in confined spaces at concentrations between 5 and 15%, asphyxiate man or animal in confined spaces at concentrations above 15%, and can even kill plants by asphyxiating the roots as it passes through the soil. Other gases produced by landfill material decomposition are listed in Table VII.1.

Table VII.1. Typical Decomposition Gases Produced By Landfills

Gas	Percent Of Total Gases (dry volume basis)
Methane	47.5
Carbon dioxide	47.0
Nitrogen	3.7
Oxygen	0.8
Paraffin hydrocarbons	0.1
Aromatic and cyclic hydrocarbons	0.2
Hydrogen	0.1
Hydrogen sulfide	0.01
Carbon monoxide	0.1
Trace compounds	0.5

Note: Trace compounds include sulfur dioxide, benzene, toluene, methylene chloride, perchlorethylene, and carbonyl sulfide.

Source: Robinson, 1986.

3. Soil. The primary soil pollutants produced by the landfill are leachate and methane gas.

(a). Leachate. Leachate formation and the problems associated with it are discussed under ground water. Leachate will also affect the soil as it travels to reach the groundwater and once in the groundwater.

(b). As mentioned above methane gas can contaminate soil. During periods of high gas formation (rapid decomposition) methane gas can move through permeable soil. The methane gas can move into adjacent soil formations.

4. Surface water. Leachate formation and the problems associated with it are discussed under ground water. Leachate poses the same danger to surface water as it does to the soil and to the groundwater.

5. Ground water. Leachate is the highly contaminated water that is formed as water percolates through the landfill. Precipitation falling on the open landfill, infiltration from precipitation on the covered landfill, and leakage of groundwater from aquifers are the principal causes of leachate formation. Some leachate is formed from water within the wastes, although it is a small amount compared to the other sources. Table VII.2 lists priority pollutants found in leachate from municipal landfills.

B. Environmental protection measures for landfills.

The follow mitigations are proposed as landfill design features that will mitigate adverse environmental impacts. Figure VI.1 is a schematic drawing intended to show the mitigation measures in the landfill.

1. Landfill cover. The type of landfill cover can reduce leachate formation in the landfill by reducing infiltration. State-of-the-art construction techniques to be used in the landfill will include daily cover placed over daily fill to reduce wind blown debris and help control odors. A final cover will be placed upon closure of the site which will be 2.5 feet thick. This final cover will be constructed of 2 feet of heavy (low permeability) soil with 6 inches of topsoil. The topsoil will be planted with a fast growing plant which will provide maximum evapotranspiration. The combination of a low permeability cover and maximum evapotranspiration will reduce infiltration. The absolute reduction of infiltration is never possible and so the need for a second, supplemental protection is necessary. The per unit cost of the cover will be the same at either site chosen.

2. Clay liner. A supplemental protective measure which will be used is a clay liner. The landfill at site E will be lined with 10 feet of compacted clay to minimize the chance of leachate leakage into the aquifers. A liner will cause accumulation of any leachate formed through infiltration. It will be necessary to remove the leachate accumulated at the base of the landfill. For the liner to be effective there will need to be some type of leachate removal method. The clay liner will be used at either site chosen and the per unit costs will be the same.

a. Laboratory tests of the reaction of the soil proposed for the liner to expected leachate chemicals shall be conducted to evaluate the particular soil material proposed for the liner.

b. The specifications for the construction of the liner shall call for it to be placed in several thin (less than 2 feet thick) layers or lifts. Monitoring shall be conducted during the placement of the liner.

3. Leachate treatment and disposal. A system to remove accumulated leachate from the base of the landfill, transport it to the surface, and treat it before disposal is planned as another mitigation measure for the landfill. The collection system consists of the following:

a. Leachate collection lines which collect leachate at the base of the landfill. The interaction of type of daily cover with the leachate collection system is very critical and should be carefully selected.
b. An underground leachate storage tank which stores the leachate until it can be brought to the surface.
c. A leachate treatment lagoon which will allow pre-treatment of the leachate to an allowable level so that it can then be piped to the Champaign-Urbana Sanitary District for final treatment.
d. A Force Main to conduct the pre-treated leachate to the Champaign-Urbana Sanitary District Sanitary District treatment plant for final treatment.
e. Cost differences between sites E and B are primarily attributable to the length of Force Main required which is directly related to the distance to the Sanitary District from the given site. Leachate disposal costs for site E are given in Table VII.3 and for site B are given in Table VII.4. Costs for site B are higher due to the longer distance of Force Main.

Table VII.3. Site E Leachate Disposal Costs

Item	Costs
1. On-site leachate pretreatment	$...200,000
2. Construct pumping station and 0.25 miles of Force Main to serve landfill site only	75,000
TOTAL COST	275,000

Table VII.4. Site B Leachate Disposal Costs

Item	Costs
1. On-site leachate pretreatment	$ 200,000
2. Construct pumping station and 1.75 miles of Force Main to serve landfill site only	220,000
TOTAL COST	420,000

4. Slurry walls. This mitigation measure is required for site E only and is due to the presence of shallow sand lenses in early geologic investigations of the site. As mentioned previously, the sand lenses are indicative of the presence of ground water. Slurry walls are walls constructed out of pumped clay materials. They are very impervious and are intended to prevent infiltration, or leakage, of aquifer water into the landfill. They will also help to prevent leachate inside of the landfill from contaminating the aquifer. The cost of the slurry walls (un reinforced) are approximately $700,000.

5. Groundwater monitoring wells. Wells to monitor the groundwater and analysis of samples for leachate contamination will be provided at both sites. Wells will be placed in sufficient numbers at different depths to monitor each aquifer present at each site. Cost differences between the two sites are therefore related to the numbers and depths of aquifers present.

6. Gas venting and monitoring system. Passive gas vents will be installed below the landfill cover to allow escape of gas into the atmosphere. A gas collection and monitoring system will also be provided at each site for further protection. The gas will be collected at the top of the landfill and will be routed to a monitoring station where it will be sampled and burned off. Unit costs will be the same for both sites.

7. New water supplies. Due to the possible impact of the landfill on groundwater supplies and for the purposes of this mock-EIS, a new water source will be provided for residences within a 1 mile radius of either site which is chose

VIII. COMPARISON OF PROPOSED ACTION AND THE ALTERNATIVE

VIII. COMPARISION OF PROPOSED ACTION AND THE ALTERNATIVE

A. Proposed and alternative landfill site development costs

1. Landfill site development cost comparison. Table VIII.1 compares the development costs for proposed site E and alternative site B. The per acre site development cost differences are given at the bottom of the table. The table illustrates the large difference in development costs between the proposed and alternative sites. One difference not reflected in the table of costs is that costs for services listed in note (4) would probably be higher for site E.

Table VIII.1. Comparison Of Landfill Site Development Costs

Item	Site B (alternative)	Site E (proposed action)
1. Land acquisition costs	479,500	645,634(1)
2. Water costs (alternatives):		
(a) protected wells	140,000	120,000
(b) new water mains	1,074,200	318,250
3. Site development (including building & equipment) costs.		
(a) Drainage improvements	293,700	60,000(2)
(b) Excavation for berm	1.384,000	872,000
(c) Excavation to stockpile	124,500	508,500
(d) Office & equipment building	192,000	192,000
(e) On-site roadway	38,500	38,500
(f) Landscaping	179,100	126,000
(g) Fencing	100,000	65,000
(h) Leachate containment & collection (lift station and pretreatment not included)	2,683,500	2,683,500
(i) Scales	81,000	81,000
(j) Monitoring wells & initial analysis	25,000	25,000
(k) Flood storage		40,000
Sub-Total	$5,101,300	4,691,500
4. Waste water	220,000	75,000
5. Transportation	961,000	580,000
6. On-site pretreatment	200,000	200,000

(continued)

7. Slurry wall		700,000
TOTAL COSTS(4)	7,101,800 8,036,000	7,012,124 7,210,384
TOTAL ACREAGE	87	31.75(3)
COST PER ACRE(4)	$ 81,630 92,368	$ 220,855 227,099

NOTES:
(1) Cost of Collins parcel not included. Same cost per acre but calculated using 31.75 acres.
(2) Cost of borrowed dirt not included.
(3) Not the actual acreage but the acreage assumed for the mock-EIS.
(4) Costs do not reflect amounts for contingency; architectural, engineering, legal or other services; owner's administration costs; construction insurance; or capitalized financing costs.

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2. <u>Distance to waste centroid (distance/cost per year).</u> This criteria reflects what the costs of hauling waste will be for consumers. It primarily reflects labor time spent hauling waste rather than equipment and fuel costs. Being a factor which directly impacts the cost of waste disposal for consumers it is important. The waste centroid for Champaign County was calculated by the firm of Daily and Associates in 1986. The centroid was found to be at the center of the east line of Section 20, Township 20 North, Range 9 East of the Third Principal Meridian. The locations of sites E and B and the waste centroid are indicated in Figure I.1. Table VIII.2 compares the distance and annual costs associated with each site. Site E is approximately twice the distance from the waste centroid as is site B. Consequently, the costs to society are twice as much.

Table VIII.2. Comparison Of Sites Using Waste Centroid Criteria

Item	Site B (alternative)	Site E (proposed action)
Distance to waste centroid (miles)	1.25	2.50
Annual costs to society	$ 40,000	80,000

B. Comparison based on most salient criteria.

This comparison will be based on criteria deemed by the preparers to be the most salient for purposes of environmental, social, and economic concerns. Many more criteria have been discussed in the preceding analysis. This section represents a synthesis of that information.

1. <u>From the previous analysis there are certain criteria which are more salient for the purposes of selection of a site.</u> These criteria are typically more important or relevant, because they represent the greatest environmental risk, greatest cost differences, or indicate the most personal effect of any of the other criteria. This is not to reduce the importance of the other criteria, however, but to aid in management of this sizeable amount of information. A discussion of the most salient criteria follows.

a. Site development costs (per acre). Site development costs reflect specific differences between the two sites and as such it may be the single most immediate indicator of which site should be the preferred alternative. Primarily, the differences reflected in the development costs are related to the following factors.

(1). Degree of environmental risk involved. Certain development costs result from design features specific to the given site. Design features such as the slurry walls included for site E reflect the risk involved in building a landfill at that site. Alternatively, the risk involved at each site is such that gas and leachate monitoring systems must be used. Both systems cost approximately the same. In that instance the site with more usable area has a lower per acre development cost.

(2). Amount of usable site area. The site area of B is much larger than at site E. Therefore, the per acre development costs are much lower.

b. Site life. Site life is the length of time the given site will be able to receive wastes. It is determined by the amount of usable volume of waste disposal is available at the site given a certain landfill design. This criteria is a realization that any site chosen has a limited life span. Longer site life translates into a longer length of time before the search for a replacement site is necessary. Therefore, it results in indirect cost savings over the long term.

c. Impact on surrounding property value. Inclusion of this criteria reflects concern over equitability matters. It indicates that whichever site is chosen someone will be impacted in a monetary sense, as well as environmental. As mentioned previously there may be differences between the per cent reduction of land value and the total effect on land value. Site E, though it may have less per cent impact on adjacent property values, may have more total impact due to the much larger assessed property value in the area.

d. Surface water impact. Modification to the drainage network associated with landfill development within the floodplain at site E poses risk to downstream areas which are not encountered at site B. The location of the retention pond at site E within the floodplain as well as the closeness of the leachate collection pond to the floodplain pose serious risks to downstream areas as well.

e. Aquifer impact. This is perhaps the single most important environmental impact to be considered. The economic impact resulting from the polluting of local aquifers is difficult to accurately address. The danger is great enough, however, that risk associated with this impact deserves consideration as a significant criteria.

2. Comparing the most salient criteria. Table VIII.3 compares the most salient criteria for the two alternative landfill sites. The comparison is based on qualitative criteria. The criteria serve to describe each site briefly in terms of the most salient as discussed in section IX.1. above.

Table VIII.3. Comparison Of Most Salient Criteria.

Characteristic	Site B	Site E
Site development costs (per acre)	$92,368	$227,099
Site life	20 to 59 years	20 years
Impact on surrounding property value		
(a) considering uses	High	Moderate to low
(b) total assessed value of surrounding property	$439,110	$4,278,490
Risk to surface water quality downstream	Low	High
Risk to aquifer . (ranking of risk)	Low	High

3. Preferred alternative. The preceding analysis and synthesis, which was summarized in Table VIII.3 above, allows the selection of a preferred landfill site. That site is site B. The combination of less risk to the aquifer, much lower site development costs, less risk to downstream surface water quality (due to floodplain location of site E) and a much longer site life outweigh, in the minds of the preparers, the impact on surrounding property value.

B. Comparison of landfill and no action alternative.

1. Salient criteria. Impacts of the no action alternative have already been discussed in the sections above. A comparison of the two actions can also be made using the most salient criteria.

(a). Environmental impacts. A full comparison of environmental impacts is not possible. The direct environmental impacts of the transfer station for Champaign County are not major. However, the full environmental effects of a Champaign County transfer station to another municiple landfill cannot be estimated unless characteristics of the final landfill or disposal method are known. The impacts would change over time, also, unless a contractual arrangement would be entered for a given time period. It is safe to assume that whatever landfill will receive the wastes will not have the mitigation measures incorporated in the proposed Champaign County landfill.

(b). Social impacts. Largely the same problems exits for an evaluation of the social impacts as for the environmental impacts. Without knowing where the wastes will be transferred there can be no evaluation.

(c). Economic impacts comparison. An approximate economic evaluation can be made at this point but the site development costs alone are not sufficient. The two alternative methods must be compared on the basis of the total life time cost for each. Total life time cost includes labor and overhead costs, equipment purchase and replacement costs, other operation and maintenance costs, as well as full capital and financing costs, for the full life of the alternate under consideration. Closure and post-closure costs must be determined. Capital costs must then be amortized for a 10 year period and sinking fund costs for replacement and closure costs must be calculated for whatever time period is relevant to that item. The final costs used as a basis of comparison are the annual costs of each alternative. Because certain costs occur at different time periods the comparison will be made for each time period.

2. Annual costs comparison. Table VIII.4 lists the annual costs for both the transfer station and a landfill. Total annual costs are given as well as an annual cost per cubic yard of waste and the annual cost per ton of waste. The analysis indicates that the landfill option is much cheaper than the transfer station.

Table VIII.4. Annual Cost Comparison.

Alternate	Years	Annual Cost ($)	Refuse Received (CY)	Cost per CY($)	Cost per CY($)
Permanent	1 thru 5	$1,502,050	400,000	3.76	15.02
Transfer	6 thru 10	984,650	200,000(1)	4.92	19.69
Station	11 thru 15	767,500	200,000(1)	3.84	15.35
	16 thru 20	693,000	200,000(1)	3.47	13.86
Landfill	1 thru 5	$2,452,998	400,000	6.13	24.52
(site B)	6 thru 10	2,249,998	200,000(1)	11.25	45.00
	11 thru 15	585,000	200,000(1)	2.93	11.72
	16 thru 20	365,000	200,000(1)	1.83	7.32

NOTES:
(1). Waste stream is reduced after the first five years.

(a). For the purposes of evaluation the CUSWDS identified a waste stream of 400,000 cubic yards (CY) for the first five years and 200,000 cy for the remaining years of the landfill. The reduction in waste will be achieved through unforeseen technological improvements or through behavioral modification, such as recycling.

3. Preferred alternative. A landfill at site B is preferable to a permanent transfer station, even though the landfill may be more costly. The uncertainty associated with a transfer station is too great to make that alternative favorable. Nevertheless, a permanent transfer station remains the no action alternative.

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X. APPENDIX

X. APPENDIX

Summary of Fish Collected by Minnow Seine Hauls in the Vermilion River and Salt Fork River Drainage Areas.

Species	Vermilion	Salt Fork
Non-Game Fish		
Grass Pickerel, Esox americanus	x	
Quillback carpsucker, Carpiodes cyprinus	x	
White sucker, Catostomus commersoni	x	x
Creek chubsucker, Erimyzon oblongus	x	
Hog sucker, Hypentelium nigricans	x	
Spotted sucker, Minetrema melanops		x
Golden redhorse, Maxostoma erythrurum	x	
Stoneroller, Campostoma anomalum	x	x
Redbelly dace, Chrosomus erythrogaster	x	
Silverjaw minnow, Erycimba buccata	x	
Silvery minnow, Hybognathus nuchalis	x	
Hornyhead chub, Hybopsis biguttata	x	
Golden shiner, Notimigonus chrysoleucas	x	x
Emerald shiner, Notropis atherinoides	x	
River shiner, N. blennius	x	
Bigeye shiner, N. boops	x	
Common shiner, N. chrysochephalus	x	x
Red shiner, N. lutrensis	x	
Rosyface shiner, N. rubellus	x	x
Spotfin shiner, N. spilopterus	x	x
Sand shiner, N. stramineus	x	x
Redfin shiner, N. umbratilis	x	x
Steelcolor shiner, N. whipplei	x	
Suckermouth minnow, Phenocobius mirabilis	x	x
Bluntnose minnow, Pimphales notatus	x	x
Blacknose dace, Rhinichthys atratulus	x	
Creek chub, Semotilus atromaculatus	x	x
Tadpole madtom, Noturus gyrinus		x
Brindled madtom, Noturus miurus	x	
Blackstripe topminnow, Fundulus notatus	x	
Mosquitofish, Gambusia affinis		x
Orangespotted sunfish, Lepomis humilis		x
Greenside darter, Etheostoma blennoides	x	
Johnny darter, Etheostoma nigrum	x	x
Orangethroat darter, Etheostoma spectabile	x	
Blackside darter, Percina maculata	x	
Dusky darter, Percina sciera	x	

Gamefish

Carp, Cyprinus carpio	x	x
Black bullhead, Ictalurus melas	x	
Yellow bullhead, Ictalurus natalis	x	
Yellow bass, Morone missippiensis	x	
Rock bass, Ambloplites rupestris		x
Green sunfish, Lepomis cyanellus	x	x
Bluegill, Lepomis machrochirus	x	x
Longear sunfish, Lepomis megalotus	x	x
Spotted bass, Micropterus punctulatus	x	
Largemouth bass, Micropterus salmoides	x	
Smallmouth bass, Micropterus dolomieui		x
White crappie, Pomoxis annularis	x	
Black crappie, Pomixis nigromaculatus	x	
Walleye, Stizostedion canadense		x