DETAILED STATEMENT OF WORK

FOR

REMEDIAL INVESTIGATION AND
FEASIBILITY STUDY

STOUGHTON CITY LANDFILL
STOUGHTON, WISCONSIN

REVISION NO. 3

SUBMITTED BY:

STOUGHTON LANDFILL STEERING COMMITTEE

MARCH 15, 1988

PREPARED BY:

ENVIRONMENTAL RESOURCES MANAGEMENT-NORTH CENTRAL, INC.
102 WILMOT ROAD, SUITE 300
DEERFIELD, ILLINOIS 60015

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

LIST OF FIGURES

LIST OF TABLES

SECTION 1.0

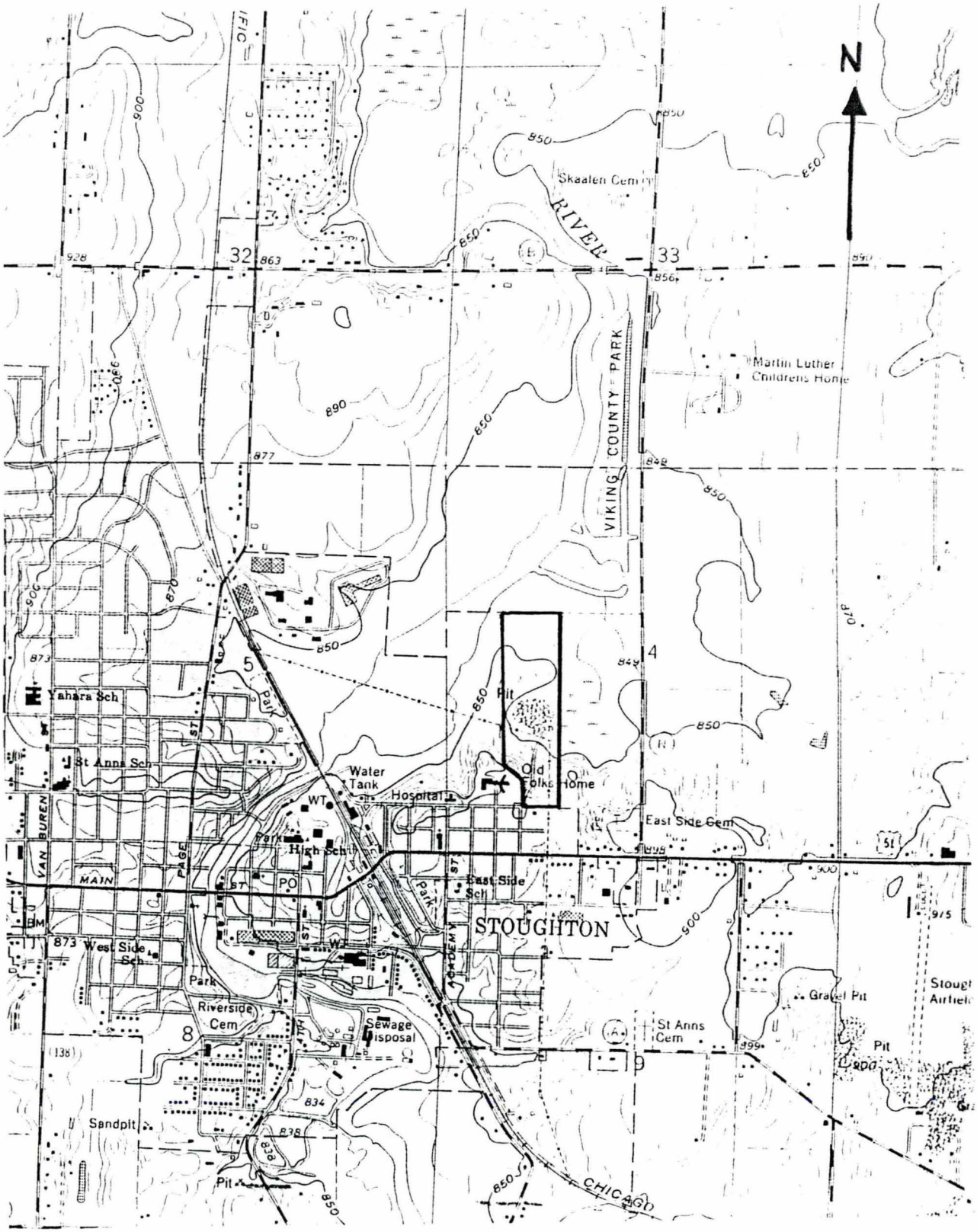
INTRODUCTION

1.1 Site Location and History

The Stoughton City Landfill is located in Dunkirk Township, Dane County, Wisconsin and occupies portions of the S1/2 of the NW1/4 and the SW1/4 of Section 4, T5N, R11E. The original Landfill property occupied approximately 40 acres, although landfilling has occurred on only about 15 acres of the property, as shown in Figure 1-1. Since 1982, land exchanges between the City and an adjacent land-owner have modified the original site boundary as shown in Figure 1-2.

The original site was purchased in July, 1952 by the City of Stoughton which then annexed the site in September, 1952. Landfill operations commenced after this latter date. Between 1952 and 1972 the site was operated as an uncontrolled dump site. During this time, burning was common and refuse was at times covered by dirt. In 1972, the site began to be operated as a State licensed landfill. In 1978, the Wisconsin Department of Natural Resources (WDNR) required that the site be abandoned according to State regulations. From 1978 to 1982, only brick, rubble, etc. were accepted at the site while closure work was performed. The unit was officially closed in 1982.

The Landfill was established for use by residents of the City, including commercial and industrial operations in the City. This would include major industries as well as smaller scale machine shops, auto body/repair operations, dry cleaners, and other

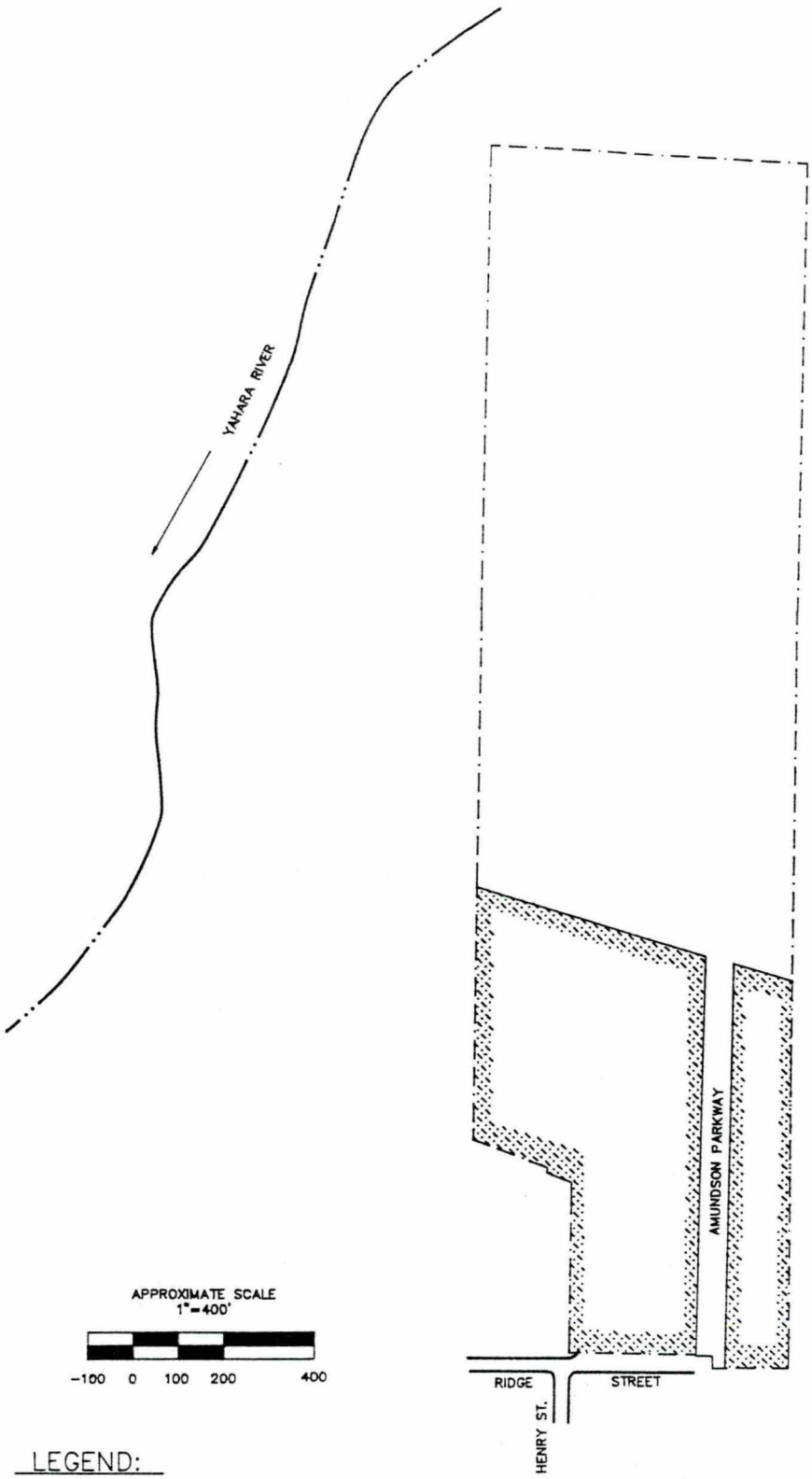


SCALE IN FEET

1000 500 0 1000 2000

SOURCE: USGS, 7.5 MINUTE STOUGHTON QUADRANGLE, DANE CO., WISCONSIN

STOUGHTON CITY LANDFILL LOCATION MAP	FIGURE 1-1
ERM ERM-North Central, Inc.	



STOUGHTON CITY LANDFILL
PROPERTY BOUNDARIES

FIGURE
1-2

ERM ERM-North Central, Inc.

maintenance facilities. Uniroyal Plastics (formerly US Rubber) disposed of liquid wastes from 1953 until they halted disposal at this site in late 1962. Most of those liquid wastes were disposed by burning in the refuse burning areas; however, some of these liquid wastes are reported to have been disposed down boreholes drilled by a local firm which tested truck mounted earth auger equipment on high ground within the west-central portion of the Landfill. In 1962 the City contracted for the collection of garbage and rubbish from residences and commercial places of business, and this waste was reportedly disposed at a site other than the City-owned site. Large items of residential rubbish such as appliances, furniture, etc. were not picked up by the contractor but were carried to the Landfill by the property owner. The City disposed of street refuse, trees, and grit from the wastewater treatment plant.

1.2 Site Status

The Stoughton City Landfill is currently an inactive facility. Vehicular access to the site is controlled by two gates which are locked at all times; however, security fencing is not in place around the site.

1.3 Statement of Work Overview

This Detailed Statement of Work (SOW) is incorporated into a Consent Order requiring a RI and FS study of the site to be conducted by PRP's. This SOW has been prepared in accordance with the Model Statement of Work for Conducting a Remedial Investigation and Feasibility Study (RI and FS), as provided by USEPA staff and the USEPA guidance documents for Remedial Investigations and Feasibility Studies (EPA/540/G-85/002 and

EPA/540/G-85/003 dated June, 1985). A Work Plan for the RI and FS will be prepared by the PRP's pursuant to the requirements of the Consent Order, in conformance with this SOW, and applicable USEPA Guidance Documents.

The purpose of the RI and FS is to evaluate the extent and magnitude of contamination attributable to the Stoughton City Landfill and to recommend viable remedial action alternatives for mitigating any potential hazard posed by the site. Specific objectives of the RI, consistent with the model statement of work, include investigations to:

- Determine the characteristics and extent of contamination attributable to the Stoughton City Landfill.
- Define the pathways of contaminant migration from the Stoughton city Landfill.
- Define the physical features which could affect migration, containment, or remediation of contamination attributable to the Stoughton City Landfill.
- Quantify risk to public health and the environment attributable to Stoughton City Landfill.
- Gather information necessary to support the FS for the Stoughton City Landfill.

This Statement of Work presents the site background, the technical approach to proposed site investigations and feasibility study activities, and a proposed schedule for RI and FS project execution at the Stoughton City Landfill site. The following tasks, which are described in the Statement of Work, have been established for the RI and FS, consistent with the Model Statement of Work and USEPA Guidance Documents:

Remedial Investigation

- Task 1 - Site Reconnaissance and Current Situation Assessment
- Task 2 - Site Investigation
- Task 3 - Site Investigation Analysis
- Task 4 - Laboratory and Bench-Scale Studies
- Task 5 - Remedial Investigation Reports

Feasibility Study

- Task 6 - Remedial Alternatives Screening
- Task 7 - Remedial Alternatives Evaluation
- Task 8 - Feasibility Study Report

This RI and FS Statement of Work has been designed so that the Stoughton City Landfill project can be conducted in a phased approach. Specifically, results of Task 1 activities will be

reviewed with USEPA and WDNR personnel to modify, as necessary, subsequent tasks to further investigate and characterize the nature and extent of contamination in areas identified by Task 1 activities. This may include, but not be limited to, monitoring well distribution, as well as limits of the site investigations with regard to site boundaries and media to be sampled.

Technical memoranda will be prepared at the completion of work for each task, and those memoranda will be provided to USEPA and WDNR for review and comments. Subsequent task modification, consistent with the objectives of the Stoughton City Landfill RI and FS, can then be evaluated in the context of available data prior to the preparation of formalized RI or FS final reports.

SECTION 2.0

INITIAL SITE EVALUATION

Section 2 summarizes readily available information regarding the site's environmental setting and operations history. It includes a discussion of a generalized characterization of waste handled at the site, the expected behavior of those contaminants in the environment, and the potential effect of those materials on the environment.

2.1 Site Description

2.1.1 Environmental Setting

The Stoughton City Landfill property originally occupied approximately 40 acres in the S1/2 of the NW1/4 quarter and in the SW1/4 of Section 4, T5N, R11E in Dane County, Wisconsin (Figure 1-1). Landfilling has occurred on only about 15 acres of the property. The site is located in the northeast portion of the City of Stoughton and borders marshy areas east of the Yahara River.

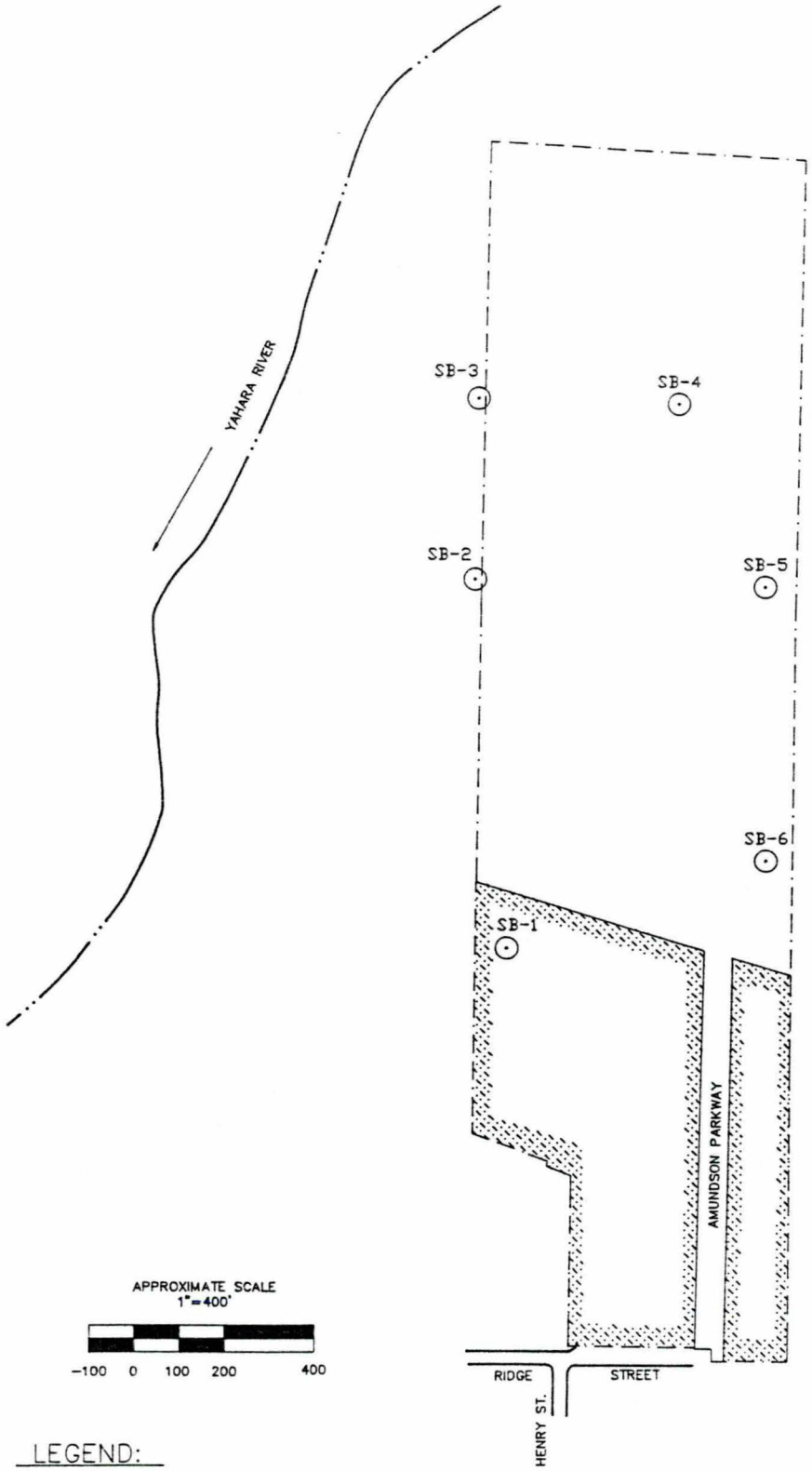
Land surface elevation ranges from a high of about 900 feet above mean sea level (AMSL) in the southwestern portion of the Landfill to about 840 feet AMSL along the north border of the Landfill and in its central portion. A relatively marshy area in the east central portion of the site, bounded on the north, west and south by higher ground, was the primary area of waste disposal. The approximate north one quarter of the site also contained an area

of lowland. Land exchanges since 1982 have modified the original property boundaries.

Surficial deposits in the vicinity of the site include ice-contact stratified deposits and lacustrine plain sediments (Mickelson and McCartney, 1979). Ice-contact stratified deposits generally include significant sand and gravel deposits and landforms such as kames and eskers. These deposits occupy higher ground within the Landfill. Lacustrine plain or glacial lake bottom sediments are generally comprised of fine-grained silt and clay with some sand present near former shorelines and stream inlets. These areas are often flat, poorly drained and show evidence of peat accumulation. Lacustrine plain deposits occupy the east-central portion of the site which was developed for primary waste disposal and the low-lying north portion of the site. Approximately 150 to 250 feet of unconsolidated glacial sediments are reported to overlie Cambrian sandstone bedrock in the vicinity of the site.

Surface water drainage features on the site are limited to a drainage ditch along the south portion of the primary disposal area and a ditch which runs along the north property boundary. As noted previously, the Yahara River flows in a southerly direction approximately 800 feet west of the primary disposal area and marshlands exist adjacent to the east property boundary.

A total of six monitoring wells have been installed in and adjacent to the Stoughton City Landfill. These monitoring wells were installed in 1978 and designated wells SB-1 through SB-6. Four of these wells (SB-1, SB-4, SB-5, and SB-6) were destroyed by landfill operations and were replaced in 1982. Figure 2-1 shows the current location of these monitoring wells.



CURRENT MONITORING WELL LOCATIONS STOUGHTON CITY LANDFILL	FIGURE 2-1
ERM ERM-North Central, Inc.	

At least one of these wells, SB-6, is completed in landfill materials while others are screened in surficial sand and gravel or clay. Ground water flow direction within the upper surficial sediments is uncertain based on review of available data. Both northwest and southeast flow directions have been indicated.

Water supply for the City of Stoughton is derived from wells completed in the deeper Cambrian sandstone strata. The closest City well is located about 3,500 feet due west of the Landfill across the Yahara River and is designated Well No. 3. This well penetrated a 75-foot thick clay layer from 85-160 feet below ground surface. Well No. 3 encountered Franconia Sandstone at a depth of 210 feet and is open hole to a total depth of 950 feet.

2.2 History of Site Contamination

No records are available of specific hazardous wastes that were disposed of at the Landfill.

Volatile organic compounds have been consistently detected in three on-site monitoring wells. Well SB-1 has shown the presence of ethyl benzene and xylenes while wells SB-2 and SB-3 have shown the presence of various chlorinated solvent compounds at low levels. In addition, tetrahydrofuran has been detected in Well SB-3. Analytical results on samples collected from all municipal wells in 1982 and 1986 did not detect any compounds attributable to the landfill site. The above sampling was conducted by the City, its contractors or the WDNR while analyses were performed by commercial laboratories or the Wisconsin State Laboratory of Hygiene.

A single surface water sample was collected by the City of Stoughton on September 22, 1984 from the Yahara River. No volatile organic compounds were detected in that sample. Sample collection and analytical procedures for that sampling episode will be reviewed during Task 1 to determine utility and relevance of those results.

Ambient air sampling was conducted by Wisconsin DNR during October 1985. Air samples were collected using Tenax sampling tubes. WDNR concluded that there were no detectable volatile organic compounds in the ambient air samples. As discussed above, these data will be reviewed with respect to collection and analytical procedures to determine utility and relevance to this study.

It is recognized by the PRPs that these data may not have been collected or analyzed under currently rigorous protocols, therefore the data must be further reviewed to evaluate them for quality and applicability. Furthermore, it is recognized that the sufficiency of the data may not be adequate to fully evaluate the actual or potential impact of the site on environmental receptors.

No additional site investigations have been conducted with regard to either waste characterization/distribution or potential for ground water contamination.

The scope of work presented in Section 3.0 of this Statement of Work details investigations which will delineate the extent and degree of contamination at the Landfill Site.

2.3 Potential Receptors

Ground water users and, potentially surface water bodies, are anticipated to be the primary receptors of concern for contamination attributable to the Landfill site, based on available data. However, other potential migration pathways will also be evaluated during the RI. A survey of ground water utilization in the site vicinity will be conducted during the RI to determine the potential risk to ground water users caused by contaminant migration from the Landfill Site. Likewise, surface water/sediment samples from adjacent wetlands and the Yahara River may be taken to assess potential contamination migration to area surface water.

Potential contaminant migration routes and receptors will be re-evaluated during the initial phase of the RI to assure sufficient scope for subsequent phases of the RI.

SECTION 3.0

REMEDIAL INVESTIGATION SCOPE OF WORK

Prior to field sampling and other information gathering an overall Work Plan must be prepared. The Work Plan will include an outline of the proposed investigation activities as well as a time schedule for the implementation of those activities. A Site Investigation Plan (also known as Site Sampling Plan) and a Quality Assurance Project Plan will be prepared as integral components of the overall Work Plan. Supporting plans to guide the field investigations and the recordkeeping/reporting will be the Health and Safety Plan and Data Management Plan, respectively.

The Work Plan will detail the site investigation activities to be conducted during the remedial investigation. Detail included in the Work Plan will describe the methods and procedures for determining the exact sampling locations, well types, analytical parameters for each set of samples, and objectives for individual tasks. The Work Plan will also contain supporting rationale for the types and quantities of samples collected during the site investigation.

In accordance with the statement of work, the RI will include and, therefore, the Work Plan must describe, five tasks as follows:

- Description of the Current Situation
- Site Investigation
- Site Investigation Analysis
- Laboratory and Bench Scale Studies
- Reporting Requirements

As previously noted the overall Work Plan provides the primary framework for conduct of the RI and subsequent FS. The necessary operational support plans are as follows:

- Site Investigation Plan (Sampling Plan) - The Site Investigation Plan will specify the types of samples to be collected for this investigation, the specific types of equipment to be utilized in the sampling, analytical parameters for each type of sample, the conceptual sample locations or the methods to determine sample locations, and frequency of sampling in each location. In addition the site investigation plan will describe any field screening techniques which may be utilized to reduce the number of samples requiring off-site, laboratory analysis.

- Quality Assurance Project Plan (QAPP) - The QAPP, prepared in accordance with USEPA document "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," (QAMS-005/80, December 29,

1980), and other applicable guidance, will specify all necessary calibration, maintenance, and operational procedures for field equipment and all analytical equipment at the off-site laboratory to be used for this program. All procedures utilized for this project will be in compliance with any applicable administrative agreement concerning the site as well as USEPA guidance on contract laboratory procedures. The QAPP will cross-reference to the site investigation plan providing detailed descriptions of sampling requirements, including sampling vessels, field decontamination procedures, sample preservation techniques for shipment, and maximum allowable holding times prior to analysis.

- Health and Safety Plan - The Health and Safety Plan developed for investigation of the Stoughton Landfill Site will be consistent with USEPA guidance and site conditions. The Health and Safety Plan will address any hazardous conditions which may exist for the on-site investigation team and the surrounding community as a result of the investigation activities. This plan will address all applicable regulatory requirements including USEPA Standard Operating Safety Guides and the OSHA Hazardous Waste Operations and Emergency Response, Proposed Rule, which amends Subpart H of 29 CFR Part 1910. The plan will provide detail regarding specific responsibilities for site personnel, specific protective equipment which may be required on-site, procedures and protocol for utilization of equipment,

as well as the identification of the need for the use of the equipment.

The Health and Safety Plan will also detail necessary personnel and equipment decontamination procedures, training, and medical surveillance documentation and requirements. To the extent possible, any problems or hazards which can be identified prior to the field investigation will be addressed and a solution presented in the Health and Safety Plan. Specific procedures for protection of any visitors to the site or the surrounding community will also be detailed.

- Data Management Plan - A Data Management Plan will be developed to document and track investigation data and results. The Plan will identify and establish laboratory and data documentation materials and procedures, project file requirements, and project-related progress and financial reporting procedures and documents.

The Work Plan to be developed pursuant to this Detailed SOW will present a phased, iterative approach that recognizes the interdependency of the RI and the FS. The primary intent of the phased approach is to minimize the need for conducting supplemental RI and FS activities by thorough characterization of the migration pathways and early identification of the site-specific data requirements associated with the applicable remedial technology. Accordingly, results of site background investigations and reconnaissance activities conducted under Task

1 will be reviewed with USEPA and WDNR personnel to modify, as necessary, subsequent tasks necessary to characterize the site and its potential hazard to public health and the environment.

3.1 Task 1 - Description of Current Situation

Task 1 activities comprise the initial phase of the RI and FS program. The purpose of the initial phase is to describe the background information pertinent to the site such that potential migration pathways may be clearly identified for subsequent, more detailed study under the site investigation phase of the RI. In this way, activities conducted under Task 1 provide focus and support for subsequent tasks.

Beyond general background information gathering, certain specific activities are proposed under Task 1. These include: 1) geophysical surveys to delineate disposal area limits and areas potentially characterized by near-surface soil contamination, 2) a soil gas investigation to evaluate the areal distribution of volatile organic compounds (VOCs) in the refuse and in the ground water at the landfill, and 3) the installation of surface water staff gages and piezometers for the determination of ground water flow direction. The inclusion of these activities in Task 1 is necessary because of data deficiencies that currently exist with regard to the above aspects, and the need to clarify these items prior to the initiation of the site investigation.

3.1.1 Site Boundary Survey

A site boundary survey will be conducted to define the study boundaries and delineate the Stoughton Landfill property line. Existing land use information available from public records will be used to determine owners of adjacent properties who would have to be contacted if off-site investigation activities are required.

A detailed land survey of the Stoughton Landfill property will be conducted to locate any features that may be of significance in conducting the site investigation. The land survey will be conducted by a licensed Wisconsin surveyor. Based on this survey, a detailed site map will be prepared, which will include all pertinent site features as well as any wetlands, floodplains, water features, easements, and other features of the surrounding properties.

3.1.2 Site Grid and Topographic Survey

A grid system will be established on the Stoughton Landfill site to allow accurate siting of sampling points and delineation of contaminated areas. The site grid will consist of two perpendicular baselines with 25 foot grid intervals, and will be used to establish transect lines for geophysical surveys and sampling locations for the soil gas survey.

Ground elevation data will be collected at a sufficient number of grid points to establish one (1) foot elevation contours across the entire site. These data will be used as ground control

during site investigation activities to determine the locations of geologic cross-sections and in estimating contaminated soil quantities. Surface runoff patterns will be evaluated using this topographic map to assess for potential off-site impact to adjacent surface water bodies.

3.1.3 Historical Aerial Photograph Analysis

All available historical aerial photographs, from the beginning of site operations to the present, will be obtained for review. These photos will be used to determine the growth and expansion sequence of the Stoughton Landfill operations and to identify any past waste disposal or storage areas. The previous location of identifiable disposal or storage areas will be of special interest. In addition, historical run-off patterns will be studied to guide an assessment of potential off-site surface water impact.

3.1.4 Area Ground Water Usage Survey

A survey of residential, municipal, and industrial wells in the vicinity of the Stoughton Landfill site will be conducted. Municipal and state records will be searched to obtain drilling logs and well installation records for existing wells within three (3) miles of the site. The objectives of this survey are to:

- identify usable aquifers in the area.

- identify the number, type, and location of wells in the vicinity of the Stoughton Landfill site. Information concerning well construction (depth, casing and screen materials, screened interval, etc.) will be obtained.

- determine if any wells are pumped from surficial or bedrock aquifers in the vicinity of the Stoughton Landfill Site.

3.1.5 History of Response Actions

A summary of all response actions and previous site investigations conducted by any regulatory agencies or private parties will be compiled. This summary will include a review of technical reports and any other documentation of sampling results prepared subsequent to each response action or site investigation. A chronological summary indicating the date, principal investigator, and results of all response actions and site investigations will be prepared.

Background information collected during this subtask will be used to refine the scope of work for the detailed site investigation conducted in Task 2.

3.1.6 Source Characterization

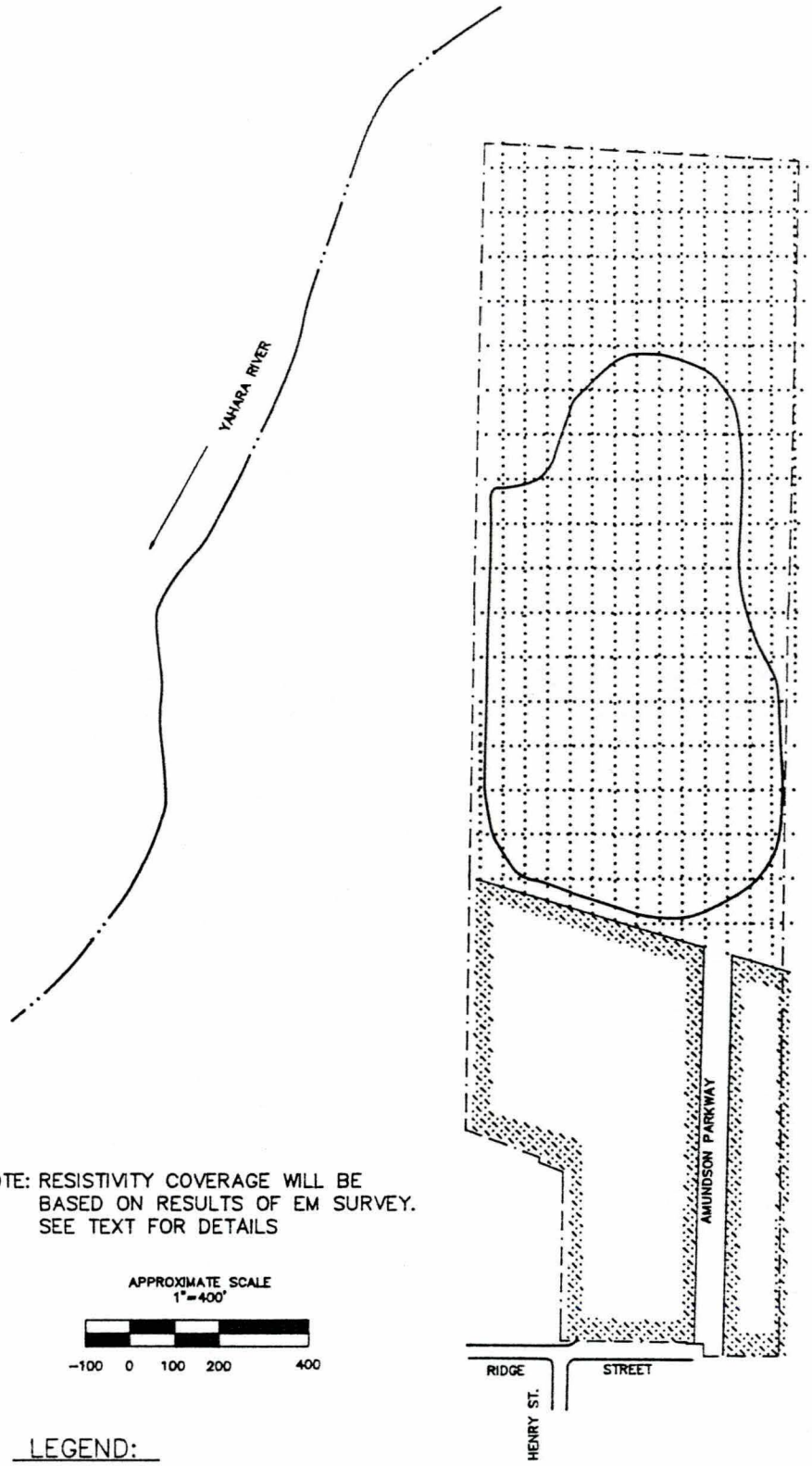
The objective of the source characterization sampling program is to delineate areas characterized by near-surface soil contamination or potential burial sites that are potential sources for contamination of ground water at the Stoughton

Landfill site or pose a risk due to contact exposure. Site investigations will focus on the Landfill property; however, investigation outside the property boundaries will be required to detail the full extent of refuse disposal and to evaluate the contamination detected in monitoring well SB-1.

3.1.6.1 Geophysical Surveys

Two survey techniques are proposed for the geophysical survey of the site. An electromagnetic (EM) survey will be conducted utilizing an EM31 to evaluate the perimeter of the site for discrete ground water plumes and to map the disposal areas on-site (Figure 3-1). As noted in the analytical data for the site, typical leachate will result in an increase in electrical conductivity of the ground water. This change in conductivity will be sensed by the EM instrumentation. Potentially discrete contaminant plumes can be mapped.

In support of and to complement the EM survey, an electrical resistivity survey will also be conducted around the perimeter of the site and across disposal boundaries as mapped using the EM. The survey will consist of vertical electrical soundings to assist in the identification of subsurface lithologies, in addition to profiling to support the EM surveys. Both survey techniques will provide information to guide the location of monitoring wells to be installed as part of the site investigation.



NOTE: RESISTIVITY COVERAGE WILL BE BASED ON RESULTS OF EM SURVEY. SEE TEXT FOR DETAILS

APPROXIMATE SCALE
1"=400'

-100 0 100 200 400

LEGEND:

- ORIGINAL LANDFILL BOUNDARY
- ORIGINAL LANDFILL PROPERTY SOLD TO SKAALEN
- APPROXIMATE FILL AREA LIMITS
- EM-SURVEY LINES

ELECTROMAGNETIC (EM) SURVEY LOCATION STOUGHTON CITY LANDFILL

ERM ERM-North Central, Inc.

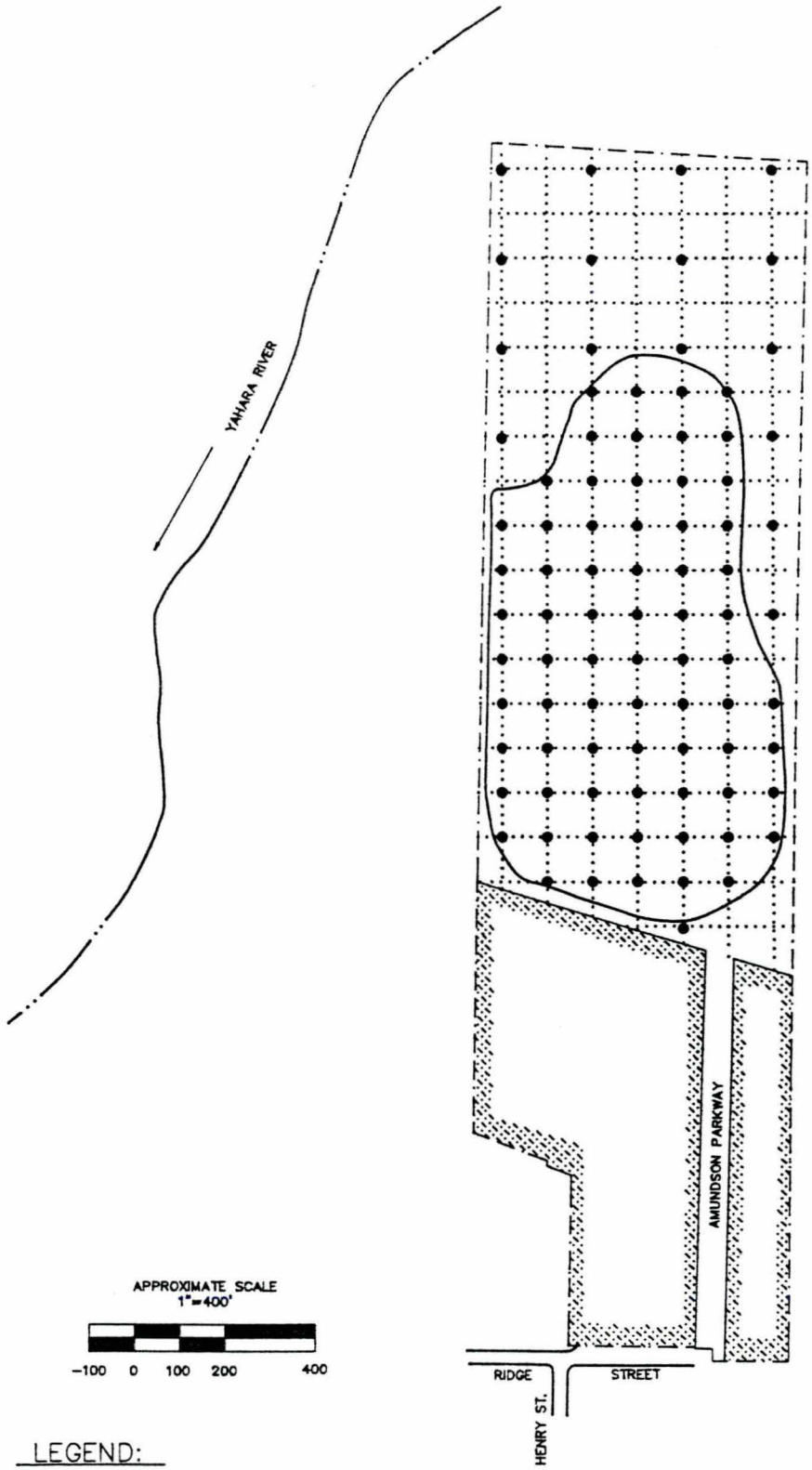
FIGURE 3-1

3.1.6.2 Soil Gas Investigation

A soil gas survey will be conducted to evaluate the areal distribution of volatile organic contamination at the Stoughton Landfill site. Source areas or any zones of contaminated soil will be located. Soil gas sampling permits the measurement of organic vapors which volatilize from contamination in the subsurface soil or ground water and are present in the soil pores of the unsaturated zone. The procedure involves pumping soil vapor from the unsaturated zone, collection of it on carbon tubes and analyzing it for volatile organic compounds. This technique will enable the quantitative analysis of specific volatile organic compounds. Field and laboratory protocols will be detailed in the Work Plan and the QAPP and they are subject to the approval by USEPA's Quality Assurance Section and Central Regional Lab.

Subsequent to collecting a soil gas sample on the activated carbon tube, an HNu photoionization meter will be used to obtain a field measurement of the total volatile organic concentration in the soil gas. If a zone of elevated concentration is detected by the HNu meter, additional soil gas sampling points may be added to further investigate the contaminated zone.

Soil gas sampling points will be located across the cleared portion of the site (Figure 3-2). Sampling locations will coincide with the grid system established during the land survey of the site.



SOIL GAS SAMPLING POINTS
STOUGHTON CITY LANDFILL

FIGURE
3-2

ERM ERM-North Central, Inc.

Results of the soil gas survey will be plotted, and iso-concentrations lines for each detected compound will be constructed to evaluate the areal distribution of volatile organic compounds below the site. Based on each compound's solubility, air to water partitioning coefficient, and depth to ground water, an assessment will be made as to whether or not concentrations in the soil gas represent contaminated ground water or separate phase contamination within the soil/refuse matrix.

3.1.7 Review of Air Sampling Data

As stated in Section 2.2, historical air data will be evaluated for adequacy and to determine if they meet the requirements for data to be used in the RI report. An additional air sampling program will be proposed under Task 2 of the RI in order to assess potential contaminant release through the air medium as described in Section 3.2.3.

3.1.8 Surface Water Evaluation

As stated in Section 2.2, historical surface water data will be reviewed for potential incorporation into the RI. Additional surface water sampling may be necessary as noted in Section 3.2.2.

During Task 1, water-level staff gages will be established in the adjacent wetlands and the Yahara River, and tied into the Site Evaluation Survey. These data will facilitate the understanding of surface-water and ground-water interrelationships within and

adjacent to the landfill. As noted in Sections 3.1.2 and 3.1.3, current and historical surface run-off patterns will be evaluated for potential off-site impact. These data will be incorporated along with the ground water data to define the scope of surface water investigations.

3.1.9 Evaluation of Ground-Water Flow Direction

Ground water flow direction in the upper surficial deposits is uncertain based on a review of available data. Therefore, three to six piezometers will be installed to evaluate shallow ground-water flow direction in association with the surface water staff gages described above. Final location of monitoring well clusters will be established based on these and other data generated during Task 1. Piezometers will be constructed of one inch I.D. PVC and will not be used as sampling points.

3.1.10 Technical Memorandum - Task 1

Results of activities under Task 1 will be compiled and interpreted for presentation in a technical memorandum. This technical memorandum will be submitted to USEPA and the WDNR for their review prior to initiation of Task 2. Based on this review, appropriate modifications, in conformance with the objectives of the RI and FS, may be made to the Work Plan.

A summary of actual and potential on-site and off-site health and environmental effects will be included in the memorandum. This may include, but not be limited to, the types of hazardous substances; affected media and pathways of exposure; contaminated

releases such as leachate or runoff; and any human and/or environmental exposure. Threats or potential threats to public health and the environment will be emphasized.

3.2. Task 2 - Site Investigation

Detailed investigations conducted during Task 2 will be designed to characterize the site and its potential hazard to the public health and the environment. These studies will provide the additional data needed for the development and evaluation of remedial alternatives during the FS. The goals of the detailed site investigation are to:

- characterize the nature of potential contamination at the site.
- locate and delineate contaminant sources at the site.
- evaluate the vertical and horizontal extent of contamination potentially originating from the Stoughton Landfill site.
- evaluate the nature and magnitude of ground water contamination which is not attributable to the Stoughton Landfill site.
- identify and evaluate potential contaminant migration characteristics.

- collect sufficient data to support an Endangerment Assessment and Feasibility Study of the Stoughton Landfill site.

It is anticipated that the primary focus of initial site investigations will be a hydrogeologic investigation. These investigations are designed to characterize contamination on-site and evaluate the suspected primary contaminant migration route (ground water). The scope of surface water or flora/fauna surveys will be evaluated based on the results of Task 1 and additional data provided by the installation and sampling of monitoring wells. This will enable focusing on those areas with potential for impact from a known suite of contaminants.

3.2.1 Hydrogeological Investigation

3.2.1.1 Overview

Monitoring wells, water samples, water level measurements, in situ permeability tests, and geotechnical testing of soil samples will be used to characterize the hydrogeologic environment of the site. Private water supply wells which may be shown to be potentially at risk will be sampled to evaluate the potential risk to public health and to provide additional off-site information regarding the potential extent of contamination.

3.2.1.2 Objectives

The objectives of the hydrogeologic investigation for the Stoughton Landfill RI are:

- o determine details of stratigraphy and geotechnical characteristics of subsurface materials at the site.

- o determine hydrogeologic conditions in the aquifers at the site, including vertical and horizontal flow rates and directions. These will be critical design information for the FS.

- o characterize the interrelationship of area surface water features to the subsurface hydrogeology.

- o characterize the vertical and horizontal extent and migration characteristics of ground water contamination attributable to the Stoughton Landfill site.

- o determine if private and municipal ground water use is potentially affected by contamination attributable to the Stoughton Landfill site.

3.2.1.3 Monitoring Well Installation

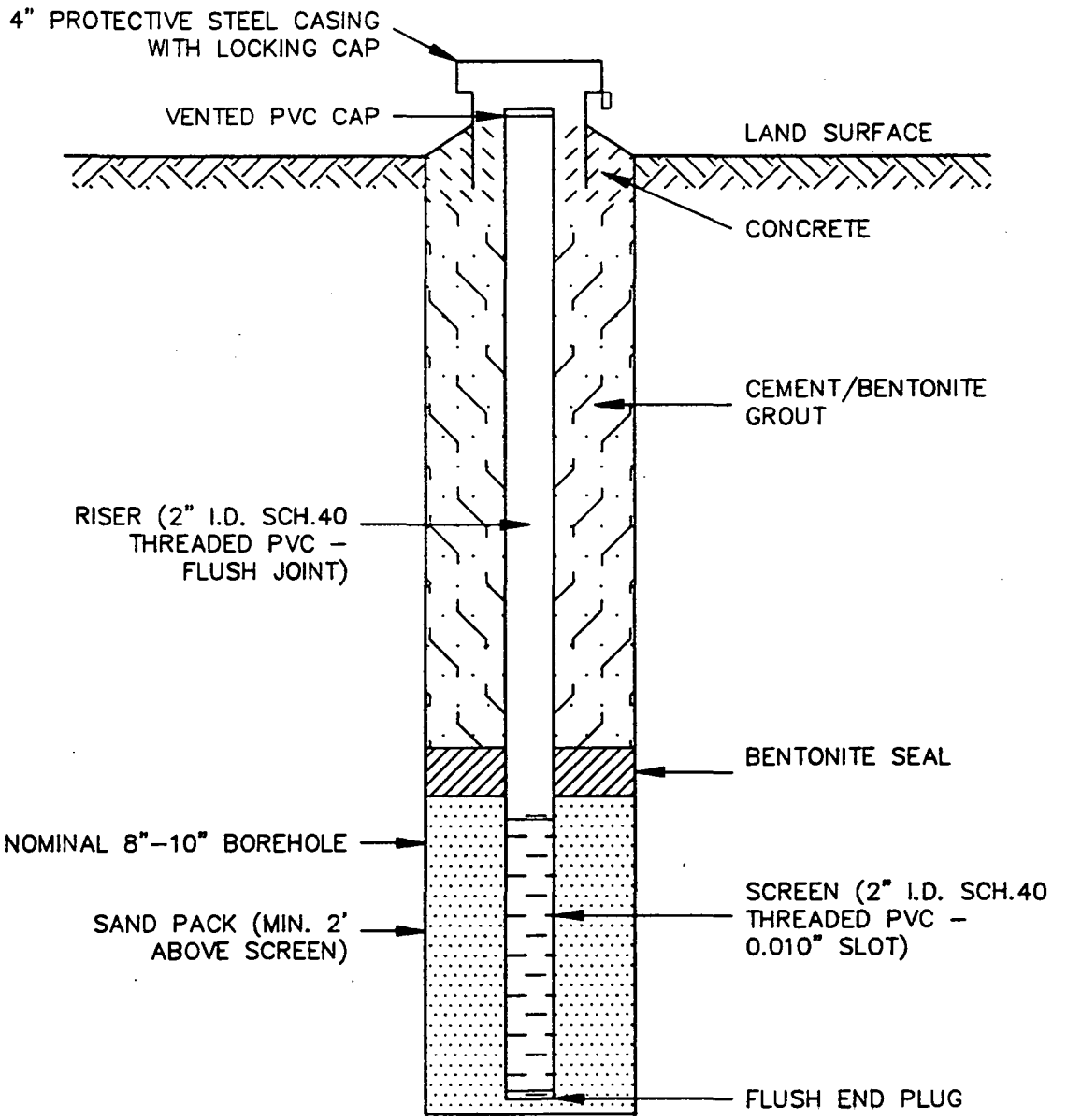
As previously described the geologic setting for this site is comprised of approximately 150 to 250 feet of unconsolidated glacio-fluvial sediments overlying bedrock. These units generally are considered as a single aquifer in most places in Dane County; however, water movement between the units may be retarded by low permeability silts and clays (Cline, 1965). As noted previously, a 75-foot thick dolomitic clay layer was encountered in Stoughton City Well No. 3 in the depth interval

85-160 feet. The areal extent of this low permeability zone is not currently known.

We anticipate six, 2-well monitoring clusters will be installed during the initial field investigation of the Stoughton Landfill. Additional monitoring wells or monitoring well clusters may be added based on results of Task 1, and the initial monitoring results. It is proposed that wells will be constructed of 2-inch I.D., Schedule 40, threaded PVC as shown on Figure 3-3. Although there has been significant controversy regarding the use of PVC for monitoring wells, it should be appropriate for use at this site. Concentrations of solvent in the ground water are extremely low compared to the percentage levels required to degrade the PVC. Monitoring well construction techniques and materials will be consistent with any current or pending Wisconsin Regulations. Additionally, each well will be purged immediately prior to sampling, resulting in insufficient time for chemical interaction of the ground water with well materials.

The shallow well in each cluster will be constructed such that the screen interval will be completely submerged, although the top of the screen will be as close to the water table as practical and still maintain a submerged screen. It is necessary to have a fully submerged screen to provide reliable in situ permeability results.

The deeper well in each cluster will be screened at a depth of 70-80 feet. This will provide an intermediate sampling interval between water table and bedrock to evaluate the vertical distribution of contaminants. Vertical gradients in the aquifer



NOT TO SCALE

TYPICAL MONITORING WELL STOUGHTON CITY LANDFILL	FIGURE 3–3
ERM ERM–North Central, Inc.	

will also be determined by comparing the two wells in each cluster. The need for and specifications of any deeper wells at the site will be evaluated based on the analytical results of ground water sampling and assessment of vertical gradient.

If during the drilling program a potential aquitard/aquiclude is located, drilling procedures for the deeper wells will be modified to prevent possible communication between separate aquifers. In such an instance, the deeper well will be finished in the upper-most portion of the lower aquifer.

Sediment samples for each boring will be screened in the field for total volatile organics using an HNu photoionization detector. We anticipate that the sample collected from above the water table exhibiting the highest concentration from each boring will be collected for laboratory analysis for the TCL compounds. At a minimum a soil sample will be collected from the screened interval from each monitoring well installed at the site, and that sample will be submitted to a geotechnical laboratory for analysis. In the event that a potential confining layer is encountered during monitor well drilling, an undisturbed sample will be taken for analysis of laboratory permeability.

Locations for monitoring well clusters will be finalized based on the results of Task 1. It is anticipated that one cluster will be located up gradient and that additional well clusters will evaluate ground water contamination detected in existing wells SB-1, SB-2 and SB-3.

Existing monitoring wells SB-1 through SB-6 will be permanently abandoned in accordance with applicable Wisconsin regulations. Due to the age and uncertain installation practices for these wells, it would be inappropriate to compare results for the old wells with wells installed under more rigorous QA/QC and materials specifications.

3.2.1.4 Ground Water Sampling and Monitoring

Prior to sampling, each well will be purged by pumping a minimum of three casing volumes to remove potentially unrepresentative ground water. These samples will be analyzed in the field for pH, specific conductance, and temperature. One duplicate sample will be obtained for every 10 ground water samples collected. Details of the sampling procedures will be presented in the Site Sampling Plan.

Initial ground water samples, duplicate samples, and blank samples will be analyzed for the complete Target Compound List (TCL).

Static water level readings will be taken at each sampling episode and on a monthly basis during the field investigations.

Hydraulic conductivity of the aquifer will be evaluated during the field investigation by performing slug tests in the completed monitoring wells. The slug test technique involves the instantaneous displacement of a known volume of water and the measurement of the subsequent water level recovery to static conditions.

It is anticipated that the determination of hydraulic conductivity through slug tests will be suitable for ground water flow path definition; however, if data are insufficient or inadequate, an aquifer pumping test may be required. Aquifer pumping tests characterize a greater proportion of the subsurface, but when conducted in settings affected by ground water contamination, they may present problems such as the storage/disposal of potentially contaminated ground water and the potential effects of pumping on an existing waste plume. Such a test would be more appropriately conducted during any bench-scale studies or modeling to ensure that data collected during the test will be sufficiently comprehensive to support later phases of the RI and the FS.

3.2.1.5 Private Water Well Sampling

A survey of ground water utilization in the vicinity of the Stoughton Landfill site will be conducted during Task 1. Area ground water flow patterns and private well construction details will be evaluated. If any of these wells are down gradient from the site or potentially affected by the existing site conditions, it will be assessed for sampling. This sampling would occur after analytical results from the site monitoring wells are available and have been reviewed. Chosen wells will then be sampled and the water analyzed for compounds detected in the site wells.

3.2.2 Surface Water Investigation

Hydrogeological investigation results, as well as current and historical surface run-off data, will be used to reevaluate the potential for surface water impact. Surface water sampling locations will be established after reviewing results of ground water sampling on-site. Potentially impacted areas include the Yahara River and apparent wetlands adjacent to the site.

A water level staff gage will be established and tied into the site evaluation survey, as noted during Task 1. River elevations would be collected at each well sampling and water level measurement event during Task 2. Available data will also be acquired regarding average flow rates/volumes for the Yahara River.

3.2.3 Air Investigation

The potential release of contaminants to air at the site will be monitored as part of the RI. Downwind sampling locations will be developed on the perimeter of the property based on readings obtained from portable wind direction/wind speed instrumentation. At each sampling location a known quantity of air will be drawn through an activated charcoal tube. Upon removal of any organic contaminants from the charcoal tube, the extract will be analyzed for VOCs.

3.3 Task 3 - Site Investigation Analysis

At the onset of Task 3, a quality assurance and data sufficiency evaluation for the RI will be conducted to validate the sufficiency and quality of the supporting data for the Endangerment Assessment and Feasibility Studies. All of the acquisition procedures and the laboratory data will be reviewed to ensure that Quality Assurance/Quality Control (QA/QC) has been maintained. The validation analysis will ensure that data quality meets the requirements of the QAPP and will be conducted in accordance with USEPA guidance documentation such as "Laboratory Data Validation Functional Guidelines." Once the data validation and QA/QC subtask is completed, a QA/QC and data sufficiency evaluation will be submitted to the USEPA and the WDNR as a technical memorandum for their review.

Concurrent with and subsequent to the data sufficiency review, a thorough analysis and summary of all site investigations and results will be prepared for presentation in the RI final report. The organization of data for that report will follow the USEPA "Guidance Manual on Remedial Investigations" (EPA/540/G-85/002, June, 1985). All site investigation data will be analyzed and a summary interpretation will be developed for the type and extent of contamination at the site. Technical memoranda will also be developed during the RI at the completion of each task as specified in the Statement of Work. The memoranda for individual investigative activities will be included as appendices for the RI report, and the RI report itself will present a summary of their findings and an overall interpretation of all data generated during the RI.

The Endangerment Assessment which will be conducted as part of the RI will evaluate the actual or potential threat to public health, welfare, or the environment resulting from no action at the site. In addition, all data will be submitted, as directed by the USEPA, for a health assessment by the Agency for Toxic Substances and Disease Registry (ATSDR). It is understood that the results of the ATSDR health assessment may not be available prior to completion of the RI report and that the RI report may be finalized without that input.

The focus of the site investigation analysis will be to evaluate contaminant extent, migration rate, and migration routes. This evaluation will then be used as the basis for the Endangerment Assessment. The primary data resulting from the contamination characterization tasks will include the following:

- type of contaminants present.
- extent of contamination.
- physical properties or contaminants present such as solubility, density, vapor pressure, and air-to-water partitioning coefficient.
- potential for migration of contaminant transport, including, but not limited to, soil absorption/adsorption, biodegradation, volatilization, etc.

Sampling and analysis of ground water, geotechnical testing of site soils, and in situ permeability testing, in combination with specific contaminant characteristics, as detailed above, will allow determination of the following:

- projected direction and rate of contaminant transport in the ground water system.
- estimated volume of contaminated water.
- estimated volume of contaminated soils.
- estimated duration of contaminant source.
- prediction of the ultimate fate for contamination attributable to the Stoughton Landfill site.

Finally, an Endangerment Assessment will be conducted as part of the site investigation data analysis. The Endangerment Assessment will evaluate the demographic, geographic, physical, chemical, and biological factors at the site to determine whether there is a risk to public health or the environment. Guidelines, prepared by the USEPA, will be used in the preparation of the Endangerment Assessment. These guidelines will include but may not be limited to: Draft Endangerment Assessment Handbook (USEPA, 1985), Superfund Public Health Evaluation Manual (USEPA, October 1987), Superfund Exposure Assessment Manual (USEPA, September 1987), Toxicology Handbook (USEPA, 1986) and "Endangerment Assessment Guidance", a memorandum prepared by USEPA, November 22, 1985.

The Endangerment Assessment will evaluate conditions at the site in the absence of remedial actions. The following factors will be considered:

- Specific contaminants found at the site
- Factors affecting migration
- Environmental fate
- Exposure evaluation
- Toxicity evaluation
- Environmental impact

Modeling of the hydrogeological system including and surrounding the Stoughton Landfill site may be necessary to evaluate the adequacy of the data base generated during the RI and to provide sufficient predictive information to support both the Endangerment Assessment and subsequent FS. A ground water model will not provide precise answers, but rather will generate predictive information to guide subsequent work effort. When sufficient data are available to evaluate appropriate flow, transport, and fate models, meetings will be held with the USEPA and WDNR to review the chosen models, input parameters, and their basic assumptions. The results of the ground water modeling activities will then be presented in the RI report as part of the

data evaluation in addition to necessary support for the Endangerment Assessment.

The Endangerment Assessment will be based exclusively on analytical data subjected to approved QA/QC procedures. Moreover, the results of any data processing or technical interpretation including transport modeling, exposure assessment, and toxicity assessment will also be subject to quality assurance review.

3.4 Task 4 - Laboratory and Bench-Scale Studies

During the development and initial screening of alternatives conducted as part of the RI, specific laboratory and bench-scale studies, or modeling may be identified as necessary to determine implementability, operability, reliability, and effectiveness of any particular alternative. The need for, design, of, and implementation of any laboratory or bench-scale testing will be discussed with the USEPA and WDNR during the progress of the RI to ensure that necessary data are available for conducting the FS.

The primary focus of any activity under this task will likely be treatability studies and compatibility studies. Treatability investigations may include the evaluation of waste fixation technologies to evaluate containment, as well as physical/chemical or biological processes to evaluate loading effectiveness, sizing, and materials requirements for treatment facilities. An aquifer pump test may also be appropriate under this task.

Compatibility studies may be necessary to evaluate remedial alternatives that incorporate the use of contaminant migration barrier walls. In addition, the synergistic reactions which may occur when different waste materials or contaminants are combined during treatment or decomposition require evaluation.

3.5 Task 5 - Remedial Investigation Reports

During the course of the RI, monthly progress reports will be submitted. The content of these reports, as presented in the Consent Order, will be detailed in the Data Management Plan submitted as part of the overall Work Plan.

At the conclusion of the RI, a draft RI report will be produced to summarize conclusions drawn from all investigative areas and levels. All technical memoranda submitted during the RI will be included as appendices to the RI report.

3.5.1 Draft Remedial Investigation Report

The following is a summary of the draft RI report contents:

- **EXECUTIVE SUMMARY**

  Key information and major investigation findings will be briefly summarized to provide a concise overview of site characterization, contaminant pathways, Endangerment

Assessment, and preliminary screening of remedial alternatives.

o INTRODUCTION

The introduction section will address four areas: (1) site background information, (2) nature and extent of contamination at the site, (3) investigative objectives and activities, and (4) an overview of the report contents. This section will review significant features and parameters of the site that are required to characterize site contamination, contaminant pathways, and select remedial action alternatives.

o SITE FEATURES INVESTIGATION

The following significant features of the site will be summarized: (1) demography, (2) land use, (3) natural resources, and (4) climatology. Discussion of each area will include key parameters investigated for the site, and all information pertinent to the applicability of remedial alternatives being considered.

o HAZARDOUS SUBSTANCES INVESTIGATION

This section will be organized into two subsections: (1) waste types and (2) waste component characteristics and behavior. The first subsection will address waste

quantities, location, components, and composition. It will cover all source areas located on site as well as contaminant migration. The second subsection will summarize results of the analysis of waste component characteristics, including: waste constituent toxicity, bioaccumulation, metabolism, environmental transformation, or other characteristics.

o HYDROGEOLOGIC INVESTIGATION

The hydrogeologic investigation will summarize data collected on the soils, geology, and ground water of the site. The soil analyses will include data and characteristics that would affect decisions on remedial alternatives such as: soil classification, stratigraphy, and contamination levels. The geology section will summarize geologic features and characteristics that have potential impacts on choosing remedial solutions. The ground water flow, delineation of the contaminant plume, plume migration and aquifer systems underlying the site. The results of any ground water modeling activities will be presented in this section.

o SURFACE WATER INVESTIGATION

The surface water investigation will summarize data and information collected to evaluate the potential for surface water impact. This material will include the

results of review of current and historical surface water run-off data, an interpretation of ground water/surface water interrelationships and the results of surface water sampling, if any.

o AIR INVESTIGATION

The air investigation will summarize the VOC and wind profile data collected from sampling locations located on the perimeter of the property to assess the potential for air contamination.

o BENCH AND PILOT STUDIES

The results of any bench scale or pilot scale testing conducted during the RI will be summarized in this section. These test results will provide data for the selection and design of remedial alternatives.

o ENDANGERMENT ASSESSMENT

The Endangerment Assessment will present demographic, physical, chemical and biological factors at the site used to determine if there is a risk to public health or environment in the absence of any remedial actions. The following factors will be evaluated and summarized: (1) specific contaminants, (2) factors effecting migration, (3)

the environmental fate of contaminants, (4) exposure evaluation, (5) toxicity evaluation, and (6) environmental impact.

o **CONCLUSIONS AND FEASIBILITY STUDY OVERVIEW**

Major conclusions from the site characterization, contaminant transport analysis, and Endangerment Assessment of the RI will be presented in this section. Based on these conclusions, a list of preliminary remedial alternatives will be identified, evaluated, and summarized.

o **APPENDICES**

While the text of the RI report will summarize information collected and analyzed during the investigative process, it will not contain a detailed description of sample collection, data gathering, and all analytical data. These detailed items will be presented in technical memoranda generated during the RI, which will be attached as appendices to the RI report.

3.5.2 Agency Review

Copies of the draft RI report will be submitted to USEPA and WDNR for review and comments. Upon completion of agency review, a meeting will be held to discuss the contents of the RI report and corresponding agency comments. On the basis of the review

meeting, a revised draft RI report will be prepared and will include all appropriate USEPA and WDNR review comments.

SECTION 4.0
FEASIBILITY STUDY SCOPE OF WORK

The Feasibility Study (FS) for the Stoughton Landfill site will consist of the identification, development, and evaluation of alternative remedial action plans based on engineering feasibility, environmental impact, and cost criteria. As a result of this process, an alternative action or a combination of alternatives will be selected that will be cost effective, reliable, and implementable and will mitigate the hazards at the site. The development of alternatives will require a definition of site specific remedial response objectives, the identification of available and appropriate remedial technologies, and the identification of alternative remedial actions.

Site specific remedial action objectives for the Stoughton Landfill site will be established in consultation with the USEPA and WDNR. These objectives will be based on the Endangerment Assessment completed during the RI. Criteria for achieving these objectives will be developed in consultation with the USEPA and WDNR. At a minimum, these criteria will include compliance with 40 CFR 300.68 of the National Contingency Plan, Section 121 of SARA, USEPA and WDNR guidelines, and applicable federal and/or state laws.

The FS for the Stoughton Landfill site will consist of three primary tasks with multiple subtasks. The primary tasks include:

Task 6 - Remedial Alternatives Screening

Task 7 - Remedial Alternatives Evaluation

Task 8 - Feasibility Study Report

The following sections describe the planned technical approach designed to conduct each of these tasks and their subtasks.

4.1 Task 6 - Remedial Alternatives Screening

Task 6 entails the development and preliminary screening of feasible technologies to remediate the site. When these subtasks are completed, an alternatives array document will be prepared and submitted to the USEPA and the WDNR for review. This document will contain a detailed description of the proposed remedial alternatives including the expected extent of remediation, contaminant levels, and the treatment methods. The results of this task will provide a basis for the development of the standards of performance required by the WDNR and USEPA.

Potentially feasible technologies identified during Task 6 will include on-site and off-site remedies. An initial list of technologies will be screened and modified based on site conditions, waste characteristics, implementation difficulties, implementation schedules, and the state of development of the technologies. Emerging or state of the art technologies will be evaluated and may be carried through this screening process even if insufficient data exist to provide a full evaluation.

Site specific remedial objectives for the FS will be established to evaluate remedial alternatives. These objectives will be based on RI data, the results of the Endangerment Assessment, USEPA interim guidelines, applicable USEPA or state environmental standards, as well as guidelines and advisories as defined under Section 121 of the Superfund Amendment and Reauthorization Act of 1986 (SARA). Preliminary clean-up standards and objectives will be developed in formal consultation with the USEPA and WDNR.

Alternative remedial actions will then be developed that incorporate the identified available technologies and are responsive to the established site specific remedial response objectives. These remedial actions will include treatment alternatives for source control that will eliminate the need for long-term management and treatment alternatives that will reduce the toxicity, mobility, or volume of the Stoughton Landfill site waste. At a minimum, two of the alternatives will be:

1. a containment option that involves little or no treatment, but provides protection of human health and the environment primarily by preventing potential for exposure or reducing mobility of the waste.

2. a no action alternative.

If remedial alternatives involving ground water management and treatment are appropriate, a number of alternatives will be developed which reduce cancer health risk potentially attributable to the Stoughton Landfill site to within the range

of 10^{-4} to 10^{-7} for maximum lifetime exposure. The ground water restoration alternatives will also include a range in the rate of restoration. Where feasible, at least one alternative will be included that would restore ground water to a 10^{-6} cancer risk potentially attributable to the Stoughton Landfill site within five years of implementation.

Combinations of remedial alternatives may possibly involve both source control and ground water restoration. The combined elements will be evaluated to ensure that the comprehensive remedial action is effective and the source and ground water restoration elements are complementary. However, each element will be detailed separately in the development and analysis of alternatives.

The final subtask will be to subject the identified alternatives and associated technologies to an initial screening considering the effectiveness, implementability, and cost for each alternative. The effectiveness evaluation will determine if an alternative: (1) adequately protects human health and the environment; (2) attains federal/state applicable or relevant and appropriate requirements (ARARs); (3) significantly and/or permanently reduces the toxicity, mobility, or volume of hazard constituents; and (4) is technically reliable, including the potential for failure and a need for replacement of the remedy. Implementability will be based on the feasibility and availability of the technologies for each alternative. This includes both the technical and institutional ability to monitor, maintain, and replace technologies as needed and the administrative ability to implement the alternative.

Finally, the cost of construction and long-term maintenance will be evaluated for each alternative. During the initial screening, cost will be a significant factor in comparing alternatives that provide similar results. However, cost will not be used to compare treatment versus nontreatment alternatives.

The objectives for screening alternatives will be used through the remainder of the FS with the most promising alternatives based on effectiveness and implementability. Alternatives chosen for more detailed analysis must also satisfy the requirements for treatment alternatives which eliminate long-term management or reduce the toxicity, mobility, and volume of site waste. State of the art or innovative alternative technologies will be carried through the screening process if they offer potential for better treatment performance or lower costs while achieving similar levels of performance. The containment and no action alternatives will be carried through the initial screening to the detailed analysis regardless of their relative effectiveness, implementability, or cost.

4.2 Task 7 - Remedial Alternatives Evaluation

Three subtasks will be necessary to complete the evaluation of remedial alternatives for the Stoughton Landfill site. The initial subtask will be to provide individualized evaluation of each proposed alternative against the review criteria. Secondly, alternatives will be compared to develop a ranking for the criteria of effectiveness, implementability, and costs. Finally, the conclusion of Task 7 and as a separate chapter in the FS Final Report, the preferred alternative or combination of

alternatives will be discussed in detail with respect to all review criteria. In the case of combined alternatives, this section will present the rationale supporting the combination and discuss the interrelationship between the components of the combined remedy.

The initial evaluation of alternatives will consist of a detailed description of the alternative; specific federal and state ARARs; and other criteria, advisories, or guidelines to be used in the selection of remedies. The alternatives will be analyzed in sufficient detail to allow selection of a site remedy from a well-defined set of hazardous waste management approaches.

The alternatives will then be evaluated for both short-term and long-term considerations for technical effectiveness, implementability, and costs. A detailed analysis within these major criteria will include specific review criteria such as protection of the public health and environment, compliance with ARARs, reliability, and technical feasibility. Specific review criteria necessary to evaluate the effectiveness of a particular alternative include the:

- degree to which the alternative is protective of human health and environment.
- reliability of the remedy, including the need for and cost of replacement.
- impact on specific environmental receptors.

- degree to which the mobility, toxicity, or volume of the contaminant source is reduced.

In instances where health based levels are not available, risk assessments will be used to establish levels appropriate for the site. In the case of ground water response actions, the potential for further migration of any contaminant and the technical limits of aquifer restoration will be necessary review factors.

Specific review criteria associated with evaluating the implementability of any response action include the technical feasibility of that alternative, the administrative feasibility of implementing and monitoring the alternative, and the availability of necessary equipment or off-site support facilities. A significant component of this evaluation will be the effectiveness and reliability of any institutional controls that may be required for an alternative.

Cost component review criteria will include an evaluation of short-term capital, operational costs, and any long-term operation/maintenance costs. A present value cost analysis will also be used to compare alternatives.

Once the detailed review of each alternative is completed, alternatives will be compared one to another. Combinations of alternatives that complement each other with respect to technical effectiveness and operational compatibility will be developed and evaluated. Combinations of remedial alternatives will be

compared by using the same criteria applied to individual alternatives.

The major objective for Task 7 is to present a detailed analysis of the preferred remedy for the Stoughton Landfill site. The preferred remedy may be a combination of several individual alternatives and may consist of a program of phased alternatives to be implemented over a period of time. The preferred remedy will reflect a preference for treatment which significantly reduces toxicity, mobility, or volume of hazardous constituents and minimizes the requirements for long-term management. The following guidelines will be satisfied by the chosen remedy:

- the alternative will be protective of human health and the environment.
- the alternative shall attain ARARs identified for the site.
- the alternative shall be cost effective.
- the alternative will utilize treatment technologies and permanent solutions to the extent practicable.

There are conditions under which a preferred remedy may not be required to meet ARARs established for the site. These include the following:

- the alternative chosen is considered an interim measure which will become part of a comprehensive remedy that will satisfy the ARARs.

- compliance with the ARARs would result in a greater risk to human health and the environment.

- compliance with the ARARs is technically unfeasible.

- the alternative chosen will attain a standard of performance which is equivalent to the ARARs.

- the state of Wisconsin has not consistently applied or demonstrated the intention to consistently apply ARARs at other remedial actions within the state.

4.3 Task 8 - Feasibility Study Report

The FS Report will summarize the findings of Tasks 6 and 7, and present a full and detailed description of the preferred remedy for the site. This report will be prepared in accordance with the USEPA's "Guidance on Feasibility Studies under CERCLA" (EPA/540/G-85/003). Copies of the draft FS Report will be submitted to the USEPA and the WDNR for review and comment. Subsequently, a meeting will be held with the USEPA and WDNR to discuss those review comments and the manner in which they should

be incorporated within the final FS Report. Comments will be incorporated as appropriate, and a public comment draft which includes a description of the preferred alternative(s) will be prepared for review. The final FS Report will be prepared at the conclusion of the public comment period and will incorporate any additional comments as necessary and appropriate. The final report will then be submitted to the USEPA and WDNR.

SECTION 5.0

SCHEDULE

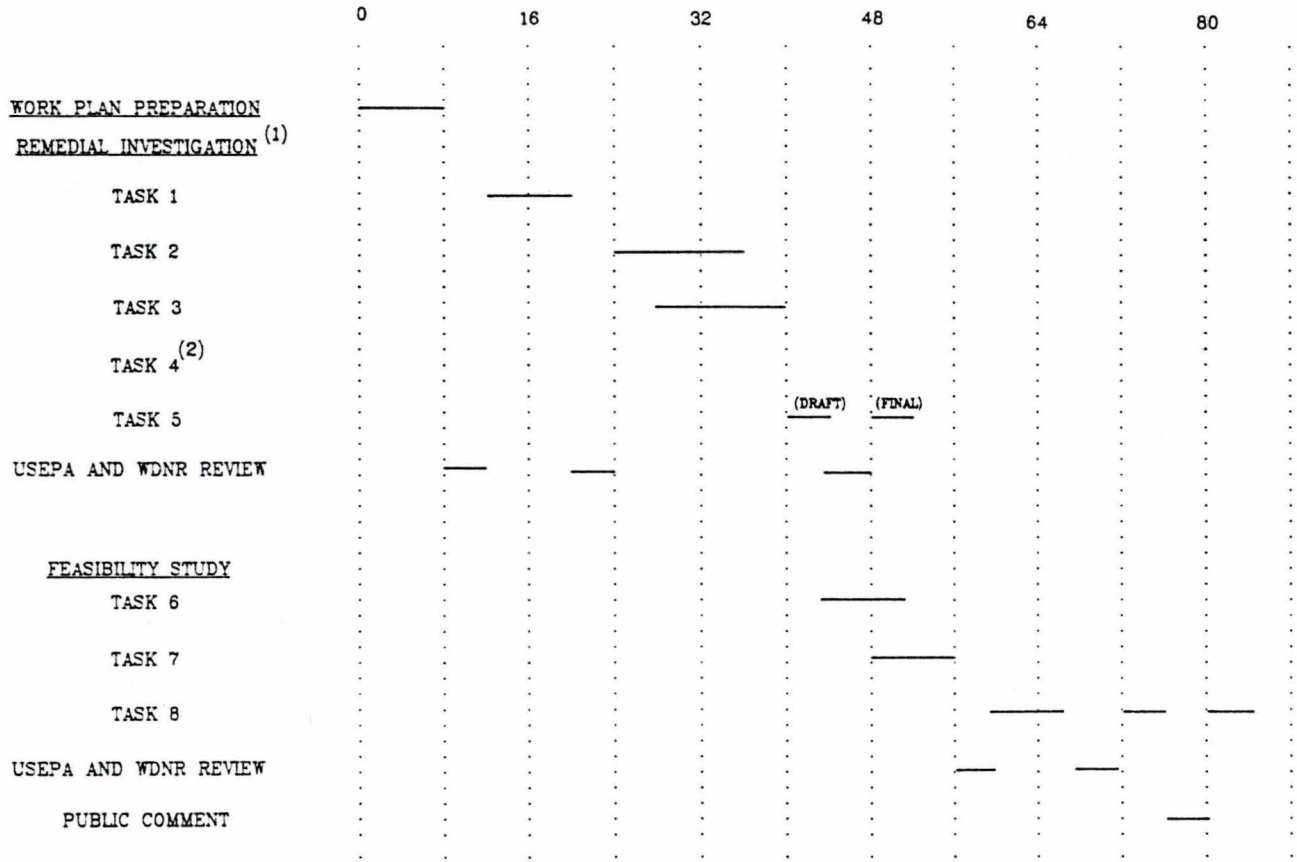
The schedule for completion of the scope of work discussed in the proposal is presented in Figure 5-1. The anticipated start and completion dates for each major project task are indicated as number of weeks following award of project. The estimated time from project initiation to presenting the Public Comment Draft of the FS is 76 weeks, with approximately 52 weeks to complete the RI and approximately 32 weeks to complete the FS.

The overall Work Plan and supporting plans will be submitted to the USEPA and WDNR within 60 days of official notice for the Consent Order.

Technical memoranda will be prepared and submitted to the USEPA and WDNR during the coarse of the RI and FS, prior to preparation and submittal of RI or FS report. The technical memoranda anticipated during the Stoughton Landfill RI and FS in the expected preparation dates in terms of weeks from initiation of project are listed on Table 5-1.

The anticipated dates for the drafts and the final submittals for the RI and FS reports are indicated in Figure 5-1. This schedule for deliverables is based on a regulatory review period of 30 days and a 30 day public comment, where necessary.

ESTIMATED PROJECT SCHEDULE
STOUGHTON LANDFILL
WEEKS FROM EFFECTIVE DATE OF CONSENT ORDER



(1) REMEDIAL INVESTIGATION TO BE CONDUCTED USING PHASED APPROACH. PHASE I INCLUDES ALL TASK 1 ITEMS WHILE PHASE II INCLUDES TASKS 2-8.

(2) SCHEDULE AND NEED UNDETERMINED

NOTE: SCHEDULE ASSUMES 30-DAY REVIEW BY USEPA/WDNR

ESTIMATED PROJECT SCHEDULE	FIGURE NO. 5-1
ERM ERM-North Central, Inc.	

TABLE 5-1

ESTIMATED SUBMITTAL DATES FOR TECHNICAL MEMORANDA
DURING THE STOUGHTON LANDFILL RI and FS

TITLE	SUBMITTAL DATE*(WEEKS)
Task 1 Technical Memorandum	20
1.1 Site Boundary/Topographic Survey	
1.2 Historical Aerial Photo Analysis	
1.3 Area Ground Water Usage Survey	
1.4 History of Response Action Survey	
1.5 Geophysical and Soil Gas Surveys	
1.6 Review of Air Sampling Data	
1.7 Surface Water Evaluation	
1.8 Ground Water Flow Direction Evaluation	
Report of Monitoring Well Installation	32
Results of Ground Water Sampling at Landfill	40**
Results of Soil Sampling at Landfill	40**
Results of Residential Well Sampling (If necessary)	44**
Results of Surface Water Sampling (If necessary)	44**
Results of Air Sampling	44**
Results of Remedial Alternative Screening	56

* Dates are in reference to effective date for Consent Order.

** Estimated submittal, actual date will be 4 weeks after receipt of laboratory results to enable validation.