


B.4. Environmental Assessment

FORM EQP 5111 ATTACHMENT TEMPLATE B4 ENVIRONMENTAL ASSESSMENT

This document is an attachment to the Michigan Department of Environmental Quality's (DEQ) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) §324.11118(3) and R 299.9504(1)(e) and R 299.9504(1)(b) establish requirements for conducting environmental assessments at hazardous waste management facilities. Before receiving an operating license, owners and operators of hazardous waste treatment, storage, or disposal facilities must evaluate the (proposed) facility's impact on air, water, or other natural resources of the state. The evaluation must also include a failure mode assessment. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for an environmental assessment for hazardous waste management units at the Wayne Disposal, Inc, facility.

 Guidance for this template can be found in the DEQ's document titled "Contents of the Environmental Assessment."

This template is organized as follows:

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B4.A.2(e) Hydrology

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- B4.B ENVIRONMENTAL IMPACTS OF (PROPOSED) FACILITY
- B4.C EXPOSURE INFORMATION REPORT FOR LANDFILLS AND SURFACE IMPOUNDMENTS
- B4.D EVALUATION OF ALTERNATIVE HAZARDOUS WASTE MANAGEMENT TECHNIQUES

INTRODUCTION


This environmental assessment for Wayne Disposal, Inc. describes current conditions, environmental impacts, and applicable exposure information for landfills and surface impoundments. The goals of the environmental assessment are to describe and discuss (1) the probable impact of the facility on natural resources, human life, and all environmental elements that affect these values; (2) probable unavoidable adverse effects of the facility; (3) alternatives for accomplishing the same objective; and (4) possible modifications that would minimize adverse effects.

 Include in this section a description of the need for and objectives of the proposed or existing facility.

The Environmental Assessment Report, hereafter referred to as the “Report”, was completed for the 2011 license application that included a lateral expansion onto undeveloped property and expanded the hazardous waste boundary. This current license renewal application only includes the previously permitted hazardous waste management area. Further, there have been no changes to the properties directly surrounding the landfill in terms of land use or isolation distances that would warrant making changes to the assessment. This template is annotated to aid the reviewer in locating the required elements as listed above.

B4.A CURRENT CONDITIONS

B4.A.1 Facility Description

 *This section should describe the facility, wastes managed, and location. Note that “facility,” as used in this template, is the hazardous waste management unit that is the subject of this licensing action.*

[See Section 1.2 of the Report.](#)


B4.A.2 Description of Existing Environmental Conditions

A description of existing environmental conditions at the facility and any surrounding areas that may be affected by the facility is included in this section. Detailed information that is provided in other attachment templates is not repeated here; however, references to appropriate attachment templates are provided. Maps, photographs, and other relevant information that are

not included in other templates are included in this section. Important ecological relationships, functions, and interdependence of physical environmental elements and social and economic elements are discussed. Factual information from publications, reports, or personal communications is documented, with sources cited.


See Section 2.0 of the Report

B4.A.2(a) Climate

 *Describe meteorological data in this section, including average rainfall and temperature. Describe seasonal variations in meteorological conditions and any weather problems unique to the area. "Area" refers to all of the area surrounding the facility that will be potentially affected by the facility.*


[See Section 2.1 of the Report](#)

B4.A.2(b) Topography

 *Provide a description and map of land relief and slope, streams, lakes, roads, cities, and other relevant topographic features. The map should be large enough to include all areas surrounding the facility that may be potentially affected by the facility.*


[See Section 2.3 of the Report](#)

B4.A.2(c) Geology

 *Describe bedrock and surficial features of the area. Describe existing or potential mineral extraction and oil and gas exploration and production. If a hydrogeologic report has been included as Template B3, Hydrogeological Report, references to appropriate sections of Template B3, Hydrogeological Report, should be included here.*


[See Section 2.4 of the Report](#)

B4.A.2(d) Soils

 *Describe common soil series in the area, including suitability for various land uses. If possible, provide a soil type map that shows facility boundaries. Again, include a reference to Template B3, Hydrogeological Report, if appropriate.*


[See Section 2.5 of the Report](#)

B4.A.2(e) Hydrology

 Describe groundwater quality, quantity, and flow direction in the area. Describe surface water characteristics, runoff patterns, flows, and seasonal variations. Describe any existing or potential problems with surface or groundwater. Note that the descriptions should be limited to hydrological features that will be potentially affected by the facility. Reference other templates, such as Template B3, Hydrogeological Report, as appropriate.

[See Section 2.6 of the Report](#)

B4.A.2(f) Land Use and Zoning

 Describe current and historic land use, existing or proposed zoning regulations, and ownership patterns in and around the area.

[See Section 2.7 and Figures 6 & 7 of the Report](#)

B4.A.2(g) Historical or Archaeological Resources

 Describe any historical or archaeological resources in the area


[See Section 2.8 of the Report](#)

B4.A.2(h) Social Environment

The social environment, in terms of demographics and infrastructure of the area, is discussed in the following two subsections.


[See Section 2.9 and Appendix C of the Report](#)

B4.A.2(h)(i) Demographics

 Describe population characteristics of the area that may be impacted by the facility. Include employment statistics, age, ethnicity, types of employment, and major employers in the area surrounding the facility.


[See Section 2.9.1 and Appendix C of the Report](#)

B4.A.2(h)(ii) Infrastructure

 Describe existing public utilities, schools, law enforcement, transportation, sewage disposal, and solid waste disposal facilities at and near the facility.


[See Section 2.9.2 and Appendix C of the Report](#)

B4.A.2(i) Transportation

 Describe existing on-site and off-site transportation facilities. "Off-site transportation facilities" refer to highways, railroads, or rail yards that will be used to transport hazardous waste either to or from the facility.


[See Section 2.9.2.3 of the Report](#)

B4.A.2(j) Air Quality

 Describe existing ambient air quality and any potential or actual sources of air pollution in the area surrounding the facility.


[See Section 2.10 of the Report](#)

B4.A.2(k) Noise

 Describe current noise levels in the area surrounding the facility and identify sources of noise.

[See Section 2.11 of the Report](#)

B4.A.2(l) Appearance and Aesthetics

 Describe diversity of vegetation, visually pleasing landscapes or views, and unique natural or man-made features of the facility.


[See Section 2.12 of the Report](#)

B4.A.2(m) Terrestrial Ecosystem

The characteristics of the terrestrial ecosystem, in terms of flora, fauna, rare or endangered species, and critical habitat are described in the following subsections.


[See Section 2.13 of the Report](#)

B4.A.2(m)(i) Flora

 Describe vegetation characteristics, species, density, age, and size. Provide a descriptive map, if possible.


[See Section 2.13 of the Report](#)

B4.A.2(m)(ii) Fauna

 *Describe wildlife species and population densities in the area surrounding the facility.*

[See Section 2.13 of the Report](#)

B4.A.2(m)(iii) Rare or Endangered Species

 *Describe any rare or endangered plant or animal species in the area surrounding the facility.*

[See Section 2.13 of the Report](#)

B4.A.2(m)(iv) Critical Habitat

 *Describe any habitat critical to the survival of local species.*

[See Section 2.13 of the Report](#)

B4.A.2(n) Aquatic Ecosystem

The characteristics of the aquatic ecosystem, in terms of flora, fauna, rare or endangered species, and critical habitat are described in the following subsections.


[See Section 2.14 of the Report](#)

B4.A.2(n)(i) Flora

 *Describe quantities and species of aquatic vegetation in the area surrounding the facility.*

[See Section 2.14 of the Report](#)

B4.A.2(n)(ii) Fauna

 *Describe aquatic animal species, populations, and available aquatic habitat in the area surrounding the facility.*


[See Section 2.14 of the Report](#)

B4.A.2(n)(iii) Rare or Endangered Species

 *Describe any rare or endangered aquatic species in the area surrounding the facility.*


[See Section 2.14 of the Report](#)

B4.A.2(n)(iv) Critical Habitat

 Describe any habitat that is critical to the survival of aquatic species in the area surrounding the facility.

[See Section 2.14 of the Report](#)

B4.B ENVIRONMENTAL IMPACTS OF THE FACILITY


 *For each hazardous waste management unit, describe how each of the items in Section B4.A.2 will be affected by normal operations and during failure mode. “Failure mode” is defined as a departure from planned or expected operations. Describe failures that can occur at each unit, including consequences of failures, if any. Examples of consequences of failures are: releases of hazardous waste to the environment, injury or death to nearby people, contamination of drinking water supplies, etc.*

Subsections of Section B4.A.2 describe various environmental conditions at and around the facility before construction and operation in the case of a new, altered, enlarged, or expanded facility. For an existing facility, the subsections describe environmental conditions existing before the current license action. The purpose of Section B4.B is to describe actual and potential effects, if any, of the proposed hazardous waste management facility or license action on the area impacted or potentially impacted by the facility. In other words, Section B4.B should describe how construction, operation, or continued operation of the facility may impact or change the environment of the area surrounding the facility.

For each hazardous waste management unit at the facility, the template containing its detailed description should be referenced, rather than repeating unit descriptions in this template.

[See Section 4.0 of the Report](#)

B4.C EXPOSURE INFORMATION REPORT FOR LANDFILLS AND SURFACE IMPOUNDMENTS

 *For landfills and surface impoundments only, include an Exposure Information Report (EIR). The EIR should include the following information: general, pathway-specific, transportation, management practices, known releases, and human exposure potential. Detailed guidance is included in “Contents of the Environmental Assessment.” Information that is included in other sections needs not be repeated here; however, reference the appropriate section(s).*

[See Section 5.0 of the Report](#)

General information should include the following:

1. *Available health or risk assessment information,*
2. *Zoning and land use maps,*
3. *Recent aerial photographs,*
4. *Additional waste analyses not already submitted in the application,*
5. *Annual volume and amount of wastes received, and*
6. *A list of agencies that inspect and report on the facility, including compliance reports.*

The following potential exposure pathways must be evaluated:

1. *Groundwater,*
2. *Surface water,*
3. *Air,*
4. *Subsurface gas, and*
5. *Soil.*

Transportation information should include the following:

1. *Types of transportation vehicles and containers,*
2. *Normal transportation routes, and*
3. *Spill response and cleanup procedures.*

Management practices information should include worker information related to operation of the unit on:

1. *Injuries,*
2. *Accidents, and*
3. *Illnesses.*


Known release information that has not been previously submitted in the application should include:

1. *Evidence identifying the release,*
2. *Pathway and extent of migration,*
3. *Corrective action taken and an evaluation of the effectiveness of the action, and*
4. *The extent and severity of any known public exposures.*

The location of the unit should be evaluated for its potential to cause human exposure by way of the following pathways:

1. *Groundwater,*
2. *Surface water,*
3. *Air,*
4. *Subsurface gas,*
5. *Soil,*
6. *Transportation, and*
7. *Worker management practices.*

B4.D EVALUATION OF ALTERNATE HAZARDOUS WASTE MANAGEMENT TECHNOLOGIES

 The purpose of this subsection is to show that construction or operation of the proposed facility is the most practical and economically viable hazardous waste management method that will protect public health and the environment. Evaluate alternative hazard waste management methods, including both positive and negative impacts on the environment of the area surrounding the facility. Discuss why the proposed method was selected. Describe disadvantages of alternatives, and describe how selected proposal is interrelated with other planned or existing community projects.

[See Section 6.0 of the Report](#)

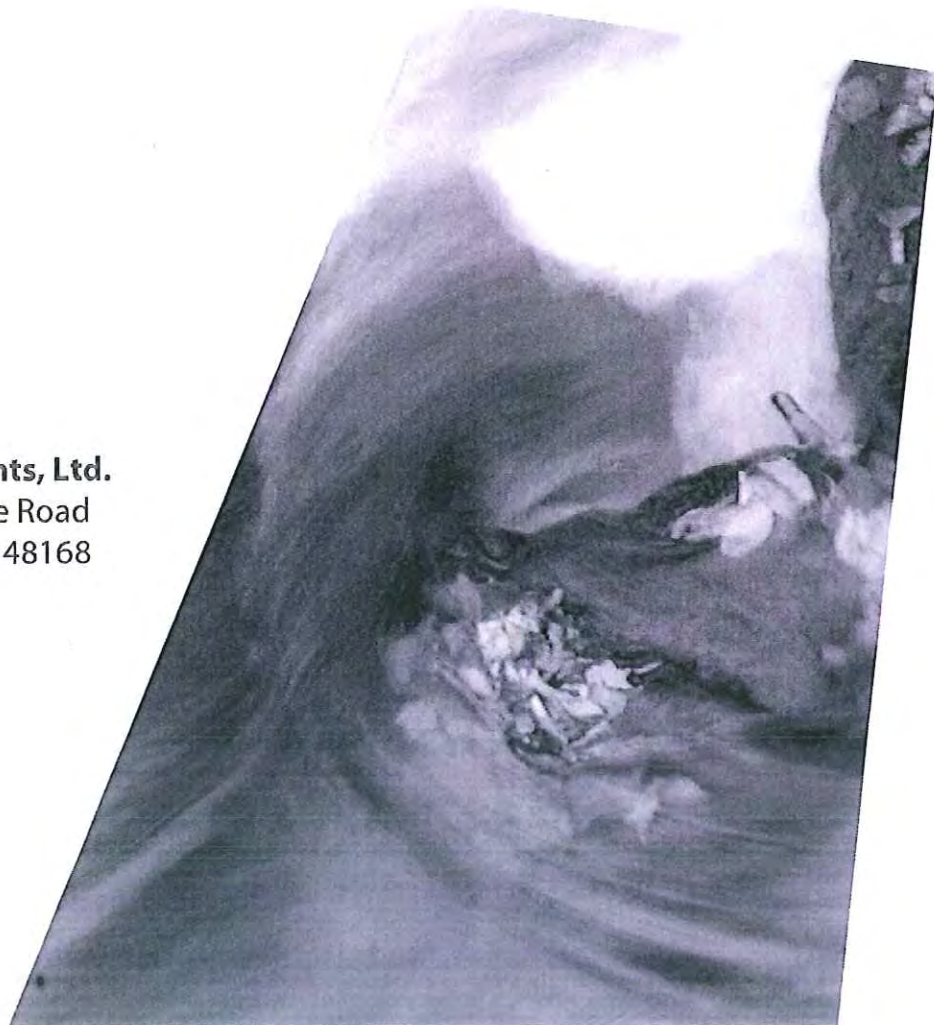
Volume V - WDI Operating License Application Master Cells VI F & G

*Environmental Assessment Report
Wayne Disposal, Inc. - Site No. 2*

NTH Project No. 13-060921-03

February 2011

NTH Consultants, Ltd.
41780 Six Mile Road
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R 299.9504 ENVIRONMENTAL ASSESSMENT
Wayne Disposal, Site No. 2 MC VI-F & G (Woodlot) Development
NTH Proj., No. 13-060921-03

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B4.A.2(d)	Soils	Section 2.5
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B4.A.2(g)	Historical or Archaeological Resources	Section 2.8
B4.A.2(h)	Social Environment	Section 2.9 / Appendix C
B4.A.2(h)(i)	Demographics	Section 2.9.1 / Appendix C
B4.A.2(h)(ii)	Infrastructure	Section 2.9.2 / Appendix C
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B4.D	EVALUATION OF ALTERNATIVE HAZARDOUS WASTE MANAGEMENT TECHNIQUES	Section 6.0



**Environmental Assessment Report (Rule 299.9504(1)(e))
Wayne Disposal, Inc., Site No. 2
Master Cell VI – F & G Development (Woodlot)
NTH Project No. 13-060921-03**

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Environmental Assessment Report (Rule 299.9504(1)(e))
Wayne Disposal, Inc., Site No. 2
Master Cell VI – F & G Development (Woodlot)
NTH Project No. 13-060921-03

1.0 INTRODUCTION

This environmental assessment describes current environmental conditions and potential environmental impacts for the proposed development of the Wayne Disposal, Inc., Site No. 2 Master Cell VI – F & G. The goals of the environmental assessment are to describe and discuss (1) the probable impact of the facility on natural resources, human life, and all environmental elements that affect these values; (2) probable unavoidable adverse effects of the facility; (3) alternatives for accomplishing the same objective; and (4) possible modifications that would minimize adverse effects.

This Environmental Assessment (EA) Report was prepared in support of the License Application for the proposed Master Cell (MC) VI-F & G at Wayne Disposal, Inc. (WDI) Site No. 2 located in Van Buren Township, Wayne County, Michigan. This report was prepared to meet the requirements of Michigan's Natural Resources and Environmental Protection Act, 1994, P.A. 451, Part 111, Hazardous Waste Management (Part 111), and applicable parts of Administrative Rule 299.9504.

As a basis for ensuring inclusion of each of the required elements, this EA Report follows format of the guidance document developed by the Michigan Department of Natural Resources and Environment (MDNRE) titled "Form EQP 5111 Attachment Template B4 Environmental Assessment," a copy of which is attached in Appendix A, MDNRE Form EQP 5111 Attachment Template B4. This template has also been transformed into a checklist and is included at the front of this document.



An EA report was prepared and submitted as part of the previous operating license application for Wayne Disposal, Inc. and for the Michigan Disposal Waste Treatment Plant (MDWTP), which is located within the WDI Site No. 2 facility and is located directly east of the proposed MC VI-F & G development. That previous report, titled *Environmental Assessment, Solidification of Sludge Wastes, Van Buren Township, Wayne County, Michigan*, was originally prepared by Environmental Research Group, Inc. (ERG), and most recently revised in December of 2004 (Revision #4). Regional environmental conditions and most internal features of the WDI Site No. 2 facility have not changed materially since the previous EA report was prepared, and therefore, the descriptions of these items are still applicable and relevant to the proposed MC VI-F & G development area. However, this report provides up to date information and new additional supplemental information to address current environmental conditions and the specific details of the MC VI-F & G development area.

1.1 NEED FOR THE FACILITY

WDI currently operates the only commercial hazardous waste/TSCA disposal facility in Michigan. There are only seven disposal facilities in the United States that are similarly permitted to dispose of the same waste streams as WDI. The general unavailability of feasible alternatives at the operational scale necessary to handle the region's quantity of hazardous wastes is the key factor in the need for continued operation of WDI's hazardous waste disposal facility. Discontinuing the operation of regulated, properly operated hazardous waste disposal facilities like WDI would result in increased transportation costs for industry and environmental clean-ups in the region and the increased risk inherent in transporting wastes over large distances. This could also increase the incentive for hazardous waste generators to resort to improper handling or disposal of hazardous or potentially hazardous wastes.



An analysis of alternatives to the proposed MC VI-F & G development is presented in Section 6.0 of this report. As demonstrated by that analysis, construction and operation of the proposed MC VI-F & G development at the existing WDI Site No. 2 facility is the most practical and effective means of providing critical hazardous waste landfill capacity to the region. The objective of the MC VI-F & G development is to continue to provide a licensed disposal facility for acceptance of hazardous wastes in a manner that provides proper environmental safeguards to surrounding areas. WDI proposes to operate the facility in compliance with stipulations agreed to by the U.S. Environmental Protection Agency (USEPA), MDNRE, and WDI. In addition, WDI currently holds a host community agreement with Van Buren Charter Township and agrees to operate the facility in a manner to protect public safety and the environment as outlined in state and federal rules. A copy of the host community agreement with Van Buren Charter Township is presented in Appendix B, Host Community Agreement.

1.2 FACILITY DESCRIPTION

WDI Site No. 2 is located at 49350 I-94 Service Drive, in Van Buren Township, Sections 17 and 18, Township 3 South/Range 8 East, Wayne County, Michigan. The facility is situated between the I-94 expressway and Willow Run Airport. Belleville Lake, which is a man-made impoundment of the Huron River, is located south of I-94, more than 1,000 feet from the WDI property boundary. Figure 1, Site Location Map depicts the location of the WDI facility referenced to nearby roads and topography.

The proposed MC VI-F & G includes extending the permitted MC VI hazardous waste boundary west over the existing MC I and MC IV areas, as well as into the undeveloped 20.5-acre "Woodlot" parcel between MC I and MC IV. The proposed MC VI-F & G hazardous waste boundary will increase the permitted MC VI hazardous waste boundary by 75.3 acres.



WDI Site No. 2 consists of eight Master Cells, designated as MC I, IV, V, VI, VII, IX, X, and XI. MC I and IV were operated before the promulgation of RCRA regulations. Both cells were filled with industrial and domestic waste. MC V, VI, and VII are RCRA-regulated hazardous waste management units (HWMUs). MC V and VII were previously filled and have been closed, in accordance with approved closure plans, for more than 20 years. Figure 2, WDI Facility Map depicts the location of each of the HWMUs at the facility and identifies the location of the proposed MC VI F & G development.

MC VI is a fully licensed, operating hazardous waste and TSCA landfill unit. It consists of six sub-units, designated as MC VI A-South, A-North, and B through E. MC VI-E, which is an overlay above the closed MC V, consists of four phases. The first three phases, designated as Phase 1, Phase 2 Southeast, and Phase 2 West, have been constructed and are currently being filled. The last phase, designated as Phase 2 Northeast, has not yet been constructed. The remaining three closed cells at the site, designated as MC IX, X and XI, are designated municipal solid waste management units that have been filled and closed in accordance with approved closure plans.

The proposed liner system MC VI-F & G has been designed to meet the Federal requirements of 40 CFR 264.301, as well as State of Michigan Administrative Rules 299.9603(5), 299.604(1)(c), and 299.620. The components of the proposed double-composite liner system for MC VI-F & G are the same as those included in the previously approved design modification for MC VI-E and consist of the following, from the top down:

- [1] 80-mil textured high-density polyethylene (HDPE) primary geomembrane;
- [2] 5-foot primary compacted clay liner with a maximum hydraulic conductivity of 1×10^{-7} centimeters per second (cm/sec);
- [3] Leak detection system consisting of a double-sided geocomposite, which is comprised of a geonet sandwiched between and heat bonded to non-woven needle-punched



geotextiles, and a grid work of additional collectors consisting of additional layers of geonet;

- [4] 80-mil textured HDPE secondary geomembrane; and
- [5] 3-foot secondary compacted clay liner with a maximum hydraulic conductivity of 1×10^{-7} cm/sec.

Where the proposed liner system extends over existing closed cells MC I and MC IV, the double liner system will be placed on a subgrade consisting of a geogrid layer overlying either a minimum 2 feet of structural fill (in areas where waste regrading is necessary) or the existing clay cover soil (in areas where waste regrading is not necessary). Where the proposed liner system extends over native ground (i.e., within the Woodlot), the double-composite liner system will be placed on native soil after excavation to the predetermined grade. Within the Woodlot, the bottom grades of the composite liner at the cell floor (including the sump area) have been designed such that at least 10 feet of native clay will remain in place below the cell.

The proposed leachate collection system for MC VI-F & G has been designed to meet the requirements of Rule 299.9619(4), and consists of a 12-inch thick sand drainage layer overlying a geocomposite drainage layer. In addition, perforated HDPE pipe will also be incorporated into the sand layer to convey leachate to sumps in the cell floor. From the sumps, leachate will be pumped through a riser and a force main system to the existing on-site treatment facility.

Additional details regarding the proposed landfill design, including the liner, leachate collection, and final cover systems, are presented in the accompanying *Basis of Design Report*, NTH Consultants, Ltd., dated February 2011, which is included in Volume ___ of this Construction Permit Application for MC VI-F & G.



2.0 DESCRIPTION OF EXISTING ENVIRONMENTAL CONDITIONS

This section presents the existing environmental conditions at the site and surrounding areas that may be affected by the proposed MC VI-F & G development, as required under R299.9504(1)(e). Important ecological relationships, functions, and interdependence of physical environmental elements and social and economic elements are discussed. Factual information from publications, reports, or personal communications is documented, with sources cited.

2.1 CLIMATE

Michigan has a temperate climate with well-defined seasons. Cloudy days are more common in Michigan than in most states, in part because of the condensation of water vapor from the Great Lakes. Climatic conditions in Wayne County are monitored by three U.S. Weather Bureau Offices, which include:

- [1] Detroit-Willow Run Station;
- [2] Detroit Metropolitan Airport Station; and
- [3] Willis Station of Washtenaw County

Climatological information is based on summary data collected by the National Oceanic and Atmospheric Administration (NOAA) at the Detroit Metropolitan Airport and the Willis Stations (MDOA, 1974). Additional detailed information can be obtained at the NOAA website (www.crh.noaa.gov/images/dtx/climate/plots).

WDI Site No. 2 lies approximately 20 miles inland (west) from Lake Erie and 35 miles inland (southwest) from Lake St. Clair. Both of these lakes play roles in determining local climatic variations; however, the site's inland location reduces lake effects somewhat. The main influence of the Great Lakes on the region is increased winter cloud cover (approximately



184 days per year are cloudy and 23 days per year foggy). Cloud cover helps to moderate winter temperatures. During winter months, the annual mean of daily minimum temperature is about 37.9°F. Record low temperatures, as low as -19°F, have occurred in December and January. The last day of freezing temperatures is usually in early May. The first day of freezing temperatures is usually in the period between September 29 and October 7. The mean number of days with a temperature below 32°F is between 139 and 152 days per year.

Summers in this region are generally warm and sunny, although brief storms usually occur every few days. Summer days with greatest temperatures (usually in June or July and as high as 105°F) are often accompanied by high humidity. The annual mean number of days with a temperature of 90°F or above is around eleven days. The average relative humidity for the year is 70 percent. The annual mean daily maximum temperature is approximately 58.6°F. The overall mean monthly temperature is 48.5°F.

Precipitation is fairly evenly distributed throughout the year. Thunderstorms occur approximately 34 days per year. Mean annual precipitation is approximately 32 inches as rain or snow (in rain equivalents) and the historic greatest daily maximum is 3.6 inches. The numbers of days with 0.01 inches of precipitation or more is typically between 71 and 131 days. Snow and ice pellets deposit approximately 35 inches annually with a monthly maximum of about 19.5 inches falling sometime in February or March. The greatest daily fall averages 9.5 inches. The prevailing wind direction is from the southwest and mean annual wind speeds are 10.0 miles per hour. The fastest one-minute wind speed recorded for the Detroit Metropolitan Airport was for a southwest 87 mph wind in June of 1973. The strongest one-minute wind speed for the Willis Station was 77 mph occurring in July of 1960. The wind rose for Detroit Metropolitan Airport, Michigan indicates that the highest wind speeds are more often southwesterly and westerly winds. Michigan is in the



northeast fringe of the tornado belt. There is a lesser occurrence of tornadoes in this region due to the influence of colder waters in Lake Michigan.

2.2 PHYSIOGRAPHY

The WDI landfill site is situated on a glacial lake plain characterized by relatively flat topography dissected by shallow surface water drainage features.

2.3 TOPOGRAPHY

Detailed topographic information and a detailed topographic survey are presented on Figure 3, WDI Topographic Map (West) and Figure 4, WDI Topographic Map (East). Topographic elevations in Van Buren Township range from approximately 715 feet above mean sea level (MSL) to 651 feet MSL (Belleville Lake). Overall, the land generally slopes gently southeasterly toward Lake Erie.

The topography of the area near WDI Site No. 2 is nearly flat ranging from 715 to 695 feet MSL, with the lowest points on the property being at the outlet of the constructed perimeter drains.

2.4 GEOLOGY

A site specific hydrogeologic investigation for the proposed MC VI-F &G development at WDI Site No. 2 was completed by NTH Consultants, Ltd. (NTH) in 2008. The investigation included test borings, observation wells, and laboratory tests to provide detailed information on the subsurface geology of the site. A general summary of the site geology based on the results of that investigation is presented below. The geologic description refers to the natural subsurface conditions prior to landfill development. For maps and greater detail, including physical soil test data, refer to the *Hydrogeologic Investigation Report Wayne Disposal, Inc – Site No. 2 MC VI-F & G (Woodlot) Development*, by NTH, dated February 2011.



Overlying the site is a surface deposit of brown and gray fine to medium sand containing varying amounts of silt. This sand represents a deltaic deposit according to Mozola (1969). In some areas, the shallow sand is underlain by sandy silt that is likely lacustrine in origin. The deltaic and lacustrine materials are underlain by a silty clay glacial till over the entire site. The till contains varying amounts of sand and gravel incorporated within a silt and clay matrix. At its base, the till grades to primarily granular material, progressing from gray clayey silt, to silt, and eventually an extensive deposit of gray silty fine sand. This lower sand contains zones of both finer and coarser material and it is sufficiently extensive to be considered a usable aquifer. Underlying these unconsolidated deposits is dark brown or black shale considered to be a member of the Antrim Formation. The shale is underlain by the Traverse Group, a carbonate aquifer that is only infrequently used as a water supply within the region (Mazola, 1969).

For descriptive purposes, the subsoil strata in the area of WDI are subdivided into five major strata:

- [1] **Surface Sand** – The granular surface stratum consists of brown and gray fine to medium sand with varying amounts of silt. This sand is removed as part of landfill construction.
- [2] **Silty Clay** – An extensive, relatively thick deposit of cohesive glacial till.
- [3] **Transition Silt** – The silty clay till generally grades downward into clayey silt, silt and finally into silty fine sand.
- [4] **Aquifer Sand** – Underlying the transition silt is a stratum of granular soil ranging from gray silty fine sand to coarse sand and gravel.
- [5] **Bedrock** – Antrim Formation.



2.5 SOILS

A US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soils map prepared for the area identifies the surface soils. This map is attached as Figure 5, Soil Type Map. Ten different soil types were mapped within the WDI Site No. 2 property. No particular distribution pattern of the soil types is apparent. A summary of the characteristics, limitations, and crop capabilities of these soils is included on Table 2-1, Surface Soils Summary. Review of the soils map indicates that soil types mapped within the undeveloped "Woodlot" parcel include Thetford loamy sand (ThA), Gilford sandy loam (Gf), Granby loamy fine sand (Gr), Gilford sandy loam (Gf) and Wasepi loamy sand (WaA).

As discussed above, detailed information, including geotechnical characteristics, of subsurface soils at the MC VI-F & G development is provided in the *Hydrogeologic Investigation Report Wayne Disposal, Inc – Site No. 2 MC VI-F & G (Woodlot) Development*, by NTH dated February 2011.



Table 2-1: Surface Soils Summary
Wayne Disposal, Site No. 2 MC VI-F & G Development
Project No. 13-060921-03

Soil Type	Shape of Deposits	Size	Slope	Subsoil	Drainage	Permeability	Management Concerns	Crop Capability Unit	Engineering Suitability as Borrow Source
Boyer Loamy Sand (BnB)	Irregular, slightly convex	5 - 90 Ac	0 - 6%	Sandy & gravelly	Well-drained	Moderately rapid	wind erosion, moisture conservation, & organic content	III S-1. Corn, wheat, oats, soybeans, and hay.	Topsoil - Poor Sand - Good Gravel - Good
Corunna Fine Sandy Loam (Co)	Irregular	3 - 100 Ac	0 - 2%	Sandy & loamy	Poorly drained	Moderate	drainage	II W-4. Corn, wheat, oats, soybeans, and hay.	Topsoil - Poor Sand - Unsuitable Gravel - Unsuitable
Gifford Sandy Loam (Gf)	Irregular	5-200 Ac	0 - 2%	Sandy, loamy, gravelly	Very poorly drained	Moderately rapid	drainage & moisture conservation	III W-3. Corn, soybeans, wheat, oats, and hay	Topsoil - Poor Sand - Fair Gravel - Fair
Granby Loamy Fine Sand (Gr)	Irregular	2-200 Ac	0 - 2%	Sandy	Poorly & Very Poorly drained	Rapid	drainage, wind erosion, moisture conservation, & organic content wind erosion organic content	III W-3. Corn, soybeans, wheat, oats, and hay	Topsoil - Poor Sand - Good Gravel - Unsuitable
Oakville Fine Sand (OaB)	Irregular or long, convex	2 - 160 Ac	0 - 6%	Sandy	Well or Moderately drained	Very rapid	wind erosion, moisture conservation, & organic content	IV S-1. Wheat, oats and hay.	Topsoil - Poor Sand - Good Gravel - Unsuitable
Spinks Loamy Sand (SpB)	Irregular, convex	3-30 Ac	0 - 6%	Sandy	Well drained	Rapid	wind erosion, moisture conservation, & organic content	III S-1. Corn, wheat, oats, soybeans, and hay	Topsoil - Poor Sand - Good Gravel - Unsuitable
Tedrow Loamy Fine Sand (TeA)	Irregular on plains	5 - 320 Ac	0 - 2%	Water-laid sandy	Somewhat poorly drained	Rapid	drainage, wind erosion, moisture conservation, & organic content wind erosion organic content	III W-2. Corn, wheat, oats, soybeans, and hay.	Topsoil - Poor Sand - Fair Gravel - Unsuitable
Tedrow Loamy Fine Sand - Loamy Substratum (TfA)	Irregular on plains	2 - 50 Ac	0 - 2%	Water-laid sandy	Somewhat poorly drained	Rapid	drainage, wind erosion, moisture conservation, & organic content wind erosion organic content	III W-2. Corn, wheat, oats, soybeans, and hay.	Topsoil - Poor Sand - Fair Gravel - Unsuitable
Thetford Loamy Sand (ThA)	Irregular	3-320 Ac	0 - 2%	Water-laid sandy & loamy	Somewhat poorly drained	Moderately rapid	drainage, wind erosion, moisture conservation, & organic content wind erosion organic content	III W-2. Corn, wheat, oats, soybeans, and hay.	Topsoil - Poor Sand - Fair Gravel - Unsuitable
Wasepi Loamy Sand (WaA)	Irregular	3-320 Ac	0 - 2%	Sandy & gravelly	Somewhat poorly drained	Moderately rapid	drainage, wind erosion, & moisture conservation	III W-2. Corn, wheat, oats, soybeans, and hay.	Topsoil - Poor Sand - Good Gravel - Good

Source: USDA, Soil Conservation Service Soil Survey of Wayne County Area, Michigan, November 1977.



2.6 HYDROLOGY

Runoff patterns and surface water flow is controlled on-site as described in the *Report on Storm Water Management System Evaluation, Wayne Disposal, Site No. 2, prepared by NTH Consultants, Ltd., April 20, 2009*. In summary, the site consists of three sub-watersheds designated as the North Sedimentation Basin (NSB), the South Sedimentation Basin (SSB) and the Lined Pond. The storm water management system for each on-site watershed includes a network of conveyance structures (e.g., ditches, culverts, pipes, etc.) and one collection structure. The three watersheds consist primarily of disposal areas with interim cover, closed landfills, and pavement. The vast majority of storm water generated from paved areas is managed as "potential contact storm water" and is collected in a lined pond. The storm water generated from interim cover, final cover and other unpaved surfaces is managed as "non-contact" runoff and is collected in one of two sedimentation basins.

Storm water runoff collected in the NSB and SSB is treated by sedimentation, filtration and activated carbon and then discharged to the Quirk Drain in accordance with a National Pollutant Discharge Elimination System (NPDES) permit issued by the Michigan Department of Natural Resources and Environment (MDNRE). The runoff collected in the NSB is pumped on demand into a ditch that leads to the SSB for treatment prior to being discharged to Quirk Drain. This current watershed configuration was completed in January 2009. Runoff collected in the Lined Pond is treated at the on-site waste water pre-treatment plant and discharged to a Publicly Owned Treatment Works (POTW) in accordance with an Industrial Pretreatment Permit (IPP) issued by the South Huron Valley Utility Authority (SHVUA).

Groundwater in the vicinity of the WDI Site No. 2 facility occurs in the surface sand, the glacial sand aquifer and the upper part of the bedrock formation. The glacial sand aquifer is the uppermost aquifer with respect to landfill monitoring. Within most of the site, the glacial sand aquifer and the bedrock are in direct hydraulic connection. However, at the north site boundary the glacial sand aquifer is separated from the bedrock by a sequence of clay and the hydraulic connection is limited. Details of the hydrogeologic units present



underlying the facility is described in detail in the *Hydrogeologic Investigation Report Wayne Disposal Site No. 2, MC VIF & G*, NTH Consultants, Ltd., dated February 2011. As discussed in that report, groundwater flow in the glacial sand aquifer is to the south toward Belleville Lake and flows at approximately 0.01 feet per day.

The surface sand unit is removed as part of landfill construction and is thus generally not present at the site. Groundwater within the surface sand is diverted around the site by a perimeter drain and is discharged to surface water at two locations.

2.7 LAND USE & ZONING

Based on information gathered in 2000 by the Southeast Michigan Council of Government (SEMCOG), land use for Van Buren Township, which represents the boundary of the study area, the following summary information is provided directly from this agency's most recent available annual report.

Charter Township Of Van Buren

46425 Tyler Rd
Belleville, MI 48111-5217
<http://www.vanburen-mi.org/>

SEMCOG
Member

Estimated Population: 27,377
Area: 36.1 square miles

People	Economy & Jobs	Housing	Transportation	Land Use
Land Use / Land Cover (in acres)		SEMCOG 2000		Change 1990-2000
Residential	4,368	18.9%	402	10.1%
Single-Family	4,066	17.6%	336	9.0%
Multiple-Family	302	1.3%	66	28.0%
Non-Residential	5,081	22.0%	659	14.9%
Commercial and Office	275	1.2%	58	26.6%
Industrial	747	3.2%	292	64.3%
Institutional	192	0.8%	-41	-17.7%
Transportation, Communication, and Utility	3,205	13.9%	236	7.9%
Cultural, Outdoor Recreation, and Cemetery	662	2.9%	114	20.9%
Under Development	777	3.4%	750	2,750.9%
Active Agriculture	4,473	19.4%	-1,850	-29.3%
Grassland and Shrub	2,466	10.7%	-135	-5.2%
Woodland and Wetland	4,590	19.9%	166	3.8%
Extractive and Barren	0	0.0%	0	-
Water	1,325	5.7%	9	0.7%
Total Acres	23,080	100.0%	0	0.0%



As shown on the summary information, land-use in Van Buren Township is highly diversified with nearly equal proportions of residential, non-residential, agricultural and undeveloped woodland and wetland. The most recent zoning map for Van Buren Township (2005) (Figure 6) shows most of the WDI property is zoned as M-2 General Industrial, except for MC I which is shown as "Ag" Agricultural and Estates.

In the areas immediately surrounding the property, there are currently a number of other various land uses. These include single-family and multi-family residential areas, air transportation, recreation, public/semi-public and utilities, as described below in relation to their location relative to the landfill site.

Single-Family Residential: The nearest significant single-family residential area is located ¼ mile east of WDI and is known as the Quirk Road Subdivisions. The proposed development is approximately 1000 feet further west from this subdivision than the existing units at Site No. 2.

Multi-Family Residential: Immediately to the south of the site, across I-94, is a multi-family complex named Providence at Harbor Club that consists of 1,145 units.

Air Transportation: Willow Run Airport occupies approximately 1,842 acres in section 7, 8, 17, and 18 of Van Buren Township and is located immediately north and west of WDI. It was originally constructed during World War II. Willow Run serves cargo, corporate and general aviation clients. The airport offers five runways, a 24-hour FAA tower and U.S. Customs operations. The airport accommodates small private planes as well as domestic and international 747 cargo jets.

Recreation: To the east of the northeast tip of the property is a small recreation area known as Van Buren Little League Park (also known as Lot B). This property is owned by



WDI and is designated for use by the local community. To the benefit of the community WDI, in agreement with Van Buren Charter Township, is completing upgrades to the park for public use. In addition, a gun shooting range is also located on WDI property and is designated for use by the Township Public Safety Departments and others.

Public/Semi-public and Utilities: This classification includes schools, churches, telephone, and electrical substations, a fire station and township offices. Neighboring the site to the northeast is the Environmental Research Institute of Michigan which does remote sensing research via satellite and airplane. Approximately 320 acres is classified semi-public in the area of this non-profit organization's facilities. The Van Buren Township Offices are located just east of the landfill, across Beck Road. The closest public education facility is located at 47097 McBride Ave, Belleville, MI, just east of the facility, approximately 0.1 miles from the eastern property boundary and approximately 1 mile from the active fill areas at WDI.

Development Trends: A Master Plan for the entire Van Buren Township was completed in 1989. Since then, Van Buren Township approved a South Side Master Plan in 2007. The South Side Master Plan does not include the WDI property but does include the zoning maps for current and projected uses. These maps for Van Buren Township are presented as Figure 6, Zoning Map and Figure 7, Future Land Use. Currently, most of the site, including the cell VI F & G property, is zoned as General Industrial and the future use shows the property as Parks/Open Space. Based on the projected and desired development described in the plans, it does not appear that the land use surrounding the WDI facility will change substantially. Therefore, it does not appear that incompatible land uses are likely to encroach on the area surrounding the site.



2.8 HISTORICAL OR ARCHAEOLOGICAL RESOURCES

In the Huron River Basin, Wayne County and Washtenaw County, archaeological resources have been found at different sites. Fluted projectiles (arrow heads) from Paleo-Indian occupations (post-glacial time period) have been found in several locations in Wayne and Washtenaw Counties (Fitting, 1975). These early occupants of the Great Lakes were hunters and left behind the remains of their trade. Other sites in Wayne County have found burial artifacts from the later Indian culture (the Late Woodland Tradition). In southeastern Michigan, sites were characterized by two major traditions: the Wayne and Younger (Fitting, 1975). The sites were principally believed to be burial grounds of Indian cultures living in the eastern United States. To date, during the development of the existing WDI facility over the past 30-plus years, no archaeological artifacts have been discovered.

2.9 SOCIAL ENVIRONMENT

The social environment, in terms of demographics and infrastructure of the area, is discussed in the following two subsections.

2.9.1 Demographics

The SEMCOG community profile based on the 2000 census provides the most current information describing the characteristics of the area near the proposed *MC VI-F & G* development including People, Economy & Jobs, Housing, Transportation and Land Use. The full SEMCOG community profile is provided in Appendix C, SEMCOG Community Report. Also included in this appendix is the SEMCOG statistics for the City of Belleville, Wayne County and Wayne County not including the City of Detroit. As shown on the following table, Van Buren Township, the host community, and the nearest city, Belleville, have similar demographics to the rest of Wayne County if the City of Detroit is excluded.



Area	Median Income	Per Capita Income	Households in Poverty	Population Black	Population Hispanic
Wayne Co.	\$40,776	\$20,058	14.9%	41.9%	3.7%
Wayne Co. (not incl. Detroit)	\$50,848	\$24,636	7.6%	8.3%	2.7%
Van Buren Twp.	\$50,984	\$24,820	7.3%	12%	2.2%
Belleville	\$44,196	\$25,947	7.6%	7.9%	2.5%

2.9.2 Infrastructure

Infrastructure can be defined as the basic physical and organizational structures needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function. The term typically refers to the technical structures that support a society, such as roads, water supply, sewers, power grids, telecommunications, and so forth. Viewed functionally, infrastructure facilitates the production of goods and services; for example, roads enable the transport of raw materials to a factory, and also for the distribution of finished products to markets. In some contexts, the term may also include basic social services such as schools and hospitals.

Support systems for Van Buren Township include modern fire and law enforcement protection, sewage treatment, solid waste disposal, water supply, electricity, natural gas, telephone, and transportation, as detailed below.

Public Works (Water & Sewer Division)

Van Buren Township contracts with the Detroit Water and Sewerage Department (DWSD) to purchase about 1 Billion gallons of water every year. The treatment plant that provides water to Van Buren Township customers is the Southwest Treatment Plant in Allen Park. Locally sewer services are provided by the City of Detroit and South Huron Valley Utility Authority. This information was provided by the Charter Township of Van Buren, Department of Public Works, located at:



Charter Township of Van Buren
Department of Public Works
Water & Sewer Division
46425 Tyler Road
Belleville, MI 48111
Phone: 734-699-8925
Fax: 734-699-8958

Law Enforcement - Van Buren Township provides law enforcement for the township except in the city of Belleville, which has its own police department. The Van Buren Township police department includes administrative and records keeping staff, a detective bureau, a traffic services division, animal control and a K-9 division, dispatch, patrol division, reserves division, chaplains and a community policing program. Wayne County Sheriff's Department and Michigan State Police also patrol the major highways in the area: I-94, I-275 and US-12. The State Police post is located nearby in Ypsilanti.

Schools - Van Buren Township is served by two public school districts: Van Buren School District and Lincoln Consolidated School District, one private school and several pre-school and day care facilities. The following list of schools was identified for Van Buren Township:

Van Buren School District

555 W. Columbia Avenue, Belleville, MI

Belleville High School,
501 West Columbia Avenue, Belleville, MI 48111 (734) 697-9133

North Middle School
47097 McBride Avenue, Belleville, MI 48111 (734) 697-9171

South Middle School
45201 Owen Street, Belleville, MI 48111 (734) 697-8711

Edgemont Elementary School
125 South Edgemont Street, Belleville, MI 48111 (734) 697-8002

Elwell Elementary School
17601 Elwell Road, Belleville, MI 48111 (734) 697-8277



Haggerty Elementary School
13770 Haggerty Road, Belleville, MI 48111 (734) 697-8483

Rawsonville Elementary School
3110 Grove Road, Ypsilanti, MI 48198 (734) 482-9845

Savage Elementary School
42975 Savage Road, Belleville, MI 48111 (734) 699-5050

Tyler Elementary School
42200 Tyler Road, Belleville, MI 48111 (734) 699-5818

Early Childhood Development Center
123 South Edgemont Street, Belleville, MI 48111 (734) 699-2180

Lincoln School District
Bessie Hoffman Elementary School
50700 Willow Rd, Belleville, MI 48111

Child's Elementary School
7300 Bemis Rd, Ypsilanti, MI 48197

Lincoln Brick Elementary School
8970 Whittaker Rd, Ypsilanti, MI 48197

Lincoln Model Elementary School
8850 Whittaker Rd, Ypsilanti, MI 48197

Lincoln Redner Elementary School
8888 Whittaker Rd, Ypsilanti, MI 48197

Keystone Academy School District
47925 Bemis, Belleville, MI 07109 (734) 697-9470

2.9.2.1 Fire Protection

Fire Protection – As communicated by Battalion Chief Daniel C. Besson, Public Information Officer, on November 8, 2010, Van Buren Township has two fire stations. Both are staffed 24/7/365 with two personnel at each station. These personnel are assisted by a full-time Fire chief, full-time fire inspector, and up to 35 other part-time personnel that respond to



the station as an incident requires, based on their availability.

The 35 personnel are considered off-duty but may return for “call backs” if requested (i.e., house fire, chemical spill, major car crash, or aircraft crash). The “on-duty” personnel are all part-time employees and are part of the 35 total personnel. The Van Buren Township stations have 11 vehicles in their fleet: 4 fire Engines, 1 Aerial Ladder Truck, 1 Heavy Rescue Truck, 1 Utility Pick-up, 1 Mini-pumper, and 3 Administrative vehicles. Van Buren has a fully hydrant community and provide first responder care to medical emergencies or traumas. Additional information can be obtained by visiting the Van Buren Township website at <http://www.vanburen-mi.org/Department/Fire.html>.

2.9.2.2 Security

At the facility, the site is secured by a systematic plan of management. During hours of operation, all traffic must check in at the office to register driver, company, and materials for disposal. These wastes are visually inspected and sampled. At the gate, a camera monitors all activities on a 24-hour/7-day basis. After hours, gates and entrances are monitored by security personnel.

Furthermore, the entire WDI site has perimeter security fencing around its boundaries. This fencing consists of woven wire and barbed wire fencing. Access to the WDI facility is through a single controlled entrance gate, with a guard on duty at all times off the North I-94 Service Drive. Back-up, supporting security is provided by the following agencies:

Van Buren Police Department
46425 Tyler Rd Belleville, MI 48111 (734) 699-8930
<http://www.vanburen-mi.org/Department/Police.html>

Belleville Police Department
6 Main Street, Belleville, MI 48111 (734) 699-2710



2.9.2.3 Transportation

Transportation routes to the facility consist of Interstate highway I-94 and the surface road North I-94 Service Drive. Traffic entering and exiting the facility must use the N. I-94 Service Drive to the Rawsonville Road exit off Interstate I-94 located just west of the facility. Trucks do not pass through any residential areas going to and from the facility. On-site, transportation follows the haul road to either the MDI treatment facility or directly off-loaded into a waste transfer box, and then loaded into dedicated on-site dump trucks. Waste is then transported to the HWMU for disposal. Site access roads and a site perimeter road are used for employee traffic and site maintenance vehicles.

2.10 AIR QUALITY

The operations and management of the facility is designed to be protective of the environment and minimizes the potential for fugitive emissions in violation of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The site operations are conducted in accordance with renewable operating permit (ROP) issued by the MDNRE. WDI collects ambient air monitoring data at six locations on the perimeter of their property. Since fugitive dust was not detected in the monitoring data, this parameter is no longer monitored per approval from EPA.

To date, WDI has not received any violations in due to fugitive emissions from landfill operations. Additional potential sources of air pollution in the area surrounding the facility is aircraft exhaust from the adjacent Willow Run Airport and the asphalt plant to the west.

2.11 NOISE

Sources of noise include trucking operations from truck entering and exiting the facility hauling waste as well as on-site trucking and construction equipment to haul and compact waste. Additional noise is generated from the processes at Wayne Energy Recovery and the Michigan



Disposal Waste Treatment Plant. Company policy requires that its employees wear proper hearing protection when working in areas where the noise levels exceed OSHA thresholds.

A constructed earthen perimeter berm is located along the southern boundary of the site. The berm is heavily vegetated with native plantings, including: shrubs, trees and grasses. The earthen berm, which has an average height between 10 and 20 feet, acts as a visual screen, but due to the baffling effect of planted vegetation, also provides a sound buffer from noise associated with facility operations. A vegetative buffer exists along the eastern boundary. The northern and western property lines are bordered by the Willow Run Airport where general public is prohibited. The noise generated from the adjacent Willow Run Airport during take offs and landings generate far greater noise that produced by WDI operations.

2.12 APPEARANCE & AESTHETIC

As indicated above, the perimeter of the facility, in view of the public along the I-94 service drive, includes an earthen berm approximately 10 to 20 feet in height. The berm is heavily vegetated with shrubs, trees and grasses. The earthen berm acts as a visual screen to block view of the facility from street view. Obviously, the landfill height will be visible from a distance, as the final elevation, as designed, is 851 feet above msl, which rises approximately 150 feet above natural grade. However, the height is limited by the FAA regulations as applied to the Willow Run Airport; therefore, this landfill will not dominate the topography in the way that some of the regions municipal solid waste landfills do.

For all practical purposes, the appearance and aesthetics will not change considerably from current conditions with approval of the proposed MC VI F & G development. Views from the north and west are particularly unaffected by the expansion due to the airport and industrial facilities. The view to motorists on I-94, south of the facility will change only slightly and for residential/other uses more than 1000 feet east of the facility the landfill is only visible from certain vantage points.



2.13 TERRESTRIAL ECOSYSTEM

Affected Environment

The characteristics of the terrestrial ecosystem in terms of flora, fauna, and critical habitat are summarized in the following subsection. The approximately 21.5-acre Woodlot parcel contains approximately 6.5 acres of non-wetland terrestrial habitats. The wetland portion of the parcel is described in Section 2.14 Aquatic Environment.

The terrestrial habitats include primarily mature woods and young woods but also have small areas of scrub vegetation and old field. The landform is nearly level to slightly sloping, with soils consisting of loamy sand. Common plant species in the mature woods include American elm (*Ulmus Americana*), shagbark hickory (*Carya ovate*) red oak (*Quercus rubra*), basswood (*Tilia Americana*) common buckthorn (*Rhamnus cathartica*) and prickly ash (*Zanthoxylum americanum*). Common plant species in the young woods include eastern cottonwood (*Populus deltoids*), silver maple (*Acer saccharinum*), Siberian elm (*Ulmus pumila*) and common buckthorn. The scrub area includes common plant species as common buckthorn, gray dogwood (*Cornus foemina*) red ash (*Fraxinus pennsylvanica*) saplings, autumn olive (*Elaeagnus umbellate*), multiflora rose (*Rosa multiflora*), black raspberry (*Rubus occidentalis*) and tall goldenrod (*Solidago altissima*). Common plant species in the old field habitat include tall goldenrod, tall fescue (*Festuca arundinacea*), Queen Anne's lace (*Daucus carota*), hairy aster (*Aster pilosus*), common teasel (*Dipsacus follonum*), autumn olive and red ash saplings.

In general, the plant species which make up the terrestrial habitat are relatively common to the region; therefore this terrestrial habitat is not considered critical. Trees larger than five inches in diameter at breast height are protected under local Van Buren Township ordinance. That ordinance also includes special provisions for the regulation of "landmark



trees". Authorization from Van Buren Township is required for the removal of trees larger than five inches in diameter at breast height as well as "landmark trees".

This parcel is bordered on the north and south by closed landfill cells, on the east by the abandoned Old Denton Road and active landfill operations, and on the west by Willow Run Airport. The closest natural habitats which are those associated with Willow Run to the west and Belleville Lake to south. These habitats are in excess of 2,000 feet from the parcel. This isolation distance limits the ability of the parcel to support a diverse fauna.

Mammals that are most likely to use the property are typical of disturbed urban/suburban habitats and include species such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis marsupialis*), eastern cottontail rabbit (*Sylvilagus floridanus*) and meadow vole (*Microtus pennsylvanicus*). Reptile and amphibian use likely includes eastern garter snake (*Thamnophis butleri*), eastern American toad (*Bufo americanus*), northern leopard frog (*Rana pipens*) and gray tree frog (*Hyla versicolor*). Bird species likely to feed, roost and/or nest in the terrestrial habitat include common songbirds, as well as raptor species which perch in the trees while hunting the adjacent grasslands.

Environmental Consequences

The existing terrestrial habitat is proposed to be entirely impacted. The existing vegetation will be removed. Mammals and birds will mostly be displaced. Some reptiles and amphibians will be displaced; however, most on-site reptiles and amphibians will likely suffer mortality from construction activities. The proposed impact to this small amount of terrestrial habitat with its isolated setting, its history of disturbance and its relatively low quality and diversity of vegetation do not represent a loss of critical habitat or a significant impact to local or regional ecological resources. WDI has received approval from Van Buren Township for removal of regulated trees within the area of terrestrial habitat and will provide tree replacement as required by Van Buren Township. The removal of the trees will also eliminate perching locations for raptors hunting the adjacent



grasslands of Willow Run Airport. The presence of these hunting birds is considered an aviation hazard by airport staff and the elimination of these perching locations is considered beneficial to local aviation safety.

2.14 AQUATIC ECOSYSTEM

The characteristics of the aquatic ecosystem in terms of flora and fauna and critical habitat are described in the following paragraphs.

Approximately 15 acres of wetland are present on the 21.5-acre parcel of which approximately 12 acres are forested wetland and 3 acres are emergent wetland. Like the terrestrial ecosystem, the wetlands are isolated from other natural features. These wetlands are part of an enclosed depression with some micro-topographic relief and are not contiguous with any surface water features such as an inland lake, stream or pond. Therefore, they do not support fish or other aquatic organisms requiring access to permanent surface water. During spring snow melt and other occasional periods of substantial surface water accumulation, the wetland may discharge surface water to the ditch adjoining the west side of Old Denton Road. This water is then collected and treated along with the rest of the stormwater runoff from the WDI facility, where it is eventually discharged to the Quirk Drain.

Soils within the wetland are loamy sand with high organic content in the topsoil. The forested wetlands are inundated or saturated from the beginning of spring into early summer. The emergent wetland area was formerly a forested wetland that, over time, experienced an increase of hydrologic contributions causing the trees to expire. Most of the emergent wetland area is inundated with up to 12 inches of water for the majority of the growing season. Vegetation in the forested wetland area is dominated by three tree species; silver maple, eastern cottonwood and American elm. These three species make up an estimated 81 percent of the total trees within the wooded portion of the parcel (see



Appendix D, King and MacGregor Tree Survey). Common understory species in the forested wetland include gray dogwood, glossy buckthorn, riverbank grape and sensitive fern. The emergent wetland area is dominated by common duckweed.

Mammals, reptiles and amphibian species likely to use the wetland are similar to those likely to use the adjoining terrestrial ecosystem. Waterfowl, such as mallard ducks (*Anas platyrhynchos*) and wood ducks (*Axis sponsa*) may loaf or feed in the emergent wetland area.

Environmental Consequences

The existing aquatic habitat is proposed to be entirely impacted. The existing vegetation will be removed. Mammals and birds will mostly be displaced. Some reptiles and amphibians will be displaced; however most reptiles and amphibians will likely suffer mortality from construction activities. The proposed impact to this aquatic habitat with its isolated setting, its lack of a direct connection to other aquatic habitats, its history of disturbance and its relatively low resource value quality and lack of vegetative diversity does not represent a loss of critical habitat or a significant impact to local or regional ecological resources. WDI has received approval from Van Buren Township for removal of regulated trees within the area of aquatic habitat and will provide tree replacement as required by Van Buren Township. The removal of the trees will also eliminate perching locations for raptors hunting the adjacent grasslands of Willow Run Airport. Again, the presence of these hunting birds is considered an aviation hazard by airport staff and the elimination of these perching locations is considered beneficial to aviation safety.

WDI has received a draft permit from the MDNRE for wetland impacts and will receive final MDNRE approval pending submittal of documents by WDI for administrative completeness. Issuance of the draft permit occurred after an application process which included a public notice period that passed without comment, MDNRE consultation with the USEPA, and agreement by WDI to establish and/or restore approximately 28 acres of



new forested and emergent wetland habitats within the ecoregion at a location in Superior Township, Washtenaw County, using plans reviewed and approved by the MDNRE.



3.0 LOCATION STANDARDS

Location standards for hazardous waste landfills are in place to ensure the protection of human health and the environment. The following sections document compliance with the locations standards identified in R299.9603.

3.1 FAULT AREAS

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located within 61 meters (200 feet) of a fault which had its displacement in Holocene time." According to the *Hydrogeologic Atlas of Michigan*, no faults that were active in the Holocene Epoch have been located or mapped in Michigan.

3.2 FLOODWAY / FLOODPLAIN

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located in a floodway, designated by the department under Part 31 of the act, or a floodplain." A floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. A floodplain, is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows. The nearest water body to the WDI Site No. 2 facility is the Willow Run Drain approximately 2800 feet southwest or the Huron River and Belleville Lake, located approximately 3000 feet south of the proposed MC VI-F & G development and on the opposite side of a major freeway (Interstate 94).

The area surrounding the WDI Site No. 2 facility is not mapped by the Federal Emergency



Management Agency (FEMA). However, review of FEMA maps adjacent to the WDI facility to the west, in Washtenaw County, indicates only the areas immediately surrounding the Willow Run Drain, Huron River, Ford Lake, and by extension Belleville Lake are identified as Zone A, high risk flood areas. The areas further removed from the waterways are mapped as Zone C, moderate to low risk flood areas. Thus, the proposed WDI MC VI F and G development is in an area with 1 percent annual chance of flooding. Further, the elevation of Belleville Lake is 654 ft msl on the upstream (west) end and 653 ft msl at the downstream (East) end. The perimeter dikes surrounding WDI are at an elevation of 705 feet msl which is nearly 50 above Belleville Lake. Additionally, the stormwater management program at WDI is designed to manage a 100-year storm and is discussed in great detail in the *Stormwater Management System Evaluation*, WDI Site No. 2, NTH Consultants, Ltd., April 20, 2009.

3.3 COASTAL HIGH RISK AREA

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located in a coastal high-risk area designated under Part 323 of the act." Review of Figure 8, Michigan Political Townships Containing High Risk Erosion Areas, indicates the proposed MC VI-F & G Woodlot development is not located near a coast and therefore is not considered a coastal high-risk area.

3.4 SOLE SOURCE AQUIFER

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located over a sole-source aquifer or the recharge zone of a sole-source aquifer,...". Based on review of information provided on the MDNRE website, there are no known sole source aquifers identified in Van Buren Township, Michigan and therefore, this issue is not a concern relative to the proposed development.



3.5 PUBLIC WATER SUPPLY

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located within the isolation distance from public water supplies specified by Act 399. There is no Type I and IIa public water supplies located within 2000 feet of the proposed MC VI-F & G Woodlot development. Also, no Type II and II water supply wells are located within 800 feet of the proposed MC VI-F & G development.

3.6 WETLAND

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located in a wetland. The area of the proposed Woodlot development is characterized by partial wetlands. A draft Wetland Mitigation Permit has been issued to WDI for this area.

3.7 WILD & SCENIC RIVERS

Based on information provided by Mr. Matt Fry of the MDNRE (formerly MDNR) on May 3, 2007, there are no state designated Natural Rivers in Wayne County, as defined by Part 305 of the Act.

3.8 NATIONAL REGISTER OF HISTORIC PLACES

Review of "Michigan's Historic Sites On-Line" and the "National Register of Historic Places" website indicates there are no historic properties present within the project's area of potential effects.

3.9 ENDANGERED SPECIES

During the MDNRE wetland permit application process (referenced in 2.14 Aquatic Ecosystem), the MDNRE advised WDI of the possible local presence of one State-protected



bird species as well as one relatively rare (special concern) bird species. These species include:

<u>Common Name</u>	<u>Status</u>	<u>Scientific Name</u>
Henslow's sparrow	State endangered	<i>Ammodramus henslowii</i>
Grasshopper sparrow	Special concern	<i>Ammodramus savannarum</i>

According to the Henslow's Sparrow Species Abstract prepared by the Michigan Natural Features Inventory (2004, Michigan State University Board of Trustees), Henslow's Sparrow is a grassland species which is rarely encountered in grasslands of less than 250 acres in size. As it relates to the Grasshopper Sparrow, according to information provided by the MDNRE (September 9, 2010, Lori Sargent email to Jeremy Richardson), the Grasshopper Sparrow can be found in a wide range of grassland, old field and agricultural habitats.

Environmental Consequences

The subject property does not contain grassland areas of a size to provide significant habitat to either of these species of sparrow. A January 18, 2011 search of the Michigan State University Extension's Michigan Natural Features Inventory (MNFI) web database (updated on December 10, 2010) indicates both species of sparrow are known from the adjacent Willow Run Airport which has large expanses of grassland. The Grasshopper Sparrow is also known from the Fons Capped Landfill approximately a mile to the west of the WDI facility.

The MFNI database search also indicated the historical occurrence of one State-threatened plant species and four non-protected but rare State special concern plants species from the vicinity of the proposed project; however these four other records span the time period from 1895 to 1931 and have a mapping precision between ranging from six square miles up to 15 square miles. Given the age, low mapping precision, and lack of reference by MDNRE, no impact to these plant species is anticipated.



No protected or rare species or other unique natural features were observed on the subject property during the wetland and woodland evaluations performed by King & MacGregor Environmental, Inc. or by MDNRE representatives when they were on site. Based upon those evaluations, the lack of significant habitat for the protected and rare species known from the project vicinity, and the issuance of the MDNRE draft wetland permit without a required statement of no effect for impacts to protected species, no impacts to Federal or State endangered, threatened or rare species are anticipated.

3.10 FISH & WILDLIFE

The proposed MC VI-F & G Woodlot development is not located adjacent any rivers and or streams. Surface water runoff from the facility is maintained on-site and treated prior to discharge to the Quirk Drain and/or Willow Run Drain. The proposed MC VI-F & G development is not expected to have an impact on local fisheries. According to MDNRE website, our project is not located within a state game and wildlife area. However, potential impacts to wildlife are discussed in Section 3.9.

3.11 HORIZONTAL ISOLATION DISTANCES

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located within 150 meters (500 feet) of any adjacent commercial, residential, or recreational property line. However, the director may allow a lesser isolation distance based on the proposed design and operation of the facility, the location of private water wells and the potential for fugitive emissions in violation of part 55 of the act.

As designed, the proposed MC VI-F & G development is located approximately 166 feet from the property line. The proposed design is protective of the environment and includes a minimum of 10 feet native clay with a demonstrated permeability of less than 1.0×10^{-7}



cm/sec and the equivalent of 20 feet of native materials less than 1.0×10^{-6} cm/sec. Detailed design criteria is presented in the *Engineering Design Drawings* and the *Basis of Design Report*, February 2011 included within this application.

The operations and management of the facility is designed to be protective of the environment and minimizes the potential for fugitive emissions in violation of Part 55. Detailed air quality information is presented in Section 2.10 of this report.

In addition, there are no private water wells located within 1 mile of the proposed development area, with the exception of the on-site well, which is used solely for operations and not consumption. Based on this information and the operating history of the facility, we have designed the proposed MC VI-F & G development with an isolation distance of approximately 166 feet from the property line.

3.12 VERTICAL ISOLATION DISTANCES

R299.9603 states that: "Active portions of new treatment, storage, or disposal facilities or expansions, enlargements, or alterations of existing facilities shall not be located in areas where there is not less than 6 meters of soil with a maximum permeability of 1.0×10^{-6} cm/sec at all points below and lateral to the liner or bottom of the landfill, unless the owner or operator substitutes an engineered backup liner of equivalent design and demonstrates to the director that it provided equivalent environmental protection."

Vertical isolation from the bottom of the engineered liner to the top of the uppermost groundwater aquifer is a minimum of 10 feet of low permeability clay with a demonstrated permeability of less than 1.0×10^{-8} cm/sec. Details of the engineered design are presented in the *Basis of Design Report*, NTH, February 2011.



4.0 ENVIRONMENTAL IMPACTS OF PROPOSED FACILITY

The following paragraphs describe a summary of unavoidable adverse impacts as a result of the proposed WDI Site No. 2-MC VI-F & G development, which provides an assessment of how the components of the environment are affected by normal and continued operation of the facility. The components of the natural environment include: Climate, Topography, Geology, Soils, Hydrology, Land Use and Zoning, Historical or Archaeological Resources, Social Environment, Demographics, Infrastructure, Transportation, Air Quality, Noise, Appearance and Aesthetics, and Terrestrial and Aquatic Ecosystems.

4.1 SUMMARY OF UNAVOIDABLE ADVERSE IMPACTS

The unavoidable adverse impacts to the existing natural environment can be segregated into two types: primary and secondary. The primary aspects are associated with the daily activities and operations, whereas, the secondary impacts are associated with the ultimate disposal of hazardous wastes within the landfill.

Climate, Geology, Historical or Archaeological Resources, Transportation and Infrastructure will not be affected by the proposed WDI Site No. 2 MC VI - F & G development and are not discussed further in this section.

4.1.1 Primary Impacts

Aesthetics, air quality, noise, social environment, transportation, and demographics may be impacted by continued operations at WDI. For all practical purposes, these impacts have already been realized during the many years of site operations and will not change significantly with continued operations. The aesthetics will be affected slightly as the final elevation of the landfill will be approximately 40 feet higher than the currently licensed elevation. However, because of the proximity to the airport and the isolation of the site by screening berms, this will be barely noticeable from the surrounding area. Extended



operations should also have minimal impact on air quality as current site operations have not had an unacceptable impact based on years of air monitoring. This can be attributed to the air pollution control technology employed and the fugitive emissions controls in place at the site.

The noise levels at the site have not been a concern for the surrounding community. Noise associated with the landfill is almost entirely related to the movement of trucks and earth moving equipment onto and around the site. The noise associated with these operations is mitigated primarily by location; the site is surrounded by airport and old landfills to the north and west, by a major highway (I-94) to the south, and is buffered to the east by wooded properties and a Township Park.

The social environment and demographics in Van Buren Township should not be adversely affected by continued operation of the landfill. Again, any affects associated with the negative perceptions or perceived impact of a hazardous waste facility have likely been realized over the years of past operation. Based on the development and populations trends witnessed over this time period it does not appear that there have been any significant adverse affects. In fact the there are potential positive affects for the continued operation of the facility, including providing stable employment for Van Buren Township residents and the business that WDI and its employees conducts within the local community. The development of Cell VI F & G will also provide direct financial benefits to Van Buren Township in accordance with the host community agreement.

4.1.2 Secondary Impacts (Permanent)

Construction and operation of the proposed development site will cause a few unavoidable adverse impacts to the natural environment, including future land use, site topography, removal of surface soils, hydrology, and elimination/relocation of wetland habitat potentially affecting the terrestrial and aquatic ecosystems. In terms of future land



use, the proposed development will have little impact on future land use as only 20 acres of undeveloped land will be utilized and this land is owned by WDI and is isolated from access. Re-use of hazardous waste landfilled property is restricted by Federal and State laws.

Development of Cell VI F & G will result in removal and mitigation of wetland identified within the Woodlot parcel. New wetlands, twice the area currently within the Woodlot, will be constructed elsewhere in the region to mitigate the area lost. Construction and operation of the proposed development will site topography and surface water drainage patterns. Accordingly, changes to storm water management plan for the facility have been prepared. Storm water runoff from the proposed development will be managed within the current system as modified to account for the changes.

4.2 FAILURE MODE ASSESSMENT

The following failure mode assessment considers only significant failure modes in which there is potential for a release of hazardous waste or waste constituents to the environment that either would not be contained on site or would require extraordinary measures to remedy. In other words, the failure mode is assessment includes only serious failure scenarios. Based on the engineering design features of the facility and with proper operations and site management, these failures would not be expected to occur under normal operations. However, the following failure modes are considered in this assessment:

- Catastrophic slope failure of a landfill cell resulting in the deformation and/or translocation of the primary and possibly the secondary liner.
- Catastrophic release from the landfill due to explosion, fire, waste slope failure or natural disaster such as a tornado or earthquake.



- Penetration of the primary and secondary liner by waste constituents due to liner defects or damage and the failure the leachate and/or LDCRS systems to control hydraulic head on the liner
- Significant leachate release through the interim or final cover system due to the failure of the leachate collection system resulting in a build-up of leachate head.

Slope failure of a landfill liner system is a potential problem early in the life of a landfill cell before a significant amount of waste is placed that will stabilize the slopes. Prevention of slope failure is attained via proper engineering design with conservative factors of safety and rigorous QA/QC during construction. The details of WDI's engineering and QA/QC protocols are contained in the Engineering Basis of Design Report section of the license application. The containment system, including base liner, leachate collection, and final cover, have been designed to prevent failure of the native soils, liner materials, and waste with respect to slope failure, basal heave, and settlement. The minimum factor-of-safety used in the design of these features is conservative; a minimum FS of 1.3. A liner slope failure probably would not result in an off-site release of wastes but would require that the wastes be removed and the liner repaired or reconstructed.

In the event of a catastrophic release from the landfill due to explosion, fire, waste slope failure or natural disaster such as a tornado or earthquake, a release of hazardous materials to air or surface water would be possible. Surface water contamination can be contained on-site via the storm water management system until the appropriate clean-up can take place. Air emissions from fugitive dust or smoke and vapors could have an off-site impact but such impact would likely be temporary. Response to such a release would be commensurate with the type and size of the catastrophic event.

Leakage of waste or waste constituents through a composite liner and through the native clay into the aquifer is highly unlikely and would require that: 1) the primary leachate collection system is ineffective at controlling leachate head on the primary liner, which



given the designed hydraulic conductivity would require that the system become plugged up to prevent drainage to the sump, 2) that the primary liner is damaged to allow leakage or is otherwise penetrated, 3) the LDCRS is also ineffective at controlling head on the secondary liner due to reduced hydraulic conductivity and 4) the secondary liner and native clay base is also sufficiently permeable to allow significant migration of waste constituents. The primary leachate collection system can be maintained to a large degree by through the clean-out pipes which allows physical or chemical cleaning of the leachate conveyance pipes within the landfill. In the unlikely event of a release to groundwater, the release should be detected via groundwater monitoring and can be controlled by remedial techniques such as pump and treat systems.

The filling of the landfill with leachate causing discharge through the cover is a viable failure mode only if the landfill cells are neglected for many, many years with no leachate collection or cover maintenance. Given the post-closure financial assurance requirements this outcome is highly unlikely.

In summary, significant failure of a properly designed, built, operated, and maintained double-composite landfill is highly unlikely.



5.0 EXPOSURE INFORMATION REPORT

Information required under this section is presented in site documents which are part of daily operations. References to the required documents are included herein.

5.1 GENERAL INFORMATION

5.1.1 Available Health or Risk Assessment

Worker information related to site operations on injuries, accidents, and illnesses, is provided in the Operations Safety Health Administration (OSHA) 300 log. WDI requires employees to undergo annual physical examinations that include extensive testing for evidence of exposure to hazardous substances. WDI has performed several worker exposure studies and routinely uses monitoring devices when performing certain tasks. Each work area is evaluated for risk and the appropriate personal protective equipment is assigned for each position. WDI has a comprehensive Health & Safety Management System, which is described in Section 5.5.

5.1.2 Zoning & Land Use Maps

Current and Future land use maps are presented as Figures 6 and 7 attached to this report. The proposed development is consistent with the current zoning for the property.

5.1.3 Recent Aerial Photographs

The most recent aerial photographs available for the site are included in the *Engineering Design Drawing Set*, NTH February 2011 included within this application. Aerial photographs depict the WDI landfills and the adjacent properties, including the Willow Run Airport.

5.1.4 Additional Waste Analysis

All waste analyses are completed in accordance with the site's *Waste Analysis Plan*.



5.1.5 Annual Volume of Waste

Annual volume of waste received is highly variable on a year to year basis based on the economic conditions and the type of projects that require land disposal. The remaining capacity at the existing facility is less than a million cubic yards. The depletion of existing capacity demonstrates the need for the proposed development to continue to provide hazardous waste disposal for the region.

5.1.6 Reporting / Inspection Agencies

Agencies that report on the facility include:

- US Environmental Protection Agency (EPA),
- Michigan Department of Natural Resources and Environment (MDNRE),
- Michigan Department of Transportation (DOT) for transportation operations; and
- Wayne County Department of Environment (DOE) for the closed landfills.

Inspections are performed by WDI in accordance with applicable regulations and Operating License requirements. In addition, inspections are regularly performed by each of the reporting agencies listed above. Inspection reports are maintained in the site's operating record. Inspection schedules and forms are provided in Attachment 2 of WDI's Operating License.

5.2 POTENTIAL EXPOSURE PATHWAYS

Potential exposure pathways for hazardous constituents managed by WDI include groundwater, surface water, air, and soil/sediment. WDI has evaluated each of these potential exposure pathways when engineering the landfill and the surrounding site and when developing the monitoring programs for each of these pathways. Much of this Information is presented and evaluated in the *Hydrogeological Investigation Report*, NTH



February 2011 and the *Basis of Design Report*, NTH February 2011.

A brief description of each pathway, the engineered and process controls in place and the monitoring program(s) designed to detect an impact are described below:

5.2.1 Groundwater

The primary protection of groundwater at the site comes from utilizing the double-composite liner technology for landfill construction. Details of this are provided in Section 1.2 Facility Description. All landfill construction at WDI since 1985 has employed this technology that utilizes two liners, each composed of both earthen (clay) and synthetic (high density polyethylene) components, with a drainage layer in between the two. This provides two highly impermeable liners with the ability to maintain zero hydraulic head on the secondary liner.

In the highly unlikely event of a leak through the double-composite liner, there are two potential groundwater pathways; the shallow sand and the glacial sand aquifer. However, the shallow sand is removed for landfill construction and water within this unit is diverted around the site by an underdrain system. The two outfalls to the underdrain are monitored as part of the post-closure monitoring plan for the closed solid-waste portion of the site. The glacial sand aquifer is the “uppermost aquifer” for the purpose of monitoring the hazardous waste landfill. Monitoring of this unit includes semi-annual monitoring of suction lysimeters beneath the sumps at closed cells MC V and MC VII (Attachment 15 of the Operating License) and quarterly monitoring of leak detection collection and removal systems (LDCRS) between the primary and secondary liners of all the subcells within MC VI (Attachment 14 of the Operating License). The lysimeter and LDCRS monitoring programs serve as early warning programs that hazardous waste constituents have penetrated the primary liner and thus pose a risk to the underlying glacial sand aquifer. To date, there has been no evidence that hazardous waste constituents have penetrated primary liner.



The glacial sand aquifer itself is monitored quarterly (Attachment 9 of the Operating License) by sampling 23 monitoring wells installed within the glacial sand or within the upper 10 feet of the underlying bedrock aquifer. Most of the wells are at the southern (downgradient) edge of the hazardous waste management area boundary.

5.2.2 Surface Water

The surface water pathway is highly controlled at the WDI site (see Section 2.6 Hydrology). In summary, all surface water is collected by a system of catch basins, culverts, pipes and ditches and routed to one of three storm water storage structures. Run-off from paved areas is collected separately from unpaved areas and is treated in the wastewater pre-treatment plant and discharged to the municipal sewer along with other pre-treated wastewater. The surface water from drainage of unpaved areas (mostly closed landfill cells) is collected in one of two sedimentation basins and is treated by sedimentation, filtration and activated carbon before being discharged to the local surface water feature, Quirk Drain, in accordance with an NPDES discharge permit.

Monitoring of the treatment system, including influent and effluent samples is conducted in accordance with the NPDES permit. In addition, surface water monitoring within the open ditch surface water conveyance system is conducted quarterly following a significant rain event in accordance with Attachment 12 of the Operating License. Furthermore, the sediments within the two sedimentation basins are analyzed annually in accordance with Attachment 16 of the Operating License.

5.2.3 Ambient Air

The air pathway is protected by processes designed to minimize fugitive dust and vapors from site operations. WDI has prepared a fugitive dust SOP that requires the use of wind screens where waste is handled, imposes strict speed limit controls on site, requires nearly continuous street sweeping operations, use of water to control dust from internal haul



roads, the application of an anti-dust daily cover on the active portion of the landfill and wind speed monitoring with provisions to shut down disposal operations under high wind conditions. The air pathway is monitored using six ambient air monitoring stations around the facility. Samples are collected every 12 days per the plan that is included in Attachment 10 of the Operating License.

5.2.4 Soil / Sediment

The soil and sediment at the site is monitored semi-annually to determine if waste constituents from fugitive dust or surface run-off are escaping containment. In addition to the fugitive dust controls described above, WDI has a vehicle track-out SOP to minimize the spread of waste constituents by vehicle traffic. This SOP requires that all vehicles that enter the active disposal area must be decontaminated before leaving the area. In addition, vehicles driving within the area directly around the active disposal area in muddy conditions must be driven through the wheel wash prior to driving to other areas of the site. The soil monitoring program is described in Attachment 11 of the Operating License.

Each of these plans has been updated to accommodate the MC VI - F & G development and is presented in site specific, *Environmental Monitoring Programs*. Modifications to the above documents include additional and/or modification of sampling locations due to changes in landfill footprint, and surface topography.

5.3 TRANSPORTATION

Transportation information related to the types of transportation vehicles and containers, normal transportation routes, and spill response and cleanup procedures are referenced or described in the following sections.

5.3.1 Types of Vehicles & Containers

WDI will allow any hazardous, non-hazardous or TSCA waste vehicle authorized to transport waste into the facility. Waste will be accepted in Department of Transportation



(DOT) approved waste containers (e.g., roll-off containers, trailers, drums). Full details are identified in the site's Waste Analysis Plan (WAP), which is Attachment 1 of the Operating License for the facility.

5.3.2 Transportation Routes

There is a transportation route into the facility that must be followed by all transporters. All transporters must enter the site from I-94 and the Rawsonville Road exit. The transporters then proceed east on the on North I-94 Service Drive to the site entrance. This route ensures that the trucks do not pass through any residential or commercial areas; the only non-landfill property on the route is an asphalt plant. Transporters must leave by the same route.

WDI notifies its customers of the designated routes to the facility with every waste approval package and periodically sends out reminders to waste transporters. If a transporter is found using an alternative route the transporter is notified, warned and may be banned from the site in the event of repeat offences

5.4 SPILL RESPONSE & CLEANUP PROCEDURES

WDI has emergency response plans in place. Contact with public officials, evacuation procedures and plans as well as emergency equipment are outlined in the site Contingency Plan. All employees have been trained regarding emergency response procedures. General spill response and cleanup procedures are outlined in the site's Contingency Plan, which is Attachment 4 of the Operating License. Additional spill response procedures are included in the Spill Prevention Control and Countermeasure Plan (SPCC) and Storm Water Pollution Prevention Plan (SWPPP) on file at the facility.



5.5 MANAGEMENT PRACTICES

WDI has a comprehensive H&S Management System. This H&S Management System has been certified through an independent 3rd party auditor to meet the OHSAS 18001 standard. The Occupational Health and Safety Assessment Series (OHSAS) 18000, has been developed to help organizations control and minimize occupational health and safety risks. OHSAS 18001 is a specific standard for occupational health and safety management systems designed to eliminate or minimize the risk to employees and other interested parties who may be exposed to occupational health and safety risks associated with the business' activities. OHSAS 18001 is compatible with ISO 9001 and ISO 14001 management systems. OHSAS 18001 represents a progression of a management system philosophy, from quality to environmental, continuing to occupational health and safety.

The key elements of EQ, Site #2's H&S Management System are as follows:

- Policy
- Planning
 - Hazard Identification and Risk Assessment
 - New Operation, Product Line, Facility Pre-startup
 - MOC-Management of Change
 - Legal and Other requirements
- Implementation & Operation
 - Structure and Responsibility
 - Training, Awareness and Competence
 - Consultation and Communication
 - Documentation
 - Operational Control
- Emergency Preparedness and Response
 - EAPs -Emergency Action Plans



- Checking & Corrective Action
 - Non-Conformance, Corrective, Preventative & Continual Improvement
 - Records and Records Management
 - Audits
 - Monitoring & Measuring
 - Management Review

The H&S Management System is scored on meeting requirements for the following programs:

- Safety Committee Meetings
 - At least one meeting per month for each facility.
- Incident Review Team (IRT) Meetings
 - IRTs are required on incidents based on pre-determined criteria and within a certain time after an incident/near-miss.
- Internal Inspections
 - Internal inspections are required monthly for all facilities.
- BBS Observations
 - A pre-determined number of Behavior Based Safety (BBS) observations are to be conducted each month at each facility.
- TRIR and DART
 - Total Recordable Incident Rates (TRIR) and Days Away and Restricted Rates (DART) are looked at each month for each facility, projected out for the year, compared to EQ corporate goals and graphed for trend analysis.
- EQMS Meetings
 - Monthly meetings regarding corrective actions and continual improvements are required.



- Compliance Calendar review
 - Each facility representative reviews a facility specific compliance calendar each month to make sure all permit requirements, inspections, regulatory obligations, etc. are being completed.
- EQMS Auditing
 - Each facility is internally audited at least monthly to make sure we are compliant with our ISO Management System.

Each month WDI's Quality, Environmental, Health & Safety (QEHS) Department distributes different training modules on various topics to all EQ employees. WDI tracks incident rates on a monthly basis. This information is distributed monthly to all Officers and Managers of the company.

5.6 KNOWN RELEASES

To date, no off-site releases have been identified related to the facility. Any and all on-site spills have previously been reported & appropriate corrective action has been taken. Records of on site spills and emergency response procedures can be found in MDNRE files as well as the site operating record.

5.7 LOCATION OF THE UNIT TO CAUSE POTENTIAL HUMAN EXPOSURE

The proposed MC VI F & G development is bounded by three sides by existing waste units, which were designed and operated in accordance with licenses issued by MDNRE, or earlier similar state agencies. Regulatory requirements for landfills have been strengthened over time. The fourth boundary of the proposed MC VI F & G development is Willow Run Airport, which has restricted access from the general public. Potential exposure pathways to humans located outside the facility is thus mitigated by its location and the engineered containment system, approved daily operational procedures, and overall site security plan. Therefore, the only direct potential human exposure based on the location of the unit is to WDI personnel, or contractors that work near the active



operations. The personal protective equipment requirements and worker hygiene protocols employed at the site are designed to prevent or limit exposure to these individuals.



6.0 EVALUATION OF ALTERNATIVE HAZARDOUS WASTE MANAGEMENT TECHNIQUES

This section describes the alternatives available to the existing operations at the Wayne Disposal Facility and provides an indication that construction and operation of the proposed facility is the most practical and economically viable hazardous waste management method. The advantages and disadvantages of each alternative are presented and discussed including the facilities relationship with other planned or existing community projects.

6.1 ALTERNATIVES

Industries that generate hazardous waste have made great strides in reducing the amount of waste generated during manufacturing and other processes. However, given that lifestyle demands, economic trends and the commitment to clean up contaminated portions of the environment are unlikely to change in the foreseeable future, hazardous wastes will continue to be generated. Once generated, there are limited available alternatives to managing hazardous wastes. Where practicable, re-use or recycling are preferred alternatives; however technological and cost barriers prohibit recycling of many wastes. That leaves treatment, land disposal, deep well injection and incineration as the viable options for managing hazardous wastes. With treatment, many hazardous wastes can be delisted and subsequently managed as a solid waste. In other cases, treatment may result in stabilizing waste to meet land disposal restrictions so that the waste can be disposed of in a hazardous waste facility such as WDI. Waste that cannot meet land disposal restrictions must be incinerated. Because the elimination of hazardous waste is essentially impractical, and because recycling and treatment technologies have not been developed to the extent necessary to negate the need for land disposal, hazardous waste landfill capacity will continue to be a necessary option for the foreseeable future.



Extending the life of existing facilities is a far superior alternative to trying to site and permit a new facility.

6.1.1 Incineration

Incineration is a method of managing hazardous by burning the waste in an incinerator licensed to burn hazardous waste. Incineration is used primarily to destroy organic compounds and reduce the volume of the waste.

The public generally opposes incineration due to areas of technical and scientific uncertainty concerning incinerator emissions. Furthermore, incineration generates ash that contains hazardous substances requiring land disposal. Since incineration is not a viable alternative for all hazardous wastes and produces a hazardous waste ash, this technology does not eliminate the need for land disposal. So, even if incineration was the preferred technology, the resulting residuals, including ash and material collected from air pollution collection devices at incinerator facilities, require a land disposal. There is no way to avoid the need for some land disposal capacity.

6.1.2 Recycling & Waste Reduction

Waste reduction and recycling are popular strategies for managing hazardous wastes. Industries generating hazardous wastes have undertaken aggressive measures to reduce the amount of wastes that are generated through the use of less hazardous raw materials, improved manufacturing processes and at the source recycling and/or re-use. The recycling of many hazardous wastes is difficult or not currently possible due to the lack of technology. Even with tax incentives and other financial inducements, recycling is often cost prohibitive and USEPA regulations for hazardous waste recycling are very strict in order to prevent "sham recycling" as a way to circumvent hazardous waste regulations. There will, no doubt, be new innovations in waste reduction and recycling; however these strategies will not eliminate the need for the land disposal option for the foreseeable future



6.1.3 Improved Landfill Technology

WDI currently employs the most advanced technologies of hazardous waste disposal at their facilities. WDI and EQ are committed to research and development to ensure that EQ/WDI meets or exceeds U.S. EPA standards.

6.1.4 Deep Well Injection

Yet another method of hazardous waste disposal is the pumping of liquid waste into deep wells. There is a strong opposition to this method because of the potential for groundwater contamination and possibly earthquakes that may be associated with waste injection techniques. In general, deep well injection is not a viable alternative to land disposal as deep wells can only handle liquid hazardous waste while land disposal cannot be used for liquid wastes. Liquid wastes solidified by treatment can be handled by land disposal, however this is rarely the cost effective option.

6.1.5 Site a New Landfill Elsewhere

As an alternate to development of the WDI Site No. 2 MC VI F & G disposal area, siting a new landfill elsewhere is an alternative. However, the feasibility of this alternative is highly unlikely for several reasons. First, the successful siting of a hazardous waste landfill at a previously unused (for waste disposal) location would be highly problematic due to the political and environmental concerns of the residents of the area. Further, USEPA and State regulatory agencies are mandated to reduce the number of hazardous waste facilities and thus would not be inclined to permit a new site. At WDI, the resources for operating a facility of this type are already present and the facility is operating with the support of the local government through the Host Community Agreement

6.2 ADVANTAGES OVER OTHER ALTERNATIVES

Based on the alternatives provided above, development of the WDI Site No. 2 MC VI - F & G area is the most feasible way to provide additional hazardous waste land disposal capacity



for the region. The WDI facility provides a hazardous waste disposal option needed for the region's manufacturers and businesses. The development plan would provide 11.7 million cubic yards or capacity while utilizing only 20 acres of undeveloped property that is within the property boundary. None of the alternatives described above, except for the permitting and construction of a similar facility can provide capability of the WDI facility. Also, continuation of operations will support current employment at the site, as well as providing a stabilizing effect on employment on local businesses.

6.3 DISADVANTAGES

The disadvantage of development of the MC VI - F & G area over other alternatives is simply the continuation of current risks over a longer period of time. As with any industrial operation that utilizes or generates hazardous materials, there is an intrinsic risk of environmental impairment in the event of an incident (e.g., fire, explosion, and natural disasters) or the failure of engineered controls or processes. However, WDI has a long operating history that indicates that they are capable of managing and minimizing these risks. Should the development of the MC VI - F & G area be prevented, these risks will be transferred to other facilities, many of which will require longer transport distances and thus even more risk.

From analysis of potential alternatives, it can be concluded that the MC VI-F & G development at the existing WDI Site No. 2 facility of the best location for additional hazardous waste landfill capacity in Michigan for the following reasons:

- [1] The site is presently operating a hazardous waste landfill and has a host community agreement with Van Buren Township.
- [2] Activity in the area would remain consistent with current operations at the existing WDI Site No. 2 landfill. The proposed Woodlot development will utilize the existing



facilities, including the existing haul roads, transportation routes, and the existing leachate collection facilities.

- [3] The site has convenient and efficient vehicular access. The entrance to the site is off a paved roadway, less than 2 miles from Interstate I-94 which eliminates transportation of wastes through residential areas.
- [4] The MC VI - F & G development at Site No. 2 would not increase secondary road traffic in the area.
- [5] Expanding the existing facility eliminates the need to site an additional facility to serve the area. The proposed design of the Woodlot development allows for efficient use of potential airspace.
- [6] The proposed MC VI - F & G development at Site No. 2 will provide sufficient capacity to manage hazardous waste for the growing county and region that it currently serves for the foreseeable future.



7.0 CONCLUSIONS

Based on the information presented in this Environmental Assessment, no human health impacts were identified from the proposed action, which is the approximate 21 acre MC VI - F & G development. Engineering and process control measures have been developed, where possible, for potential short-term and long-term unavoidable impacts to topography, soils, water quality, wetlands, noise, and air quality.

The construction and operation of this hazardous waste disposal facility meets the requirements of the Michigan Solid Waste Management Act, Act 451, Part 111, as amended, and as designed will not cause any significant adverse impacts on the area environment. This overall conclusion is supported by numerous scientific and engineering investigations completed as part of the overall permit application, as well as historical data associated documents produced on behalf of WDI as well as independent governmental and regulatory agencies.



8.0 REFERENCES

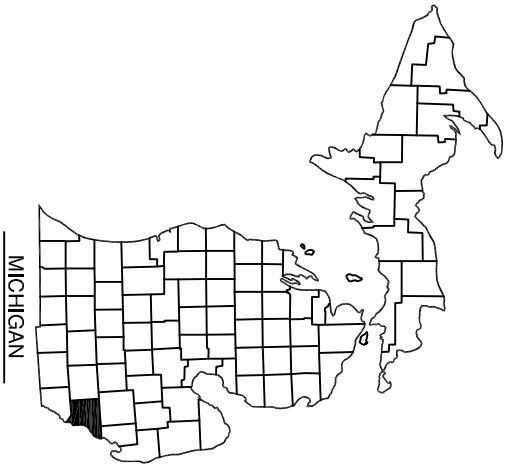
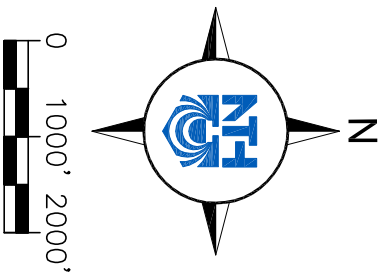
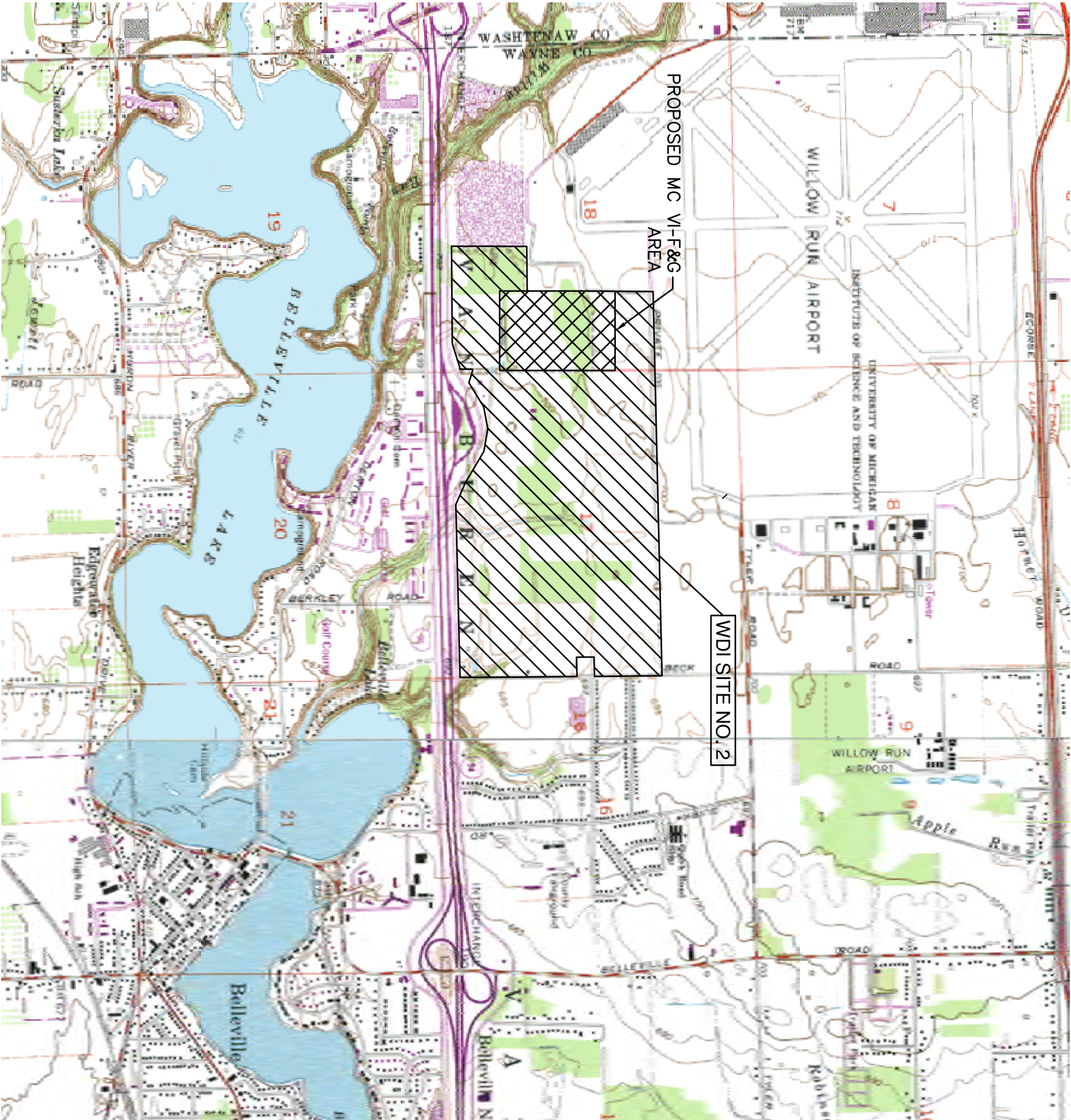
Sources of information used to develop this EA include the following:

- [1] *Hydrogeologic Atlas of Michigan*, Western Michigan University, Department of Geology, College of Arts & Sciences, 1981.
- [2] *Flood Insurance Rate Map (FIRM)*, Federal Emergency Management Agency, Federal Insurance Administration, June 15, 1981.
- [3] *Environmental Assessment, Solidification of Sludge Wastes*, Van Buren Township, Wayne County, Michigan, NREPA, Part 111 R504(1)e, Environmental Research Group, Inc., Revision 4, December 2004.
- [4] SEMCOG website, www.semcog.org
- [5] Van Buren Township website, www.vanburen-mi.org
- [6] Lower Huron River Watershed Advisory Group (LHRWAG) website, <http://www.hrwc.org/lowerhuron//watershed.php>
- [7] *Michigan Land Cover/Use Classification System*, Michigan State University, Department of Geography, Remote Sensing & GIS Research and Outreach Services, Revised March 2010.
- [8] *South Side Master Plan*, Van Buren Charter Township, Wayne County, Michigan, McKenna Associates, Northville, MI, October 10, 2007
- [9] *Charter Township of Van Buren Environmental Commission 2007 Annual Report*, Van Buren Township Environmental Commission Members
- [10] Michigan Department of Natural Resources and Environment website, www.michigan.gov/MDNRE
- [11] *Hydrogeologic Investigation Report, Wayne Disposal Site No. 2, MC VI F & G (Woodlot) Development*, NTH Consultants, Ltd., February 2011.
- [12] *Basis of Design Report, Wayne Disposal, Site No. 2, MC VI F & G (Woodlot) Development*, NTH Consultants, Ltd., February 2011.
- [13] *Engineering Design Drawings, Wayne Disposal, Site No. 2, MC VI F & G (Woodlot) Development*, NTH Consultants, Ltd., February 2011.




LIST OF FIGURES

- **FIG. 1: SITE LOCATION MAP**
- **FIG. 2: WDI FACILITY MAP**
- **FIG. 3: WDI TOPOGRAPHIC MAP (WEST)**
- **FIG. 4: WDI TOPOGRAPHIC MAP (EAST)**
- **FIG. 5: SOIL TYPE MAP**
- **FIG. 6: ZONING MAP**
- **FIG. 7: FUTURE LAND USE**
- **FIG. 8: MICHIGAN POLITICAL TOWNSHIPS
CONTAINING HIGH RISK EROSION AREAS
(HREA)**



NOTE:

1. BASE MAP TAKEN FROM U.S.G.S YPSILANTI EAST AND BELLEVILLE MICHIGAN QUADRANGLES (1983).
2. ORIGINAL FIGURE INCLUDES COLOR GRAPHICS WHICH SHOULD NOT BE OMITTED IN REPRODUCTION

FIGURE: 1	SITE LOCATION MAP	NTH PROJECT No.: 62080376	CAD FILE NAME: 620808376-SLM	 NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services
		DESIGNED BY: DLP	PLOT DATE: 2/3/2011	
	DRAWN BY: RMLII	DRAWING SCALE: AS SHOWN		
	CHECKED BY: DLP	INCEPTION DATE: 02/16/09		
	WAYNE DISPOSAL, INC. SITE NO. 2 - MC VI F&G VAN BUREN TWP., WAYNE COUNTY, MICHIGAN			



NTH Consultants, Ltd.
Infrastructure Engineering and
Environmental Services

Farmington Hills, MI	248.553.6300
Detroit, MI	313.237.2900
Lansing, MI	313.484.6900
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649
Chicago, IL	610.524.2900
Exton, PA	610.524.2900
Philadelphia, PA	215.854.6559
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:

**WAYNE DISPOSAL, INC.
SITE NO. 2 - MC VI F&G
(WOODLOT)
DEVELOPMENT**

PROJECT LOCATION:

**VAN BUREN TWP., WAYNE
COUNTY, MICHIGAN**

NTH PROJECT NO.:	62080376
DATE:	02/16/09
DRAWN BY:	AS SHOWN
CHECKED BY:	09/17/09
SHEET TITLE:	WDI TOPOGRAPHIC MAP (WEST)

6

LEGEND:

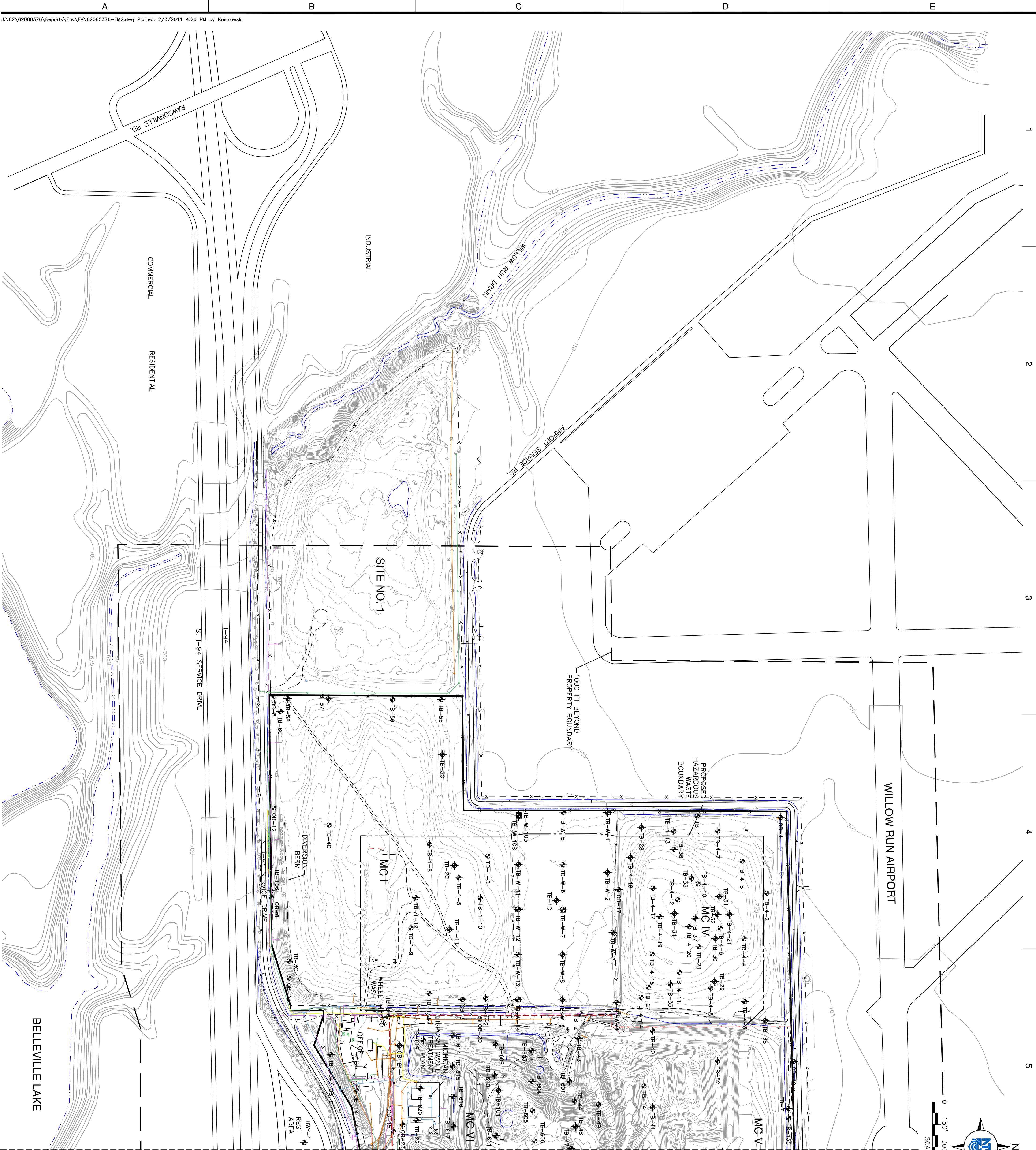
	GROUNDWATER OBSERVATION WELL
	SOIL BORING
	MONITORING WELL
	EXISTING CONTOUR
	PROPERTY BOUNDARY
	FENCE
	ACCESS ROAD
	EXISTING HAZARDOUS WASTE BOUNDARY
	TREE LINE
	DITCH / STREAM
	STORM
	SANITARY
	WATER MAIN
	GAS
	TELEPHONE
	ELECTRIC
	PROPOSED HAZARDOUS WASTE BOUNDARY
	1000 FT BOUNDARY

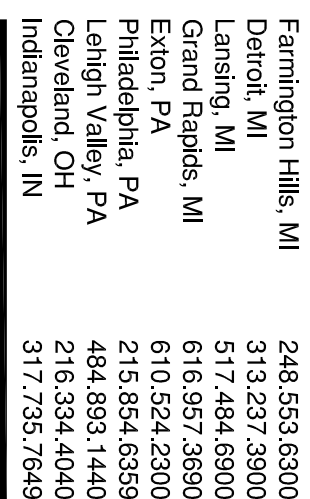
NOTE:

- THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AERIAL SURVEY AND PHOTOGRAPHY BY WDI IN OCTOBER 2007 AND A GROUND SURVEY BY WDI IN OCTOBER 2008. ADDITIONAL TOPOGRAPHIC INFORMATION BASED ON VERTICAL EAST QUADRANGLE USGS MAP.
- FIGURE 3 & 4 TOGETHER ARE SPECIFICALLY INTENDED TO MEET REQUIREMENTS OF SECTION 270.14 (b)(19)(i)&(ii)-(iv).
- THE 100-YEAR FLOODPLAIN, AS REQUIRED UNDER SECTION 270.14(b)(19)(i) IS UNMAPPED. REFER TO ENVIRONMENTAL ASSESSMENT FOR DISCUSSION OF COMPLIANCE WITH LOCATION STANDARDS.
- ORIGINAL FIGURE INCLUDES COLOR GRAPHICS WHICH SHOULD NOT BE OMITTED IN REPRODUCTION.

SOIL BORING NOTES:

- TEST BORINGS TB-1 THROUGH TB-15, TB-16 THROUGH TB-62, AND TB-21 THROUGH TB-27 WERE DRILLED BY GEO-TEK, INC. UNDER OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED JUNE 1978 (TB-25), JULY 1978 (TB-56 THROUGH TB-58), MAY 1979 (TB-27 AND TB-28), JANUARY 1980 (TB-52 THROUGH TB-57), JUNE 1980 (TB-35 THROUGH TB-51), AND JULY 1980 (TB-52 THROUGH TB-54).
- TEST BORINGS TB-101 THROUGH TB-135 WERE DRILLED BY GEO-TEK, INC. UNDER OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED OCTOBER 1980 (TB-101 THROUGH TB-107), OCTOBER 1980 (TB-108), FEBRUARY 1981 (TB-122, TB-129 THROUGH TB-132), MARCH 1981 (TB-109, TB-126, TB-128, TB-133, TB-135), AND APRIL 1981 (TB-134).
- OBSERVATION WELLS OB-4 THROUGH OB-11 AND OB-17 WERE DRILLED BY GEO-TEK, INC. UNDER OBSERVATION OF NTH CONSULTANTS. OBSERVATION WELLS WERE COMPLETED MAY 1979 (OB-4 AND OB-5), SEPTEMBER 1980 (OB-6 AND OB-8), MARCH 1981 (OB-7 AND OB-11), AND APRIL 1981 (OB-9, OB-10, AND OB-17).
- OBSERVATION WELLS OB-12 THROUGH OB-18 WERE DRILLED BY PEARSON WELL LOGGING, INC. UNDER OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED MARCH 1981 (OB-14 THROUGH OB-16) AND APRIL 1981 (OB-12 AND OB-13).
- OBSERVATION WELLS OB-19 THROUGH OB-31 WERE DRILLED BY AMERICAN DRILLING, INC. UNDER OBSERVATION OF NTH CONSULTANTS. JULY THROUGH SEPTEMBER 1984.
- TEST BORINGS TB-601 THROUGH TB-621 WERE DRILLED BY AMERICAN DRILLING, INC. UNDER OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED DECEMBER 1985 (TB-615 AND TB-619) AND JANUARY 1986 (TB-601 THROUGH TB-614, TB-616 THROUGH 618, TB-620, AND TB-621).
- TEST BORINGS NTH-1 THROUGH NTH-26 WERE DRILLED BY AMERICAN DRILLING, INC. UNDER OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED OCTOBER 1986 (NTH-1 THROUGH NTH-7, NTH-14, AND NTH-16 THROUGH NTH-18), AND NOVEMBER 1986 (NTH-8 THROUGH NTH-13, NTH-15, AND NTH-19 THROUGH NTH-26).
- TEST BORINGS TB-W-1 THROUGH TB-W-4 WERE DRILLED BY MATCO DRILLING COMPANY UNDER THE OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED JUNE 2008 (TB-W-11, TB-W-13, AND TB-W-14), JULY 2008 (TB-W-1 AND TB-W-2, TB-W-5 AND TB-W-6, TB-W-10, AND TB-W-12), AND SEPTEMBER 2008 (TB-W-2 AND TB-W-3, TB-W-7 THROUGH TB-W-9).
- TEST BORINGS TB-IV-1 THROUGH TB-IV-8, TB-IV-10 THROUGH TB-IV-15, AND TB-IV-17 THROUGH TB-IV-21 WERE DRILLED BY MATCO DRILLING COMPANY UNDER THE OBSERVATION OF NTH CONSULTANTS. BORINGS WERE COMPLETED MAY 2008 (TB-IV-1 THROUGH TB-IV-8, TB-IV-10, AND TB-IV-15), AND TB-IV-17, TB-IV-19, TB-IV-20, AND TB-IV-21.
- TEST BORINGS TB-1-2, TB-1-3, TB-1-5, TB-1-6, AND TB-1-8 THROUGH TB-1-10 AND TB-1-12).





GROUNDWATER OBSERVATION WELL

-
- Legend:
- GROUNDWATER OBSERVATION WELL
 - SOIL BORING
 - MONITORING WELL
 - EXISTING CONTOUR
 - PROPERTY BOUNDARY
 - FENCE
 - ACCESS ROAD
 - EXISTING HAZARDOUS WASTE BOUNDARY
 - TREE LINE
 - DITCH/ STREAM
 - STORM
 - SANITARY
 - WATER MAIN
 - GAS
 - TELEPHONE
 - ELECTRIC

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY, AND PROVIDED BY WDA. A SURVEY BY MCLC IN OCTOBER 2007 AND A GROUND SURVEY BY WDA IN FEBRUARY 2008 ADDITIONAL TOPOGRAPHIC INFORMATION BASED ON "FLUENT" EAST ADDITIONAL TOSS MAP.
2. FIGURE 3 & 4 TOGETHER ARE SPECIFICALLY INTENDED TO MEET REQUIREMENTS OF SECTION 270.14 (g)(3)(D)-(f)(ii)-(iii)-(iv).
3. THE 100-YEAR FLOODPLAIN, AS REQUIRED UNDER SECTION 270.14(f)(1)(v)(3) IS UNAVAILABLE. REFERS TO ENVIRONMENTAL ASSESSMENT FOR DISCUSSION OF COMPLIANCE WITH LOCALITY STANDARDS.
4. ORIGINAL FIGURE INCLUDES COLOR GRAPHICS WHICH SHOULD NOT BE OMITTED IN REPRODUCTION.



YPSILANTI (WILLOW RUN) - 2006

REVISIONS			
REV	DESCRIPTION	DATE	BY

A blank grid for drawing a diagram. The grid consists of 20 columns and 10 rows of squares. The leftmost column is highlighted with a thicker vertical line.

WAYNE DISPOSAL, INC.
SITE NO. 2 - MC VI F&G
(WOODLOT)
DEVELOPMENT

PROJECT LOCATION:
VAN BUREN TWP., WAYNE
COUNTY, MICHIGAN

NTH PROJECT NO.:	62080376	CAD FILE NAME:	62080376-TM2
DESIGNED BY:	DLP	INCEP DATE:	02/16/09
DRAWN BY:	KRO	DRAWING SCALE:	AS SHOWN
CHECKED BY:	DLP	SUBMITTED DATE:	09/17/09

WDI TOPOGRAPHIC MAP
(EAST)



LEGEND:

MAP LEGEND	
	Area of Interest (AOI)
	Soil Map Units
	Special Point Features
	Special Line Features
	City Spot
	Coastal Depression
	Gravel Pit
	Gravelly Spot
	Landfill
	Lava Flow
	Marsh or Swamp
	Mud or Quarry
	Manufactured Water
	Perennial Water
	Rice Outcrop
	Saline Spot
	Sand Spot
	Severely Eroded Spot
	Spot of Slope
	Spot Spot
	Spot Area
	Spot Spot

MAP INFORMATION

Map Scale: 1:10,000 if printed on 8 1/2" x 11" sheet.
The soil surveys that comprise your AOI were mapped at 1:15,840.
Please rely on the bar scale on each map sheet for accurate map measurements.
Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 17N NAD83
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
Soil Survey Area: Wayne County Area, Michigan
Survey Area Block: Version 7, Jan 22, 2009
Date(s) aerial images were photographed: 7/10/2005
The orthophoto or other base map on which the soil lines were computer digitized was probably derived from the background map or aerial photograph. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BnB	Boyer loamy sand, 0 to 6 percent slopes	91.1	6.8%
Co	Courtesy fine sandy loam	12.1	0.9%
Cu	Cut and fill land	6.1	0.5%
Gf	Gifford sandy loam	127.5	9.7%
Gr	Gravelly loamy fine sand	83.7	6.3%
Ma	Mable land	1.5	0.1%
OaB	Oakville fine sand, 0 to 6 percent slopes	72.5	5.6%
Pb	Pine bluffs	5.3	0.4%
So	Sloan silt loam, wet	12.4	0.9%
SpB	Sprinkles loamy sand, 0 to 6 percent slopes	89.2	6.8%
TeA	Tedrow loamy fine sand, 0 to 2 percent slopes	32.8	2.5%
TfA	Tedrow loamy fine sand, loamy substratum, 0 to 2 percent slopes	6.6	0.5%
ThA	Thieford loamy sand, 0 to 2 percent slopes	601.5	45.6%
W	Water	1.1	0.1%
WcA	Wesley loamy sand, 0 to 2 percent slopes	195.6	14.8%
Totals for Area of Interest		1,318.9	100.0%

1. THE SOIL MAP WAS PROVIDED BY THE USDA-NRCS WEB SOIL SURVEY VERSION 2.2. THE SOIL SURVEY AREA IS IN WAYNE COUNTY, MICHIGAN (MAPPED IN 1973). THE SURVEY AREA DATA IS VERSION 7, JUNE 22, 2009.
2. SOIL TYPES MAPPED PRIOR TO LANDFILL DEVELOPMENT.

NOTE:

SOIL TYPE MAP

WAYNE DISPOSAL INC., SITE NO. 2
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

FIGURE:

5

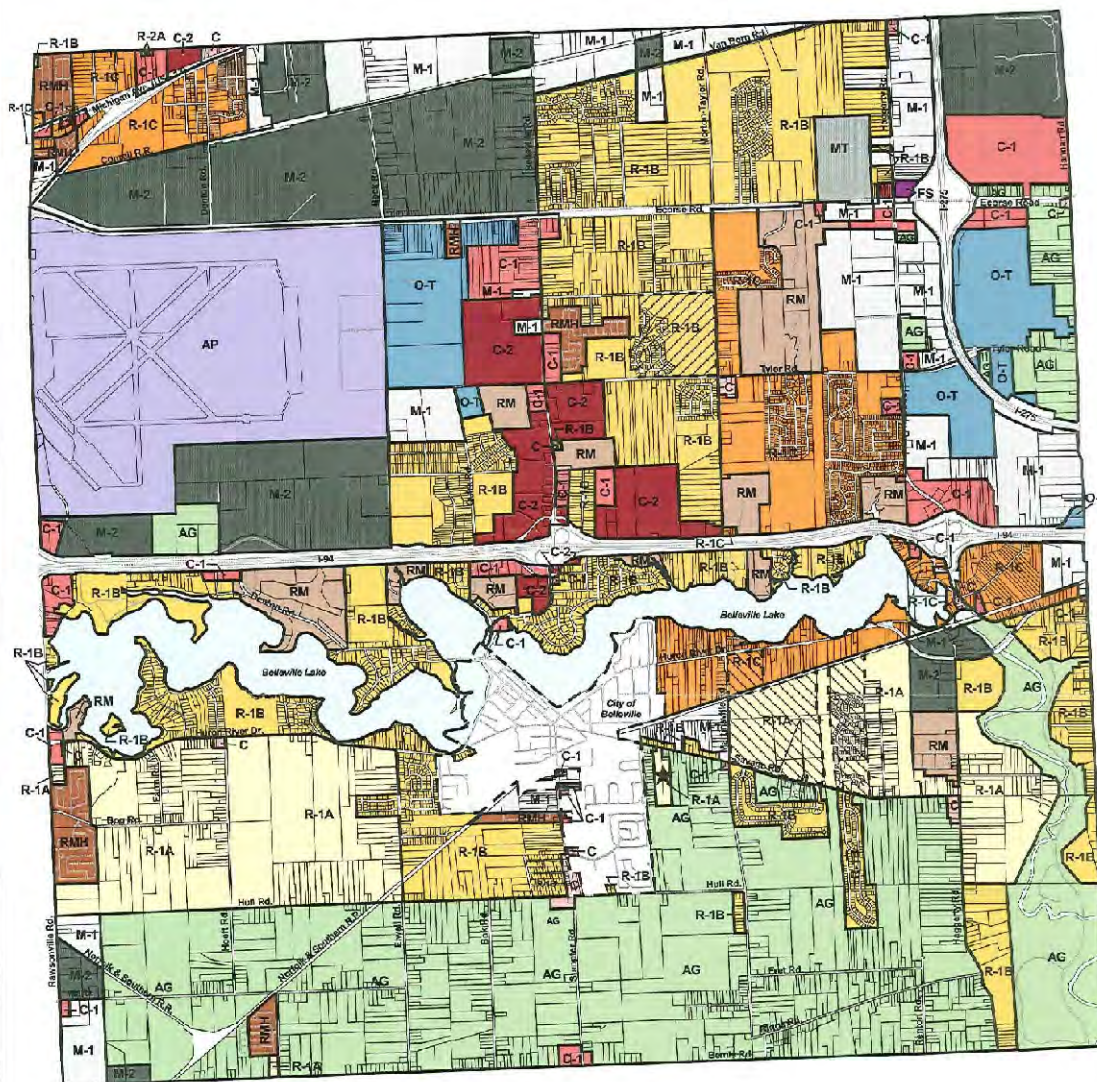


NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

NTH PROJECT No.: 62080376	CAD FILE NAME: 62080376-SM
DESIGNED BY: DLP	PLOT DATE: 2/3/2011
DRAWN BY: KRO	DRAWING SCALE: AS SHOWN
CHECKED BY: DLP	INCEPTION DATE: 02/16/09



Charter Township of Van Buren, Wayne County, Michigan



Zoning Districts

- | | | | |
|---|-----------------------------------|---|--|
|  | AG-A Agricultural and Estates - A |  | C-2 Extensive Highway Business |
|  | AG Agricultural and Estates |  | FS Freeway Service |
|  | R-1A Single Family Residential |  | O-T Office/Technology |
|  | R-2A Single Family Residential |  | M-1 Light Industrial |
|  | R-1B Single Family Residential |  | M-T Industrial Transportation |
|  | R-1C Single Family Residential |  | M-2 General Industrial |
|  | RM Multiple Family Residential |  | AP Airport |
|  | RMH Mobile Home Park |  | (zoning is pursuant to a consent judgement) |
|  | C Local Business |  | (Land is subject to a Planned Residential Development (PRD) agreement) |
|  | C-1 General Business |  | (Land is subject to a Planned Land Development (PLD)) |

The parcel lines of this map are representational of the actual parcel lines and are not intended to be substituted for an official survey or used to resolve boundary or area discrepancies. Consult official Charter Township of Van Buren records for precise distances and areas of parcels, and boundaries.

REVISION DATES

July 1966	April 1979	March 1989	April 1994	May 1998	June 2003
August 1968	August 1980	April 1989	October 1996	June 1998	August 2003
January 1971	August 1982	October 1990	March 1998	July 1999	April 2004
August 1972	August 1984	January 1991	June 1997	July 1999	July 2004
December 1973	June 1986	February 1991	August 1997	September 1999	September 2004
March 1974	October 1986	April 1992	October 1997	October 1999	February 2005
August 1974	August 1987	July 1992	November 1997	June 2001	August 2005
March 1978	October 1987	November 1992	February 1998	January 2002	

I, DANIEL D. PAYNE, CLERK OF THE CHARTER TOWNSHIP OF VAN BUREN, DO HEREBY CERTIFY THAT THIS IS A TRUE COPY OF THE MAP, ADOPTED BY THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF VAN BUREN, WAYNE COUNTY, MICHIGAN, IN JUNE OF 1950, AS WELL AS THOSE AMENDMENTS MADE AS OF THE REVISED DATE.

JOHN B. D. PAYN, TOWNSHIP CLERK

Zoning Map

A horizontal number line with arrows at both ends. It is marked with '0 Ft.' at the left end, '1600 Ft.' at the midpoint, and '3200 Ft.' at the right end. The segment from 0 to 1600 is shaded dark gray, and the segment from 1600 to 3200 is shaded light gray.

Printed on:
01/24/2007

NTH PROJECT No.: 62080376	CAD FILE NAME: 620808376-ZM
DESIGNED BY: DLP	PLOT DATE: 2/3/2011
DRAWN BY: CWS	DRAWING SCALE: AS SHOWN
CHECKED BY: DLP	INCEPTION DATE: 09/17/09



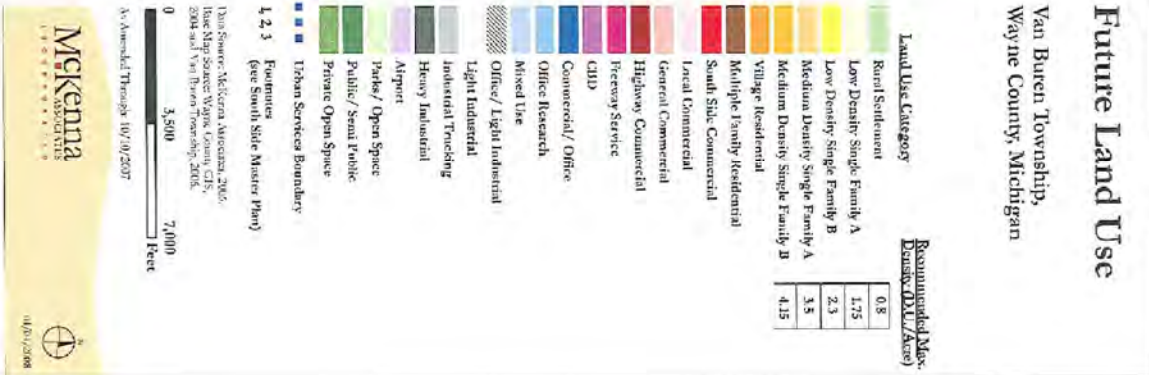
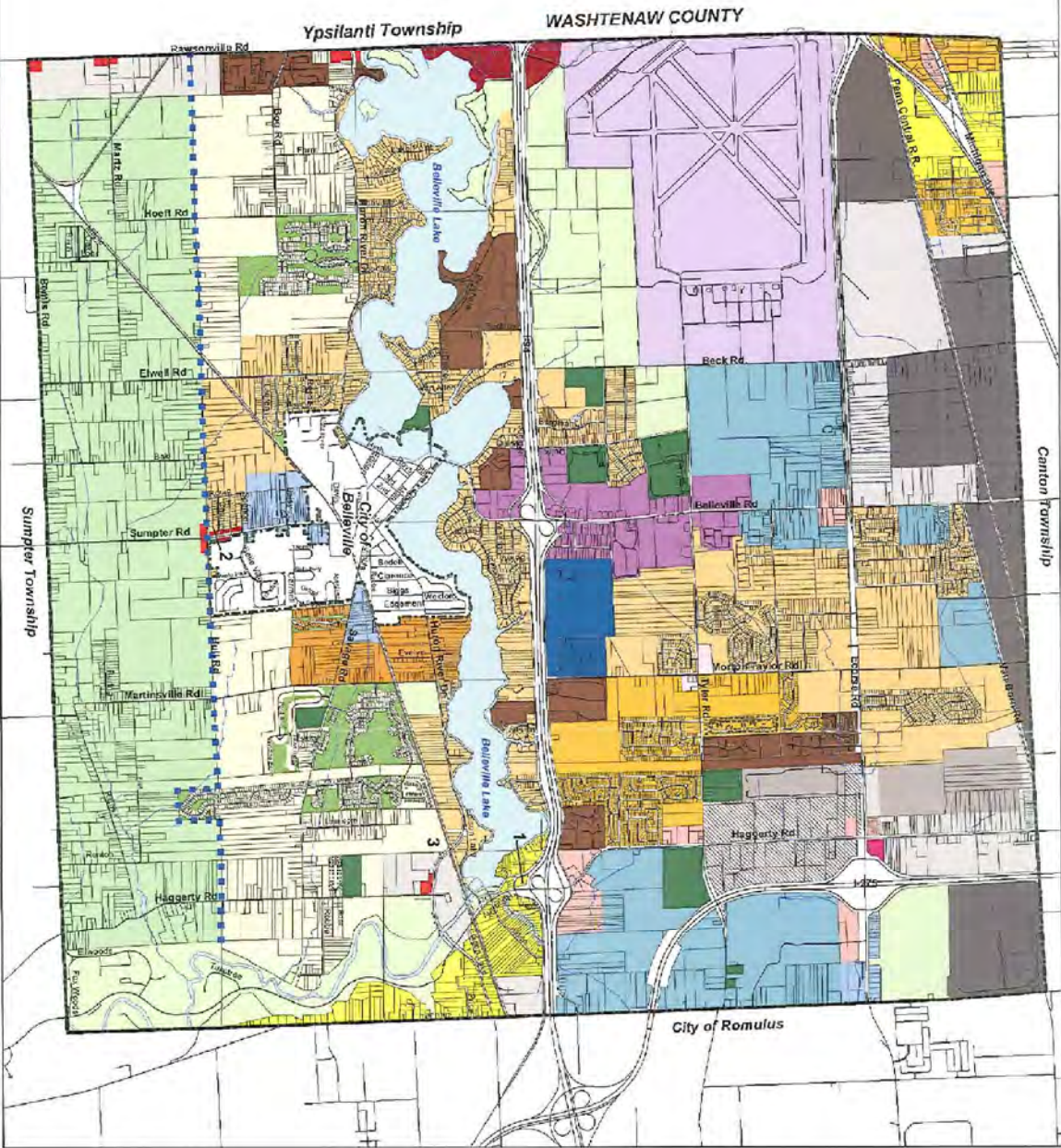
NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

ZONING MAP

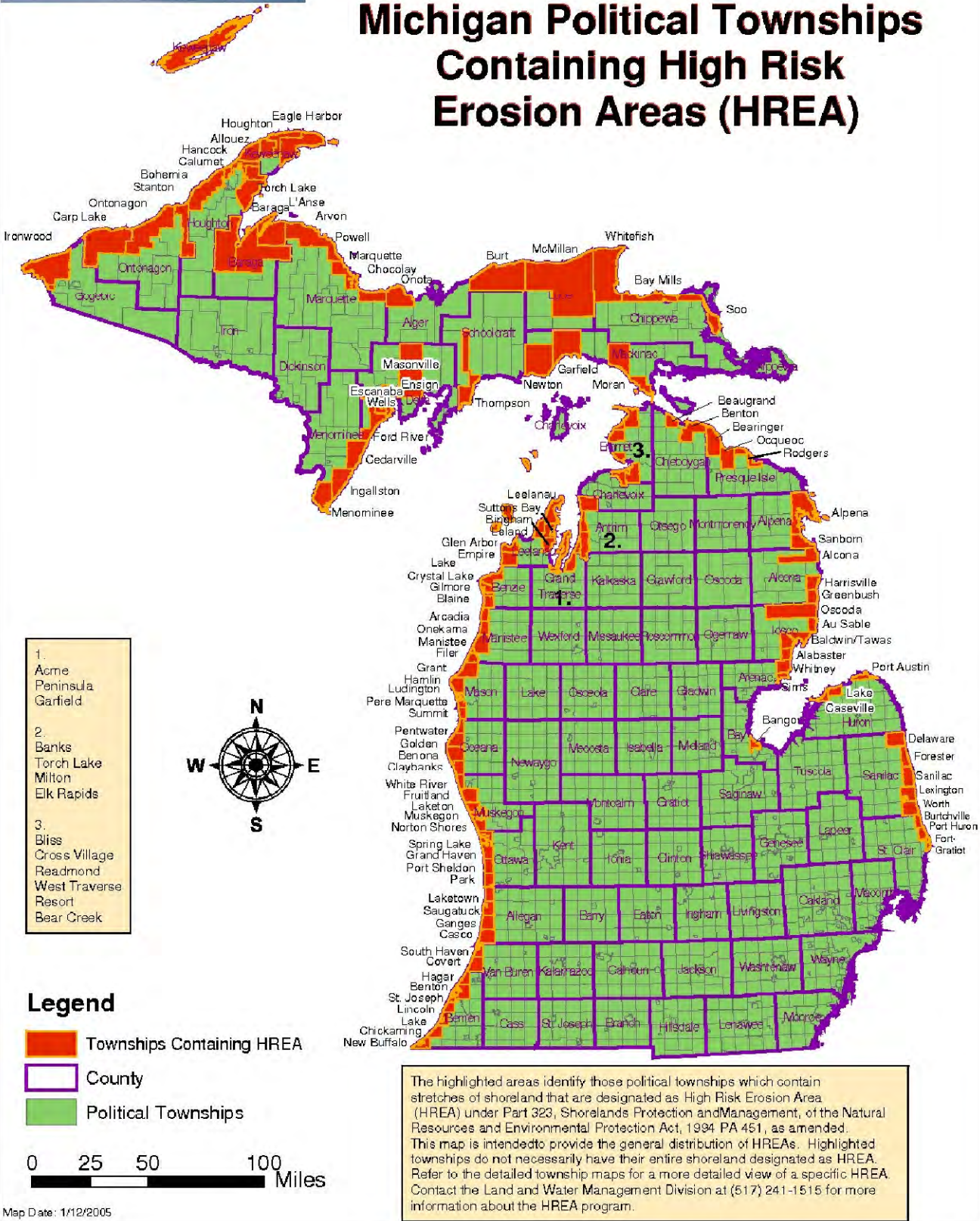
WAYNE DISPOSAL, INC. SITE NO. 2 - MC VI F&G
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

FIGURE 1

6



Michigan Political Townships Containing High Risk Erosion Areas (HREA)



NTH PROJECT No.: 62080376	CAD FILE NAME: 62080376-HRA
DESIGNED BY: DLP	PLOT DATE: 2/3/2011
DRAWN BY: CWS	DRAWING SCALE: AS SHOWN
CHECKED BY: DLP	INCEPTION DATE: 09/17/09



NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

**MICHIGAN POLITICAL TOWNSHIPS CONTAINING
HIGH RISK EROSION AREAS (HREA)**
**WAYNE DISPOSAL, INC. SITE NO. 2 - MC VI F&G
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN**

FIGURE:
8



APPENDIX A

MDNRE FORM EQP 5111 ATTACHMENT TEMPLATE B4

**FORM EQP 5111 ATTACHMENT TEMPLATE B4
ENVIRONMENTAL ASSESSMENT**

This document is an attachment to the Michigan Department of Environmental Quality's *Instructions for Completing Form EQP 5111, Construction Permit and Operating License Applications, Hazardous Waste Treatment Storage and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) §324.11118(3) and R 299.9504(1)(e) and R 299.9504(1)(b) establish requirements for conducting environmental assessments at hazardous waste management facilities. Before receiving either a construction permit or an operating license, owners and operators of hazardous waste treatment, storage, or disposal facilities must evaluate the (proposed) facility's impact on air, water, or other natural resources of the state. The evaluation must also include a failure mode assessment. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for an environmental assessment for hazardous waste management units at the [Facility Name] facility.

 Guidance for this template can be found in Michigan Department of Environmental Quality's document titled "Contents of the Environmental Assessment."

This template is organized as follows:

INTRODUCTION

B4.A CURRENT CONDITIONS

B4.A.1 Facility Description

B4.A.2 Description of Existing Environmental Conditions

B4.A.2(a) Climate

B4.A.2(b) Topography

B4.A.2(c) Geology

B4.A.2(d) Soils

B4.A.2(e) Hydrology

B4.A.2(f) Land Use and Zoning

B4.A.2(g) Historical or Archaeological Resources

B4.A.2(h) Social Environment

B4.A.2(h)(i) Demographics

B4.A.2(h)(ii) Infrastructure

B4.A.2(i) Transportation

B4.A.2(j) Air Quality

B4.A.2(k) Noise

B4.A.2(l) Appearance and Aesthetics

B4.A.2(m) Terrestrial Ecosystem

B4.A.2(m)(i) Flora


B4.A.2(m)(ii) Fauna

B4.A.2(m)(iii) Rare or Endangered Species

- B4.A.2(m)(iv) Critical Habitat
- B4.A.2(n) Aquatic Ecosystem
 - B4.A.2(n)(i) Flora
 - B4.A.2(n)(ii) Fauna
 - B4.A.2(n)(iii) Rare or Endangered Species
 - B4.A.2(n)(iv) Critical Habitat
- B4.B ENVIRONMENTAL IMPACTS OF (PROPOSED) FACILITY
- B4.C EXPOSURE INFORMATION REPORT FOR LANDFILLS AND SURFACE IMPOUNDMENTS
- B4.D EVALUATION OF ALTERNATIVE HAZARDOUS WASTE MANAGEMENT TECHNIQUES


INTRODUCTION

This environmental assessment for *[Facility Name]* describes current conditions, environmental impacts, and applicable exposure information for landfills and surface impoundments. The goals of the environmental assessment are to describe and discuss (1) the probable impact of the facility on natural resources, human life, and all environmental elements that affect these values; (2) probable unavoidable adverse effects of the facility; (3) alternatives for accomplishing the same objective; and (4) possible modifications that would minimize adverse effects.

 Include in this section a description of the need for and objectives of the proposed or existing facility.

B4.A CURRENT CONDITIONS

B4.A.1 Facility Description

 *This section should describe the facility, wastes managed, and location. Note that "facility," as used in this template, is the hazardous waste management unit that is the subject of this permitting action.*

B4.A.2 Description of Existing Environmental Conditions


A description of existing environmental conditions at the facility and any surrounding areas that may be affected by the facility is included in this section. Detailed information that is provided in other attachment templates is not repeated here; however, references to appropriate attachment templates are provided. Maps, photographs, and other relevant information that are not included in other templates are included in this section. Important ecological relationships, functions, and interdependence of physical environmental elements and social and economic elements are discussed. Factual information from publications, reports, or personal communications is documented, with sources cited.

B4.A.2(a) Climate


 *Describe meteorological data in this section, including average rainfall and temperature.*

Describe seasonal variations in meteorological conditions and any weather problems unique to the area. "Area" refers to all of the area surrounding the facility that will be potentially affected by the facility.


B4.A.2(b) Topography

 *Provide a description and map of land relief and slope, streams, lakes, roads, cities, and other relevant topographic features. The map should be large enough to include all areas surrounding the facility that may be potentially affected by the facility.*


B4.A.2(c) Geology

 *Describe bedrock and surficial features of the area. Describe existing or potential mineral extraction and oil and gas exploration and production. If a hydrogeologic report has been included as Template B3, Hydrogeological Report, references to appropriate sections of Template B3, Hydrogeological Report, should be included here.*


B4.A.2(d) Soils

 *Describe common soil series in the area, including suitability for various land uses. If possible, provide a soil type map that shows facility boundaries. Again, include a reference to Template B3, Hydrogeological Report, if appropriate.*

B4.A.2(e) Hydrology

 *Describe groundwater quality, quantity, and flow direction in the area. Describe surface water characteristics, runoff patterns, flows, and seasonal variations. Describe any existing or potential problems with surface or groundwater. Note that the descriptions should be limited to hydrological features that will be potentially affected by the facility. Reference other templates, such as Template B3, Hydrogeological Report, as appropriate.*

B4.A.2(f) Land Use and Zoning

 *Describe current and historic land use, existing or proposed zoning regulations, and ownership patterns in and around the area.*


B4.A.2(g) Historical or Archaeological Resources

 *Describe any historical or archaeological resources in the area.*


B4.A.2(h) Social Environment

The social environment, in terms of demographics and infrastructure of the area, is discussed in the following two subsections.


B4.A.2(h)(i) Demographics

 Describe population characteristics of the area that may be impacted by the facility. Include employment statistics, age, ethnicity, types of employment, and major employers in the area surrounding the facility.


B4.A.2(h)(ii) Infrastructure

 Describe existing public utilities, schools, law enforcement, transportation, sewage disposal, and solid waste disposal facilities at and near the facility.


B4.A.2(i) Transportation

 Describe existing on-site and off-site transportation facilities. "Off-site transportation facilities" refer to highways, railroads, or rail yards that will be used to transport hazardous waste either to or from the facility.


B4.A.2(j) Air Quality

 Describe existing ambient air quality and any potential or actual sources of air pollution in the area surrounding the facility.

B4.A.2(k) Noise

 Describe current noise levels in the area surrounding the facility and identify sources of noise.


B4.A.2(l) Appearance and Aesthetics

 Describe diversity of vegetation, visually pleasing landscapes or views, and unique natural or man-made features of the facility.

B4.A.2(m) Terrestrial Ecosystem

The characteristics of the terrestrial ecosystem, in terms of flora, fauna, rare or endangered species, and critical habitat are described in the following subsections.


B4.A.2(m)(i) Flora

 Describe vegetation characteristics, species, density, age, and size. Provide a descriptive map, if possible.

B4.A.2(m)(ii) Fauna

 *Describe wildlife species and population densities in the area surrounding the facility.*

B4.A.2(m)(iii) Rare or Endangered Species

 *Describe any rare or endangered plant or animal species in the area surrounding the facility.*

B4.A.2(m)(iv) Critical Habitat

 *Describe any habitat critical to the survival of local species.*


B4.A.2(n) Aquatic Ecosystem

The characteristics of the aquatic ecosystem, in terms of flora, fauna, rare or endangered species, and critical habitat are described in the following subsections.


B4.A.2(n)(i) Flora

 *Describe quantities and species of aquatic vegetation in the area surrounding the facility.*


B4.A.2(n)(ii) Fauna

 *Describe aquatic animal species, populations, and available aquatic habitat in the area surrounding the facility.*


B4.A.2(n)(iii) Rare or Endangered Species

 *Describe any rare or endangered aquatic species in the area surrounding the facility.*

B4.A.2(n)(iv) Critical Habitat

 *Describe any habitat that is critical to the survival of aquatic species in the area surrounding the facility.*


B4.B ENVIRONMENTAL IMPACTS OF THE FACILITY

 *For each hazardous waste management unit, describe how each of the items in Section B4.A.2 will be affected by normal operations and during failure mode. "Failure mode" is defined as a departure from planned or expected operations. Describe failures that can occur at each unit, including consequences of failures, if any. Examples of consequences of failures are: releases of hazardous waste to the environment, injury or death to nearby people, contamination of drinking water supplies, etc.*

Subsections of Section B4.A.2 describe various environmental conditions at and around the facility before construction and operation in the case of a new facility. For an existing facility, the subsections describe environmental conditions existing before the current permit action. The purpose of Section B4.B is to describe actual and potential effects, if any, of the proposed hazardous waste management facility or permit action on the area impacted or potentially impacted by the facility. In other words, Section B4.B should describe how construction, operation, or continued operation of the facility may impact or change the environment of the area surrounding the facility.

For each hazardous waste management unit at the facility, the template containing its detailed description should be referenced, rather than repeating unit descriptions in this template.

B4.C EXPOSURE INFORMATION REPORT FOR LANDFILLS AND SURFACE IMPOUNDMENTS

 *For landfills and surface impoundments only, include an Exposure Information Report (EIR). The EIR should include the following information: general, pathway-specific, transportation, management practices, known releases, and human exposure potential. Detailed guidance is included in "Contents of the Environmental Assessment." Information that is included in other sections needs not be repeated here; however, reference the appropriate section(s).*

General information should include the following:

- 1. Available health or risk assessment information,*
- 2. Zoning and land use maps,*
- 3. Recent aerial photographs,*
- 4. Additional waste analyses not already submitted in the application,*
- 5. Annual volume and amount of wastes received, and*
- 6. A list of agencies that inspect and report on the facility, including compliance reports.*

The following potential exposure pathways must be evaluated:

- 1. Groundwater,*
- 2. Surface water,*
- 3. Air,*
- 4. Subsurface gas, and*
- 5. Soil.*

Transportation information should include the following:

- 1. Types of transportation vehicles and containers,*
- 2. Normal transportation routes, and*
- 3. Spill response and cleanup procedures.*

Management practices information should include worker information related to operation of the unit on:

- 1. Injuries,*
- 2. Accidents, and*
- 3. Illnesses.*


Known release information that has not been previously submitted in the application should include:

- 1. Evidence identifying the release,*
- 2. Pathway and extent of migration,*
- 3. Corrective action taken and an evaluation of the effectiveness of the action, and*
- 4. The extent and severity of any known public exposures.*

The location of the unit should be evaluated for its potential to cause human exposure by way of the following pathways:

- 1. Groundwater,*
- 2. Surface water,*
- 3. Air,*
- 4. Subsurface gas,*
- 5. Soil,*
- 6. Transportation, and*
- 7. Worker management practices.*

B4.D EVALUATION OF ALTERNATE HAZARDOUS WASTE MANAGEMENT TECHNOLOGIES

 *The purpose of this subsection is to show that construction or operation of the proposed facility is the most practical and economically viable hazardous waste management method that will protect public health and the environment. Evaluate alternative hazard waste management methods, including both positive and negative impacts on the environment of the area surrounding the facility. Discuss why the proposed method was selected. Describe disadvantages of alternatives, and describe how selected proposal is interrelated with other planned or existing community projects.*



APPENDIX B

HOST COMMUNITY AGREEMENT

HOST COMMUNITY AGREEMENT

This Host Community Agreement ("Agreement") is made and entered into this ____ day of _____, 2009 by and between Wayne Disposal, Inc., a Michigan corporation ("WDI") and Van Buren Charter Township ("Township").

RECITALS

WHEREAS, WDI owns and operates a landfill site currently consisting of approximately Five Hundred Ninety (590) acres located within the Township (the "Landfill Site") a portion of which is currently permitted to lawfully receive and dispose of waste listed under Part 111 of Act 451 of the Natural Resources and Environmental Protection Act, Michigan Compiled Laws, Act 451 of 1994, as amended (together with any successor legislation, "Act 451")("Waste").

WHEREAS, WDI seeks to modify a parcel of approximately twenty (20) acres identified as Lot A on Exhibit B located within the Landfill Site (the "Modified Site") in order to allow WDI to dispose of Waste at the Modified Site in a manner consistent with WDI's current operations and Act 451.

WHEREAS, the modifications require the clearing of trees, other construction at the Modified Site and, potentially, other environmental obligations.

WHEREAS, Act 451 requires WDI to obtain certain environmental permits from the Michigan Department of Environmental Quality (the "MDEQ") and other regulatory approvals in order to proceed with the disposal of Waste at the Modified Site.

WHEREAS, based upon the Township's review of the proposed location of the Modified Site, the Township believes that the disposal of Waste at such location consistent with WDI's current operations does not present public safety or environmental concerns.

WHEREAS, WDI intends to file an administratively complete application for such modifications to its permits and to obtain any other regulatory approvals in cooperation with the Township, and the Township desires to support such application and approvals in a manner consistent with protection of public safety and the environment.

NOW THEREFORE, the parties agree as follows:

1. Definitions.

As used in this Agreement, the following terms shall have the following meanings:

- (a) "Adjacent Property" shall mean that portion of the real property owned by WDI adjacent to the Landfill Site, designated as Lot B on the attached Exhibit B. Lot B on Exhibit B currently consists of existing baseball diamonds used by the Little League ("Baseball Diamonds") and a gun shooting range ("Shooting Range") used by the Township Public Safety Department and others.
- (b) "Cubic Yard" shall mean one cubic yard of Waste received by WDI from Michigan Disposal, Inc., and its successors and assigns, for disposal at the

Landfill Site, including the Modified Site.

- (c) "Gate Ton" shall mean one ton of Waste received by WDI for disposal at the Landfill Site, including the Modified Site; excluding any Waste received from Michigan Disposal, Inc. and its successors and assigns.
- (d) "Modifications" shall mean the clearance of trees and all other construction activities on the Landfill Site and the real property designated as Lot A on the attached Exhibit B necessary to dispose of Waste at the Modified Site.
- (e) "Permit Date" shall mean the date on which WDI has received all Permits necessary to enable WDI to complete the Modifications and to dispose of Waste at the Modified Site.
- (f) "Permits" shall mean all permits, licenses, or regulatory approvals of any kind necessary for WDI to complete the Modifications and to dispose of Waste at the Modified Site.
- (g) "Resolution" shall mean a Resolution of Support executed by the Township, substantially in the form of Exhibit A.

2. Effective Date.

This Agreement shall become effective upon the (i) adoption of the Resolution and (ii) the execution of this Agreement by both parties, and shall be in force and effect until such time as WDI no longer accepts Waste at the Landfill Site, including, but not limited to, the Modified Site or this Agreement is terminated in accordance with Section 8 below.

3. Township's Consent and Obligations.

- (a) The Township consents to be the host municipality for the Landfill Site for so long as the Landfill Site, including the Modified Site, remains operational and in compliance with all applicable laws and regulations. For the duration of WDI's efforts to obtain the Permits, the Township hereby agrees (i) to adopt the Resolution, (ii) to reasonably support and not to object to any WDI application for any Permits necessary to utilize the Modified Site, and (iii) to reasonably support and not object to any of WDI's efforts to fulfill any obligations that may be necessary in connection with the issuance of the Permits; provided, however, that the Township reserves the right to comment on any WDI submissions to the MDEQ to address any public safety concerns and/or take any action it determines necessary to safeguard the public health, safety and welfare of its residents in accordance with the procedures set forth in Section 3(b) below.
- (b) In the event the Township has concerns with any WDI submission to the MDEQ, including but not limited to concerns which relate to safety, environmental protection, operations, or engineering ("Township Concerns"), the Township will discuss such concerns with WDI prior to any action or communications with the MDEQ. The parties will work

together in good faith to resolve any such concerns. Further, the parties agree to raise and address concerns in a timely manner sufficient to enable Township comments to be submitted to the MDEQ prior to deadlines for public comment applicable to the Permits. In the event the Township Concerns cannot be resolved to the mutual satisfaction of the parties, WDI shall advise the Township which, if any, actions or communications with the MDEQ by the Township would result in WDI terminating the Agreement pursuant to Section 8(a).

- (c) It is expressly agreed that the adoption of the Resolution is made in express and direct reliance on the terms of this Agreement and would not be adopted without agreement to its terms. In the event WDI does not execute this Agreement or abandons its efforts to obtain the necessary Permits to accept Waste at the Modified Site, the Resolution shall automatically become null and void without further action by the Township.

4. Compensation.

- (a) Compensation prior to the Permit Date. Prior to the Permit Date, WDI shall, at its own cost and expense:
 - (i) no later than December 31, 2010, regrade the parking lot and surrounding area at the baseball diamonds to improve drainage substantially in the manner set forth on the attached Exhibit C;
 - (ii) no later than December 31, 2010, construct restroom facilities and if necessary install or upgrade a sanitary sewer connection on the Adjacent Property substantially in the manner set forth on the attached Exhibit C;
 - (iii) no later than December 31, 2010, pave the parking lot adjacent to such baseball diamonds substantially in the manner set forth on the attached Exhibit C;
 - (iv) no later than December 31, 2010, construct a pavilion at the baseball diamonds substantially in the manner set forth on the attached Exhibit C;
 - (v) no later than December 31, 2010, construct a playscape on the Adjacent Property at the baseball diamonds substantially in the manner set forth on the attached Exhibit C;
 - (vi) no later than December 31, 2010, install a sign with a brick base at the entrance to the baseball diamonds substantially in the manner set forth on the attached Exhibit C;
 - (vii) no later than December 31, 2010, construct asphalt walking paths

around the baseball diamonds substantially in the manner set forth on the attached Exhibit C;

- (viii) no later than December 31, 2010, install benches along such walking paths at the baseball diamonds substantially in the manner set forth on the attached Exhibit C;
- (ix) no later than December 31, 2010, plant trees around the baseball diamonds substantially in the manner set forth on the attached Exhibit C;
- (x) no later than December 31, 2009, plant trees on the property at the Southwest corner of the intersection of Beck Road and Tyler Road, subject to approval by Willow Run Airport and other regulatory authorities as may apply, substantially in the manner set forth on the attached Exhibit C; or other suitable location as determined by the Township.
- (xi) no later than December 31, 2009, plant 24 trees at Van Buren Park substantially in the manner set forth on the attached Exhibit C;
- (xii) reimburse the Township for the cost of review of WDI's landfill construction permit application by the Township's consultant up to an amount not to exceed Five Thousand Dollars (\$5,000).

Notwithstanding anything in this Agreement to the contrary, in no event shall the cost of the improvements set forth in subparagraphs (i)-(xi) above (the "Pre-Permit Construction") exceed \$520,000. Subject to the preceding sentence, the proposed improvements are listed in order of priority and Exhibit C may be modified by mutual consent of the parties.

- (b) Building Codes and Warranties. In completing the Pre-Permit Construction, WDI shall adhere to all local, state and federal laws and regulations (including but not limited to the Michigan Building Code), provide a minimum one (1) year warranty on all plant materials, and provide a one (1) year warranty on building code compliance with respect to all other improvements set forth in subparagraphs (i) – (xi) above.
- (c) Permit Applications. The Township hereby agrees to reasonably cooperate with WDI in WDI's efforts to obtain permits applicable to the Pre-Permit Construction or Post-Permit Construction (as defined below).
- (d) Tree Mitigation. The Township acknowledges and agrees that completion of subparagraphs (i), (ii), and (ix)-(xi) of the Pre-Permit Construction satisfies all WDI tree mitigation obligations of any kind or nature associated with the clearance of the Modified Site.
- (e) Compensation Subsequent to the Permit Date. In the event that WDI

receives the Permits, WDI shall perform the following obligations.

- (i) Beginning on the Permit Date, which is currently estimated to be October, 2010, WDI shall pay to the Township, within thirty (30) days of the end of each calendar quarter following the Permit Date, a royalty (the "Royalty") consisting of (i) \$1.65 per Gate Ton of Waste received and disposed of at the Landfill Site, including the Modified Site in the previous quarter; and (ii) \$1.65 per Cubic Yard of Waste received and disposed of at the Landfill Site, including the Modified Site in that previous quarter, provided, that Township shall allocate the revenue from at least \$0.10 per Gate Ton of Waste and \$0.10 per Cubic Yard of Waste to its Department of Public Safety. In addition, the Township shall allocate the revenue from at least \$0.05 per Gate Ton of Waste and a \$0.05 per Cubic Yard of Waste to environmental projects and programs. Late payments shall bear interest at the prime rate being charged by Bank of America.

The Royalty and the Minimum Annual Royalty (as defined below) shall increase annually commencing on the first anniversary of the Permit Date consistent with any rise in the consumer price index for CPI-U (all urban customers) for the Detroit-Ann Arbor-Flint, MI CMSA over the same time period. For purposes of this calculation, the base year shall be the price index published in the month and year in which the Permit Date takes place. In addition, the Royalties shall be reduced by the amount of all charges, if any, levied on the receipt, handling, or disposal of Waste which WDI must pay and which are received by the Township ("levied amounts"). WDI shall confirm in writing to the Township the total of all such levied amounts for each calendar quarter and shall deduct such amounts from the Royalties paid quarterly to the township under this Section 4(e). WDI guarantees the annual Royalties to the Township shall not be less than Three Hundred Twenty Five Thousand (\$325,000.00) Dollars (the "Minimum Annual Royalty") regardless of the Gate Tons or Gate Yards received; provided that in the event WDI is substantially prohibited from accepting Waste at any time after the Permit Date for reasons outside its control, including but not limited to orders of governmental authority (including court orders), regulatory action, acts of war (declared or undeclared), insurrection, terrorism, rebellion or sabotage, civil disturbances, strikes of a duration of at least two consecutive weeks, actions of the elements, or unavailability of adequate insurance, the Minimum Annual Royalty shall not apply to the time period of such interruption, and the Minimum Annual Royalty shall be prorated on the basis of a 365 calendar day year for that portion of the calendar year prior to and

subsequent to such interruption.

In the event that in any calendar year, the Minimum Annual Royalty exceeds the amount that would otherwise be due to the Township based on the Gate Tons and Gate Yards received in such calendar year, the amount of such excess (the "Shortfall Amount") may be set off against the amount by which the Royalties exceed the Minimum Annual Royalties in subsequent years until the Shortfall Amount is fully utilized. Examples of such calculations are set forth on the attached Exhibit E.

In the event WDI does not accept Waste at any time after the Permit Date for a period of 365 consecutive days for any reason whatsoever, the Minimum Annual Royalty shall not apply to such time period, and shall be prorated on the basis of a 365 calendar day year for that portion of the calendar year prior to and subsequent to such interruption.

The Minimum Annual Royalty applicable to the balance of the first calendar year in which the Permit is granted and the last calendar year in which WDI accepts Waste shall be prorated on the basis of a 365 calendar day year.

If the above CPI is discontinued, a mutually agreeable replacement shall be selected.

- (ii) Upon receipt of the Permit, WDI shall lease the property designated as Lot B on the attached Exhibit B to the Township at an annual rate of one dollar (\$1) for a term of ninety-nine years. The Township may record a memorandum of lease. Such lease shall not permit the Township to utilize the property for any purpose other than for public recreational use or public recreational purposes, with the exception that the Shooting Range may continue its current use of training by Township public safety personnel, but if its current use is discontinued, the Shooting Range shall not be used for any purpose other than public recreational use or public recreational purposes.
- (iii) Within 365 days of the Permit Date, WDI shall construct a training facility at the shooting range on the Adjacent Property substantially in the manner set forth on Exhibit D. WDI shall, subject to the cost limitation set forth below, at its own expense bring a waterline to and provide sanitary sewage facilities reasonably acceptable to the Township for the training facility. WDI warrants that the construction of the training facility shall comply with all applicable federal, state and local laws and regulations for a period of one (1) year.

- (iv) Consistent with its past practice, WDI shall designate one day in each calendar year on which Van Buren Township residents, upon proof of residence, may bring household hazardous waste of a type and nature WDI has accepted from residents on prior occasions, including but not limited to, cleaners, pesticides, electronic devices and chemicals to an area designated by WDI for disposal at the Landfill Site by WDI at no charge.
- (v) On at least a bi-annual basis, WDI shall conduct a mock emergency training exercise for the benefit of the Township's Department of Public Safety. Each party shall bear its own expenses with respect to such training.
- (vi) WDI shall, at its sole cost, provide a response and clean up team for any off site incident (e.g., waste spills) that occurs in the Township involving Waste shipments being transported to or from the Landfill Site. In addition, in the event the Township incurs any expenses related to any off site incident that occurs in the Township involving Waste shipments being transported to or from the Landfill Site, WDI shall reimburse the Township for reasonable equipment and personnel expenses documented and provided to WDI up to an amount not to exceed Twenty Thousand Dollars (\$20,000) per incident.

Notwithstanding anything in this Agreement to the contrary, in no event shall the cost of the improvements set forth on Exhibit D exceed \$150,000. Subject to the preceding sentence, Exhibit D may be modified by mutual consent of the parties.

- (f) The compensation set forth in Sections 4(a) and 4(e) above is to compensate the Township for its direct and indirect costs by reason of the siting of the Modified Site within the Township. The parties hereto do expressly recognize and acknowledge that such sums and/or services as may be payable or due from WDI to the Township hereunder are a fair and reasonable measure of compensation and do not constitute any form of exaction, tax or levy.

5. Compliance with Laws.

WDI shall comply with any and all applicable county, state and or federal laws, rules or regulations related to operation of the Landfill Site. The Landfill Site, including the Modifications, shall meet or exceed all applicable existing laws, rules or regulations. WDI shall operate the Modified Site in a manner protective of human health and environment.

6. Audit Rights.

The Township may retain, at its sole expense, an independent certified auditor, who is

reasonably acceptable to WDI, to verify (i) the amount of Waste disposed of at the Landfill Site in any calendar year, (ii) the levied amounts which are deducted from quarterly payments; and (iii) the calculation of the Royalty, Minimum Annual Royalty and/or Shortfall Amount in Section 4(e)(i).

After any calendar year, the auditor shall be granted access to WDI records pertaining to the matters to be verified, provided that the Township submits a written request for access to the WDI records within ninety (90) days after the end of that calendar year. The Township shall furnish a copy of any final audit report to WDI. The findings or conclusions of the auditor shall not be binding on the Township or WDI. In the event of any dispute as to the auditor's findings or conclusions (including number of Gate Yards, Gate Tons or monies due), then either WDI or Township may elect to have such dispute resolved by a binding arbitration. In such event, then WDI or Township shall notify the other in writing within ten (10) days of WDI's receipt of the Township's audit. Within ten (10) days after such notification of an election to arbitrate, WDI and Township shall each name one (1) arbitrator who shall jointly name a third arbitrator. All arbitration matters shall be concluded within thirty (30) days of the submission. The decision of the arbitration panel shall be in writing and shall be deemed to be final and binding when agreed upon by at least two (2) of the arbitration members. Such arbitration shall be fully binding upon Township and WDI. Arbitrators shall be qualified degreed accountants.

7. Township Access to the Landfill Site.

The Township, upon reasonable request, shall be entitled to receive monitoring report results. In addition, WDI agrees to (i) communicate with applicable Township authorities on environmental matters upon reasonable request, (ii) allow Township officials access to the Landfill Site during regular business hours, and (iii) allow the Township to witness monitoring events and inspect monitoring equipment, provided that WDI shall be under no obligation to inform the Township of any such monitoring event in advance. Each of subparagraphs (ii) and (iii) above shall be subject to reasonable notice from the Township and WDI's safety rules. All Township personnel present on the Landfill Site for any reason shall be accompanied by qualified WDI personnel. Furthermore, the parties agree to promptly advise each other of any citizen complaints or as soon as reasonably possible, but no later than twenty-four (24) hours of emergency situations at the Landfill Site that threaten human health or the environment.

8. Termination.

(a) Termination by WDI. Upon an event of termination as provided below, WDI shall no longer be bound by any provision of this Agreement, shall have no further duties or obligations hereunder or be subject to any term or condition hereunder, and shall not be liable for the breach of any provision of this Agreement. WDI may terminate this Agreement upon occurrence of any of the following:

- (i) WDI's abandonment of its efforts to obtain the Permits;
- (ii) closure of the Landfill Site;
- (iii) the Township fails to consult with WDI prior to communication with the MDEQ concerning the Permits or taking other action

regarding any Township Concerns in contravention of Section 3(b) above; or

- (iv) the Township materially breaches this Agreement in any other manner, provided that the Township shall have thirty (30) days to cure any such breach or actively pursue the cure of any such breach after receipt of written notice from WDI.

In addition, the parties expressly acknowledge and agree that the Township may comment following the procedure set forth in Section 3(b) above on any WDI submissions to the MDEQ to address any public safety concerns and/or take any action it determines necessary to safeguard the public health, safety and welfare of its residents without being in breach of this Agreement. However, in the event that WDI reasonably determines that any such comment or action frustrates WDI's efforts to obtain the Permits, WDI may terminate this Agreement. Upon such termination, neither party shall have any further duties or obligations hereunder or be subject to any term or condition hereunder, and shall not be liable for the breach of any provision of this Agreement

- (b) Termination by Township. Township shall not be bound by any provision of this Agreement, shall have no duties or obligations hereunder or be subject to any terms or condition hereunder, and shall not be liable for the breach of any provision of this Agreement, upon occurrence of any of the following:
 - (i) WDI's abandonment of its efforts to obtain the Permits;
 - (ii) WDI materially breaches this Agreement in any manner, provided that WDI shall have thirty (30) days to cure any such breach or actively pursue the cure of any such breach after receipt of written notice from the Township.

Prior to WDI's receipt of the Permits, WDI's or Township's right to terminate hereunder shall be the terminating party's sole remedy for any breach of this Agreement. Subsequent to WDI's receipt of the Permits, the right to terminate hereunder shall be in addition to all other legal or equitable remedies available to the non-breaching party, except that in no event shall the Township be liable to WDI for money damages of any kind or nature, either prior to or subsequent to issuance of the Permits and the Township will have no obligation to refund to WDI any monies or return any consideration to WDI received from WDI prior to the termination.

9. Notices.

All notices required or permitted under this Agreement shall be in writing and shall be delivered personally, by courier, or sent by certified registered mail (signature requested) to WDI or the Township at the addresses listed below:

If to WDI:

Wayne Disposal, Inc.
36255 Michigan Avenue
Wayne, MI 48184
Attention: President

With a copy to:
Honigman Miller Schwartz and Cohn, LLP
Attn: Patrick T. Duerr
2290 First National Building
660 Woodward Avenue
Detroit, MI 48226
Fax no. (313) 465-7363

If to Township:
Charter Township of Van Buren
46425 Tyler Road
Van Buren Township, MI 48111
Attention: Clerk

With a copy to:
Giarmarco, Mullins & Horton, P.C.
Attn: Patrick B. McCauley, Esq.
101 W. Big Beaver, 10th Floor
Troy, MI 48084
Fax no. (248) 457-7001

10. Waiver.

Waiver by either party of any term or provision of this Agreement shall not constitute a continuing waiver nor a waiver of any further or additional rights such party may hold under this Agreement.

11. Severability.

If any provision of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not in any way be affected or impaired.

12. Governing Law.

This Agreement shall be construed in accordance with the laws of the State of Michigan, without regard to such state's choice of law rules.

13. Entire Agreement.

This Agreement is the complete and exclusive statement between the parties relating to the subject matter of this Agreement, and supersedes all prior understandings, communications, or representations, either oral or written, between the parties. Any and all Exhibits referred to in

this Agreement are and shall be incorporated by reference herein. This Agreement shall be deemed to be mutually drafted by the parties and may not be modified or altered except by a written instrument duly executed by WDI and the Township.

14. Section Headings.

Section headings have been inserted in this Agreement for convenience of reference only and shall in no way modify or restrict any of the terms or provisions of this Agreement.

15. Assignment.

Neither party may assign this Agreement without the other party's written consent, which may not be unreasonably withheld. This Agreement shall bind and inure to the benefit of the parties to this Agreement and their respective successors and permitted assigns. This Agreement may not be relied upon by any third parties for their benefit.

16. Additional WDI Obligations.

In addition to the duties, responsibilities and obligations of WDI set forth herein, WDI shall also:

- (a) Provide to the Township a copy of all applications and plans related to the Permits submitted to or received from MDEQ prior to or concurrent with submission to MDEQ;
- (b) Comply with all applicable Township ordinances, rules and regulations which are not otherwise pre-empted, voided, or in conflict with any federal statutes or regulations or any rules, regulations, permits or approvals under Act 451; and
- (c) In the event of any environmental accident, notify the Township as soon as reasonably possible, but no later than twenty four (24) hours of the environmental accident, to act promptly and have in place emergency procedures to assure a minimization of any environmental damage or harm to the Township's natural assets or its citizens.
- (d) To the extent WDI is required by state law to mitigate wetlands in connection with the construction of the Modified Site, WDI will assess the viability of performing part of its mitigation responsibility within the Township. If such mitigation is viable and required, up to 50% of the mitigation will take place in the Township. In such event, WDI may donate to the Township the property in the Township on which such mitigation takes place, subject to mutual agreement of the parties. If such mitigation is required but not viable within the Township, the Township will support WDI's proposed mitigation plans outside the Township in accordance with Section 3 of this Agreement.
- (e) WDI shall direct all vehicles carrying Waste to the Landfill Site from I-94 to utilize the Rawsonville Road Exit, proceed north to the North I-94 Service Drive, then east to the Site entrance. In addition, all vehicles will

be instructed not to use Belleville Road when entering or exiting the Landfill Site. In the event that the Rawsonville Road exit is closed, alternate routes to and from the Landfill Site that avoid the Belleville Road exit off I-94 shall be provided to all Waste transporters.

- (f) WDI shall provide technical assistance and information to the Township for the development of an Emergency Notification System for possible events and/or accidents that could occur in the Township.
- (g) The Township or WDI may make modifications to the dugouts at the Baseball Fields. WDI shall provide financial or in-kind contributions for reasonable improvements to the dugouts at the baseball diamonds, subject to mutual agreement of the parties.
- (h) The roles and responsibilities of the former Citizens Involvement Council (CIC) shall be transferred to the Township Environmental Commission and WDI may be required by the Township to make presentations to the Commission regarding activities and any regulatory issues at the Landfill Site at least every six (6) months.

17. Recitals.

The Recitals set forth on the first page of this Agreement are incorporated into and are an integral part of this Agreement.

18. Delays.

Notwithstanding any specific dates set forth in this Agreement, if any delay in the processing or approval of the Permits occurs for any reason not attributable to a breach of this Agreement by WDI or the Township, neither party will be relieved of its obligations hereunder.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date first written above.

Wayne Disposal, Inc.

Charter Township of Van Buren

Title:

Paul D. White
Title: Supervisor

Date:

Date:

Title:

Leon Wright
Title: Clerk

EXHIBIT A

CHARTER TOWNSHIP OF VAN BUREN

RESOLUTION 2009-18

RESOLUTION OF SUPPORT

BE IT RESOLVED, by the Charter Township of Van Buren (the "Township"),

WHEREAS, Wayne Disposal, Inc. ("WDI") is the owner of a landfill site containing approximately 590 acres on the south side of Willow Run Airport, west of Beck Road, and north of I-94 (the "Site");

WHEREAS, WDI desires to utilize an additional parcel of approximately twenty (20) acres at the Site to construct and operate a landfill facility on the Site (the "Modified Facility"), to be regulated under Part 111 of Act 451 of the Natural Resources and Environmental Protection Act, Michigan Compiled Laws, Act 451 of 1994 as amended, and consistent with its current operations at the Site;

WHEREAS, the Modified Facility is more particularly described in the proposed construction plans and other documentation to be provided by WDI to the Township;

WHEREAS, WDI intends to apply to the Michigan Department of Environmental Quality ("MDEQ") for a modification to its existing environmental permit, and may also apply for additional regulatory approvals (the "Approvals");

WHEREAS, WDI intends to secure the support of the Township in obtaining the Approvals and in hosting the Landfill Site, and constructing the Modified Facility;

THEREFORE, BE IT RESOLVED, that the Township consents to be the host municipality for the Landfill Site (including the Modified Facility) subject to execution of the Host Community Agreement by and between WDI and the Township (the "Host Community Agreement");

BE IT FURTHER RESOLVED, that in consideration of the terms and conditions contained within the Host Community Agreement, the Township hereby supports WDI in its efforts to have the MDEQ and all other applicable regulatory agencies issue the Approvals;

BE IT FURTHER RESOLVED, that the Board of Trustees of the Township hereby authorizes the Supervisor and Clerk to execute the Host Community Agreement, to which this Resolution is attached as Exhibit "A"; and further that the Host Community Agreement shall be effective upon execution by the Supervisor and Clerk.

YEAS:

NAYS:

ABSENT:

I hereby certify that the foregoing resolution was adopted by the Board of Trustees, Charter Township of Van Buren, on August 18, 2009 by unanimous action of said Board.

Attest

By: Leon Wright

Clerk, Charter Township of Van Buren

EXHIBIT C

Pre-Permit Construction

EXHIBIT D

Post-Permit Construction

EXHIBIT E

Minimum Annual Royalty Calculations

The following are hypothetical examples of the Royalties due the Township under the assumptions set forth below (for simplicity, only Gate Tons are considered and the CPI increase to the Minimum Annual Royalty required by Section 4(e)(i) is not included).

Year 1: WDI disposes of 181,819 Gate Tons of Waste

Royalty = $181,819 \times \$1.65 = \$300,000$

WDI pays Township Minimum Annual Royalty of \$325,000.

Shortfall Amount = \$25,000

Year 2: WDI disposes of 206,061 Gate Tons of Waste

Royalty = $206,061 \times \$1.65 = \$340,000$

WDI pays Township \$325,000 (because entire Shortfall Amount cannot be set off against amount by which Royalty exceeds the Minimum Annual Royalty without dipping below the Minimum Annual Royalty)

Shortfall Amount available for set off in subsequent years = \$10,000 (previous Shortfall Amount reduced by amount set off in Year 2)

Year 3: WDI disposes of 212,121 Gate Tons of Waste

Royalty = $212,121 \times \$1.65 = \$350,000$

WDI pays Township \$340,000

Year 4: WDI disposes of 181,819 Gate Tons of Waste

Royalty = $181,819 \times \$1.65 = \$300,000$

WDI pays Township \$325,000 (Minimum Annual Royalty)

Shortfall Amount = \$25,000

Year 5: WDI disposes of 212,121 Gate Tons of Waste

Royalty = $212,121 \times \$1.65 = \$350,000$

WDI pays Township \$325,000



APPENDIX C

SEMOG COMMUNITY REPORT



SEMCOG ... Equipping local government leaders for the future

Southeast Michigan Council of Governments

Community Profiles

Charter Township Of Van Buren

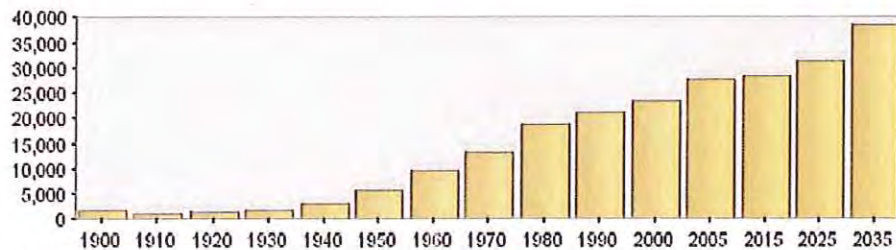
46425 Tyler Rd
Belleville, MI 48111-5217
<http://www.vanburen-mi.org/>

SEMCOG
Member

Estimated Population: 27,377
Area: 36.1 square miles

People Economy & Jobs Housing Transportation Land Use Reference Map

Population Forecast



Source: U.S. Census Bureau and SEMCOG 2035 Forecast.

☐ - Move cursor over chart to view population numbers

Population and Households	Census 2000	SEMCOG Jul 2010	Change 2000-2010	SEMCOG 2035
Total Population	23,559	27,377	3,818	38,680
Group Quarters Population	82	82	0	92
Household Population	23,477	27,295	3,818	38,588
Housing Units	10,417	13,103	2,686	-
Households (Occupied Housing Units)	9,867	11,836	1,969	16,931
Residential Vacancy Rate	5.3%	9.7%	4.4%	-
Average Household Size	2.38	2.31	-0.07	2.28

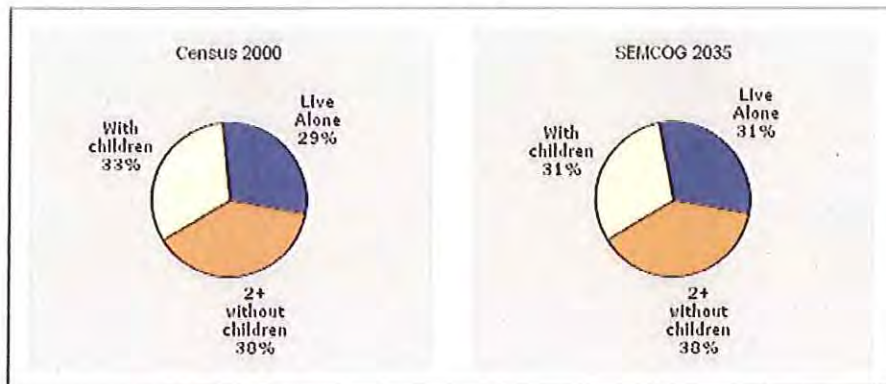
Annual Average

Components of Population Change	Census 1990-1999	SEMCOG 2000-2008
Natural Increase (Births - Deaths)	80	80
Births	182	186
Deaths	103	106
Net Migration (Movement In - Movement Out)	175	415
Population Change (Natural Increase + Net Migration)	255	496

Source: Michigan Department of Community Health Vital Statistics, U.S. Census Bureau, and SEMCOG.

Demographics

Household Types



Household Types	Census 2000		SEMCOG 2035		Change 2000-2035
Total Households	9,867	-	16,931	-	7,064
With seniors 65+	1,153	12%	6,395	38%	5,242
Without seniors	8,714	88%	10,536	62%	1,822
With children	3,219	33%	5,236	31%	2,017
Without children	6,648	67%	11,695	69%	5,047
Two or more Persons	3,780	38%	6,480	38%	2,700
Live Alone	2,868	29%	5,215	31%	2,347
Seniors 65+	355	4%	2,701	16%	2,346
Under 65	2,513	25%	2,514	15%	1

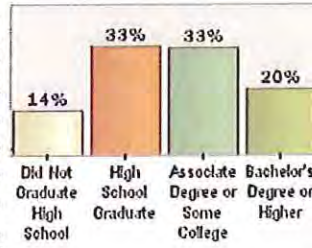
Age Group	Census 2000	SEMCOG 2035	Change 2000-2035	Population by Age Group
65+	1,551	8,329	6,778	
35-64	9,075	12,753	3,678	
18-34	7,300	7,776	476	
5-17	3,949	6,856	2,907	
Under 5	1,684	2,966	1,282	

Senior and Youth Population	Census 2000		SEMCOG 2035		Change 2000-2035
65 and over	1,551	6.6%	8,329	21.5%	6,778
Under 18	5,633	23.9%	9,822	25.4%	4,189
5 to 17	3,949	16.8%	6,856	17.7%	2,907
Under 5	1,684	7.1%	2,966	7.7%	1,282

Note: Population by age changes over time because of the aging of people into older age groups, the movement of people, and the occurrence of births and deaths.

Race and Hispanic Origin	Census 1990		Census 2000		Percentage Point Chg 1990-2000
Non-Hispanic	20,688	98.5%	23,030	97.8%	-0.7%
White	18,771	89.3%	19,135	81.2%	-8.1%
Black	1,595	7.6%	2,820	12.0%	4.4%
Asian or Pacific Islander	202	1.0%	447	1.9%	0.9%
Other	120	0.6%	628	2.7%	2.1%
Hispanic	322	1.5%	529	2.2%	0.7%
Total Population	21,010	100.0%	23,559	100.0%	0.0%

Highest Level of Education*	Census 2000	Percentage Point Chg 1990-2000
Graduate / Professional Degree	7.1%	2.7%
Bachelor's Degree	13.0%	1.2%
Associate Degree	6.5%	-0.2%
Some College, No Degree	26.3%	3.6%
High School Graduate	33.3%	1.3%
Did Not Graduate High School	13.8%	-8.6%



* Population age 25 and over

Source Data

[SEMCOG - Detailed Data](#)

[Michigan Department of Community Health - Vital Statistics](#)

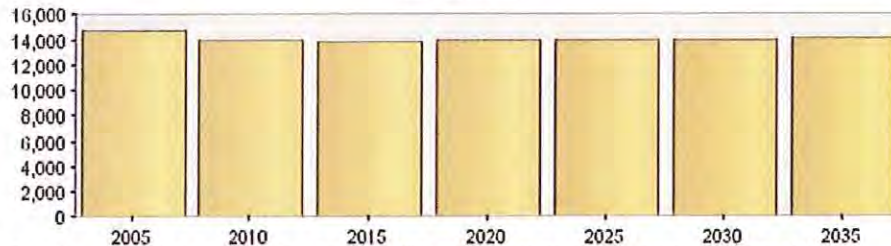
[U.S. Census Bureau - American FactFinder](#)

Note: All SEMCOG employment numbers are by place-of-work and do not include Farming, Construction, or Military jobs. Some differences exist between Current Job Estimates and Forecasted Jobs. [Learn more](#)

Current Job Estimates by Industry	SEMCOG 2002	SEMCOG 2005	Change 2002-2005
Natural Resources & Mining	97	C	C
Manufacturing	2,901	2,432	-469
Wholesale Trade	740	821	81
Retail Trade	1,372	1,373	1
Transportation & Warehousing	562	785	223
Utilities	C	316	C
Information	C	0	C
Financial Activities	C	868	C
Professional, Scientific, & Technical Services	53	2,598	2,545
Management of Companies & Enterprises	0	556	556
Administrative, Support, & Waste Services	552	C	C
Education Services	368	378	10
Health Care & Social Assistance	204	247	43
Leisure & Hospitality	940	797	-143
Other Services	146	101	-45
Public Administration	280	285	5
Total	9,428	12,498	3,070

Note: "C" indicates data blocked due to confidentiality concerns of ES-202 files.

Job Forecast



If any five-year interval employment numbers from 2005-2035 are not shown, the numbers were blocked for confidentiality reasons.

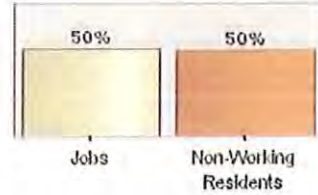
Source: SEMCOG 2035 Forecast.

- Move cursor over chart to view employment numbers

Forecasted Jobs by Industry	SEMCOG 2005	SEMCOG 2035	Change 2005-2035
Natural Resources & Mining	C	C	C
Manufacturing	2,355	1,042	-1,313
Wholesale Trade	939	631	-308
Retail Trade	1,825	1,234	-591
Transportation & Warehousing	917	978	61
Utilities	245	121	-124
Information	C	C	C
Financial Activities	1,421	1,242	-179
Professional, Scientific, & Technical Services	3,005	3,399	394
Management of Companies & Enterprises	505	370	-135
Administrative, Support, & Waste Services	C	C	C
Education Services	419	445	26
Health Care & Social Assistance	352	1,095	743
Leisure & Hospitality	1,009	1,103	94
Other Services	275	263	-12
Public Administration	301	247	-54
Total	14,794	14,039	-755

Note: "C" indicates data blocked due to confidentiality concerns of ES-202 files.

Daytime Population	SEMOG and Census 2000	Change 1990-2000
Jobs	10,611	4,904
Non-Working Residents	10,517	473
Age 15 and under	5,056	140
Not in labor force	4,864	478
Unemployed	597	-145
Daytime Population	21,128	5,377



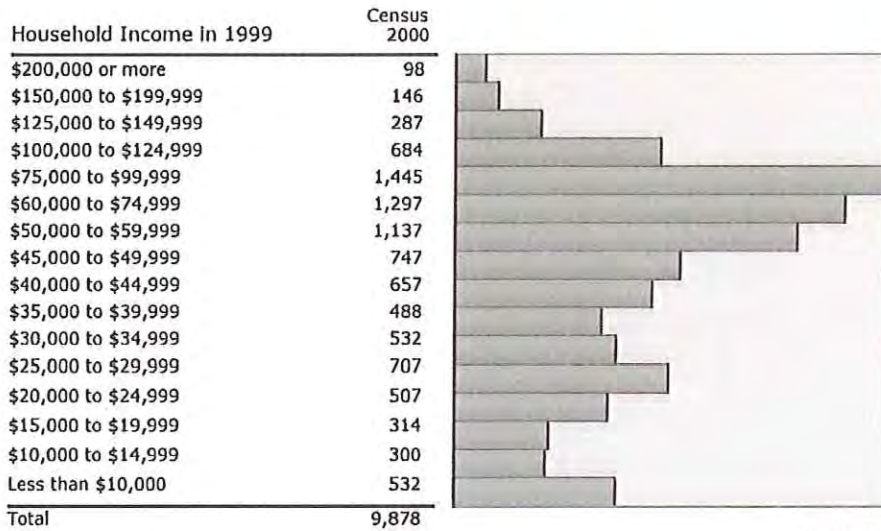
Note: The number of residents attending school outside Van Buren Twp is not available. Likewise, the number of students commuting into Van Buren Twp to attend school is also not known.

Where Workers Commute From *		Census 2000	
		Workers	Percent
1	Van Buren Township	1,536	15.9%
2	Detroit	975	10.1%
3	Ypsilanti Township	592	6.1%
4	Sumpter Township	511	5.3%
5	Westland	471	4.9%
6	Canton Township	422	4.4%
7	Romulus	351	3.6%
8	Taylor	307	3.2%
9	Belleville	300	3.1%
10	Lincoln Park	198	2.0%
-	Elsewhere	4,022	41.5%
* Workers, age 16 and over, employed in Van Buren Twp		9,685	100.0%

Resident Population

Where Residents Work *		Census 2000	
		Workers	Percent
1	Van Buren Township	1,536	12.3%
2	Ann Arbor	1,142	9.2%
3	Romulus	1,092	8.8%
4	Detroit	828	6.6%
5	Dearborn	702	5.6%
6	Ypsilanti Township	687	5.5%
7	Canton Township	622	5.0%
8	Livonia	507	4.1%
9	Belleville	481	3.9%
10	Wayne	474	3.8%
-	Elsewhere	4,382	35.2%
* Workers, age 16 and over, residing in Van Buren Twp		12,453	100.0%

Income	Census 2000	Change 1990-2000	Percent Change 1990-2000
Median Household Income (in 1999 dollars)	\$ 50,984	\$ 78	0.2%
Per Capita Income (in 1999 dollars)	\$ 24,820	\$ 3,667	17.3%



Poverty	Census 1990		Census 2000		Percentage Point Chg 1990-2000
Persons in Poverty	1,482	7.1%	1,468	6.2%	-0.8%
Households in Poverty	572	7.3%	589	6.0%	-1.3%

Source Data

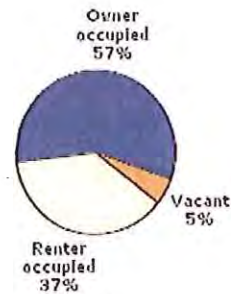
[SEMCOG - Detailed Data](#)

[U.S. Census Bureau - American FactFinder](#)

[U.S. Census Bureau - MCD/County Worker Flow Data](#)

Housing Type	Census 1990	Census 2000	Change 1990-2000	New Units Permitted 2000-2010
Single Family Detached	3,961	4,636	675	2,244
Duplex	63	67	4	0
Townhouse / Attached Condo	403	385	-18	555
Multi-Unit Apartment	2,728	3,823	1,095	0
Mobile Home / Manufactured Housing	1,234	1,504	270	0
Other	43	7	-36	-
Total	8,432	10,422	1,990	2,799
Units Demolished				- 55
Net (Total Permitted Units - Units Demolished)				2,744

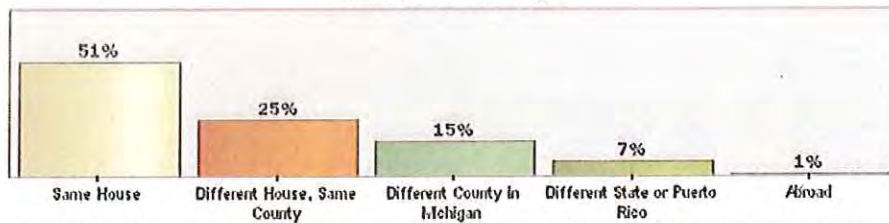
Housing Tenure	Census 2000	Change 1990-2000
Owner Occupied	5,980	948
Median housing value (in 1999 dollars)	\$ 143,100	\$ 50,151
Renter Occupied	3,887	1,031
Median gross rent (in 1999 dollars)	\$ 693	\$ -54
Vacant	550	6
Seasonal or migrant	94	63
Other vacant units	456	-57
Total Housing Units	10,417	1,985



Housing Value in 1999	Census 2000
\$1,000,000 or more	6
\$500,000 to \$999,999	11
\$300,000 to \$499,999	276
\$250,000 to \$299,999	188
\$200,000 to \$249,999	565
\$175,000 to \$199,999	444
\$150,000 to \$174,999	472
\$125,000 to \$149,999	746
\$100,000 to \$124,999	753
\$80,000 to \$99,999	529
\$60,000 to \$79,999	157
\$40,000 to \$59,999	128
\$30,000 to \$39,999	46
\$20,000 to \$29,999	9
\$10,000 to \$19,999	8
Less than \$10,000	0
Specified Owner-Occupied Units	4,338



Residence 5 Years Ago *



* This table represents persons, age 5 and over, living in Van Buren Twp in 2000. The table does not represent persons who moved out of Van Buren Twp from 1995 to 2000.

Source Data

[SEMCOG - Detailed Data](#)

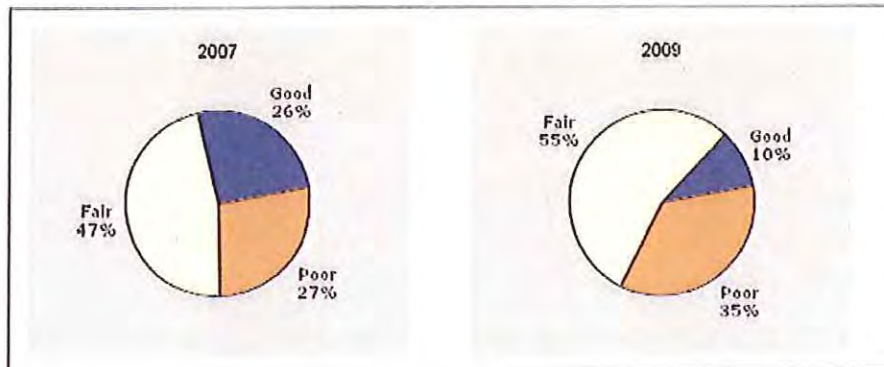
[U.S. Census Bureau - American FactFinder](#)

Roads & Bridges

Roads

Miles of public road (including boundary roads): 213

Pavement Condition (in Lane Miles)



Note: Poor pavements are generally in need of rehabilitation or full reconstruction to return to good condition. Fair pavements are in need of capital preventive maintenance to avoid deteriorating to the poor classification. Good pavements generally receive only routine maintenance, such as street sweeping and snow removal, until they deteriorate to the fair condition.

Bridge Status	2007		2008		2009		Percentage Point Chg 2007-2009
Open	16	100.0%	16	100.0%	16	100.0%	0.0%
Open with restrictions	0	0.0%	0	0.0%	0	0.0%	0.0%
Closed*	0	0.0%	0	0.0%	0	0.0%	0.0%
Total bridges	16	100.0%	16	100.0%	16	100.0%	0.0%

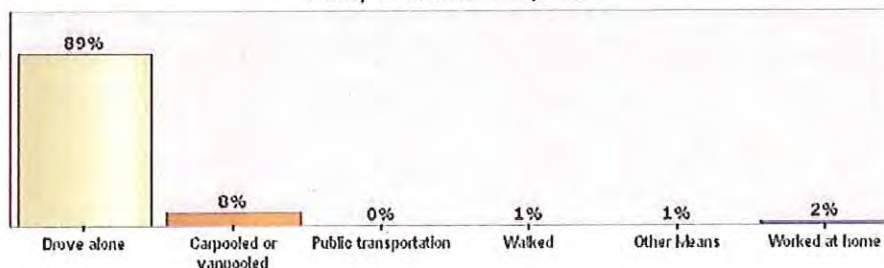
* Bridges may be closed because of new construction or failed condition.

Deficient Bridges	2007		2008		2009		Percentage Point Chg 2007-2009
	1	6.3%	1	6.3%	1	6.3%	0.0%

Note: A bridge is considered deficient if it is *structurally deficient* (in poor shape and unable to carry the load for which it was designed) or *functionally obsolete* (in good physical condition but unable to support current or future demands, for example, being too narrow to accommodate truck traffic).

Travel

Transportation to Work, 2000 *



* Resident workers age 16 and over

Transportation to Work	Census 1990		Census 2000		Percentage Point Chg 1990-2000
Drove Alone	9,435	88.6%	11,259	89.0%	0.4%
Carpooled or Vanpooled	962	9.0%	954	7.5%	-1.5%
Public Transportation	9	0.1%	12	0.1%	0.0%
Walked	57	0.5%	102	0.8%	0.3%
Other Means	43	0.4%	68	0.5%	0.1%
Worked at Home	145	1.4%	258	2.0%	0.7%
Resident workers age 16 and over	10,651	100.0%	12,653	100.0%	0.0%

Mean Travel Time To Work	Census 1990	Census 2000	Change 1990-2000
For residents age 16 and over who worked outside the home	22.1 minutes	24.0 minutes	1.9 minutes

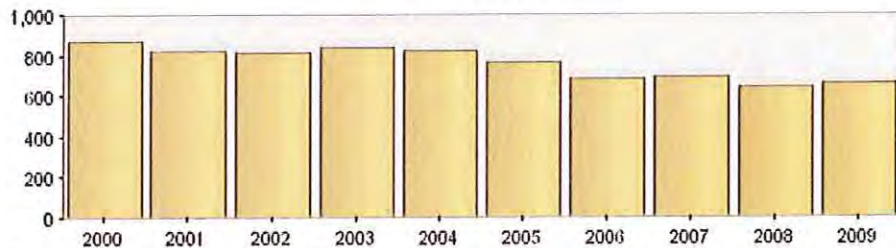
Transit

Public Transportation:

[Ann Arbor Transportation Authority \(AATA\)](#)
[September Days Senior Center](#)

Safety

Crashes, 2000-2009



Source: Michigan Department of State Police,
Criminal Justice Information Center, and SEMCOG.

- Move cursor over chart to view crash counts

Crash Severity	2005	2006	2007	2008	2009	Percent of Crashes 2005-2009
Fatal	2	5	7	5	1	0.6%
Incapacitating Injury	19	20	34	24	21	3.4%
Other Injury	172	131	152	142	144	21.5%
Property Damage Only	570	525	499	476	493	74.5%
Total Crashes	763	681	692	647	659	100.0%

High-Frequency Crash Segments

Local Rank	County Rank	Region Rank	Segment	From Road - To Road	Annual Avg 2005-2009
1	17	82	Belleville Rd	North Service Rd - Tyler Rd	55.8
2	72	268	Rawsonville Rd	Bemis Rd E - Textile Rd	39.0
3	239	876	Sumpter Rd	Bemis Rd - Main St	23.2
4	350	1,242	Belleville Rd	Tyler Rd - Ecorse Rd	19.4
5	384	1,344	E I 94	Ramp - Rawsonville/E I 94 - Ramp - E I 94/Belleville	18.6
6	457	1,550	North Service Rd	Belleville Rd - Haggerty Rd	17.0
7	475	1,615	W I 94	Ramp - W I 94/Rawsonville - Ramp - S Belleville/W I 94	16.6
8	509	1,724	Rawsonville Rd	Textile Rd - Grove St	16.0
8	509	1,724	Belleville Rd	Quirk Rd - I 94 Service Drive S	16.0
10	725	2,347	Ecorse Rd	Ramp - Ecorse/N I 275 - Hannan Rd	13.2

Note: Segments are ranked by the number of reported crashes, which does not take into account traffic volume.

Other Transportation Facilities

System Airports:

[Willow Run Airport](#)

Corridor Studies

[Ann Arbor-Detroit Regional Rail Project](#)

Source Data

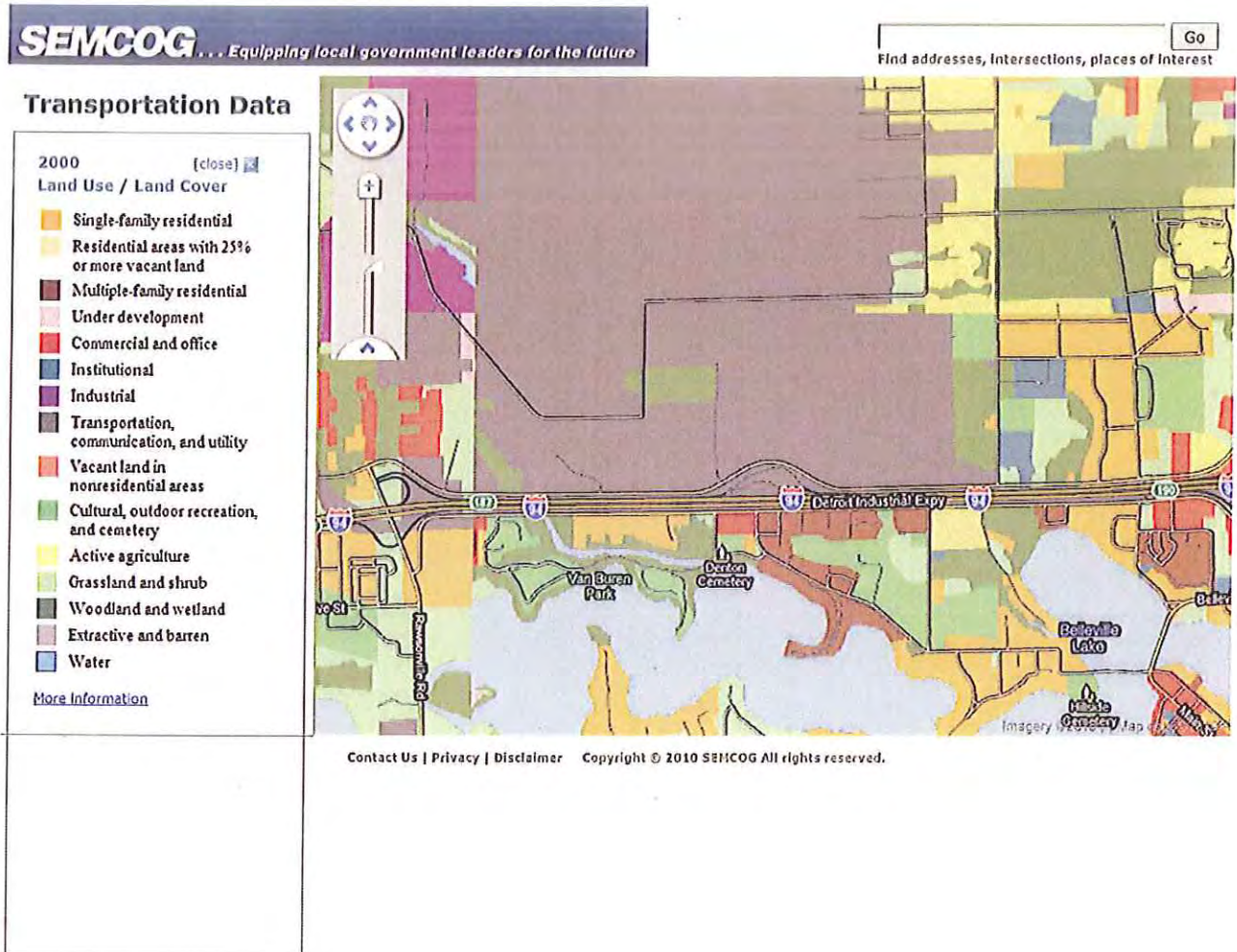
[SEMCOG - Detailed Data](#)

[U.S. Census Bureau - American FactFinder](#)

Land Use / Land Cover (in acres)	SEMCOG 2000		Change 1990-2000	
Residential	4,368	18.9%	402	10.1%
Single-Family	4,066	17.6%	336	9.0%
Multiple-Family	302	1.3%	66	28.0%
Non-Residential	5,081	22.0%	659	14.9%
Commercial and Office	275	1.2%	58	26.6%
Industrial	747	3.2%	292	64.3%
Institutional	192	0.8%	-41	-17.7%
Transportation, Communication, and Utility	3,205	13.9%	236	7.9%
Cultural, Outdoor Recreation, and Cemetery	662	2.9%	114	20.9%
Under Development	777	3.4%	750	2,750.9%
Active Agriculture	4,473	19.4%	-1,850	-29.3%
Grassland and Shrub	2,466	10.7%	-135	-5.2%
Woodland and Wetland	4,590	19.9%	166	3.8%
Extractive and Barren	0	0.0%	0	-
Water	1,325	5.7%	9	0.7%
Total Acres	23,080	100.0%	0	0.0%

Source Data

[SEMCOG - Detailed Data](#)





APPENDIX D

KING & MACGREGOR TREE SURVEY



King & MacGregor
Environmental
Inc.

October 30, 2008

Sent Via U.S. Mail and Email

Mr. Kerry Durnen, P.E.
Director of Operations
Wayne Disposal, Inc.
49350 N. I-94 Service Drive
Belleville, Michigan 48111

Re: Dead Tree Survey Report within the 21.5-Acre Township Woodland
T3S, R8E, Section 18, Van Buren Township, Wayne County, Michigan

Dear Mr. Durnen:

At your request, staff from our office investigated an approximately 21.5-acre woodlot on the west side of Old Denton Road, north of Interstate 94 in Van Buren Township, Wayne County, Michigan (see Figure 1). The purpose of our work was to inventory dead and dying trees that are of a species and size, and growing in a location that might require replacement or relocation if removed under Section 4.45.E of the Van Buren Township Zoning Ordinance (commonly referred to as the Woodland and Tree Preservation Ordinance).

The Township Ordinance requires a tree removal permit for the following activities:

1. "Remove, transplant, damage, or destroy any tree or similar woody vegetation of any D.B.H. [diameter at breast height] in a woodland
2. Remove, transplant, damage or destroy any tree or similar woody vegetation of five inches D.B.H. or greater which is not located in a woodland
3. Conduct any land-clearing or grubbing activities within a woodland area."

The site in question appears to be listed on Van Buren Township map of regulated woodlands (see Figure 2). Therefore it is our opinion that regulated activities 1 and 3 listed above would likely apply to all trees growing on the subject site.

The Township Ordinance does provides an exemption to the requirements of the Ordinance for "the removal or trimming of dead, diseased or damaged trees...provided that the damage resulted from an accident or non-human cause..." To that end, we offer the following observations to document trees that, in our opinion, can reasonably be excluded from the requirements of the Van Buren Township Ordinance as they are dead, diseased and/or dying:

On-site inspections occurred on September 4, September 10, 2008 and October 21, 2008 under the direction of a Certified Arborist. The condition of trees five-inches and greater D.B.H. was examined using the International Society of Arboricultural Health Ratings, 9th Edition:

40595 Koppemick Rd.
Canton, MI 48187
Phone: 734/354-0594
Fax: 734/354-0593

Other Michigan Offices:
Grand Rapids
East Lansing
Traverse City
St. Clair Shores

e-mail: kmac@king-macgregor.com

Mr. Kerry Durnen
Wayne Disposal – Dead Tree Survey

October 30, 2008
Page 2

Condition based on the International Society of Arboriculture Health Ratings, 9th Edition	
Excellent:	Trees in this class are judged to be exceptional trees and possess the best qualities of the species. All have excellent form and very minor maintenance problems and are growing in a location which will enable them to achieve full mature shape.
Good:	Trees in this class are judged to be high-quality trees with decent crown shape and little to no dead limbs or insect activity.
Fair:	These trees are in general decent health, which may be brought into better condition with better maintenance. They have few dead limbs, limited insect or disease activity, or slight nutritional deficiencies.
Poor:	Most trees in this group have the following problems: large dead limbs, with as much as one-third (1/3) of the tree already dead; large cavities; drastic deformities; girdling roots; severe disease problems; or restricted growing spaces.
Very Poor:	Trees in this group are extremely weak with irreversible problems such as severe decline in health, structural degradation, lethal disease or insect infestation with no hope for survival. Trees in this group will have to be removed in the near future and may pose hazardous situations.
Dead:	Trees in this group are dead, potentially hazardous and should be removed.

Dead and very poor condition trees were identified using a variety of cues: all work was conducted prior to the completion of fall leaf drop, so the lack of leaves was a primary diagnostic tool. Those trees lacking leaves were subsequently observed for other signs such as sloughing bark, the lack of fine branching, or signs of disease (e.g. the distinctive "D-shaped" Emerald Ash Borer exit holes).

Those standing trees determined to be very poor and dead were marked in the field by painting an identification number on the south side of the trunk. The species of each tree was identified (where possible) and recorded (see Appendix A). Dead trees that had fallen to the ground were not recorded. A total of 643 trees were marked.

In addition, an approximately 2.9-acre area in the northeast corner of the site was found to contain nearly 100 percent dead trees. These trees were not individually painted; rather the trees defining the boundary of that area were painted with "DZ" (dead tree zone) and those boundary trees were GPS located. The boundary of the "dead tree zone" is shown on Figure 3.

The likely cause of death or decline was noted (when evident from a visual inspection). Many of the dead and very poor trees are of species with known, prolific diseases. American and Slippery Elm (146 trees total) were likely affected by Dutch Elm disease, whereas White Ash and Red Ash (295 trees total) were likely affected by Emerald Ash Borer. Other trees appeared to be dead or in decline from saturated soils to standing water during the growing season. However, in no instances did we note dead or dying trees with signs of intentional efforts to kill trees.

We trust that this information is helpful in your future planning. Please contact us at your convenience if you should have any further questions.

Sincerely,



King & MacGregor Environmental, Inc.
Matt Stone-Palmquist, RLA, CA
ISA Certified Arborist #MI-3880A

Enclosures



Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
1	Ulmus pumila	Siberian Elm	Very Poor	50% canopy dead
2	Fraxinus pensylvanica	Red Ash	Very Poor	EAB signs
3	Ulmus americana	American Elm	Dead	
4	Fraxinus pensylvanica	Red Ash	Very Poor	EAB signs
5	Fraxinus pensylvanica	Red Ash	Dead	
6	Fraxinus pensylvanica	Red Ash	Very Poor	EAB signs
7	Fraxinus pensylvanica	Red Ash	Very Poor	EAB signs
8	Ulmus americana	American Elm	Dead	
9	Fraxinus pensylvanica	Red Ash	Dead	
10	Fraxinus pensylvanica	Red Ash	Dead	
11	Fraxinus pensylvanica	Red Ash	Dead	
12	Sassafras albidum	Sassafras	Dead	
13	Sassafras albidum	Sassafras	Dead	
14	Sassafras albidum	Sassafras	Dead	
15	Fraxinus pensylvanica	Red Ash	Dead	
16	Fraxinus pensylvanica	Red Ash	Dead	
17	Ulmus americana	American Elm	Dead	
18	Ulmus americana	American Elm	Dead	
19	Rhamnus cathartica	Common Buckthorn	Dead	
20	Ulmus americana	American Elm	Dead	
21	Ulmus americana	American Elm	Dead	
22	Ulmus americana	American Elm	Dead	
23	Ulmus americana	American Elm	Dead	
24	Acer saccharinum	Silver Maple	Very Poor	50% canopy dead, major heart rot
25	Ulmus americana	American Elm	Dead	
26	Ulmus americana	American Elm	Dead	
27	Ulmus americana	American Elm	Dead	
28	Sassafras albidum	Sassafras	Dead	
29	Fraxinus pensylvanica	Red Ash	Dead	
30	Fraxinus pensylvanica	Red Ash	Dead	
31	Unknown	Unknown	Dead	
32	Fraxinus pensylvanica	Red Ash	Dead	
33	Ulmus rubra	Slippery Elm	Dead	
34	Ulmus rubra	Slippery Elm	Dead	
35	Ulmus rubra	Slippery Elm	Dead	
36	Ulmus americana	American Elm	Dead	
37	Ulmus rubra	Slippery Elm	Dead	
38	Ulmus rubra	Slippery Elm	Dead	
39	Quercus rubra	Red Oak	Dead	
40	Sassafras albidum	Sassafras	Dead	
41	Fraxinus pensylvanica	Red Ash	Dead	
42	Fraxinus pensylvanica	Red Ash	Dead	
43	Fraxinus pensylvanica	Red Ash	Dead	
44	Fraxinus pensylvanica	Red Ash	Dead	
45	Ulmus rubra	Slippery Elm	Dead	
46	Ulmus rubra	Slippery Elm	Dead	
47	Ulmus rubra	Slippery Elm	Dead	
48	Fraxinus pensylvanica	Red Ash	Dead	
49	Fraxinus pensylvanica	Red Ash	Dead	
50	Ulmus rubra	Slippery Elm	Dead	
51	Ulmus rubra	Slippery Elm	Dead	
52	Unknown	Unknown	Dead	
53	Ulmus americana	American Elm	Dead	
54	Acer rubrum	Red Maple	Dead	
55	Fraxinus pensylvanica	Red Ash	Dead	
56	Ulmus americana	American Elm	Dead	
57	Ulmus americana	American Elm	Dead	
58	Ulmus americana	American Elm	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
59	Fraxinus pensylvanica	Red Ash	Dead	
60	Fraxinus pensylvanica	Red Ash	Dead	3 stems
61	Sassafras albidum	Sassafras	Dead	2 stems
62	Fraxinus pensylvanica	Red Ash	Dead	
63	Ulmus americana	American Elm	Dead	
64	Ulmus rubra	Slippery Elm	Dead	
65	Ulmus rubra	Slippery Elm	Dead	
66	Fraxinus pensylvanica	Red Ash	Dead	
67	Ulmus rubra	Slippery Elm	Dead	
68	Ulmus rubra	Slippery Elm	Dead	
69	Ulmus americana	American Elm	Dead	
70	Ulmus americana	American Elm	Dead	
71	Ulmus rubra	Slippery Elm	Dead	
72	Ulmus rubra	Slippery Elm	Dead	2 stems
73	Ulmus americana	American Elm	Dead	
74	Ulmus rubra	Slippery Elm	Dead	
75	Ulmus rubra	Slippery Elm	Dead	
76	Ulmus rubra	Slippery Elm	Dead	2 stems
77	Ulmus americana	American Elm	Dead	
78	Ulmus rubra	Slippery Elm	Dead	
79	Ulmus rubra	Slippery Elm	Dead	3 stems
80	Fraxinus pensylvanica	Red Ash	Dead	
81	Ulmus rubra	Slippery Elm	Dead	
82	Ulmus rubra	Slippery Elm	Dead	
83	Fraxinus pensylvanica	Red Ash	Dead	
84	Ulmus rubra	Slippery Elm	Dead	
85	Ulmus rubra	Slippery Elm	Dead	
86	Ulmus rubra	Slippery Elm	Dead	
87	Ulmus rubra	Slippery Elm	Dead	
88	Ulmus rubra	Slippery Elm	Dead	
89	Ulmus rubra	Slippery Elm	Dead	
90	Ulmus rubra	Slippery Elm	Dead	
91	Ulmus rubra	Slippery Elm	Dead	
92	Sassafras albidum	Sassafras	Very Poor	95% canopy dead
93	Sassafras albidum	Sassafras	Dead	
94	Sassafras albidum	Sassafras	Dead	
95	Sassafras albidum	Sassafras	Dead	
96	Sassafras albidum	Sassafras	Dead	
97	Sassafras albidum	Sassafras	Dead	
98	Sassafras albidum	Sassafras	Dead	
99	Sassafras albidum	Sassafras	Dead	
100	Sassafras albidum	Sassafras	Dead	
101	Sassafras albidum	Sassafras	Dead	
102	Sassafras albidum	Sassafras	Dead	
103	Sassafras albidum	Sassafras	Dead	
104	Sassafras albidum	Sassafras	Dead	
105	Sassafras albidum	Sassafras	Dead	
106	Acer rubrum	Red Maple	Dead	
107	Sassafras albidum	Sassafras	Dead	
108	Sassafras albidum	Sassafras	Dead	
109	Sassafras albidum	Sassafras	Very Poor	75% canopy dead
110	Sassafras albidum	Sassafras	Dead	
111	Sassafras albidum	Sassafras	Very Poor	60% canopy dead
112	Sassafras albidum	Sassafras	Dead	
113	Sassafras albidum	Sassafras	Very Poor	60% canopy dead
114	Sassafras albidum	Sassafras	Dead	
115	Sassafras albidum	Sassafras	Dead	
116	Sassafras albidum	Sassafras	Dead	2 stems

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
117	Sassafras albidum	Sassafras	Dead	
118	Sassafras albidum	Sassafras	Dead	
119	Sassafras albidum	Sassafras	Dead	
120	Sassafras albidum	Sassafras	Dead	
121	Sassafras albidum	Sassafras	Dead	
122	Sassafras albidum	Sassafras	Dead	
123	Sassafras albidum	Sassafras	Dead	
124	Sassafras albidum	Sassafras	Dead	
125	Sassafras albidum	Sassafras	Dead	
126	Sassafras albidum	Sassafras	Dead	
127	Sassafras albidum	Sassafras	Dead	
128	Sassafras albidum	Sassafras	Dead	
129	Fraxinus pensylvanica	Red Ash	Dead	EAB signs
130	Ulmus americana	American Elm	Dead	
131	Prunus avium	Sweet Cherry	Dead	
132	Ulmus americana	American Elm	Dead	
133	Sassafras albidum	Sassafras	Dead	
134	Sassafras albidum	Sassafras	Dead	
135	Sassafras albidum	Sassafras	Dead	
136	Sassafras albidum	Sassafras	Dead	
137	Sassafras albidum	Sassafras	Dead	
138	Sassafras albidum	Sassafras	Dead	
139	Sassafras albidum	Sassafras	Dead	
140	Sassafras albidum	Sassafras	Dead	
141	Sassafras albidum	Sassafras	Dead	
142	Acer rubrum	Red Maple	Dead	
143	Unknown	Unknown	Dead	
144	Acer rubrum	Red Maple	Dead	
145	Acer rubrum	Red Maple	Dead	
146	Fraxinus pensylvanica	Red Ash	Dead	
147	Fraxinus pensylvanica	Red Ash	Dead	
148	Fraxinus pensylvanica	Red Ash	Dead	
149	Sassafras albidum	Sassafras	Very Poor	All canopy dead; only suckers alive
150	Fraxinus pensylvanica	Red Ash	Dead	
151	Fraxinus pensylvanica	Red Ash	Dead	
152	Fraxinus pensylvanica	Red Ash	Dead	
153	Ulmus americana	American Elm	Dead	
154	Ulmus americana	American Elm	Dead	
155	Ulmus americana	American Elm	Dead	
156	Ulmus americana	American Elm	Dead	
157	Ulmus americana	American Elm	Dead	
158	Fraxinus pensylvanica	Red Ash	Dead	
159	Fraxinus pensylvanica	Red Ash	Dead	
160	Sassafras albidum	Sassafras	Dead	
161	Ulmus americana	American Elm	Dead	
162	Fraxinus pensylvanica	Red Ash	Dead	
163	Ulmus americana	American Elm	Dead	
164	Fraxinus pensylvanica	Red Ash	Dead	
165	Prunus serotina	Black Cherry	Very Poor	90% of canopy dead
166	Prunus serotina	Black Cherry	Dead	
167	Fraxinus pensylvanica	Red Ash	Dead	
168	Fraxinus pensylvanica	Red Ash	Dead	
169	Fraxinus pensylvanica	Red Ash	Dead	
170	Fraxinus pensylvanica	Red Ash	Dead	
171	Fraxinus pensylvanica	Red Ash	Dead	
172	Fraxinus pensylvanica	Red Ash	Dead	
173	Fraxinus pensylvanica	Red Ash	Dead	
174	Fraxinus pensylvanica	Red Ash	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
176	Fraxinus pensylvanica	Red Ash	Dead	
176	Fraxinus pensylvanica	Red Ash	Dead	
177	Fraxinus pensylvanica	Red Ash	Dead	
178	Acer rubrum	Red Maple	Dead	
179	Fraxinus pensylvanica	Red Ash	Dead	
180	Fraxinus pensylvanica	Red Ash	Dead	
181	Ulmus americana	American Elm	Dead	
182	Robinia pseudoacacia	Black Locust	Very Poor	76% canopy dead
183	Fraxinus pensylvanica	Red Ash	Dead	
184	Fraxinus pensylvanica	Red Ash	Dead	
185	Ulmus americana	American Elm	Dead	
186	Fraxinus pensylvanica	Red Ash	Dead	
187	Fraxinus pensylvanica	Red Ash	Dead	
188	Fraxinus pensylvanica	Red Ash	Dead	
189	Fraxinus pensylvanica	Red Ash	Dead	
190	Fraxinus pensylvanica	Red Ash	Dead	
191	Fraxinus pensylvanica	Red Ash	Dead	
192	Fraxinus pensylvanica	Red Ash	Dead	
193	Fraxinus pensylvanica	Red Ash	Dead	
194	Fraxinus pensylvanica	Red Ash	Dead	
195	Ulmus americana	American Elm	Dead	
196	Fraxinus pensylvanica	Red Ash	Dead	
197	Fraxinus pensylvanica	Red Ash	Dead	
198	Fraxinus pensylvanica	Red Ash	Dead	
199	Fraxinus pensylvanica	Red Ash	Dead	
200	Fraxinus pensylvanica	Red Ash	Dead	
201	Fraxinus pensylvanica	Red Ash	Dead	
202	Ulmus americana	American Elm	Dead	
203	Fraxinus pensylvanica	Red Ash	Dead	
204	Fraxinus pensylvanica	Red Ash	Dead	
205	Fraxinus pensylvanica	Red Ash	Dead	
206	Fraxinus pensylvanica	Red Ash	Dead	
207	Ulmus americana	American Elm	Dead	
208	Fraxinus pensylvanica	Red Ash	Dead	
209	Quercus rubra	Red Oak	Very Poor	50% canopy dead
210	Fraxinus pensylvanica	Red Ash	Dead	
211	Fraxinus pensylvanica	Red Ash	Dead	
212	Fraxinus pensylvanica	Red Ash	Dead	
213	Fraxinus pensylvanica	Red Ash	Dead	
214	Fraxinus pensylvanica	Red Ash	Dead	
215	Fraxinus pensylvanica	Red Ash	Dead	
216	Ulmus americana	American Elm	Dead	
217	Fraxinus pensylvanica	Red Ash	Dead	
218	Fraxinus pensylvanica	Red Ash	Dead	
219	Fraxinus pensylvanica	Red Ash	Dead	
220	Ulmus americana	American Elm	Very Poor	50% canopy dead
221	Ulmus americana	American Elm	Dead	
222	Ulmus americana	American Elm	Dead	
223	Fraxinus pensylvanica	Red Ash	Dead	
224	Ulmus americana	American Elm	Dead	
225	Ulmus americana	American Elm	Dead	
226	Ulmus americana	American Elm	Dead	
227	Ulmus americana	American Elm	Dead	
228	Ulmus americana	American Elm	Very Poor	50% canopy dead
229	Fraxinus pensylvanica	Red Ash	Dead	
230	Fraxinus pensylvanica	Red Ash	Dead	
231	Fraxinus pensylvanica	Red Ash	Dead	
232	Fraxinus pensylvanica	Red Ash	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
233	Fraxinus pensylvanica	Red Ash	Dead	
234	Fraxinus pensylvanica	Red Ash	Dead	
235	Fraxinus pensylvanica	Red Ash	Dead	
236	Fraxinus pensylvanica	Red Ash	Dead	
237	Fraxinus pensylvanica	Red Ash	Dead	
238	Fraxinus pensylvanica	Red Ash	Dead	
239	Fraxinus pensylvanica	Red Ash	Dead	
240	Fraxinus pensylvanica	Red Ash	Dead	
241	Ulmus americana	American Elm	Dead	
242	Ulmus americana	American Elm	Dead	
243	Fraxinus pensylvanica	Red Ash	Dead	
244	Acer rubrum	Red Maple	Dead	
245	Acer rubrum	Red Maple	Dead	
246	Acer rubrum	Red Maple	Dead	
247	Fraxinus pensylvanica	Red Ash	Dead	
248	Fraxinus pensylvanica	Red Ash	Dead	
249	Fraxinus pensylvanica	Red Ash	Dead	
250	Fraxinus pensylvanica	Red Ash	Dead	
251	Fraxinus pensylvanica	Red Ash	Dead	
252	Fraxinus pensylvanica	Red Ash	Dead	
253	Fraxinus pensylvanica	Red Ash	Dead	
254	Fraxinus pensylvanica	Red Ash	Dead	
255	Fraxinus pensylvanica	Red Ash	Dead	
256	Fraxinus pensylvanica	Red Ash	Dead	
257	Fraxinus pensylvanica	Red Ash	Dead	
258	Fraxinus pensylvanica	Red Ash	Dead	
259	Fraxinus pensylvanica	Red Ash	Dead	
260	Fraxinus pensylvanica	Red Ash	Dead	
261	Fraxinus pensylvanica	Red Ash	Dead	
262	Unknown	Unknown	Dead	
263	Fraxinus pensylvanica	Red Ash	Dead	
264	Fraxinus pensylvanica	Red Ash	Dead	
265	Ulmus americana	American Elm	Dead	
266	Fraxinus pensylvanica	Red Ash	Dead	
267	Fraxinus pensylvanica	Red Ash	Dead	
268	Fraxinus pensylvanica	Red Ash	Dead	
269	Fraxinus pensylvanica	Red Ash	Dead	
270	Fraxinus pensylvanica	Red Ash	Dead	
271	Fraxinus pensylvanica	Red Ash	Dead	
272	Fraxinus pensylvanica	Red Ash	Dead	
273	Fraxinus pensylvanica	Red Ash	Dead	
274	Acer saccharinum	Silver Maple	Dead	
275	Fraxinus pensylvanica	Red Ash	Dead	
276	Fraxinus pensylvanica	Red Ash	Dead	
277	Fraxinus pensylvanica	Red Ash	Dead	
278	Fraxinus pensylvanica	Red Ash	Dead	
279	Ulmus americana	American Elm	Dead	
280	Fraxinus pensylvanica	Red Ash	Dead	2 stems
281	Fraxinus pensylvanica	Red Ash	Dead	
282	Acer saccharinum	Silver Maple	Very Poor	90% canopy dead
283	Acer rubrum	Red Maple	Dead	
284	Unknown	Unknown	Dead	
285	Acer rubrum	Red Maple	Dead	
286	Unknown	Unknown	Dead	
287	Prunus serotina	Black Cherry	Dead	
288	Tilia americana	Basswood	Dead	
289	Tilia americana	Basswood	Dead	
290	Ulmus rubra	Slippery Elm	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
291	Fraxinus pensylvanica	Red Ash	Dead	
292	Fraxinus pensylvanica	Red Ash	Dead	
293	Acer rubrum	Red Maple	Very Poor	50% canopy dead; significant heart rot
294	Acer rubrum	Red Maple	Dead	
295	Ulmus americana	American Elm	Dead	
296	Acer rubrum	Red Maple	Dead	
297	Ulmus americana	American Elm	Dead	
298	Ulmus americana	American Elm	Dead	
299	Acer rubrum	Red Maple	Dead	
300	Acer rubrum	Red Maple	Dead	
301	Acer rubrum	Red Maple	Dead	
302	Acer rubrum	Red Maple	Dead	
303	Fraxinus pensylvanica	Red Ash	Dead	
304	Fraxinus pensylvanica	Red Ash	Dead	
305	Acer rubrum	Red Maple	Very Poor	75% canopy dead
306	Acer rubrum	Red Maple	Dead	
307	Tilia americana	Basswood	Very Poor	50% canopy dead
308	Ostrya virginiana	Hop Hornbeam	Dead	
309	Tilia americana	Basswood	Very Poor	50% canopy dead
310	Ulmus americana	American Elm	Dead	
311	Ulmus americana	American Elm	Dead	
312	Juglans nigra	Black Walnut	Dead	
313	Unknown	Unknown	Dead	
314	Quercus macrocarpa	Bur Oak	Dead	
315	Ostrya virginiana	Hop Hornbeam	Dead	
316	Sassafras albidum	Sassafras	Dead	
317	Ostrya virginiana	Hop Hornbeam	Dead	
318	Fraxinus pensylvanica	Red Ash	Dead	
319	Fraxinus pensylvanica	Red Ash	Dead	
320	Fraxinus pensylvanica	Red Ash	Dead	
321	Fraxinus pensylvanica	Red Ash	Dead	
322	Fraxinus pensylvanica	Red Ash	Dead	
323	Fraxinus pensylvanica	Red Ash	Dead	
324	Fraxinus pensylvanica	Red Ash	Dead	
325	Fraxinus pensylvanica	Red Ash	Dead	
326	Fraxinus pensylvanica	Red Ash	Dead	
327	Acer rubrum	Red Maple	Dead	
328	Ulmus americana	American Elm	Dead	
329	Acer rubrum	Red Maple	Dead	
330	Fraxinus pensylvanica	Red Ash	Dead	
331	Fraxinus pensylvanica	Red Ash	Dead	
332	Fraxinus pensylvanica	Red Ash	Dead	
333	Unknown	Unknown	Dead	
334	Acer rubrum	Red Maple	Dead	
335	Acer rubrum	Red Maple	Dead	
336	Fraxinus pensylvanica	Red Ash	Dead	
337	Acer rubrum	Red Maple	Very Poor	2 stems, 1 dead; live stem with heart rot
338	Acer rubrum	Red Maple	Dead	
339	Fraxinus pensylvanica	Red Ash	Dead	
340	Fraxinus pensylvanica	Red Ash	Dead	
341	Fraxinus pensylvanica	Red Ash	Dead	
342	Fraxinus pensylvanica	Red Ash	Dead	
343	Fraxinus pensylvanica	Red Ash	Dead	
344	Acer rubrum	Red Maple	Dead	
345	Fraxinus pensylvanica	Red Ash	Dead	
346	Fraxinus pensylvanica	Red Ash	Dead	
347	Fraxinus pensylvanica	Red Ash	Dead	
348	Fraxinus pensylvanica	Red Ash	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
349	Fraxinus pensylvanica	Red Ash	Dead	
350	Fraxinus pensylvanica	Red Ash	Dead	
351	Fraxinus pensylvanica	Red Ash	Dead	
352	Fraxinus pensylvanica	Red Ash	Dead	
353	Fraxinus pensylvanica	Red Ash	Dead	
354	Fraxinus pensylvanica	Red Ash	Dead	
355	Acer rubrum	Red Maple	Dead	
356	Fraxinus pensylvanica	Red Ash	Dead	
357	Fraxinus pensylvanica	Red Ash	Dead	
358	Ulmus americana	American Elm	Dead	
359	Fraxinus pensylvanica	Red Ash	Dead	
360	Fraxinus pensylvanica	Red Ash	Dead	
361	Fraxinus pensylvanica	Red Ash	Dead	
362	Ulmus americana	American Elm	Dead	
363	Tilia americana	Basswood	Dead	
364	Fraxinus pensylvanica	Red Ash	Very Poor	No canopy; EAB signs
365	Acer rubrum	Red Maple	Dead	
366	Fraxinus pensylvanica	Red Ash	Dead	
367	Fraxinus pensylvanica	Red Ash	Dead	
368	Fraxinus pensylvanica	Red Ash	Dead	
369	Fraxinus pensylvanica	Red Ash	Dead	
370	Fraxinus pensylvanica	Red Ash	Dead	
371	Ulmus americana	American Elm	Dead	
372	Fraxinus pensylvanica	Red Ash	Dead	
373	Ulmus americana	American Elm	Dead	
374	Ulmus americana	American Elm	Dead	
375	Fraxinus pensylvanica	Red Ash	Dead	
376	Fraxinus pensylvanica	Red Ash	Dead	
377	Fraxinus pensylvanica	Red Ash	Dead	
378	Fraxinus pensylvanica	Red Ash	Dead	
379	Fraxinus pensylvanica	Red Ash	Dead	
380	Acer rubrum	Red Maple	Very Poor	Main trunk dead
381	Fraxinus pensylvanica	Red Ash	Dead	
382	Fraxinus pensylvanica	Red Ash	Dead	
383	Fraxinus pensylvanica	Red Ash	Very Poor	Canopy dead; suckers only
384	Fraxinus pensylvanica	Red Ash	Dead	
385	Fraxinus pensylvanica	Red Ash	Dead	
386	Fraxinus pensylvanica	Red Ash	Dead	
387	Ulmus americana	American Elm	Dead	2 stems
388	Tilia americana	Basswood	Very Poor	95% canopy dead
389	Fraxinus pensylvanica	Red Ash	Dead	
390	Fraxinus pensylvanica	Red Ash	Dead	
391	Fraxinus pensylvanica	Red Ash	Dead	
392	Fraxinus pensylvanica	Red Ash	Very Poor	Canopy dead; suckers only
393	Fraxinus pensylvanica	Red Ash	Very Poor	Canopy dead; suckers only
394	Fraxinus pensylvanica	Red Ash	Dead	
395	Ulmus americana	American Elm	Dead	
396	Fraxinus pensylvanica	Red Ash	Very Poor	Canopy dead; suckers only
397	Acer saccharinum	Silver Maple	Dead	
398	Acer rubrum	Red Maple	Dead	
399	Acer rubrum	Red Maple	Dead	
400	Acer rubrum	Red Maple	Dead	2 stems
401	Acer rubrum	Red Maple	Dead	
402	Fraxinus pensylvanica	Red Ash	Dead	
403	Fraxinus pensylvanica	Red Ash	Dead	
404	Fraxinus pensylvanica	Red Ash	Dead	
405	Fraxinus pensylvanica	Red Ash	Dead	
406	Fraxinus pensylvanica	Red Ash	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
407	Fraxinus pensylvanica	Red Ash	Dead	2 stems
408	Fraxinus pensylvanica	Red Ash	Dead	
409	Fraxinus pensylvanica	Red Ash	Dead	2 stems
410	Fraxinus pensylvanica	Red Ash	Dead	
411	Fraxinus pensylvanica	Red Ash	Dead	
412	Fraxinus pensylvanica	Red Ash	Dead	
413	Ulmus americana	American Elm	Very Poor	90% canopy dead
414	Fraxinus pensylvanica	Red Ash	Dead	
415	Quercus palustris	Pin Oak	Very Poor	Thin canopy, major branches dead
416	Ulmus americana	American Elm	Dead	
417	Ulmus americana	American Elm	Dead	
418	Fraxinus pensylvanica	Red Ash	Dead	
419	Fraxinus pensylvanica	Red Ash	Dead	
420	Fraxinus pensylvanica	Red Ash	Dead	
421	Fraxinus pensylvanica	Red Ash	Dead	
422	Fraxinus pensylvanica	Red Ash	Dead	
423	Fraxinus pensylvanica	Red Ash	Dead	
424	Fraxinus pensylvanica	Red Ash	Very Poor	Canopy dead; suckers only
425	Fraxinus pensylvanica	Red Ash	Dead	
426	Fraxinus pensylvanica	Red Ash	Dead	
427	Ulmus americana	American Elm	Dead	
428	Acer rubrum	Red Maple	Dead	
429	Fraxinus pensylvanica	Red Ash	Dead	
430	Acer rubrum	Red Maple	Very Poor	75% canopy dead; heart rot
431	Fraxinus pensylvanica	Red Ash	Dead	
432	Ulmus americana	American Elm	Dead	
433	Sassafras albidum	Sassafras	Dead	
434	Fraxinus pensylvanica	Red Ash	Dead	
435	Fraxinus pensylvanica	Red Ash	Dead	
436	Fraxinus pensylvanica	Red Ash	Dead	
437	Sassafras albidum	Sassafras	Dead	
438	Sassafras albidum	Sassafras	Dead	
439	Fraxinus pensylvanica	Red Ash	Dead	
440	Fraxinus pensylvanica	Red Ash	Dead	
441	Fraxinus pensylvanica	Red Ash	Dead	
442	Fraxinus pensylvanica	Red Ash	Dead	
443	Fraxinus pensylvanica	Red Ash	Dead	
444	Fraxinus pensylvanica	Red Ash	Dead	
445	Prunus serotina	Black Cherry	Dead	
446	Sassafras albidum	Sassafras	Dead	
447	Fraxinus pensylvanica	Red Ash	Dead	
448	Unknown	Unknown	Dead	
449	Unknown	Unknown	Dead	
450	Fraxinus pensylvanica	Red Ash	Dead	
451	Sassafras albidum	Sassafras	Dead	
452	Sassafras albidum	Sassafras	Dead	2 stems
453	Fraxinus pensylvanica	Red Ash	Dead	
454	Fraxinus pensylvanica	Red Ash	Dead	
455	Ulmus americana	American Elm	Dead	
456	Fraxinus pensylvanica	Red Ash	Dead	
457	Fraxinus pensylvanica	Red Ash	Dead	2 stems
458	Fraxinus pensylvanica	Red Ash	Dead	
459	Fraxinus pensylvanica	Red Ash	Dead	
460	Acer rubrum	Red Maple	Very Poor	75% canopy dead
461	Fraxinus pensylvanica	Red Ash	Dead	
462	Fraxinus pensylvanica	Red Ash	Dead	
463	Fraxinus pensylvanica	Red Ash	Dead	
464	Acer rubrum	Red Maple	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
465	Fraxinus pensylvanica	Red Ash	Dead	
466	Fraxinus pensylvanica	Red Ash	Dead	
467	Acer rubrum	Red Maple	Dead	2 stems
468	Fraxinus pensylvanica	Red Ash	Dead	
469	Fraxinus pensylvanica	Red Ash	Dead	
470	Fraxinus pensylvanica	Red Ash	Dead	
471	Fraxinus pensylvanica	Red Ash	Dead	
472	Fraxinus pensylvanica	Red Ash	Dead	
473	Unknown	Unknown	Dead	
474	Acer rubrum	Red Maple	Dead	2 stems
475	Fraxinus pensylvanica	Red Ash	Dead	
476	Fraxinus pensylvanica	Red Ash	Dead	
477	Fraxinus pensylvanica	Red Ash	Dead	
478	Acer rubrum	Red Maple	Dead	
479	Fraxinus pensylvanica	Red Ash	Dead	2 stems
480	Fraxinus pensylvanica	Red Ash	Dead	
481	Acer rubrum	Red Maple	Dead	2 stems
482	Fraxinus pensylvanica	Red Ash	Dead	
483	Fraxinus pensylvanica	Red Ash	Dead	
484	Sassafras albidum	Sassafras	Dead	
485	Fraxinus pensylvanica	Red Ash	Dead	
486	Sassafras albidum	Sassafras	Dead	
487	Prunus serotina	Black Cherry	Dead	
488	Fraxinus pensylvanica	Red Ash	Dead	
489	Sassafras albidum	Sassafras	Dead	
490	Sassafras albidum	Sassafras	Dead	
491	Prunus serotina	Black Cherry	Dead	
492	Sassafras albidum	Sassafras	Dead	
493	Sassafras albidum	Sassafras	Dead	
494	Sassafras albidum	Sassafras	Dead	
495	Ulmus americana	American Elm	Dead	2 stems
496	Sassafras albidum	Sassafras	Dead	
497	Sassafras albidum	Sassafras	Dead	2 stems
498	Unknown	Unknown	Dead	
499	Sassafras albidum	Sassafras	Dead	
500	Sassafras albidum	Sassafras	Dead	
501	Sassafras albidum	Sassafras	Dead	2 stems
502	Sassafras albidum	Sassafras	Dead	
503	Sassafras albidum	Sassafras	Dead	
504	Sassafras albidum	Sassafras	Dead	
505	Sassafras albidum	Sassafras	Dead	
506	Sassafras albidum	Sassafras	Dead	
507	Sassafras albidum	Sassafras	Dead	
508	Sassafras albidum	Sassafras	Dead	
509	Sassafras albidum	Sassafras	Dead	
510	Sassafras albidum	Sassafras	Dead	
511	Sassafras albidum	Sassafras	Dead	
512	Sassafras albidum	Sassafras	Dead	
513	Sassafras albidum	Sassafras	Dead	
514	Prunus serotina	Black Cherry	Dead	
515	Sassafras albidum	Sassafras	Dead	
516	Sassafras albidum	Sassafras	Dead	
517	Sassafras albidum	Sassafras	Dead	
518	Sassafras albidum	Sassafras	Dead	
519	Sassafras albidum	Sassafras	Dead	
520	Fraxinus pensylvanica	Red Ash	Dead	
521	Fraxinus pensylvanica	Red Ash	Dead	
522	Unknown	Unknown	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
523	Unknown	Unknown	Dead	
524	Fraxinus pensylvanica	Red Ash	Dead	
525	Ulmus americana	American Elm	Dead	
526	Fraxinus pensylvanica	Red Ash	Dead	2 stems
527	Fraxinus pensylvanica	Red Ash	Dead	2 stems
528	Unknown	Unknown	Dead	
529	Ulmus americana	American Elm	Very Poor	90% canopy dead
530	Juglans nigra	Black Walnut	Dead	
531	Sassafras albidum	Sassafras	Dead	
532	Sassafras albidum	Sassafras	Dead	
533	Sassafras albidum	Sassafras	Dead	
534	Fraxinus pensylvanica	Red Ash	Dead	
535	Sassafras albidum	Sassafras	Dead	2 stems
536	Sassafras albidum	Sassafras	Dead	
537	Sassafras albidum	Sassafras	Dead	
538	Ulmus americana	American Elm	Dead	
539	Fraxinus pensylvanica	Red Ash	Dead	
540	Sassafras albidum	Sassafras	Dead	2 stems
541	Unknown	Unknown	Dead	2 stems
542	Fraxinus pensylvanica	Red Ash	Dead	
543	Fraxinus pensylvanica	Red Ash	Dead	
544	Unknown	Unknown	Dead	
545	Unknown	Unknown	Dead	
546	Fraxinus pensylvanica	Red Ash	Dead	
547	Acer rubrum	Red Maple	Dead	2 stems
548	Fraxinus pensylvanica	Red Ash	Dead	2 stems
549	Acer rubrum	Red Maple	Dead	
550	Fraxinus pensylvanica	Red Ash	Dead	
551	Fraxinus pensylvanica	Red Ash	Dead	
552	Unknown	Unknown	Dead	
553	Ulmus americana	American Elm	Dead	
554	Ulmus americana	American Elm	Dead	
555	Unknown	Unknown	Dead	
556	Ulmus americana	American Elm	Dead	
557	Ulmus americana	American Elm	Dead	
558	Ulmus americana	American Elm	Dead	
559	Ulmus americana	American Elm	Dead	
560	Ulmus americana	American Elm	Dead	
561	Ulmus americana	American Elm	Dead	
562	Fraxinus pensylvanica	Red Ash	Dead	
563	Fraxinus pensylvanica	Red Ash	Dead	
564	Ulmus rubra	Slippery Elm	Dead	
565	Ulmus americana	American Elm	Dead	
566	Ulmus americana	American Elm	Dead	
567	Fraxinus pensylvanica	Red Ash	Dead	
568	Ulmus americana	American Elm	Dead	
569	Ulmus americana	American Elm	Dead	
570	Ulmus americana	American Elm	Dead	
571	Ulmus americana	American Elm	Dead	
572	Ulmus americana	American Elm	Dead	
573	Ulmus americana	American Elm	Dead	
574	Ulmus americana	American Elm	Dead	
575	Ulmus americana	American Elm	Dead	
576	Ulmus americana	American Elm	Dead	
577	Ulmus americana	American Elm	Dead	
578	Ulmus americana	American Elm	Dead	
579	Ulmus americana	American Elm	Dead	
580	Ulmus americana	American Elm	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
581	Ulmus americana	American Elm	Dead	
582	Ulmus americana	American Elm	Dead	
583	Ulmus americana	American Elm	Dead	
584	Ulmus americana	American Elm	Dead	
585	Ulmus americana	American Elm	Dead	
586	Ulmus americana	American Elm	Dead	
587	Ulmus americana	American Elm	Dead	
588	Ulmus americana	American Elm	Dead	
589	Ulmus americana	American Elm	Dead	
590	Ulmus americana	American Elm	Dead	
591	Prunus serotina	Black Cherry	Dead	
592	Fraxinus americana	White Ash	Dead	
593	Fraxinus americana	White Ash	Very Poor	90% canopy dead
594	Fraxinus americana	White Ash	Dead	
595	Fraxinus americana	White Ash	Dead	
596	Fraxinus americana	White Ash	Dead	
597	Fraxinus americana	White Ash	Dead	
598	Fraxinus pensylvanica	Red Ash	Dead	
599	Fraxinus pensylvanica	Red Ash	Dead	
600	Fraxinus pensylvanica	Red Ash	Dead	
601	Fraxinus pensylvanica	Red Ash	Dead	
602	Fraxinus pensylvanica	Red Ash	Very Poor	90% canopy dead
603	Fraxinus americana	White Ash	Very Poor	90% canopy dead
604	Fraxinus americana	White Ash	Dead	
605	Fraxinus americana	White Ash	Dead	
606	Fraxinus americana	White Ash	Dead	
607	Fraxinus americana	White Ash	Dead	
608	Fraxinus americana	White Ash	Dead	
609	Fraxinus americana	White Ash	Dead	
610	Fraxinus americana	White Ash	Dead	
611	Fraxinus americana	White Ash	Dead	
612	Fraxinus americana	White Ash	Dead	
613	Fraxinus americana	White Ash	Dead	
614	Fraxinus americana	White Ash	Dead	
615	Ulmus americana	American Elm	Dead	
616	Fraxinus americana	White Ash	Dead	
617	Ulmus americana	American Elm	Dead	
618	Salix nigra	Black Willow	Dead	
619	Ulmus americana	American Elm	Dead	
620	Fraxinus pensylvanica	Red Ash	Dead	
621	Acer rubrum	Red Maple	Dead	
622	Acer rubrum	Red Maple	Dead	
623	Carya sp.	Hickory	Dead	
624	Carya sp.	Hickory	Dead	
625	Acer rubrum	Red Maple	Dead	
626	Fraxinus pensylvanica	Red Ash	Dead	
627	Acer rubrum	Red Maple	Dead	
628	Acer rubrum	Red Maple	Dead	
629	Acer rubrum	Red Maple	Dead	
630	Fraxinus pensylvanica	Red Ash	Dead	
631	Quercus bicolor	Swamp White Oak	Dead	
632	Quercus bicolor	Swamp White Oak	Dead	
633	Fraxinus pensylvanica	Red Ash	Dead	
634	Acer rubrum	Red Maple	Dead	
635	Ulmus americana	American Elm	Dead	
636	Fraxinus pensylvanica	Red Ash	Dead	
637	Ulmus americana	American Elm	Dead	
638	Ulmus americana	American Elm	Dead	

Appendix A: Wayne Disposal Tree Survey Data

ID No.	Scientific Name	Common Name	Condition	Notes
639	Fraxinus pensylvanica	Red Ash	Dead	
640	Ulmus americana	American Elm	Dead	
641	Fraxinus pensylvanica	Red Ash	Dead	
642	Fraxinus pensylvanica	Red Ash	Dead	
643	Ulmus americana	American Elm	Dead	

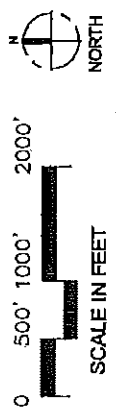
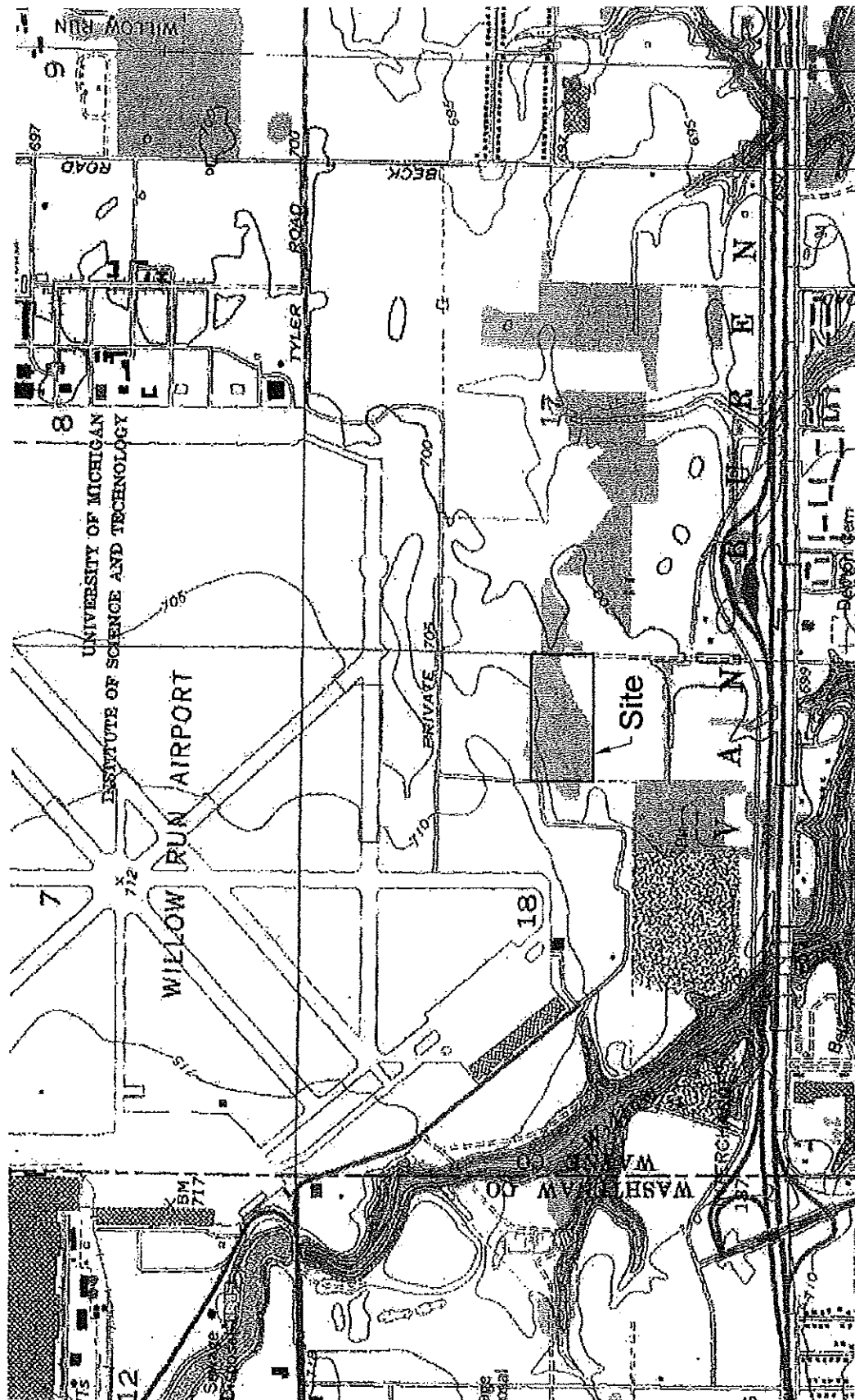
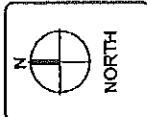


Figure 1: Location Map
 Wayne Disposal
 RME #RS136
 10-23-08



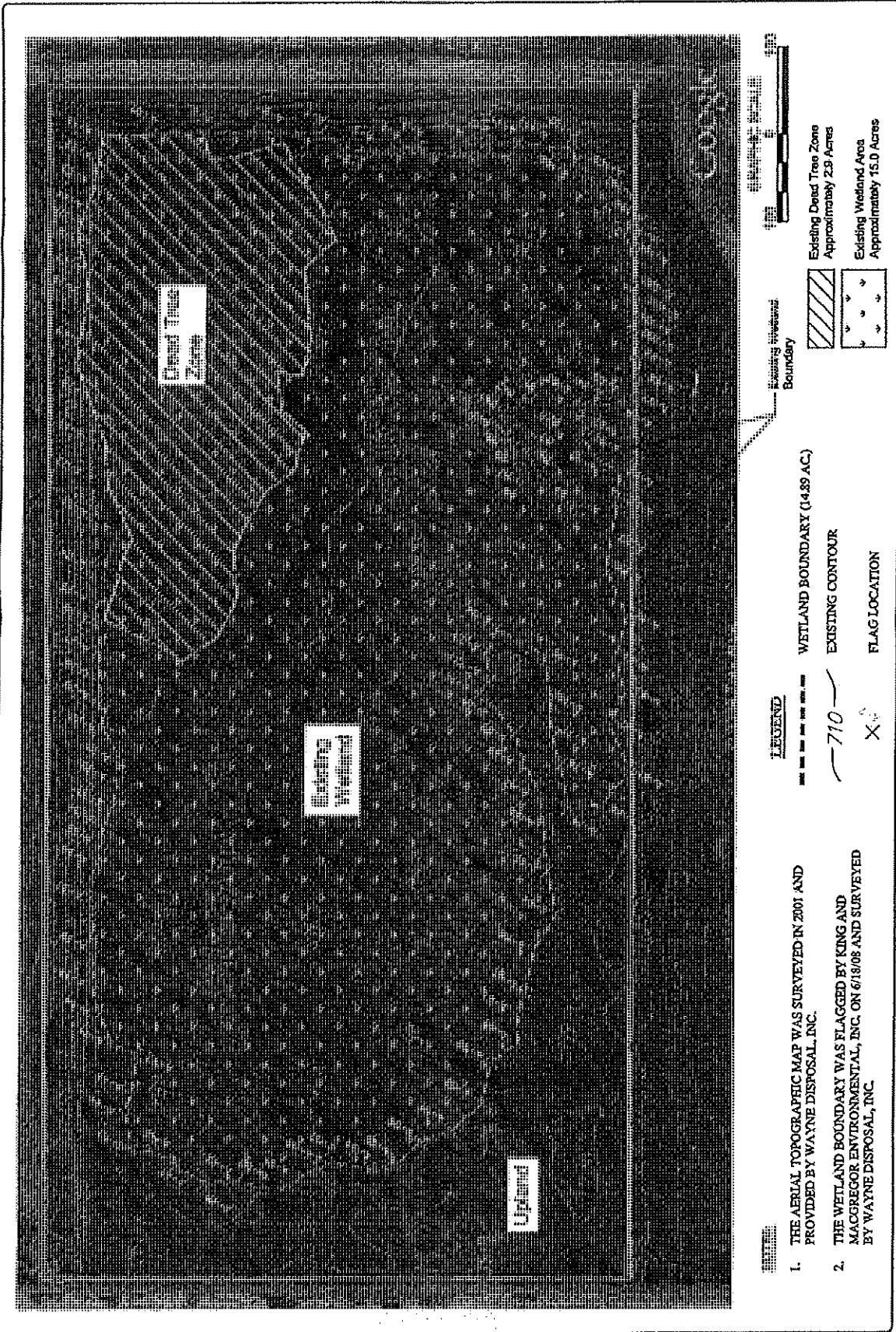
Figure 2: Township Woodlands Map
Wayne Disposal
KME #05136
10-23-08

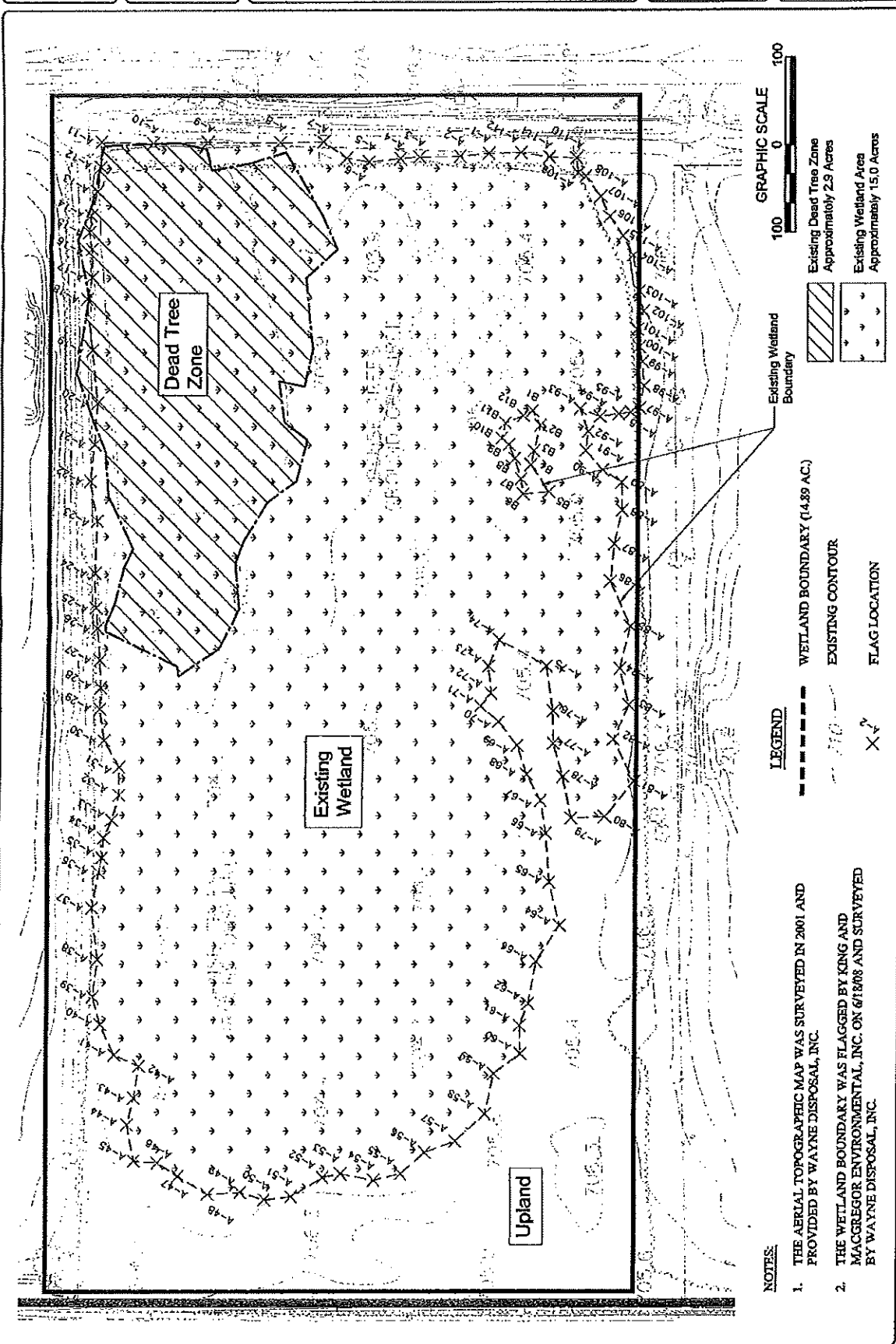


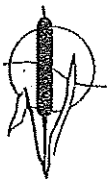
Wayne Disposal, Inc. - Denton Rd Site
Dead Tree Survey Graphic
Van Buren Township
Wayne County, Michigan

PROJECT NUMBER	05136
DATE	05/13/08
LOCATION	Wayne County, Michigan
PROJECT NAME	Wayne Disposal, Inc. - Denton Rd Site
PROJECT NUMBER	05136
DATE	05/13/08
LOCATION	Wayne County, Michigan
PROJECT NAME	Wayne Disposal, Inc. - Denton Rd Site

3a







King & MacGregor
Environmental
Inc.

October 30, 2008

Hand Delivered

Mr. Bryce Kelley, Director
Van Buren Township
Department of Development
46425 Tyler Road
Van Buren Twp, MI 48111

Re: Application for Dead Tree Cutting & Felling - Wayne Disposal, Inc.
T3S, R8E, Section 18, Van Buren Township, Wayne County, Michigan

Dear Mr. Kelley:

Enclosed is an application on behalf of our client, Wayne Disposal, for the cutting and felling of dead, diseased and dying trees found within the above-referenced approximate 23-acre parcel located on Old Denton Road and west of the existing active landfill. The application package includes a site location map, a site survey drawing including wetland boundaries, a dead tree zone delineation, a dead tree survey report, a project description, supplemental Figures and the application fee in the amount of \$2,708.75

Thank you for your consideration in this matter. Should you have any questions or require additional information, please contact me at your convenience.

Sincerely,

Theresa A. King for:

King & MacGregor Environmental, Inc.
Jeffery A. King

cc: Kerry Durnen (Wayne Disposal, Inc.)
Jenghwa Lyang (NTH Consultants)

enc.

40595 Koppernick Rd.
Canton, MI 48187
Phone: 734/354-0594
Fax: 734/354-0593

Other Michigan Offices:
Grand Rapids
East Lansing
Traverse City
St. Clair Shores

e-mail: kme@king-macgregor.com

P:\2005\05100\05136 Wayne Disposal Site\Dead Tree Removal Appl\Cover Letter.doc

PLANNING & ZONING APPLICATION

Case Number _____ Date Submitted _____

APPLICANT INFORMATION

Applicant Wayne Disposal, Inc. attn: Kerry Durnen Phone 734-669-6265
 Address 48350 N. I-94 Service Drive Fax 734-697-9388
 City, State Belleville, MI Zip 48111
 E-mail Kerry.Durnen@eqonline.com Cell Phone Number N/A
 Property Owner _____ Phone _____
 (if different than applicant) _____
 Address _____ Fax _____
 City, State _____ Zip _____
 Billing Contact Same Phone _____
 Address _____ Fax _____
 City, State _____ Zip _____

SITE/PROJECT INFORMATION

Name of Project Wayne Disposal Woodlot
 Parcel Id No. V125-83-072-09-0002-000 Project Address Old Denton Road
 Attach Legal Description of Property
 Property Location: On the West Side of Old Denton Road, Between N. I-94 Service Drive Road
 and northern terminus of Old Denton Road. Size of Lot Width 736' Depth 1,370'
 Acreage of Site ±23 Total Acres of Site in Review ±23 Current Zoning of Site M2 Gen
 Project Description: The cutting and felling of dead, diseased and dying trees within township-regulated woodland

Is a re-zoning of this parcel being requested? No YES (if yes complete new line) NO
 Current Zoning of Site _____ Requested Zoning _____

SPECIAL PERMIT INFORMATION

Does the Proposed Use Require Special Approval? YES (if yes complete new line) (NO)
 Section of Zoning Ordinance for which you are applying _____
 Is there an official Woodland within parcel? Yes Woodland acreage ±21.6
 List total number of regulated trees outside the Woodland area? 0 Total number of trees 643 dead trees
 Detailed description for cutting trees See attached project description field identified with painted numbers and
an estimated 460 dead trees within the
approximate 3-acre dead tree zone

If applicable application **MUST** be accompanied with a Tree Survey or statement of no trees, which incorporates all the requirements listed in Section 4.45 of Zoning Ordinance 6-2-92, as amended.

OWNER'S AFFIDAVIT

Timothy M. Tillett
 Print Name
[Signature]
 Signature of Property Owner

10/30/08
 Date

STATE OF MICHIGAN
 COUNTY OF WAYNE
 The undersigned, being duly sworn, depose and say that the foregoing statements and oaths are herein contained and were repeated in formation and this are in all respects true and correct.

Subscribed and sworn before me this 30 day of Oct 2008
Judith Reed Mayor, Wayne County, Michigan My Commission expires 6/21 2013

JUDITH REED
 NOTARY PUBLIC, MONROE COUNTY
 MY COMMISSION EXPIRES 6-21-2013
 ACTING IN Wayne COUNTY

PLANNING & ZONING FEES

Supersedes all prior Fee Schedule(s) upon approval with an effective date of January 1, 2008

Item	Township Base	Consultant Base	Fee per acre	Fee per unit/lot	Fee per tree
Rezoning	\$597.00	\$530.00	\$8.15		
Special Approval	\$767.00	\$450.00	\$10.25		
Staff/Administrative Review	\$364.00	\$350.00			
Site Plan Application (non-residential)					
Commercial Development	\$1,253.00	\$490.00	\$65.00		
Industrial Development	\$1,253.00	\$490.00	\$65.00		
Conceptual Review	\$364.00	\$350.00			
Initial Engineering		\$4,000.00	\$50.00		
Administrative Review (non Res)	\$1,253.00				
Acreage Deposit			\$200.00		
Site Plan Application (residential)					
Multiple-Family	\$1,234.00	\$360.00		\$10.50	
Cluster Housing Development	\$1,234.00	\$390.00		\$10.50	
Mobile Home Park	\$1,234.00	\$545.00		\$10.50	
Site Condominium	\$1,273.00	\$455.00		\$15.60	
Conceptual Review	\$364.00	\$350.00			
Administrative Review (Res.)	\$1,253.00				
Initial Engineering		\$4,000.00		\$25.00	
Acreage Deposit			\$200.00		
Plat Review					
Conceptual Plan Review (sketch)	\$364.00	\$350.00		\$15.50	
Site Plan Review	\$1,198.00	\$465.00		\$15.50	
Engineering Review		\$4,000.00		\$25.00	
Preliminary Plat Review	\$575.00	\$465.00		\$15.50	
Preliminary Final Plat Review		\$238.00		\$3.25	
Final Plat Review (Planning)	\$575.00	\$238.00		\$15.50	
Acreage Deposit			\$200.00		
Special Meetings					
Expedited Review	150% of cost	150% of cost			
Planning Commission	\$560.00				
Conceptual Plan Review	\$364.00				
Board of Zoning Appeals (Res.)	\$400.00				
Board of Zoning Appeals (Non-Res)	\$360.00	\$229.32			
Acreage Deposit			\$200.00		
Other Fees					
Woodlands/Tree Removal	\$735.00	+	\$630.00	+	$\$62.50 \times 21.5 \text{ AC} =$
Lot Split Review			\$250.00		\$2.00
Planning Commission Review (Res.)	\$400.00				\$1,343.75
Fire Department site plan review	\$400.00				
Weed & Grass Mowing Admin.	\$100.00 + cost				

Total Woodland/Tree Removal Fee = \$2,708.75

Dead Tree Application Supplemental Document

T3S, R8E, Section 18, Van Buren Township, Wayne County, MI
Wayne Disposal, Inc.

These documents are being submitted in addition to those plans and documents currently being submitted to, and under review by, the Van Buren Township (Township) Department of Development, in the above-referenced matter.

Project Description

The applicant, Wayne Disposal, Inc. (WD), is proposing to fell all dead, diseased and dying trees within the Township-regulated 21.5-acre woodland on a 23 acre parcel off of Old Denton Road (see Figures 1-3). The purpose for this activity is to decrease the amount of bird perching opportunities due the site's close proximity to Willow Run Airport and to remove any potential bat habitat (during a time of the year when migratory bats are not present). The total amount of trees to be felled and left remaining on the ground within the woodland is approximately 643 dead trees and an approximately 2.9-acre dead tree zone containing approximately 450 dead trees (please refer to the other submitted documents for further explanation of the impacted resources and refer to the section below titled "Tree Replacement Plan" for replacement costs).

Contractor Selection and Award of Contract

The applicant will be conducting a competitive bid process to solicit quotes from qualified contractors for this proposed activity. Due to the nature of this work and sensitivity to the remaining live trees, several key performance standards will be included in the bid documents:

1. A required work plan proposed by the contractor which will be approved by WD. The work plan will be based on cutting individual dead/dying trees with a chainsaw (or equivalent) and typical forestry practices to fell the tree into clear landing zones; no machines will be allowed within the "live" woodland areas. A hydro-axe or similar machine will be allowed within the approximate 2.9-acre dead tree zone to efficiently fell all dead trees within that section of the woodland.
2. Established baseline performance boundaries in which, if neglected by the contractor, the Owner (WD) may terminate the contract.
3. The contractor will provide its own project manager for the work crew and shall be on-site daily for efficient communication, manage quality control and alert KME or WD of any issues, if they should arise.

Sequence of Construction and Schedule

The following sequence of construction explains the methods of felling the dead trees. Construction is anticipated to begin fall of 2008 and be completed by early spring 2009.

1. King & MacGregor Environmental (KME) will meet with the awarded contractor to establish the scope of work, limits of work and performance conditions to be met.
2. KME will conduct daily site visits to observe the methods and means performed by the contractor, quality control and performance standards.
3. KME will record any damage to live trees, record the number of dead trees felled and report these findings to WD.

4. Upon completion of the dead tree felling operation WD, KME and the Township will meet jointly on-site to discover and record the amount of damage to live trees and the number of dead trees felled.
5. The contractor will clean site and provide restoration to any areas outside the limits of work, access roads, etc. to the specifications on the plan and/or to the standards of WD.

Tree Replacement Plan

Upon completion of the dead tree felling operation, the Township will be invited to inspect the remaining live trees and woodland for damage and/or removal of live trees, if any. KME will be present at this site visit to concur with the amount of damage and viability of the live trees. The number of live trees taken due to the process of felling dead trees will be recorded and decided at this site visit. The obligation to replace the trees will be documented with a letter of credit (bond or equivalent financial instrument as negotiated between WD and the Township) equal to the number of live trees irreversibly damaged valued at \$350 per tree.

The record keeping of damaged live trees and the letter of credit (or replacement equivalent approved by the Township) is proposed due to the sequential application for live tree removal on the same parcel. To avoid WD providing twice for live tree removals, we propose to keep a record of the amount of live trees taken during the dead tree felling application and provide the replacement costs as a letter of credit, bond or equivalent financial instrument as negotiated between WD and the Township to show in good faith that the live trees will be replaced. However, in the sequential application (for live tree removals), the Township-required tree survey has been waived and a scientific-based tree sampling methodology has been suggested by the Township. The tree sampling methodology will not take into account the live trees which were taken as a result of the dead tree felling operation. Therefore, although a letter of credit (or replacement equivalent approved by the Township) will be available, we propose to replace all tree costs with the final tree replacement plan with the second application.