

HAZARD MITIGATION PLAN

FOR

BLOOMFIELD TOWNSHIP



August 2017

Prepared by:



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Consulting Engineers

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Section 1 - Executive Summary

As with all communities in Michigan, Bloomfield Township is subject to natural, technological, and human hazards that can threaten life and health, and can impact property, the environment, and infrastructure. Due to the characteristics of the Township, some hazard events have occurred more frequently in the past, and are more likely to occur in the future. Providing strategies to minimize these hazards requires a multi-step program, which includes defining the hazards, identifying preventative measures and mitigation strategies, and incorporating these strategies into Township-wide planning efforts. This plan outlines possible Bloomfield Township hazards, prioritizes the most significant ones, and discusses way to mitigate the impacts of these hazards.

The Plan Process

This plan is an updated version of the 2011 Bloomfield Township FEMA approved Hazard Mitigation Plan. The 2011 plan was prepared using the guidelines outlined in the FEMA Multi-Hazard Mitigation Planning Guidance. Surveys were distributed and a meeting between Township staff members who deal with planning and hazard response was held. These surveys and discussions were used to identify the major hazards which could potentially affect the Township.

Also, information from the Oakland County Hazard Mitigation Plan, which the Township was involved in the preparation of, members of Township staff, members of the public, and other interested parties, was used for preparation of this plan. Bloomfield Township was active in the preparation of the Oakland County Hazard Mitigation Plan and much of the information related to Oakland County as a whole also pertains to Bloomfield Township. However, Bloomfield Township has specific concerns related to flooding which are incorporated into this plan.

The goal of hazard mitigation is to reduce loss of life and property from hazards that occur in the Township by protecting the health, safety and economic interests of its residents. In order to secure access to funding through the Federal Emergency Management Agency (FEMA), a hazard mitigation plan must be adopted by the community and approved by FEMA. Also, this plan will help to develop a method to incorporate hazard identification and mitigation into the planning process of the Township.

The specific tasks associated with this Plan are as follows:

- ≡ Identifying Hazards and Risks
- ≡ Developing a Hazard History
- ≡ Developing a Community Profile
- ≡ Assessing Vulnerabilities
- ≡ Defining Community Goals and Objectives
- ≡ Identifying and Prioritizing Hazard Mitigation Strategies
- ≡ Developing Action Plans for A Select List of Mitigation Strategies
- ≡ Preparing a Draft Report and Soliciting Community and Public Feedback
- ≡ Finalizing Report, including Community Outreach and Communication, and Documenting the Planning Process
- ≡ Adopting the Final Plan

Hazard Assessment

The plan evaluates 29 hazards using historical research, community and public input, and information presented in the Oakland County Hazard Mitigation Plan. Based on the research and evaluation, several hazards were identified as being most critical for the Township. Evaluation of these hazards does not reduce the significance of a hazard event from any of the hazards identified, but provides focus for the mitigation activities and resources.

- ≡ Flooding (Non Dam)
- ≡ Hazmat Incidences
- ≡ Fire Hazards
- ≡ Infrastructure Failures, including Petroleum and Gas Pipeline Accidents
- ≡ Severe Weather Events (Thunderstorms, Winter Storms, Tornadoes)
- ≡ Transportation Accidents

Hazard Mitigation

This plan assessed numerous possible hazard mitigation strategies. Of these, the 7 listed below were selected to prepare Action Plans.

- ≡ Install additional tornado sirens in the community
- ≡ Continue additional hazmat training
- ≡ Participate in mutual aid assistance with surrounding communities (including 911)
- ≡ Encourage tree trimming and maintenance to prevent limb breakage and protect nearby utility lines
- ≡ Prepare Nursing Home evacuation plans
- ≡ Install additional v-tag radios in fire trucks
- ≡ Acquire rail transportation knowledge

Mechanism for Regulating Development

Bloomfield Township has authority over all zoning matters within the Township. All new developments or redeveloped properties are reviewed by all applicable departments in the Township (building and planning, engineering, fire, etc.). The Township has been zoned and land use is in accordance with that zoning plan. The Zoning Ordinance includes provisions for construction within the floodplain, fire suppression requirements, setbacks and density requirements, and other such requirements to protect new and redeveloped sites.

The Township's floodplain limits have been mapped and flood maps are reviewed during the development process to assure there are not adverse impacts on the proposed construction, or that the proposed construction does not cause any additional flooding upstream or downstream. If areas with known flooding problems are proposed for redevelopment, the Township reviews these plans for measures to alleviate flooding. The majority of the property along floodplain limits is privately owned and fully developed. The Township ordinances have provisions for limiting construction in the floodplain.

Commercial properties are generally located along major thoroughfares which make access in case of an emergency situation easier. Furthermore, major thoroughfares tend to have better access to utilities such as transmission water mains which help to assist in hazards such as fires.

Section 2 - Introduction

In order to be eligible for pre- or post- disaster mitigation funding, the Federal Disaster Mitigation Act of 2000 requires local governments to prepare a Hazard Mitigation Plan (HMP), which identifies strategies to minimize the impact of these hazards. Oakland County prepared a County-wide mitigation plan in 2005 which included some of the risks inherent to Bloomfield Township. Bloomfield Township participated in the preparation of this plan and adopted the County Plan by ordinance on December 12, 2005. In 2006, Bloomfield Township elected to move forward with a Flood Mitigation Action Plan to mitigate flooding concerns as identified in the Oakland County Hazard Mitigation Plan. However, during the course of FMAP preparation, it was determined that the Township would prepare an individual Multi-Hazard Mitigation Plan, incorporating the FMAP that was previously completed, due to elimination of the FMAP Project Plan process, and Michigan State Police (MSP) and FEMA moving towards Multihazard Plans for all communities. The most recent plan was adopted in 2011. These plans must be updated every five (5) years in order to remain eligible for FEMA funding and the Township plan is approaching five years since its preparation and needs to be updated.

Development of this Hazard Mitigation Plan required the assistance of personnel from key departments within the Township, including Police, Fire, Engineering and Environmental Services, Ordinance, Building, Assessing, and DPW. In addition, the Michigan State Police, Emergency Management and Homeland Security Division provided assistance for the preparation of this plan. This plan also uses the Oakland County Hazard Mitigation Plan as a basis for identifying hazards which may affect all of southeast Michigan, including Oakland County and Bloomfield Township.

The Planning Team for the preparation of this Multi-Hazard Mitigation Plan consisted of the following members:

- ≡ Mr. Noah Mehalski – Bloomfield Township Department of Public Works
- ≡ Mr. Wayne Domine – Bloomfield Township Engineering and Environmental Services
- ≡ Ms. Olivia Olsztyn-Budry – Bloomfield Township Engineering and Environmental Services
- ≡ Mr. John LeRoy – Bloomfield Township Fire Department
- ≡ Mr. Peter Vlahos – Bloomfield Township Fire Department
- ≡ Mr. Rich Davis – Bloomfield Township Department of Public Works

- ≡ Mr. Jim Allen – Bloomfield Township Assessing Department
- ≡ Mr. George Kilpatrick – Bloomfield Township Building Department
- ≡ Mr. Dan Edwards – Bloomfield Township Police Department
- ≡ Ms. Karyn Stickel – Hubbell, Roth, & Clark, Inc.
- ≡ Ms. Ashley Allen – Hubbell, Roth & Clark, Inc.

The Bloomfield Township Building Department handles all planning and zoning issues in house. The Township has several ordinances in place and when plans for new buildings or developments are submitted, they are reviewed with respect to the Township's Zoning Ordinance. The Zoning Ordinance has several sections in plans, such as the floodplain and wetland sections, which are used to protect from hazards.

The draft plan was posted on the Township's website on July 11, 2017 for comment from members of the public, business owners, neighboring communities and other interested parties and has remained posted since that date. No comments were received. Furthermore, the plan was presented to the Township Board on two separate occasions, with opportunities for the public to comment. Information regarding these meetings is included in Appendix B.

Section 3 - Hazard Mitigation Plan Process

The Hazard Mitigation Plan was created to help Bloomfield Township better understand the natural, technological, and human hazards that may affect the community, and the impacts they may have. Also, this report identifies ways to mitigate these impacts to protect the health, safety, and economic interests of the community.

The Plan is designed to comply with the requirements of the Disaster Mitigation Act of 2000, which states that local governments, to be eligible for pre-disaster mitigation funds after November 1, 2003 and post-disaster mitigation funds after November 1, 2004, must have an approved Hazard Mitigation Plan in place.¹

Based on the requirements of the “Local Hazard Mitigation Planning Guidebook”, this Plan evaluated 29 hazards in the three categories as described below. Flooding hazards were evaluated in detail in the Township’s Flood Mitigation Project Plan, which is incorporated into this document.

Natural Hazards

- ≡ Flooding
- ≡ Drought
- ≡ Earthquakes
- ≡ Hurricanes
- ≡ Extreme Temperatures (heat and cold)
- ≡ Fires (Structural)
- ≡ Wildfires
- ≡ Subsidence (Natural)
- ≡ Thunderstorms (Lightning and Severe Winds)
- ≡ Tornadoes
- ≡ Winter Hazards (Ice, Hail, Extreme Cold, Sleet Storms, and Snowstorms)

- ≡ Landslides and Debris Flow
- ≡ Climate Change Adaptation

Technological Hazards

- ≡ Hazardous Material Incidents
- ≡ Power Outages
- ≡ Sanitary and Storm Sewers
- ≡ Infrastructure Failure (Water, Electrical, Communication, Storm, and Sanitary Systems)
- ≡ Nuclear Power Plant Accidents
- ≡ Oil and Gas Well Accidents
- ≡ Pipeline Accidents (Petroleum and Natural Gas)
- ≡ Subsidence (Mining)

Human Hazards

- ≡ Civil Disturbance
- ≡ Criminal Acts (including vandalism and arson)
- ≡ Transportation Accidents (air, car, public, rail, and marine)

Terrorism

- ≡ Explosions
- ≡ Biological Threats
- ≡ Chemical Threats
- ≡ Nuclear Blasts
- ≡ Radiological Dispersion Device (RDD)

Although included in the hazard analysis section, this Plan does not include mitigation strategies for terrorism, the use of weapons of mass destruction, or nuclear power plant accidents. These hazards were addressed in the Oakland County Threats and Needs Assessment, which is a homeland security and law

enforcement sensitive document, and therefore, not available to the public. For this reason, the information in these documents is not included in this Plan.

3.1 *Plan Goals and Objectives*

The goals of the Hazard Mitigation Plan are saving lives and protecting property, preserving and protecting an area's environment and economy, and preserving and maintaining an area's essential services and quality of life. In addition, specific goals of this plan are:

- ≡ Ensure access to FEMA funding for the Township by complying with Section 104 of the Disaster Mitigation Act of 2000
- ≡ Provide a basis for identifying and mitigating hazards that affect the Township
- ≡ Develop a method to incorporate hazard identification and mitigation into the planning process of the Township

3.2 *Planning Process*

This plan was prepared to update the 2011 Hazard Mitigation Plan and provide a basis for identifying and managing hazards which may affect Bloomfield Township and to meet federal, state, and local requirements for hazard mitigation and FEMA grant funding eligibility. Plan preparation included the following tasks:

- ≡ Reviewing Existing Plan
- ≡ Identifying New Hazards and Risks
- ≡ Identifying Goals and Objectives
- ≡ Developing a Community Profile
- ≡ Assessing Vulnerabilities
- ≡ Defining Community Goals and Objectives
- ≡ Identifying and Prioritizing Hazard Mitigation Strategies
- ≡ Developing Action Plans for a Select List of Mitigation Strategies
- ≡ Preparing a Draft Report and Soliciting Community and Public Feedback

- ≡ Finalizing Report, including Community Outreach and Communication, and Documenting the Planning Process
- ≡ Adopting the Final Plan

Bloomfield Township worked together with Hubbell, Roth, & Clark, Inc. (HRC), its consulting engineer to facilitate the planning process and prepare this Hazard Mitigation Plan. Development of this plan included input from all departments in the Township that may deal with hazards. Furthermore, the plan was posted on the Township's website for 4 weeks during which public comment was encouraged.

Planning Approach

The plan was prepared based on FEMA's Local Multi-Hazard Mitigation Planning Guidance (dated July, 2008) and the Township's 2011 HMP. The Plan began with an initial meeting between HRC and Township staff members. Prior to the meeting, a survey was sent asking about the hazards that they believe were most critical to the Township. The first meeting was used to discuss this survey, and develop a list of the high priority hazards affecting the Township. Information on hazards in the Township, and possible mitigation strategies, were also discussed at the kick off meeting. Furthermore, during the preparation of the County's Multihazard plan, Township staff completed a detailed analysis of the hazards facing the Township, and prioritized the most important. This information was used to prioritize the hazards outlined and discussed in this plan.

Existing Plans and Programs

A Hazard Mitigation Plan is only part of emergency planning, mitigation, preparedness, response, and recovery process. Therefore, a second objective of this planning process was to coordinate plan preparation with existing plans, programs, and procedures. Successful coordination in the future is key to following through with the goals outlined in this plan.

For the purposes of this Plan, existing hazard mitigation goals and objectives within the Township were reviewed. This plan does not replace any existing plans or programs, but provides a reference on hazard mitigation to be used for planning purposes throughout the Township.

Informational sources were utilized from several existing documents. These documents include those listed below:

- ≡ Bloomfield Township Fire Department 2014 Annual Report
- ≡ Bloomfield Township Police Department 2015 Annual Report
- ≡ Bloomfield Township Public Works Department 2014 Annual Report
- ≡ Oakland County Hazard Mitigation Plan
- ≡ SEMCOG Community Profile, Specific to Bloomfield Township
- ≡ Bloomfield Township Vulnerability Assessment

3.3 Plan Participation

This plan was prepared with information from many Township representatives, and with opportunity for feedback from Township residents and the general public. This plan was also prepared using information from the Oakland County Hazard Mitigation Plan, which incorporated a large amount of participation from several different sources. Representatives from many of the Township departments were involved in identifying hazards, and developing mitigation strategies.

3.3.1 Public Outreach

A draft copy of the plan was posted on the Township's website and available for public review on July 11, 2017 and was available for review. No public comments were received. Additionally, as part of the planning process, the plan must be formally adopted by the Township Board. On August 14, 2017, this plan was adopted by the Township Board. As with all public meetings, the public will had an opportunity to discuss at those times. Information regarding these meetings is included in Appendix B.

3.4 Plan Activities

3.4.1 Surveys

A survey was provided to the planning committee participants. This survey was designed to provide input in a workshop, and to provide a basis for discussing hazard evaluation and ranking, and mitigation strategies. The survey provided a ranking of the hazards affecting the Township, as well as a discussion of mitigation options.

3.4.2 Workshops

The project team held a meeting to discuss any changes or updates needed from the 2011 plan. This meeting consisted of discussion of the potential hazards and the effect they may have on the Township.

3.5 Plan Adoption

Formal adoption of a Hazard Mitigation Plan is required for FEMA approval. The Draft plan was provided initially to Bloomfield Township for review relative to issues of security. Following incorporation of security related comments, a public review version of the draft document was provided for public review by residents, businesses and other interested parties on the Township's website (link to website is: <http://www.bloomfieldtp.org/Services/EES/Engineering/HazardMitigationPlanning.asp>). The Township's website is visited frequently by residents and business owners.

Following the public review period on the Township's website, the plan was presented to the Township Board on August 14, 2017. At this time, the public was offered another opportunity to comment upon the plan. Information regarding these public hearings is included in Appendix B.

3.6 Plan Maintenance

In order to remain eligible for Hazard Mitigation funding, this plan must be updated every five (5) years. Bloomfield Township staff will review the plan on an annual basis to assure that there are no new hazards or mitigation strategies to be added in. Every five (5) years, the plan will be updated as necessary if any new hazards are found, or as the prioritization of hazards changes. This will be tracked by the various departments in the Township, as most departments were involved with the plan preparation.

The committee of representatives that were involved with this original plan will review the plan on an annual basis to evaluate for completeness, review progress on Action Plans, update changes in hazard history, and update based on any known changes in vulnerability.

Plan evaluation and maintenance is the responsibility of Ms. Olivia Olszyn-Budry, who is the Township Engineer for Bloomfield Township.

The Plan will be updated every five (5) years to maintain up to date. Updated plans will also be posted on the Township website for public review and comment. Once updates are complete and public comment has been received, the plan will be re-adopted by the Township Board. If during the annual reviews of the plans, substantial revisions are made, the plan will be posted on the Township website and depending on the revisions, may be re-adopted by the Township Board.

Section 4 - Community Profile

4.1 Historical Overview

This area was first settled by the Native Americans of the Chippewa, Ojibwa, Ottawa, and Potawatomi Tribes. The area began to be settled in 1818 by the Pontiac Company with the intent to purchase land and establish a settlement. Bloomfield Township was established in 1827.

Through the 1950s, the population in the Township was less than 4,000 people. In the 1960s and 1970s, the population increased from less than 4,000 to 43,000 people, which is approximately equal to its current population. From the mid-70s to present day, the population has held steadily at or around 43,000 people.

4.2 Geography and Climate

Bloomfield Township is located in the southeastern portion of Oakland County and is bordered by the cities of Pontiac and Auburn Hills to the north, the City of Troy to the east, the cities of Birmingham, Beverly Hills, Bingham Farms, and the Village of Franklin to the south, and West Bloomfield Township to the west. Bloomfield Township also completely surrounds the City of Bloomfield Hills. Bloomfield Township is located in both the headwaters of the Rouge River Watershed and the Clinton River Watershed.

The total land area in Bloomfield Township is approximately 16,630 acres. The topography of the Township is generally flat, which is consistent with Oakland County and southeastern Michigan.

Weather in Bloomfield Township is consistent with the weather in Oakland County and other non-coastal areas in the southeastern portion of Michigan. The following table provides average monthly weather conditions as published by the National Climatic Data Center and the Midwestern Regional Climate Center.

Table 4-1: Bloomfield Township Precipitation and Temperature Averages

| Month | Average Daily Temp. (°F) | Average Precip. (Inches) | Average Snowfall (Inches) |
|--------------|--------------------------|--------------------------|---------------------------|
| January | 22.1 | 1.73 | 10.4 |
| February | 25.9 | 1.72 | 9.9 |
| March | 36.8 | 2.51 | 5.3 |
| April | 48.9 | 3.45 | 1.5 |
| May | 59.6 | 4.20 | 0.0 |
| June | 69.0 | 4.33 | 0.0 |
| July | 72.8 | 4.03 | 0.0 |
| August | 71.0 | 3.72 | 0.0 |
| September | 63.1 | 3.43 | 0.0 |
| October | 51.0 | 2.98 | 0.1 |
| November | 38.4 | 2.72 | 1.2 |
| December | 26.6 | 2.28 | 7.7 |
| Annual Total | - | 32.42 | 36.1 |

Sources: Midwestern Regional Climate Center, cli-MATE,

<http://mrcc.isws.illinois.edu/>, Oakland County Weather Station, 1980-2015 Average

National Oceanic and Atmospheric Administration, national Climatic Data Center,

<http://www.ncdc.noaa.gov>, Pontiac Weather Station, 1981-2010 Normals

4.3 Land Use Patterns

Land use in Bloomfield Township is similar to that throughout Oakland County with the majority being single-family residential. The next biggest land use categories include Transportation, Water, Governmental/Institutional, Open Space, and Commercial. Further information regarding land use is available in the Land Use table created from data provided by the Southeast Michigan Council of Governments (SEMCOG) and the 2010 U.S. Census Bureau.

The median home value in Bloomfield Township is approximately \$379,900 and the median gross rent is approximately \$964 per rental unit per month. Approximately 4.8% of all housing units (a total of

approximately 850 units) in Bloomfield Township are vacant. Approximately 1/3 of the vacant units are due to seasonal trends.

Table 4-2: Land Use Patterns and Trends

| SEMCOG 2008 Land Use | Acres | Percent |
|--|--------------|----------------|
| Agricultural | 0 | 0% |
| Single-family residential | 10,745.2 | 65.1% |
| Multiple-family residential | 68.1 | 0.4% |
| Commercial | 525 | 3.2% |
| Industrial | 103 | 0.6% |
| Governmental/Institutional | 772.8 | 4.7% |
| Park, recreation, and open space | 570.2 | 3.5% |
| Airport | 0 | 0% |
| Transportation, Communication, and Utility | 2,680.1 | 16.2% |
| Water | 1,031.5 | 6.3% |
| Total Acres | 16,495.9 | |

Source: SEMCOG Community Profile for Bloomfield Township, 2016 Data

4.4 Transportation Network

There are approximately 334 miles of roads in Bloomfield Township, which are owned and maintained by various agencies including the Michigan Department of Transportation (MDOT), Road Commission for Oakland County (RCOC), and private entities. The Bloomfield Township Roads Division maintains approximately 213 miles of subdivision roads and an additional 50 miles of gravel roads through a contract with RCOC. There are 10 bridges including one with weight restrictions.

The Suburban Mobility Authority for Regional Transportation (SMART) provides bus service to areas in Bloomfield Township, which serves routes and connections to destinations in Oakland, Wayne, and Macomb Counties. Specialized services to the handicapped and elderly are also provided by SMART.

Air transportation is served by Detroit Metropolitan International Airport and Bishop International Airport for commercial and passenger travel, and the Oakland County International Airport for corporate flights.

Rail service in the area is provided by Amtrak for passengers with train stations located in Pontiac, Birmingham, and Royal Oak. Freight rail service is provided by CN North America and CSX Transportation.

4.5 Population Characteristics

Based on data from SEMCOG and the 2010 U.S. Census Bureau, as of August 2016, Bloomfield Township has a population of 41,070. The population is expected to increase to 44,338 in 2040.

Table 4.3: Bloomfield Township Population Count/Projections

| Year | Population Count/Projection |
|------|-----------------------------|
| 1990 | 42,473 |
| 2000 | 43,023 |
| 2010 | 41,070 |
| 2040 | 44,338 |

Source: SEMCOG

Table 4.4: Population Age Breakdown

| Age Group | Population (2010 U.S. Census) |
|-------------------|-------------------------------|
| Under 5 years | 1,626 |
| 5 to 19 years | 8,314 |
| 20 to 34 years | 3,730 |
| 35 to 64 years | 18,473 |
| 65 years and over | 8,927 |
| Total | 41,070 |

Source: SEMCOG & 2010 U.S. Census Bureau

Table 4.5: Population Race Breakdown

| Race | Population (2010 U.S. Census) |
|---------------------------|-------------------------------|
| Non-Hispanic | 40,330 |
| White | 33,797 |
| Black | 2,732 |
| Asian or Pacific Islander | 2,968 |
| Other | 115 |
| Hispanic | 740 |
| Total Population | 41,070 |

Source: SEMCOG & 2010 U.S. Census Bureau

Table 4.6: Household Characteristics

| Household Types | Number | Percentage |
|------------------|--------|------------|
| With Seniors 65+ | 6,196 | 38% |
| Without Seniors | 10,270 | 62% |
| Total Households | 16,466 | 100% |
| With Children | 4,834 | 39% |
| Without Children | 7,675 | 61% |
| Total Households | 12,509 | 100% |

Source: SEMCOG, 2010 U.S. Census Bureau & Decennial Census

4.6 Economic Characteristics

Nearly 79% of the Bloomfield Township population is over 18 years old with 77% of that population in the workforce. Based on the employment numbers by place-of-work from SEMCOG, the top four industries for employment in Bloomfield Township include Knowledge-based Services, Services to Households & Firms, Private Education & Healthcare and Retail Trade. The following table lists the data provided by SEMCOG 2012 various industries and the population employed in each. Some of the data has been blocked due to confidentiality concerns.

Table 4.7: Occupation and Industry Characteristics

| Industry | SEMCOG 2010 | Percent |
|---|-------------|---------|
| Natural Resources, Mining & Construction | 482 | 2% |
| Manufacturing | 395 | 2% |
| Wholesale Trade, Transportation, Warehousing, & Utilities | 812 | 3% |
| Retail Trade | 3,263 | 14% |
| Knowledge-based Services | 5,930 | 25% |
| Services to Households & Firms | 5,803 | 24% |
| Private Education & Healthcare | 3,371 | 14% |
| Leisure & Hospitality | 1,832 | 8% |
| Government | 1,934 | 8% |
| Total | 23,822 | 100% |

Source: SEMCOG

Based on information from SEMCOG, the median household income in Bloomfield Township is \$106,778 with a per capita income of \$66,409 (in 2010 dollars). Approximately 659 households are below the poverty line (4.1% of total households in the Township).

4.7 Community Services/Organizations

Bloomfield Township offers its residents a variety of services including: Assessing, Building (including Planning and Zoning), Cable, Clerk, Code & Ordinance Enforcement, Engineering, Environmental Services, Fire, Planning, Police, Public Works, Roads, Senior Services, Solid Waste, Treasurer, and Water & Sewer. Most of these services are delivered from the Township’s Campus site at 4200 Telegraph Road. The 48th District Court and Senior Services Center are also located within this government campus. Bloomfield Township recently constructed a new Senior Services Center which offers a fitness center, adult day care, trips, events, etc. to all residents of Bloomfield Township 50 years of age or older.

Natural gas service is provided by Consumers Energy. Electrical service is provided by DTE Energy. Telephone service is provided by AT&T, Century Tel Midwest, Frontier, and Verizon North. Cable service is provided by Comcast and AT&T. Water is provided by Southeastern Oakland County Water Authority (SOCWA) and sewer service is provided by the Evergreen Farmington Sewage Disposal System (EFSDS). However, the Township is responsible for providing operation and maintenance of much of the water and sanitary sewer service infrastructure within the community, with the exception of EFSDS interceptor sanitary sewers and large diameter water transmission mains.

Bloomfield Township is served by Bloomfield Hills Public Schools, Birmingham Public Schools, and Avondale Public Schools. Additionally, there are several private schools and academies throughout the Township.

Bloomfield Township has an extensive Safety Path network which runs along many of the major roads, and provides safe passage for pedestrians, joggers, and bikers, from subdivisions to major points of interest throughout the Township, including schools and shopping areas. Bloomfield Township also has a library which provides many services to Township residents. A recent upgrade to the library in 2008 helped to improve these services.

Bloomfield Township is home to Oakland Hills Country Club, which has hosted several major PGA or other golfing events in the past. The annual Woodward Dream Cruise also runs through Bloomfield Township.

4.8 Critical Assets

The following is a list of the critical assets that was developed based on current and future land use in Bloomfield Township, the nature of hazards which may affect the Township, and the results of community input.

- ≡ Business Districts
- ≡ Commercial Sites
- ≡ Medical Facilities/Senior Living Centers
- ≡ Industrial Sites

- ≡ Natural Areas
- ≡ Open Spaces
- ≡ Public Facilities
- ≡ Residential Areas
- ≡ Roads, Railroads, and Bridges
- ≡ Schools and Places of Worship
- ≡ Sports and Entertainment Venues
- ≡ Utility Facilities

These facilities and infrastructure are critical to providing essential products and services to the general public, preserving the welfare and quality of life of the community, and assuring public safety, emergency response, and disaster recovery.

Natural features are also an important asset to the Township as they provide economic, environmental, educational, and recreational benefits.

Section 5 - Hazard History

5.1 Civil Disturbances

Definition

A public gathering or uprising which disrupts essential functions and results in unlawful behavior such as rioting or arson. This event involves a large number of people and requires a significant response effort by law enforcement and/or emergency responders.

Historical Events

Although not very common, large civil disturbances can typically be attributed to labor disputes, controversial court judgment or government actions, resource shortages following a catastrophe, demonstrations by special interest groups, unfair death or injury, or celebrating a victory by a sports team. Bloomfield Township has no history of civil disturbances.

Frequency & Probability

The Michigan Department of State Police, Emergency Management Division, has documented that civil disturbances occur in Michigan approximately once every ten years¹. Per the Oakland County Hazard Mitigation Plan, the most likely causes for a civil disturbance would be a labor dispute, sporting event or demonstration at a college, government or military facility within the County. There is limited history of civil disturbances within Oakland County. The risk of civil disturbances at sport/entertainment venues, educational facilities, detention facilities and governmental facilities is generally higher. Bloomfield Township is home to Oakland Hills Country Club which in the past has hosted several large PGA events. This is the only large sporting or entertainment venue within the Township.

Health & Safety

Because Oakland County and more specifically Bloomfield Township have no history of civil disturbances, there is no history of deaths or injuries from this hazard. However, on a statewide level, there have been over 75 deaths and 1,700 injuries from major civil disturbances since 1943.

Area Impacted

Arson, looting, and vandalism often occur during civil disturbance events, which in turn can result in significant damage to property. Because there have been no civil disturbances within the Township, there has been no history of property damage from this hazard.

Economic Impact

Economic recovery from civil disturbances can be slow and may require government assistance to revive the local economy because the economic impact from this hazard goes far beyond emergency response costs and property damage. Civil disturbances can adversely impact a community's reputation, which in turn could deter potential residents and businesses. Additional investigation to establish the economic impact from civil disturbances is not recommended at this time due to the historical lack of these hazard events.

Critical Facilities/Services

Civil disturbances often require emergency response services from the local community and other local or state units. However, due to the historical lack of civil disturbances in Bloomfield Township and Oakland County, it is not recommended to devote further resources to identify critical facilities/services that may be impacted by this hazard at this time.

5.2 Criminal Acts

5.2.1 Vandalism

Definition

Vandalism is the willful or malicious destruction, injury, disfigurement, or defacement of public or private property. A vandalism offense is an act of vandalism which is reported to a law enforcement agency.

Historical Events

Examples of acts of vandalism can include graffiti, tampering with traffic signs, and damage to vacant buildings. Vandalism can also occur to public facilities or infrastructure. Depending on the extremity of the vandalism, there is a potential for a significant impact to the community.

Frequency and Probability

Oakland County reports an average of approximately 10,000 vandalism offenses per year. Bloomfield Village Police Department, which is part of Bloomfield Township, responded to 6 calls of malicious destruction of property in 2015. Given the history and frequency, it is anticipated that this hazard will continue to occur in the future.

Health and Safety

Bloomfield Township does not have data available for death or injury rates associated with acts of vandalism. It is assumed that the majority of these events affect only property, and do not pose a threat to health and safety. However, if vandalism occurs to public infrastructure, it could affect health and safety.

Area Impacted

The amount of impact to a community is generally related to the severity of the event. Vandalism can occur in all areas of the Township. However, higher rates of occurrence take place in areas with vacant buildings. Property damage can be expected with each occurrence.

Economic Impact

High rates of vandalism can decrease the attractiveness of a neighborhood, thus leading to economic loss due to the loss of businesses or residents. Detailed information regarding the economic impacts of vandalism is not available.

Critical Facilities/Services

Generally, critically services and facilities are not directly impacted by vandalism, although vandalism on utilities or transportation systems can impact these services.

5.2.2 Arson

Definition

Arson is the willful or malicious burning or attempt to burn, with or without intent to defraud, a dwelling, public building, motor vehicle, or personal property of another. An arson offense is an act of arson which is reported to a law enforcement agency.

Historical Events

Arson is second leading cause of residential fires and residential fire deaths in the United States according to the U.S. Fire Administration. Oakland County had a total of 205 arson offenses in 2010.

Frequency & Probability

While Bloomfield Township does have some reported cases of arson, the frequency is low. It is anticipated that the probability for this will remain the same in the future.

Health & Safety

Data regarding civilian deaths and injuries in Bloomfield Township due to arson was not available. Due to the low frequency of this event, the health and safety impacts are relatively low. There is a risk to emergency responders as with any fire.

Area Impacted

Any property is a target for arson. It is expected that arson will occur in areas with high property crime rates because it is considered a property crime. Property crime rates in Bloomfield Township are relatively low and therefore the probability of arson remains low.

Economic Impact

Economic loss attributed to the loss of residents and businesses can occur due to the effects that arson can have on the attractiveness and feeling of safety in neighborhoods and business districts. This can result in economic loss due to loss of residents or businesses. Specific information regarding the economic impact of arson in Bloomfield Township is not available.

Critical Facilities/Services

As stated above, all properties are potential targets for arson, which means that critical services and facilities in Bloomfield Township could be impacted by this hazard at any time. Depending on the nature of the event, an arson fire could impede the Township's ability to provide services to its residents.

5.3 Drought

Definition

A drought is an extended period of time with significantly low precipitation levels that usually occurs during spring and summer seasons.

Historical Events

Statewide there have been several drought conditions occurring in 1976-1977, 1988, and 1998-2001. During the 1998-2001 drought season, the USDA declared a disaster for 82 of Michigan's County's, including Oakland County.

Frequency & Probability

The Michigan Department of State Police, Emergency Management Division, has documented that droughts effect the entire State of Michigan approximately once every ten to fifteen years. The probability of a drought occurring in Bloomfield Township is the same as the probability occurring statewide.

Health & Safety

Risk to human life may not be directly attributable to drought but rather to associated drought effects including extreme heat, fire, and health problems from increased pollutant concentrations in surface water.

Area Impacted

Drought would primarily affect agricultural lands and those employed in agriculture. Additionally, drought conditions would decrease water levels in the lakes, streams, wetlands and other water bodies.

Based on the information from SEMCOG, there are approximately 54 acres of active agricultural land in Bloomfield Township and therefore the impact on agriculture in the Township is low. Droughts can also affect natural resources such as lakes, streams, and other water bodies, which may experience a decrease in water level. Droughts can also increase the likelihood of fires, which can result in the destruction of trees and other natural habitats.

Economic Impact

Droughts can impact a community by causing water shortages, a decrease in the quality and quantity of agricultural crops, a decrease in water levels in lakes, streams, and other water bodies, increase in wildfires, increase in insect infestations, increase in plant diseases and soil erosion. The damage to crops caused by droughts can cause an economic loss to local agricultural operations. As there is limited cropland in Bloomfield Township, the economic impact of the drought on farmland would be very low.

Critical Facilities/Services

Local and regional governmental agencies may be requested to respond to drought. However, due to the low significance of impact in Bloomfield Township, it is not recommended to devote further resources to identify critical facilities/services that may be impacted by this hazard at this time.

5.4 Earthquakes

Definition

An earthquake is a sudden movement or motion in the earth caused by an abrupt release of slowly accumulating strain, which results in ground shaking, surface faulting, or ground failures.

Historical Events

Since the 1800s, the State of Michigan has experienced several mildly damaging earthquakes. Michigan is located in an area that is considered stable with fault lines in bedrock geology, but is most affected by earthquakes that originate in upstate New York or centered near the Arkansas/Tennessee state line. Earthquakes originating in Bloomfield Township have not been documented. However, there have been several low-magnitude earthquakes that have been felt in the Township.

Frequency & Probability

Based on the type of fault and distance from the fault, the probability of experiencing a significant magnitude is not very likely. However, a small disturbance from an earthquake is possible. The frequency of an earthquake in Bloomfield Township is assumed to be once every 100 years or more.

Health & Safety

There have not been any recorded deaths or injuries related to earthquakes in Michigan. Due to the low probability of an earthquake in Bloomfield Township, the threat to the public is relatively low.

Area Impacted

Earthquakes typically affect large regions, not just an area the size of Bloomfield Township. The largest impact from an earthquake would be mostly to water, sewer, and gas pipelines located in the Township.

Economic Impact

Earthquake damage can occur to any structure, and is proportional to the earthquake magnitude. High property damage would be expected in areas of high development density. However, in Bloomfield Township most of the damage would be to the utility infrastructure such as water, sewer, and gas.

Critical Facilities/Services

Due to the low probability of severely destructive earthquakes happening in Michigan, it is not recommended to perform additional investigation of the impact to critical facilities/services at this time.

5.5 Extreme Temperatures

5.5.1 Extreme Cold

Definition

A prolonged period of extreme cold, usually accompanied by snowstorms, sleet and ice storms or hail. There is no standardized temperature used to define extreme cold, although prolonged periods of temperatures below freezing, and especially below 20°F is of concern. Human mortality temperature thresholds vary with latitude. Areas of the southern United States are more susceptible to human health

impacts from cold than areas in the north. Human health effects vary with an individual's age, physical condition, physical activity, wind chill, and access to heated buildings.

Historical Events

There have been multiple extreme cold events that have occurred in Oakland County, and Bloomfield Township, over the years, which resulted in 10 deaths and 29 injuries.

Frequency & Probability

The Michigan Department of State Police, Emergency Management Division, has documented that Michigan experiences 90-180+ days per year below freezing³. Even though the probability for an extreme cold event to occur in Bloomfield Township is based on seasonal weather patterns, the likelihood is high.

Health & Safety

Extreme cold will affect the entire population, but will more critically affect children, the elderly, disabled, and impoverished residents. The common conditions associated with extreme cold are hypothermia and/or frostbite. Based on the population for Bloomfield Township, this leaves approximately 26% of the population (i.e. elderly over 65 years, children under 5 years, etc) at risk.

Area Impacted

Extreme cold would primarily occur to infrastructure such as gas and water supply lines. Along with extreme cold, there is an increased chance for winter storms which would affect transportation.

Economic Impact

Extreme cold that impacts the water and gas supply lines, would result in increased repair costs. Additionally, there are costs associated with medical treatment for residents adversely affected by the extreme cold.

Critical Facilities/Services

Local and regional governmental agencies respond to extreme cold by providing assistance. There would be an increase in the amount of cases for frostbite, hypothermia, and other cold-related illnesses that hospitals and medical clinics would treat.

Gas and electric companies like Consumers Energy and DTE Energy would be essential in providing enough resources to meet demand for heat and repair all damaged lines.

During periods of extreme cold, there is also an increased risk of breaks in the water main system. Bloomfield Township would be essential in repairing the breaks to assure that water service is provided to all users.

5.5.2 Extreme Heat

Definition

A prolonged period of extreme heat, usually accompanied by conditions such as high humidity, high winds, and lack of rain. Prolonged periods of temperatures above 90°F are of concern. Human mortality temperature thresholds vary with latitude. Areas of the northern United States are more susceptible to human health impacts from extreme heat than areas in the south. Human health effects vary with an individual's age, health, physical activity, humidity, and access to air conditioning.

Historical Events

There have been multiple extreme heat events that have occurred in Oakland County over the years, which resulted in 4 deaths and 594 injuries.

Frequency & Probability

Even though the probability for an extreme heat event to occur in Bloomfield Township is based on seasonal weather patterns, the likelihood is high.

Health & Safety

Extreme heat will affect the entire population, but will more critically affect children, the elderly, disabled, impoverished residents, and people in poor health. The common conditions associated with extreme heat are heat stroke and heat exhaustion. Based on the population for Bloomfield Township, this leaves approximately 25.7% of the population (ie elderly over 65 years, children under 5 years, etc) at risk. (SEMCOG Census 2010)

Area Impacted

Extreme heat would primarily occur to entire regions or counties in Michigan, with open spaces being at risk for wildfires. Additionally, elderly housing areas would also be the most impacted.

Economic Impact

Extreme heat is usually accompanied by drought and would have the largest economic impact on agricultural operations. Additionally, there would be costs associated with increased energy demand.

Critical Facilities/Services

Local and regional governmental agencies would respond to extreme heat by providing assistance. There would be an increase in the amount of cases for heat exhaustion, heat stroke, and other heat-related illnesses that hospitals and medical clinics would treat.

Gas and electric companies like Consumers Energy and DTE Energy would be essential in providing enough resources to meet demand for power. DWSD and Bloomfield Township would be essential in assuring that adequate water is available to all users and demand raises sharply during periods of high temperatures.

If extreme heat conditions last long enough to cause a drought, State and Federal assistance may be made available.

5.6 Fire Hazards

5.6.1 Forest/Field Fire

Definition

An uncontrolled fire within an open space, forested area, brush or grassed area, or wildland.

Historical Events

While there were 12 fires associated with forest or grassland areas in 2010, these primarily affected individual properties and were quickly contained. Bloomfield Township has not historically had any large scale, uncontrolled forest or field fires.

Frequency & Probability

Based off of DNR jurisdiction, Oakland County had 55 wildfires between 1981-2005. Small scale events such as localized grass or brush fires are more likely to occur rather than the probability of major forest/field fires in Oakland County.

Health & Safety

Deaths from Forest/Field fires have not been reported in Bloomfield Township. Injuries are more likely to occur and would be attributed to heat exhaustion and smoke inhalation.

Area Impacted

Based on the 2008 SEMCOG data, Bloomfield Township has approximately 27.2% of its land use covered in grasslands, turfgrass and agricultural fields, which would be vulnerable to forest/field fires. Developed or inhabited areas next to these open spaces would be affected by these types of fires. Additionally, the response time of the local fire department and the method of fire control would affect the amount of area impacted by these fires. Due to the size of the community and location of the various fire stations, response time is generally very quick, which limits the impacted area.

Economic Impact

Total property loss due to forest/field fires depends on the size and location of the fire. There may also be loss due to infrastructure damage, timber loss, property loss, wildlife loss, and loss of life or injury.

Critical Facilities/Services

Bloomfield Township has four fire stations. Bloomfield Township also provides and receives mutual aid with the surrounding communities, which would assist with controlling these fires. However, due to the limited large woodland or grassland areas within the Township, and the low probability of this event occurring, it is not recommended to spend any additional time researching this hazard.

5.6.2 Structural Fire

Definition

A structural fire is a fire of any origin which ignites one or more structures and causes loss of life and/or property. In Oakland County, there is an average of 544 structural fires per year.

Historical Events

In 2014, Bloomfield Township responded to 22 structural fires compared to 19 incidents in 2013.

Frequency & Probability

The occurrence of structure fires in Bloomfield Township will continue to occur in the future. As the Township is most built out, it is not anticipated that the frequency or probability increase in a major way.

Health & Safety

Structural fires throughout the State of Michigan can cause injury or death to occupants or those fighting the fire.

Area Impacted

Any parcel that has a structure is subjected to the possibility of a structural fire. Depending on the size of the fire, neighboring properties and structures could also be at risk.

Economic Impact

Property loss and contents loss can be very high due to structural fires. In Oakland County, the average cost of property and content loss due to a structural fire is approximately \$40,605.00. These costs could be much higher depending on the severity of the event.

Critical Facilities/Services

Bloomfield Township has 4 fire stations and one Bloomfield Village Fire Department that provides supportive fire services for the Township. All of them provide both fire and emergency medical services. Bloomfield Township also provides and receives mutual aid with the surrounding communities which can assist with a large structural fire if needed.

5.7 Flooding

The following historical flooding events that are discussed in detail were prepared by the Township (report dated July 2010). The Township is a participant in the National Flood Insurance Program (NFIP) and all floodplain maps were updated in 2005. Currently, the Township has no compliance issues with the program.

There are many different types of flooding including flooding caused by dam failure, riverine flooding, urban flooding, and shoreline flooding. Dam failure is the failure of an impoundment located in a river, stream, lake, or other waterway resulting in downstream flooding. Riverine flooding is the periodic occurrence of overbank flows of rivers and streams resulting in partial or complete inundation

of the adjacent floodplain. This occurs in the Township along the Franklin branch of the Rouge River. Urban flooding is the overflow of storm sewer systems and is usually caused by inadequate drainage following heavy rainfall or rapid snowmelt. Shoreline flooding and erosion hazards typically involve the loss of or damage to property as sand or soil is removed by water action and is carried away over time. Shoreline flooding generally occurs along the Great Lake shoreline. Bloomfield Township does not have any Great Lakes shoreline and therefore this type of flooding is not a concern.

The effects of flooding on Bloomfield Township are discussed in detail in this report. Historically, there have been several large scale flooding events, both riverine and urban flooding, which have caused problems throughout the Township. The most recent events in the area were:

Township-wide Events

The following are a list of recent large storm events that have caused flooding concerns throughout the Township, in some or all of the areas indicated on the attached map. During large rain events, the regulated floodplain areas and the other areas of historical flooding often have complaints.

- ≡ In June of 1998, a series of heavy thunderstorms moved across Bloomfield Township, producing rainfall amounts of around 3 inches across much of the county. Many basements and roads throughout southeast Michigan were flooded.
- ≡ In September of 2000, all of Oakland County, including Bloomfield Township, was granted a Presidential Major Disaster Declaration due to widespread flooding and sewer backups caused by an intense rainfall on September 10 and 11, 2000.
- ≡ February 2001 had heavy rains and snowmelt and flooding throughout the area, including portions of Bloomfield Township.
- ≡ On August 5, 2003 an urban and small stream flooding warning was issued for all of Oakland County, including Bloomfield Township due to heavy rain.
- ≡ On March 5, 2004, a flood warning was issued for Oakland County, including Bloomfield Township due to heavy rain and snowmelt.
- ≡ On May 23, 2004, a large storm occurred throughout the region which caused widespread flooding over Southeast Michigan. Much of the rainfall occurred in saturated areas that had experienced well-above average precipitation for the month of May.
- ≡ In June of 2004, heavy flooding throughout all of Southeast Michigan, including Bloomfield Township, prompted the issuance of a Presidential Disaster Declaration to provide assistance to properties affected by flooding.
- ≡ In September of 2008, a two day rainstorm resulting from Hurricane Ike brought a large amount of rain throughout the State of Michigan, including Bloomfield Township.
- ≡ In March of 2009, heavy rain, coupled with snowmelt and still frozen ground conditions, caused riverine flooding throughout Bloomfield Township.

Localized Events

The following localized events have occurred in the past several years throughout the Township:

- ≡ In January of 2009, a culvert blockage on Kirkway Road led to the lake levels of Island Lake rising to crest over Kirkway Road. Kirkway Road had to be closed for several days while the blockage was cleaned out and flow was restored. Due to the fact that this occurred in the winter time, the water over the roadway froze, resulting in additional traffic safety concerns.
- ≡ In March of 2009, the lake levels at Forest Lake and the associated downstream floodplain rose causing flooding and road closures along Club Drive and threatening to flood homes and structures along the floodplain. The Township had to pump flows over Franklin Road for several days in order to protect the structures and minimize the time of the road closures. While some improvements were made throughout this drainage corridor, more improvements are necessary to prevent future flooding.
- ≡ The Amy Drain at the northeast corner of the Township has historically had flooding complaints in periods of heavy rain. The entire corridor, most of which is located on private properties, will be cleaned out as part of a 2017 project.

5.7.1 Property and Infrastructure Inventory

There were several steps taken to identify properties located in the FEMA designated flood hazard area. The FEMA issued flood hazard area map was overlaid into the Township's GIS database and queries were run to identify parcels, structures, and homes located in the floodplain. The queries produced lists of addresses for parcels and structures located fully or partially within the floodplain. The addresses identified as having a structure in the floodplain were individually verified by HRC staff to assure that the structure or a portion of the structure was located in the flood hazard area. Copies of the queries are attached in Appendix A. Overall there are 1,084 parcels and 59 homes located wholly or partially within the 100 year floodplain.

A similar process was used to identify public infrastructure in the flood hazard area. The sanitary sewer, water main, and storm sewer systems, and the local roadways were all placed on the GIS floodplain map and facilities, lengths of pipe, and sections of road located in the flood hazard area were all identified. The results of these queries were verified by HRC staff. Copies of the queries are attached in Appendix A.

Once the properties, structures, and infrastructure in the flood hazard area were identified, other areas of known flooding, outside of the FEMA designated flood hazard areas, were identified. A map was presented at the Township staff meeting and no new flooding areas were identified. The limits of flooding were estimated using contour maps and available data from the Township. The limits were then

added to the overall map. From these areas, the length of utilities, the road length, and the number of utility structures located in these areas were identified and added to the queries mentioned above. These flooding areas are generally limited to the road and yard areas and did not result in the addition of any structures to the list of floodprone areas. Therefore, the number of structures within the known historic flooding zone as shown on the maps was not included in the total structure count.

Historical Flooding Descriptions

The following properties and areas have a history of flooding as reported by a several different agencies. During large rain events, such as those described in the previous section, these areas display road, yard and ditch flooding, and result in complaints from property owners. The areas numbered on the Township Map in Appendix C are broken down herein based on the department of the Township which reported the complaint.

Areas of Known Flooding: These areas are all areas that are known by all Township Departments to have flooding issues during rain events. These were identified in the previous report and several issues have been addressed.

- ≡ Intersection of Burnley and Kirkcaldy (1)
- ≡ Dover Road – Kensington to Charing Cross (2)
- ≡ Franklin Road and 14 Mile – This area is located in a designated floodplain and some work has been done in this area. However, flooding still occurs during large events. (4)

Engineering and Environmental Service Department: These are properties or areas that have been identified by the Township EESD as being at risk for flooding during large rain events. Many of them are outside of the regulated floodplain but are adjacent to ponds or unregulated streams.

- ≡ 3854 Wabeek Lake Drive (38)
- ≡ Behind homes on McEwen and Sodon Lake Road (21)
- ≡ 2905 Lahser (19)
- ≡ 5360/5280 Brookdale Road (5)
- ≡ 1850 Orchard Lane – Rear Yard (34)
- ≡ Adams Road – Pine Hill to south of Wattles (10)
- ≡ Bryn Mawr/Kenmoor Area (28)
- ≡ St. Auburn and 14 Mile Road (31)

Roads Department: These are areas along roadways that have a history of flooding during heavy rain events. The water standing on the roads can lead to deterioration of the roadways and road closures if it is deep enough.

- ≡ N. Greentree – Rockaway to Belmont (14)
- ≡ Hawthorne at N. Valley Chase (11)
- ≡ Charing Cross at Dover Drive (8)
- ≡ Strathmore – Brookdale to RR tracks (7)
- ≡ Brookdale – Big Beaver to Charing Cross (6)
- ≡ 1495/1465 Clarendon Drive (25)
- ≡ Clarendon Crest (26)
- ≡ Ardmore at Ardmore Court (20)
- ≡ Bloomfield Drive cul-de-sac (18)
- ≡ 1135/1171 Kemper Drive (4)
- ≡ Inkster at Cragin (24)
- ≡ Indian Trail at Cimmaron (23)
- ≡ 6070 Darramore (39)
- ≡ Jackson Park at 14 Mile (32)
- ≡ Club Drive at Forest Lake (42)

Building Department: These are areas that are identified by the Building Department as having a history of flooding during heavy rain events.

- ≡ Westmoor Drive, south of Walnut Lake Road (29)
- ≡ Eastmoor and Indianwood Trail (30)
- ≡ Parkston/Parkhurst area (35)
- ≡ Cedar Hill and Crosswick (36, 41)
- ≡ Southdown and Greentree (13)
- ≡ Hadsell and Highland Road (15)
- ≡ West End of the Berkshire Loop (16)
- ≡ Malibu Drive Loop (22)

Ordinance Department: These are areas that have been identified by the Ordinance Department as having a history of flooding during heavy rain events.

- ≡ 6970 Castle Drive
- ≡ 7425 Lahser Road

- ≡ 4553 Burnley
- ≡ 3467 Greentree
- ≡ 2705 Lahser

An overall map of the Township showing the designated flood hazard areas, as well as areas with known historical flooding is included as Appendix C.

The amount of flooding throughout these areas depends on the areas. The areas identified occasionally or frequently receive complaints from property owners regarding water in yards, streets, or ditches above and beyond the capacity.

Prioritization of individual projects is included in Sections VI and V of this report.

A. Flood Risk Assessment

The flood risk was determined based on the proximity to the 100 year floodplain. It is assumed that any structure located in this area is at risk for flood damage.

As previously stated, the areas of historical flooding are primarily limited to roads and yards. However, in these areas, there is a possibility of structure damage should flooding conditions worsen.

It was determined that the vulnerability of the structures within the flood plain is based on the extent of the structure in the floodplain. Those properties that have a structure fully located within the floodplain are more at risk than those structures only partially within the floodplain. The vulnerability for the utilities was prioritized based on the size and service area of the utility. Water main vulnerability was further assessed based on whether it was a dead end or transmission main. Similarly, the road vulnerability was determined based on whether it was a major road, or dead end road with no other means to access properties in the case of an emergency. Further information regarding the prioritization is included in Section V.

B. Estimates and Types of Structures at Risk

Based on the above-mentioned assessment, there are approximately 49 properties where the primary structure is located within the 100 year floodplain. The majority of these properties are single family residential homes. However, there are also several businesses which are wholly or partially located within the flood hazard area. There are also several properties identified with only a secondary structure such as a swimming pool/deck or shed located in the 100 year floodplain. In addition to the 49 properties that were identified as being located in the flood hazard area, the GIS query also identified an additional four (4) properties which have structures located in the flood hazard area. However, at this time, these properties have LOMAs with FEMA. At the time of this study, these properties are still shown on the

floodplain maps although it was determined that the structures are located outside of the designated floodplain area.

There are also numerous fire hydrants, water system gate valves and sanitary sewer and storm sewer manholes located within the 100 year floodplain. Due to their location within the floodplain area, these structures are all at risk for damage due to flooding. Furthermore, any sanitary sewer structures which are located within the 100 year floodplain are prone to the introduction of storm or surface water into the sanitary sewer system.

C. Repetitive Loss Properties

There are no known structures in the Township that have experienced repetitive loss due to flooding.

D. Extent of Flood Depth and Loss Potential

The total area of Bloomfield Township is 25.85 square miles. The total area of the 100 year floodplain located within Bloomfield Township is 1.84 square miles. Therefore, loss potential due to location in the flood hazard area exists in approximately 7.1% of the Township. This does not include areas outside of the flood hazard area which have been identified as areas of historical flooding within the Township. While it is difficult to place a value on the historical flooding area, the flooding has reached depths capable of severe property or structural damage.

There is a significant loss potential in the Township. The total assessed value (2016) of the residential homes alone that are located wholly or partially within the floodplain is just over \$15.0 million. This amount does not include any utilities or secondary structures which are located in the floodplain. Therefore, reducing and/or eliminating flooding risks can save the Township, its residents, and insurance carriers substantial money by reducing claims.

5.8 Hazmat Incidents

5.8.1 Fixed Site

Definition

Hazardous Material (Hazmat) Incident – Fixed Site is defined as an uncontrolled release of a hazardous material originating from a building, structure, or fixed equipment which is capable of posing a risk to life, health, safety, property, or the environment.

Historical Events

There are facilities in Bloomfield Township that store hazardous substances which could leak in the future and create a hazmat incident. The Bloomfield Township Fire Department responds to all hazmat incidences. No significant fixed site hazardous material incident has occurred in the Township to date.

Frequency & Probability

The probability of a hazardous material occurrence is expected in the future for Bloomfield Township and the impact on the Township could be significant. In 2014, Bloomfield Township Fire Department responded to 55 Hazardous Materials calls. Most of the calls were made up of carbon monoxide incidents, natural gas leaks, and fuel spills.

Health & Safety

Given the frequency of Hazmat events, and the few number of sites within the Township that store hazardous materials, the number of deaths and injuries from hazmat incidents is low. The majority of these incidents involve evacuations of the site of the release only.

Area Impacted

Hazmat incidents will most likely involve releases to surface and/or groundwater and the area impacted will depend upon the nature of the release. If the material is released into a storm sewer system, the impacts could be greater.

Economic Impact

Depending upon the amount and type of material released, these conditions will determine the amount of economic impact and whether environmental remediation is required. Some property damage can be expected. Additionally, property damage may be caused by fire or explosions from the Hazmat release.

Critical Facilities/Services

A significant Hazmat incident would involve the use of mutual aid and assistance with other agencies and departments.

5.8.2 Transportation Incident

Definition

A Transportation Hazardous Material (Hazmat) Incident is defined as an uncontrolled release of a hazardous material during transport which is capable of posing a risk to life, health, safety, property, or the environment.

Historical Events

There are several major transportation facilities in Bloomfield Township including I-75, Telegraph Road, Woodward Avenue, and the CSX Railroad Line. Bloomfield Township has had several events occur on these thoroughfares in the past and more are expected to occur in the future due to the large amount of traffic on these roads.

Frequency & Probability

The probability of a hazardous material occurrence during transport is expected in the future for Bloomfield Township due to the major thoroughfares throughout the Township.

Health & Safety

Death or injury could occur with transportation related hazmat incidents. Depending on the nature of the incident, these are typically limited to the operator of the transportation vessel. However, depending on the substance and severity of the event, evacuation of the area may be necessary in order to limit death or injury.

Area Impacted

Impacts from hazmat incidents will most likely involve evacuation, closure of roadways, and environmental contamination. As with fixed site hazmat incidents, the areas most affected involve surface water and land.

Economic Impact

Depending upon the amount and type of material released, these conditions will determine the amount of economic impact and whether environmental remediation is required. Costs to the public would include response efforts, commuter delays, and damage to transportation infrastructure.

Critical Facilities/Services

A significant Hazmat incident would involve the use of mutual aid and assistance with other agencies and departments. The Bloomfield Township Fire Department has personnel on staff that have been trained to deal with these situations as well.

5.9 Infrastructure Failure

Definition

An infrastructure failure is the failure of a critical public or private utility infrastructure which results in a short-term loss of service.

5.9.1 Communication Systems

Historical Events

Bloomfield Township operates an internal communication system such as 911 and cable. Telephone service for Bloomfield Township is available from numerous service providers. In April 2003, a severe ice storm affected Oakland County, including Bloomfield Township, which led to outages for many customers.

Frequency & Probability

Within Bloomfield Township, communication failures would most likely occur due to severe weather events or interference with phone lines from animals or vehicle accidents with utility poles. Communication failures are possible with major storm events including ice storms, lightning, or severe winds. The 911 call center can also be affected by power outages, although an alternate call center is maintained in case the phone lines to the 911 call center are impacted.

Health & Safety

People requiring emergency services during a communications system failure are at a greater risk for impact because these systems are the link between the public and emergency response services.

Area Impacted

Even though a telephone communication failure will affect the local communication network, a failure of the emergency communications system will impact the entire community.

Economic Impact

The economic impact would be mainly to a loss of productivity with affected businesses associated with a communications system failure.

Critical Facilities/Services

The 911 call center and emergency dispatch systems are crucial services provided to Bloomfield Township. Backup generators are to be utilized during power outages so emergency communications can be maintained. An alternate call center is maintained in case the phone lines to the 911 call center are impacted.

5.9.2 Electrical Systems

Historical Events

Bloomfield Township lost electrical power along with the surrounding communities in SE Michigan during the power outage that started on August 14, 2003. Localized areas of Bloomfield Township lose power during storm events, or during other interruptions to the service grid.

Frequency & Probability

Within Bloomfield Township, electrical service failures would most likely be due to severe weather events or interference with electrical lines from animals or vehicle accidents with utility poles. Additionally, ice storms and severe weather events can cause electrical service outages or interruptions. It is expected that interruptions will continue as the demand for electricity grows.

Health & Safety

Public health and safety depends upon uninterrupted electrical service to be provided in order to operate traffic signals, operate hospitals and emergency services, and heat and cool homes. Power outages can be dangerous during extreme heat or cold events.

Area Impacted

Power outages can affect an area as small as one parcel or an entire region like the 2003 event.

Economic Impact

Because electricity is vital to operating business and conducting daily Township activities and services, it is anticipated that the economic impact would be quite expensive. However, this number would be affected by the number of affected customers and the duration of the power outage.

Critical Facilities/Services

The region-wide blackout in 2003 affected every service in the Township. There were traffic backups due to the loss of traffic signals, loss of water service, and gasoline shortages.

5.9.3 Sanitary Sewer Systems

Historical Events

Failures of the sanitary sewer system will create sewer backups in homes or businesses and discharge of untreated sewage to rivers and lakes.

Frequency & Probability

The Township's sanitary sewer occasionally has backups at manholes or into homes due to the heavy rains or blockages in the pipe. While aging of the sanitary sewer system may contribute to more frequent sanitary sewer system failures, the Township has been very proactive at addressing areas throughout the sewer system which have had a history of backups and working to eliminate those issues.

Health & Safety

Untreated sewage is major health and safety threat to humans. Untreated sewage that is discharged to lakes or rivers will adversely impact the water quality within the receiving stream.

Area Impacted

The area impacted is dependent upon the severity of the event, which could affect one parcel or a large area of the Township.

Economic Impact

The economic impact would be mainly to a loss of productivity with affected businesses associated with a sanitary sewer system failure and is dependent upon the number of affected customers and duration of the event.

Critical Facilities/Services

Without sanitary sewer service, critical facilities such as hospitals, schools, businesses, sport/entertainment, and government cannot operate.

5.9.4 Storm Sewer Systems

Historical Events

Failures of the storm sewer system will create flooding and potentially sewer backups in homes or businesses and discharge of untreated sewage to rivers and lakes. In September 2000, municipal storm drain systems were flooded due to excessive rains in the region. Also, in the Winter and Spring of 2009, the heavy snowfall, coupled with a very wet spring caused flooding issues throughout the system.

Frequency & Probability

There are both open drains and enclosed underground drainage systems in Bloomfield Township. These systems are operated and maintained by MDOT, RCOC, Bloomfield Township, or by private entities. Storm sewer flooding is expected with most major rain or snowmelt events. More frequent flooding is expected due to the aging of the storm sewer system and as more development occurs.

Health & Safety

The flooding that occurs when storm drain systems fail can be a threat to safety.

Area Impacted

The area impacted is the drainage area contributing to the failed storm drain system and is dependent upon the severity of the event, which could affect one parcel or a large area of the Township.

Economic Impact

There can be a significant economic impact due to flooding and property damage.

Critical Facilities/Services

Bloomfield Township, the Oakland County Water Resources Commissioner, Michigan Department of Transportation, Road Commission for Oakland County, and private entities are responsible for maintaining a functioning storm sewer system in order to maintain the public health and safety.

5.9.5 Water Systems

Historical Events

Failures of the water system will create a loss of water service to one or thousands of Bloomfield Township residents depending upon the severity and location of the failure.

Frequency & Probability

Within Bloomfield Township, there have been 1,723 water main breaks since 1968, or an average of 42 breaks per year. In 2014, however, there were 44 water main breaks. Water system failures can be attributed to causes such as construction/excavation activities, underground freezing, power outages, and system blockages. Aging of the water system will contribute to more frequent water system failures. The Township has embarked on a multi-year, multi-phase water main replacement program and to date has replaced approximately 10 miles of aging and undersized water main, in areas with a high frequency of breaks.

Health & Safety

Clean drinking water is critical to the health and safety of the public. Water service interruptions could cause untreated or poorly treated drinking water to enter the public water supply.

Area Impacted

The area impacted is variable, which could affect one parcel or a large area of the Township, depending on the size of the break, and the service area of the main.

Economic Impact

The economic impact is expected to be costly and would be dependent upon the number of affected customers affected and duration of the event.

Critical Facilities/Services

Without water service, critical facilities such as hospitals, schools, businesses, sport/entertainment, and government cannot operate. Therefore, the Township has a policy to address water system failures as quickly as possible. The Township has a 24-hour emergency call line for residents or users to report water main failures and Township staff responds quickly to shut down the area of the break and restore service as quickly as possible. The Township exercises gate valves in order to be sure that in an emergency situation, the line can be shut down.

5.10 Nuclear Power Plant Accidents

Definition

A nuclear power plant accident would involve an actual or potential release of radioactive material at a nuclear facility in a quantity sufficient to constitute a threat to the health and safety of offsite populations.

Historical Events

Nuclear power facilities are regulated by the Federal Nuclear Regulatory Commission. There are three nuclear power plants operating in the State of Michigan, with the closest being Enrico Fermi-2 Nuclear Power Plant in Monroe, Michigan. The Secondary Emergency Planning Zone SEPZ, the 50 mile radius

zone around a nuclear facility, covers all of Bloomfield Township along with the southern portion of Oakland County.

Frequency & Probability

Because Bloomfield Township is located within the Secondary Emergency Planning Zone for the Enrico Fermi-2 Nuclear Power Plant in Monroe, it is possible that the Township could be impacted by an off-site release from the plant. This plant has not had an off-site release in the past, but could in the future.

Health & Safety

Radioactive materials could be released and become airborne or directly impact the land adjacent to the plant during an accident at nuclear power plant. The amount of radiologic contamination from a release is directly related to the type and amount of radioactive material released, weather conditions and wind direction during the release. Even though Bloomfield Township is located with the SEMZ, it is upwind of the prevailing wind patterns. Therefore, it is expected that the primary concern to Bloomfield Township would radiologic contamination to food sources.

Area Impacted

The Secondary Emergency Planning Zone, a 50-mile radius zone around a nuclear facility, for the Enrico Fermi-2 Nuclear Power Plant covers approximately 460 square miles in the southern portion of Oakland County, including all of Bloomfield Township. The actual area impacted would be dependent upon the type and amount of radioactive material released, weather conditions and wind direction during the release.

Economic Impact

It is difficult to determine the economic impacts from a nuclear power plant accident due to the low frequency of these events. However, it is still possible that these events could be very costly depending upon the severity of the event.

Critical Facilities/Services

There are response plans that have been developed by nuclear power plant operators and emergency planners to address the accidental release of radioactive materials. The nuclear power plant owner/operator shares responsibility for response to these type of events with all levels of government.

5.11 Oil and Gas Well Accidents

Definition

An oil or gas well incident could involve an uncontrolled release of oil or natural gas, or a release of hydrogen sulfide gas a by-product of production wells.

Historical Events

Based on the Oakland County Hazard Mitigation Plan, there are 53 active or producing wells within Oakland County, although there do not appear to be any active or producing wells within Bloomfield Township.

Frequency & Probability

The Michigan Department of State Police has produced the statistic that an oil or gas well incident occurs in Michigan every 3-4 years ¹⁰.

Death and injury rates from oil and gas well accidents are low, and the probability would be even lower due to the lack of active or producing wells in Bloomfield Township.

Health & Safety

Hydrogen sulfide gas can be produced as a by-product of oil or gas wells, and is extremely poisonous. This gas would be a safety hazard to emergency responders and surrounding populations. Additionally, fires and explosions can occur during an accidental release from a gas or oil well.

Area Impacted

Oil and gas wells would most affect the immediately surrounding lands. Due to the lack of active or producing oil or gas wells in the area, it does not appear that land in Bloomfield Township would be impacted.

Economic Impact

Information about the economic impact from oil or gas well accidents is limited in Michigan, but does not typically produce significant property damage or loss. Further investigation at this time is not warranted because of this.

Critical Facilities/Services

Response to an oil or gas well accident would involve public agencies, and may very well require the use of mutual aid depending upon the severity of the accident and the potential for evacuation. The oil or gas line infrastructure owner/operator shares responsibility for response to these type of events with all levels of government.

5.12 Petroleum and Natural Gas Pipeline Accident

Definition

A petroleum or natural gas pipeline incident would involve an uncontrolled release of petroleum, natural gas, or hydrogen sulfide gas from a pipeline.

Historical Events

Michigan is a large producer and consumer of petroleum and natural gas products, and therefore there are transmission lines throughout the State, including in Bloomfield Township. There are several areas throughout the Township where there are large diameter, high pressure oil lines. Furthermore, there is a large network of transmission and distribution gas mains throughout the Township. While there have been some smaller accidents related to the oil pipeline, there has not been a major incident in the Township to date.

Frequency & Probability

Although no major accidents have occurred on these lines in the Township, it is anticipated that as the lines continue to age, this hazard will be more likely to occur.

Health & Safety

Pipeline accidents can cause a significant threat to public safety and welfare. Explosions, fires, and ruptures can occur which can cause significant damage.

Area Impacted

The area impacted is largely dependent upon the severity of the accident. Typically, these incidents only affect the immediate area. However, evacuations may be necessary. Furthermore, depending on the severity of the accident and the service area, users may experience an interruption in service.

Economic Impact

In the United States in 2003, the average property damage caused by a transmission pipeline accident was \$412,249.00. This is due mostly to damage to the pipeline structure. Depending on the size and severity of the incident, there may be a reduction in product availability, which could impact costs.

Critical Facilities/Services

Response to these type of incidents would involve the Bloomfield Township Fire and Police Departments, and may very well require the use of HazMat Teams, and mutual aid depending upon the severity of the incident and the potential for evacuation. In 2009, the Bloomfield Township Fire Department responded to 37 calls of suspected or actual gas leaks.

5.13 Public Health Emergencies

Definition

A public health emergency is a widespread and/or severe epidemic, incident of contamination, or other situation that presents a danger to or otherwise negatively impacts the general health and well being of the public.

Historical Events

Public health emergencies can result from causes such as food borne illness, waterborne pathogens, loss of sewer/water service, and epidemics of communicable disease. In recent years, the risk of a public health emergency resulting from an intentional release of a chemical, biological, or radiological agent has become more apparent.

Frequency & Probability

Public health emergencies can arise from a wide range of causes and can result in varying levels of severity, thus making it difficult to establish a frequency of occurrence. Since 1973, there have been ten major public health emergencies in Michigan, an average of one emergency almost every four years.¹³¹

It is important to note that some of the same cases of a public health emergency (i.e. food borne illness), do occur with regularity within Bloomfield Township. However, these cases are isolated to a few individuals with limited impact to the general public.

It is anticipated this hazard will become more likely in the future as the population ages and the Township population increases.

Health and Safety

Public health emergencies are an obvious threat to human health and safety. A public health emergency can take many forms and be spread by various means. As a result, it is not feasible to determine a death or injury rate for this hazard. However, since 1973, there have been no deaths and 327 injuries from public health emergencies in Michigan.

Public health emergencies are of particular concern for populations with weakened or undeveloped immune systems. Within Bloomfield Township, nearly 4% of the population is aged 0-4 and nearly 22% is 65 years or older. In summary, almost 26% of the Bloomfield Township population is at risk for greater impact from a public health emergency based solely upon age.

Area Impacted

Areas impacted tend to be widespread rather than one location. A public health emergency can originate from outside Bloomfield Township and still impact the community.

Economic Impact

Economic impacts from this hazard can be severe if the source is infrastructure related, for example if improvements are needed to the public water supply system. However, it is more likely that economic impacts will result through lost wages and medical expenses for impacted persons. Additional impact may result if a business is determined as the source of the emergency. Due to the low frequency of this hazard, additional investigation of the economic impact is not recommended at this time.

Critical Facilities/Services

Bloomfield Township would most likely involve the local, state and possibly federal public health agencies including the Oakland County Division of Health.

5.14 Subsidence

5.14.1 Natural

Definition

A lowering or collapse of the land surface due to loss of subsurface support.

Historical Events

There have been no known natural subsidence events in Bloomfield Township, according to the Oakland County Hazard Mitigation Plan and the Geological and Survey Division of the MDEQ.

Frequency & Probability

The frequency of subsidence events is not able to be determined because there have been no recorded events in Oakland County.

Health & Safety

If a sinkhole occurs, potential health and safety issues can vary depending on the size and location of the sinkhole. A sinkhole which occurs near or within a street or public area could potentially cause injury. Injury could also occur if a sink hole occurred beneath a building causing structural damage or collapse. Following an event, a sinkhole could pose a risk to the health and safety of people within the community if proper barricades are not put in place. Workers are at risk for cave-ins if entrance within the sinkhole is necessary to address the problem.

Area Impacted

The area impacted would be immediately around the area of subsidence or sink hole.

Economic Impact

Economic impacts are dependent upon the size and location of the sinkhole. Costs incurred could include disturbances in transportation and costs to fill the sinkhole.

Critical Facilities/Services

Response would be primarily localized police and fire departments, utility services and potentially road services.

5.14.2 Mining

Definition

A lowering or collapse of the land surface due to loss of subsurface support in mining areas.

Historical Events

Based on the Oakland County Hazard Mitigation Plan and the Michigan Department of State Police, there are no mining subsidence hazards in Bloomfield Township.

5.15 Thunderstorm Hazards

The Michigan Department of State Police states that Oakland County receives 30-40 thunderstorm days per year, so thunderstorms are common in Bloomfield Township. Based on the Oakland County Emergency Management, in 2011, 13 severe thunderstorm watches and 15 severe thunderstorm warnings were issued.

5.15.1 Hail

Definition

Conditions where atmospheric water particles from thunderstorms form into rounded or irregular lumps of ice that fall to earth.

Historical Events

Based on the National Climatic Data Sponsored Website (www.ncdc.noaa.gov/), there have been 206 events in Oakland County that produced hail since January 1950 to September 2016. Of those, at least four (4) were located in the Bloomfield Hills/Bloomfield Township area.

Frequency & Probability

In Michigan, there is one intense hailstorm per year that causes significant property damage. Hail events are highly likely to occur in Oakland County and in Bloomfield Township.

Health & Safety

Health and safety risk to the public is considered low. There have been no reported deaths, and three injuries attributed to hail storms. However, hail is often associated with tornado activity, which is discussed in Section 5.16.

Area Impacted

Typically, hail storms impact localized areas.

Economic Impact

Hail can cause damage to such infrastructure as power and communication lines, and cause damage to property, crops, and automobiles. The National Climatic Data Sponsored Website stated that there was approximately \$25 million in total damage in Oakland County.

Critical Facilities/Services

Damage to utilities would require repair, which would be localized. Oakland County along with the National Weather Service, NOAA, and other local media provide hazardous weather warnings using warning sirens, television, and radio.

5.15.2 Lightning

Definition

Lightning is the discharge of electricity from within a thunderstorm.

Historical Events

Lightning strikes are very common with 42 recorded incidents occurring in Oakland County since 1994. One of these lightning strikes was in the Bloomfield Hills/Bloomfield Township area, causing a house fire and \$300,000 worth of damage.

Frequency & Probability

Lightning happens every year and will continue to happen in the future. Approximately 2.5 lightning strikes events occur per year in Oakland County. Bloomfield Township has issues with underlying soils because they get a higher average of lightning strikes. The majority of lightning events occur in the months of May, June, July, and August.

Health & Safety

The Michigan Department of State Police reports that an average of 2.3 deaths and 16.1 injuries occur per year from lightning strikes. The National Weather Service reports than an average 58 people are killed annually from lightning strikes.

Area Impacted

Typically, lightning will impact localized areas, while thunderstorms can cover a large region.

Economic Impact

There has been approximately \$2.348 million in property damage caused by lightning strikes in Oakland County since 1994. Lightning can cause fires or damage critical electrical systems.

Critical Facilities/Services

Bloomfield Township emergency providers would typically be first responders to lightning strikes. Emergency response could be hampered by power outages caused by lightning strikes.

Additionally, communication services such as telephone and cable, or electrical utilities can be impacted by lightning strikes.

Oakland County along with the National Weather Service, NOAA, and other local media provide hazardous weather warnings using warning sirens, television, and radio.

5.15.3 Severe Wind

Definition

Winds greater than 58 miles per hour, not including tornadoes, are classified as windstorms.

Historical Events

Based on the National Climatic Data Sponsored Website (www.ncdc.noaa.gov/), there have been 32 events that produced windstorms between January 1950 and September 2016 in Oakland County. These windstorms have killed one person and injured 20 people along with producing \$39.3 million in property damage.

Frequency & Probability

Windstorms happen with a frequency of 5-7 times a year in the southern Lower Peninsula, and will continue to happen in the future.

Health & Safety

Windstorms produce the most risk from falling trees, electrical lines, and blowing debris. Severe winds can be a result of tornadoes, which are discussed in Section 5.16.

Area Impacted

Typically, windstorms will affect the entire population of Bloomfield Township, but would put residents in mobile homes at the greatest risk. The population of Bloomfield Township that lives in mobile homes is very small and therefore there is not a major risk in Bloomfield Township.

Economic Impact

The National Climatic Data Sponsored Website stated that there has been \$39.3 million in property damage caused by windstorms since 1990 in Oakland County. Windstorms can cause power outages.

Critical Facilities/Services

Initial response for emergencies caused by high winds would be Bloomfield Township Police and Fire Departments. It is expected that emergency response could be hampered by power outages caused by windstorms. Additionally, communication services such as telephone and cable would be impacted by windstorms.

Oakland County along with the National Weather Service, NOAA, and other local media provide hazardous weather warnings using warning sirens, television, and radio.

Utility companies would provide repair and clean-up services in order to quickly restore electricity and other services. There may be additional response from regional, state, and other local agencies to provide clean-up assistance.

5.16 Tornadoes

Definition

A violently rotating column of air extending downward to the ground from a cumulonimbus cloud.

Historical Events

Based on the National Climatic Data Sponsored Website (<https://www.ncdc.noaa.gov/>), there have been 32 tornadoes that occurred between January 1, 1950 and 2016 in Oakland County. These tornadoes have killed three people, injured 78 people, and produced \$46.7 million in property damage.

Frequency & Probability

Based on the information from the National Climatic Data Sponsored Website for the period of January 1950 to September 2016, tornadoes happen with a frequency of 1 event every two years. Tornadoes will continue to be a hazard in the future. Tornadoes typically occur in the months of April through September. Historical records show that a tornado occurred as early as March and as late as October.

Health & Safety

Three deaths and seventy-eight injuries resulted from tornadoes that occurred between January 1950 and September 2016 in Oakland County. Tornadoes produce the most risk from falling trees, electrical lines, and blowing debris. Michigan's tornadoes have resulted in more deaths than in many other tornado-prone states. Michigan ranks in the top 10 states for single killer tornadoes, deaths per 10,000 square miles, and killer tornadoes as a percent of all tornadoes.

Area Impacted

Residents in mobile homes are at the greatest risk to tornadoes, even though a tornado would affect an entire population in its path. Based on information from the Michigan State Police Department, an average tornado track is 16 miles long with the longest track reported at 200 miles long. In addition, Bloomfield Township's hazardous pipelines have changed so there might be a larger area impacted if a tornado hits.

Economic Impact

The National Climatic Data Sponsored Website stated that there has been over \$46.7 million in property damage caused by tornadoes since January 1950 to September 2016. Tornadoes can also cause severe damage to electrical systems, which leads to power outages.

Critical Facilities/Services

Oakland County along with the National Weather Service, NOAA, and other local media provide tornado warnings using warning sirens, television, and radio, which saves a great number of lives. Initial response for emergencies caused by tornadoes would be Bloomfield Township Police and Fire Departments. Emergency response could be hampered by power outages that usually accompany tornadoes. Additionally, communication services such as telephone and cable would be impacted.

Utility companies would provide repair and clean-up services in order to quickly restore electricity and other services. There may be additional response from regional, state, and other local agencies to provide clean-up assistance.

5.17 Transportation Accidents

Definition

A transportation accident is a crash or other accident involving an air, land, or water-based passenger carrier. (Transportation accidents involving hazardous materials are covered in Section 5.8.2 Hazmat Incidents-Transportation)

5.17.1 Air

Historical Events

The majority of air transportation accidents occur during takeoff or landing. As such, impacted areas are typically located near airports. Even though Bloomfield Township has no airports and no history of air transportation accidents, Oakland County has experienced 40 air transportation accidents.

Frequency & Probability

Although there are no records of plane crashes occurring in Bloomfield Township, air transportation accidents will continue to occur in Oakland County. Because of this, there is a possibility of an accident occurring in the Township.

Health & Safety

Air transportation accidents are typically deadly to passengers. Furthermore, if an air crash occurs in a populated area, casualties on the ground are possible.

Area Impacted

The majority of air transportation accidents occur during takeoff or landing, which would impact those areas immediately surrounding airports the most. There are no airports located directly within Bloomfield Township.

Economic Impact

The economic impact from air transportation accidents involves damage to the aircraft and damage to property or structures on the ground at the accident.

Critical Facilities/Services

Response to air transportation accidents in the Township would be by Bloomfield Township Police and Fire Departments. Additional assistance would be provided by mutual aid if required.

Damage to infrastructure caused by an air transportation accident would need to be addressed by the owners of the infrastructure.

5.17.2 Highway

Historical Events

All communities are affected by vehicle accidents, which can occur along any roadway. Vehicle accidents are generally due to driver error or inclement weather conditions.

Frequency & Probability

In 2015, there were 2,298 traffic accidents that occurred in Bloomfield Township. The Township experiences minor and major traffic accidents which can cause injury and death. In 2015, there were 482 crash incidents that occurred at Telegraph and Square Lake, 330 that occurred at Telegraph and Maple, 314 that occurred at Square Lake and Woodward, 310 that occurred at Telegraph and Long Lake, and 122 that occurred at Square Lake and Adams Road.

Health & Safety

Passengers on mass transit buses and school buses are at risk for injury or death.

Area Impacted

The area impacted by transportation accidents would involve traffic delays due to temporary road closures.

Economic Impact

Economic losses due to accidents involving mass transit buses and school buses would involve the loss of productivity, medical costs, legal costs, insurance costs, emergency services costs, travel delays, property damage, etc. The Oakland County Hazard Mitigation Plan estimates that there is approximately \$887 million in costs per year for Oakland County.

Critical Facilities/Services

Traffic crashes in Bloomfield Township typically cause delays especially if occurring on the major thoroughfares including I-75, Woodward Avenue, Square Lake, Telegraph Road, or the other major mile roads. On average, there are 2-3 traffic accidents per morning and evening daily. Bloomfield Township's Fire and Police Departments would be the first responders to this type of hazard.

5.17.3 Rail

Historical Events

Rail accidents usually involve derailments or collision with motor vehicles.

Frequency & Probability

Since there are passenger and freight rail lines that travel through Bloomfield Township, rail accidents occurring in the future is expected.

Health & Safety

Death and injury attributed to rail accidents in Oakland County is rare. The exception to this would be passengers in motor vehicles that are in accidents with trains. In these cases, deaths in the motor vehicle are likely to occur.

Area Impacted

The area immediately surrounding railroads are impacted the most by this hazard. In Bloomfield Township, one rail line goes past a nursing home. Traffic delays may occur if railroad crossings are closed due to derailments.

Economic Impact

Large property damage to the train and railroad is the most probable of economic loss, and is the responsibility of the railroad owner/operator.

Critical Facilities/Services

Bloomfield Township's Fire and Police Departments would be the first responders to this type of hazard when required. First responders' plan needs to be adjusted because they don't know what runs down the rail lines every day. Especially for nursing homes, they need a plan of action.

5.17.4 Marine

Historical Events

There are no marine transportation services operated in Bloomfield Township. Thus, marine transportation accidents do not present a hazard to Bloomfield Township.

5.18 Winter Hazards

5.18.1 Ice and Sleet Storms

Definition

Freezing rain is rain that freezes on contact with surfaces causing a coating of ice on exposed surfaces.

Historical Events

Based on the National Climatic Data Sponsored Website (<https://www.ncdc.noaa.gov/>), there have been 5 ice events or freezing rain events between January 1950 and September 2016 in Oakland County. One person was killed and two dozen people were injured during an ice storm that occurred on April 3, 2003.

Frequency & Probability

The State of Michigan averages one major ice or sleet storm per year, which usually occur during the months of December through March. In Bloomfield Township, the probability for an ice storm to occur is high.

Health & Safety

Death and injury is usually caused by secondary effects such as auto accidents, downed power lines, and heart attacks from overexertion.

Area Impacted

Bloomfield Township would be impacted by an ice/sleet storm due to the potential loss of power and the dangerous driving conditions created.

Economic Impact

Economic losses due to ice/sleet storms would potentially involve the loss of productivity, property damage, and costs of responses.

Critical Facilities/Services

Emergency responders in the Bloomfield Township Police and Fire Departments would be first responders to traffic accidents from icy road conditions, etc.

Oakland County along with the National Weather Service, NOAA, and other local media provide severe storm warnings using warning sirens, television, and radio.

As needed, utility companies would provide repair and clean-up services in order to quickly restore electricity and other services. There may be additional response from regional, state, and other local agencies to provide clean-up assistance.

5.18.2 Snow Storms

Definition

A period of rapid accumulation of snow accompanied by high winds and cold temperatures.

Historical Events

Based on the National Climatic Data Sponsored Website (<https://www.ncdc.noaa.gov/>), there have been 58 snow events since January 1950 to September 2016 in Oakland County. Three people were injured and there was one death during these snow storms.

Frequency & Probability

The State of Michigan averages one major snow storm every five years, which usually occur during the months of December through March. In Bloomfield Township, the probability for a snow storm to occur in the future is high.

Health & Safety

Death and injury is usually caused by secondary effects such as auto accidents, downed power lines, and heart attacks from overexertion.

Area Impacted

Snowstorms and their secondary effects would impact all of Bloomfield Township.

Economic Impact

The primary costs from snow storms would include property damage and snow removal. The Township is responsible for providing snow plowing services. Economic losses are highly dependent upon the storm severity. A State of Emergency could be declared that prohibits traffic on roadways. Schools and businesses could be closed, which would cause productivity losses.

Critical Facilities/Services

Oakland County along with the National Weather Service, NOAA, and other local media provide snow storm warnings using television, and radio to alert the public.

Transportation including roads and airports would be affected. Bloomfield Township would provide local response in the form of public works for snow plowing and emergency medical services as needed.

5.19 Climate Change Adaptation

Definition

According to the Environmental Protection Agency (EPA), adaptation refers to the adjustments that societies or ecosystems make to limit the negative effects of climate change or to take advantage of opportunities provided by a changing climate. Examples of challenges posed could be more powerful storms, heat waves, extreme flooding, higher sea levels, and prolonged droughts.

Historical Events

The Polar Vortex of 2014 would be an example of extreme climate change weather. In addition, during February of 2015, the average temperature was only 14.5 degrees. That's the coldest since 1875, when the average temperature was 12.2 degrees, according to the National Weather Service.

Frequency and Probability

The probability of a 100 year storm is now occurring more often because of climate change. However, the likelihood that Bloomfield Township will be affected greatly is low.

Area Impacted

Risk can be reduced by infrastructures/buildings implementing higher building levels based on sea level rise. Managing areas that are in the floodplain is critical when preparing for climate change items.

5.20 Terrorism

Definition

An intentional, unlawful use of force, violence or subversion against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political, social, or religious objectives.

Historical Events

Terrorism comes in many forms including assassination, bombings, extortion, etc. The Michigan Department of State Police has reported that there was a terrorism event that occurred in Oakland County in 1971, which was perpetrated by members of the Ku Klux Klan and involved the bombing of buses in a Pontiac bus depot.

Frequency & Probability

It is not easy to establish a frequency for this hazard. However, it is possible that a terrorist act could occur in Bloomfield Township in the future.

Health & Safety

Death and injury are not always intended as a consequence of terrorist acts. However, pre-meditated workplace or school violence can lead to death and injury.

Area Impacted

The area impacted by a terrorist act is highly dependent upon the severity of act itself. Terrorism can cause destruction of property, harm people, or disrupt quality of life. This information is also sensitive to law enforcement and homeland security needs, and as such may not be available for the general public.

Economic Impact

Economic losses are highly dependent upon the severity of the terrorist act, but have the potential for large economic damage.

Critical Facilities/Services

It is expected that Bloomfield Township Emergency Services providers would be the first to respond to acts of terrorism. Public infrastructure that is impacted by terrorist acts would impact the Township's ability to operate and provide essential services. It is possible that large scale terrorist acts would require response from all levels of government.

5.21 Weapons of Mass Destruction

Definition

Weapons intended to cause widespread damage and high number of casualties.

Historical Events

There are four categories of this type including missiles, biological weapons, nuclear weapons, and chemical weapons. An attack from weapons of mass destruction has never occurred in Bloomfield Township.

Frequency & Probability

Even though Bloomfield Township does not have a history of attacks from weapons of mass destruction, the possibility of this occurring in the future in this area does exist.

Health & Safety

Death and injury are variable with each attack from a weapon of mass destruction, but there is a potential for a significant loss of life and injuries. Depending upon the type of weapon used, the effects on human health can linger for years, continuing to present a hazard.

Area Impacted

The information on this matter is sensitive to law enforcement and homeland security needs, and as such is not available for the general public.

Economic Impact

Economic losses are highly dependent upon the severity of the attack, but have the potential for large economic damage due to the loss of life, damage to property and infrastructure.

Critical Facilities/Services

It is expected that Bloomfield Township Emergency Services providers would be the first to respond to an attack using weapons of mass destruction. Public infrastructure that is attacked by these weapons would impact the Township's ability to operate and provide essential services. Large scale damage would require response from all levels of government. The Township has identified and evaluated locations that could be potential targets for weapons of mass destruction.

The following table lists the possible hazards within the Township and their frequency, probability, health, safety, and economic impacts, and the area that may be impacted. The Township does not have any structures that have suffered repetitive losses due to any of these hazards. The most likely hazard to cause repetitive losses is flooding, and as described in more detail in Sections 7 and 8 of this report. No structures have filed repetitive claims for loss.

| Hazard | Annual Frequency | Probability | Health & Safety | Area (sq miles) | Economic |
|---|-------------------------|--------------------|----------------------------|------------------------|-----------------|
| Civil Disturbances | 0.1 | Low | Medium | <1 | Medium |
| Criminal Acts-Arson | <1 | High | High | <1 | Low |
| Criminal Acts-Vandalism | 100 | Very High | Low | <1 | Low |
| Drought | 0.04 | Low | Low | >25.98 | Low |
| Earthquakes | 0.01 | Low | Low | >25.98 | Low |
| Extreme Temperatures | 0.28 | Medium | Medium | >25.98 | Low |
| Fire Hazards- Forest/Field | 12 | Low | Low | <1 | Low |
| Fire Hazards- Scrap Tire Fires | 0 | N/A | N/A | <1 | Low |
| Fire Hazards- Structural Fires | 27 | Very High | High | <1 | Medium |
| Flooding-Dam Failure | 0 | Low | High | 1-5 | High |
| Flooding-Riverine Flooding | 0.5 | Medium | Low | 1-5 | High |
| Flooding-Urban Flooding | 1 | Medium | Low | 1-5 | High |
| Flooding-Shoreline and Erosion | NA | NA | NA | NA | NA |
| HazMat Incidents-Fixed Sites | <1 | High | High | 3 | Medium |
| HazMat Incidents- Transportation | <1 | Medium | Medium | 3 | Medium |
| Infrastructure Failure-Communications | 0.5 | Low | High | <1 | Low |
| Infrastructure Failure- Electrical Systems | 1 | Medium | Medium | 1-5 | High |
| Infrastructure Failure- Sanitary Sewer System | 0.05 | Low | High | 1-5 | Medium |
| Infrastructure Failure-Storm Sewer System | 0.5 | Low | Medium | <1 | Low |
| Infrastructure Failure-Water System | 42 | Very High | Low | <1 | Low |
| Nuclear Power Plant Accidents | 0 | Low | High | >25.98 | High |
| Oil and Gas Well Incidents | 0.25 | Low | Low | <1 | Low |
| Petroleum and Natural Gas Pipeline Accidents | 1 | High | High | <1 | Medium |
| Public Health Emergencies | 0.12 | Low | High | >25.98 | Low |

| Hazard | Annual Frequency | Probability | Health & Safety | Area (sq miles) | Economic |
|-----------------------------------|-------------------------|--------------------|----------------------------|------------------------|-----------------|
| Subsidence | NA | Low | Low | <1 | Low |
| Terrorism | 0 | Low | High | <1 | High |
| Thunderstorm | 5-7 | High | Medium | >25.98 | Low |
| Tornadoes | 0.5 | Low | High | 16 | High |
| Transportation Accidents- Air | 0 | Low | Low | 5 | Low |
| Transportation Accidents- Highway | 2,280 | High | High | <1-5 | High |
| Transportation Accidents- Rail | 0 | Medium | Moderate | <1-5 | Low |
| Transportation Accidents- Marine | NA | NA | NA | NA | NA |
| Weapons of Mass Destruction | 0 | Low | High | 1-25.98 | High |
| Climate Change Adaptation | | Low | Low | | Moderate |
| Winter Hazards | 1 | Medium | Medium | | Medium |

Section 6 - Hazard Assessment

Assessment of the hazards was completed in a multi-phase approach. First, the Oakland County Hazard Mitigation Plan was reviewed to see what was identified as the most urgent needs of the Township. Second, a survey was distributed to departments throughout the Township to determine what they felt were the most critical hazards, and the results analyzed. Third, a meeting was held with the Community Representatives to discuss the hazards. A final list was prepared from these steps.

6.1 Hazard Assessment

A survey was provided to the members of the project team. The responses were discussed, tallied and a list of the highest priority hazards was developed. Based on the results of this survey, the highest priority hazards are structural fires, transportation accidents, localized flooding, hazmat incidents, and pipeline accidents. The full rankings are listed below:

| Hazardous Event | Rank |
|--|-------------|
| Structural Fires | 1 |
| Transportation Accidents | 2 |
| Localized Flooding | 3 |
| HazMat Incidents- Fixed Sites | 4 |
| Petroleum and Natural Gas Pipeline Accidents | 5 |
| Thunderstorm | 6 |
| Flooding- Dam Failure | 7 |
| Winter Hazards | 8 |
| Extreme Temperatures | 9 |
| Transportation Accidents- Rail | 10 |
| Criminal Acts | 11 |
| HazMat Incidents- Transportation | 12 |
| Infrastructure Failure | 13 |
| Tornadoes | 14 |
| Power Outages | 15 |
| Sanitary and Storm Sewers | 16 |

| | |
|--------------------------------------|----|
| Biological Threats | 17 |
| Nuclear Power Plant Accidents | 18 |
| Chemical Threats | 19 |
| Radiological Dispersion Device (RDD) | 20 |
| Civil Disturbances | 21 |
| Weapons of Mass Destruction | 22 |
| Earthquakes | 23 |
| Drought | 24 |
| Oil and Gas Well Incidents | 25 |
| Subsidence | 26 |
| Landslides and Debris Flow | 27 |
| Wildfires | 28 |
| Climate Change Adaptation | 29 |

A meeting was held with all members of the project team to discuss the survey, and the significant hazards affecting the Township. An open panel discussion was held to discuss the hazards, possible mitigation strategies, likelihood of occurrence, threats, etc. This discussion included the frequency, severity, population impacted, and services impacted. The draft plan was posted on the Township website and the public was offered the opportunity comment upon any hazards that they felt should be added to the list. No public comment was received.

The Oakland County Hazard Mitigation plan identified similar hazards as were identified by the Project Team. Specifically, the biggest concerns identified in the Community Input Section of the Oakland County plan were flooding, traffic accidents (including hazmat accidents), tornadoes, and train derailments.

6.3 Hazard Evaluation

Based on the survey results, the task force meeting, the information presented in the Oakland County Hazard Mitigation plan, and public input, the top hazards to evaluate during the mitigation portion of this plan were identified. In selecting the top hazards, special consideration was given to those hazards that are being mitigated by other programs. Specifically, terrorism and weapons of mass destruction are

being evaluated under the Homeland Security Program. This information was not available for consideration in this plan. Similarly, due to security considerations, hazards from nuclear power plant accidents are not considered in this plan.

6.3.1 Hazard Selection

The hazards selected for consideration when developing mitigation strategies were selected based on the Oakland County Hazard Mitigation Plan, Survey Results, and the Risk Assessment that was prepared by the Township.

6.4 Vulnerability Assessment

6.4.1 Current Assessment

Civil Disturbance

A civil disturbance in Michigan occurs once every 10 years. There is no history of civil disturbance in Bloomfield Township. Generally, these events take place in court houses or federal buildings, detention facilities, large sports or entertainment facilities, colleges, detention facilities, or military facilities. Based on this, the most vulnerable locations or events in Bloomfield Township are Oakland Hills Country Club, and the Woodward Dream Cruise. The Police Station is also vulnerable to these types of events.

Criminal Acts - Vandalism

Bloomfield Township, as with all areas, is subject to some vandalism each year. This generally takes place in government or educational facilities, historical structures, or police stations.

Criminal Acts – Arson

Bloomfield Township has had very few arson fires over the past several years. Any property is a potential target. However, residential structures are generally more vulnerable. The Township has four stations which respond to fires.

Drought

Three drought events have occurred in Michigan since 1950, which have also affected Bloomfield Township. Due to the limited agricultural land within the Township, the vulnerability within the Township is relatively low. However, the Township has a large number of natural resources such as lakes, waters, and streams which could be adversely affected by drought.

Earthquakes

Historically, earthquakes that occur in Michigan are minor and result in little damage. The most vulnerable assets in the Township when related to an earthquake are the water, sewer, natural gas, and oil pipelines.

Extreme Temperatures

Extreme temperature periods occur every year in the Township. Underground utilities, primarily water and gas services areas, are vulnerable to extreme cold. Extreme temperatures also affect elderly, young, disabled, and impoverished people.

Forest/Field Fire

Woodlands, wetlands, grassland, shrubland, and areas near railroad rights-of-way are vulnerable to forest/field fires. Bloomfield Township has approximately 895 of forest and woodland, and grass and shrubland, or approximately 5% of its land area. The fire department is a vulnerable critical asset in response to forest or field fires.

Structural Fires

Structural hazards can occur anywhere, and therefore the Township is vulnerable to this hazard. In 2016, there were 46 structure fires in the Bloomfield Township. The four fire stations in the Township are a vulnerable asset in response to structural fire. Many firefighter and civilian injuries result from responding to structural fires. The Central Fire Station is located in the residential heart of the Township and responded to 1,074 incidents in 2016. Station 2 is located on the Township's northeast side and responded to 1,300 incidents in 2016. Station 3 is located in the Township's southwest side and responded to 1,863 incidents in 2016. Station 4 is located on the Township's north side and responded to 1,377 incidents in 2016.

Flooding

The vulnerability of the Township due to flooding is discussed in more detail in Sections 7 and 8 in this report.

Hazmat Incidences – Fixed Site

Vulnerable locations for these incidences are Sara Title III sites (sites that store hazardous substances) in the Township, and those that are within an approximate one-mile radius of these sites.

Police and Fire station are vulnerable assets in response to a fixed site release. The Fire Department has a hazmat trailer to respond to these sites, and has gone through training.

Hazmat Incidences – Transportation Incident

Vulnerable locations to a transportation hazmat incident are the areas within a one-mile radius of railroad and major roadways. Bloomfield Township has several areas that are considered vulnerable, including I-75, Telegraph Road, Woodward Avenue, Square Lake Road, and railroad tracks. Police and fire stations are vulnerable assets in response to a hazmat fixed site release including activities such as evacuation and cleanup assistance.

Infrastructure Failures – Water System, Sanitary & Storm Sewers, Electrical, Communications

Bloomfield Township operates and maintains the water and sanitary sewer system throughout the community, with the exception of several large diameter transmission water main, and several interceptor sanitary sewers. Minor problems with the sanitary sewer system can occur with major rain or snowfall event. Interruptions in the water system are also common, with approximately 42 breaks per year. The primary consequence of this hazard is potential public health impacts. As a result, schools, medical facilities, and elderly care facilities have been identified as the most vulnerable. The Township has completed a Vulnerability Assessment on the water system which findings cannot be made public and which further outline the possible vulnerabilities to that system.

Electrical service is provided to Bloomfield Township by DTE Energy. Private communication services are provided by a number of companies. Bloomfield Township operates a 911 Call Center. Failures of the electrical and communications systems are also more likely to occur during severe storm events. Populations in schools, hospitals and elderly care facilities have been identified as being at increased vulnerability to this hazard.

To reduce infrastructure failure risk, redundancy in new systems and regular maintenance of existing systems is needed. If an accident were to occur, residents, business owners, and visitors to the Township would all be at risk. Although probability of occurrence is random, it would affect the Township at large and have an economic impact on loss of business and access to systems.

Nuclear Power Plant Accidents

Bloomfield Township is located within the Secondary Emergency Planning Zone of the Enrico Fermi-2 plant (a 50-mile radius around the plant).

The primary vulnerability to a nuclear power plant incident is radiological contamination of food sources. Restaurants and grocery stores are most vulnerable, as well as active agricultural lands. All of Bloomfield Township is located within the Secondary Emergency Planning Zone.

Oil and Gas Well Accidents/Petroleum and Natural Gas Pipeline Accidents

There have not been any oil or gas well related incidents in Bloomfield Township in the past 5 years. However, there is a large network of transmission and distribution gas mains throughout Bloomfield Township, as well as several oil lines which could cause issues in the Township in the future.

Pipelines can pose a significant threat to the public due to the threat of fires, explosions, and ruptures. Most vulnerable are high residential areas, schools, places of worship, and hospitals. Local fire and police departments would respond to a pipeline incident. The Bloomfield Township Fire Department gets frequent calls regarding gas leaks.

Public Health Emergencies

Public Health Emergencies can arise from a wide range of causes and can result in varying levels of severity. Persons most susceptible to public health emergencies are those with weakened or undeveloped immune systems. Based on age, almost 22% of the Bloomfield Township population is vulnerable to this hazard. Adult care, day care, and schools are most vulnerable.

Vulnerable assets involved with public health emergencies are medical service facilities and includes health departments, clinics, and hospitals. There are no Oakland County Division of Health locations in Bloomfield Township. However, there are medical facilities located in the Township.

Subsidence

The only known potential incident of subsidence in the Township is sink holes most likely caused from utility failures. The probability of this occurring increases with age.

Thunderstorm Hazards and Tornadoes

Bloomfield Township receives 30-40 thunderstorm days per year. Vulnerabilities associated with thunderstorms, including hail, lighting, or severe wind and tornadoes are the warning siren systems, communications/electrical infrastructure, police and fire facilities, and people. Private and public urban tree removal services are vulnerable to tree hazards.

Oakland County funded to replace sirens that were in disrepair or reached the end of their useful life. Although County has the most warning sirens of any county in the State, there was still a need to expand coverage.

Bloomfield Township's underlying soils on properties have a higher than average lightning strike record. Issues with soil need to be evaluated along with lightning protection placed throughout the Township to better protect the residents.

Transportation Accidents – Air, Highway, and Rail

There are no airports located within Bloomfield Township. As the majority of air accidents take place during takeoff or landing, impacted areas are generally near runways. Therefore, the risk of an air accident in the Township is relatively low.

Automobile accidents have a high occurrence in the Township. There are at least two to three accidents that occur every morning and every evening on busy streets and highways. Popular areas are Telegraph, Square Lake, and I-75. The impact to the public from private automobile accidents is generally limited, based on the area surrounding the accident that occurred.

Bloomfield Township is served by SMART buses. Bus station, bus stops, and bus routes, are vulnerable to highway transportation accidents.

Winter Hazards

Michigan averages one major snowstorm every five years, and one major ice and sleet storm event per year. Communications and utilities are vulnerable to winter hazard events. Bridges and major roadways are also vulnerable to winter hazards.

6.4.2 Future Assessment

The majority of this report concerns current hazards, and the areas and people within the Township that are vulnerable to hazards, anticipated changes in regional population and land use that allows some prediction of how these hazards and vulnerabilities may change over time. Review of growth trends and predictions for Bloomfield Township, Oakland County and southeast Michigan identify the following four hazard categories as particular concerns to be considered by the Township.

Transportation Accidents

Commuting traffic and road congestion continue to grow in southeast Michigan. Oakland County leads the region in road congestions. The County anticipates continued growth in both population and job

creation. Increasing road congestion exacerbates the potential for transportation accidents, including hazardous material accidents.

Flooding – Urban/Riverine

SEMCOG predicts a slight population growth between now and 2030. Future development will continue to contribute to changes in land, which can potentially create additional flooding within the Township. Studies compiled from across the country demonstrate the hydrologic changes, and associated changes in water quality and stream integrity, that accompany land use change and an increase in the area covered by impervious surfaces.

Bloomfield Township can anticipate increased occurrence and severity of flooding as growth and redevelopment occurs. Additional flooding will likely occur not only in areas currently identified as problem flood zones, but because much of the County's population growth is expected to occur in outlying headwater areas, it may also be expected to occur in areas that currently exhibit no problem flooding. Flooding in the Township is discussed in further detail in Sections 7 and 8 of this report.

Infrastructure Failure

The existing infrastructure system will continue to be strained and Bloomfield Township will likely need to continue to upgrade and improve their infrastructure systems for maintenance and improvements.

Extreme Temperatures

Bloomfield Township's population is continuing to age. That number is supposed to continue to grow as the baby-boomers reach retirement age. Furthermore, longevity is increasing, and the older segment of this population, 85 and older, will also continue to grow.

Extreme temperatures have great implications for the elderly as they are more prone to the effects of these temperatures.

Section 7 - Hazard Mitigation

7.1 Goals and Objectives

The following three goals, with objectives listed for each, were selected to focus mitigation activities under this Plan.

1. Improve public and private organizational preparedness
 - ≡ Reduce injuries and loss of life from hazards.
 - ≡ Identify infrastructure, land use, and population vulnerabilities through both the public and private sector.
 - ≡ Continue to improve preparedness.

2. Improve public and private organizational response capabilities
 - ≡ Motivate governmental entities to identify and mitigate hazards.
 - ≡ Identify deficiency of existing response capabilities.
 - ≡ Correct deficiency for training, coordination, and distribute equipment.
 - ≡ Implement mutual aid pacts.
 - ≡ Seek methods of addressing vulnerabilities
 - ≡ Establish a continuous improvement program.
 - ≡ Support public and private response organizations.

3. Improve public education and awareness
 - ≡ Improve the public's hazard response awareness.
 - ≡ Establish a continuous improvement program.
 - ≡ Support public and private response organizations.

7.1.1 Mitigation Selection Criteria

Evaluation criteria used in this Plan for the review of mitigation alternatives are listed below:

- ≡ Community and Public Acceptance
-

- ≡ Protection of Critical Response Resources
- ≡ Ability to Accomplish
- ≡ Cost Effectiveness
- ≡ Technical Feasibility

7.2 Community Input

The Township and response teams identified mitigation strategies to address hazards within the community. Action Plans were developed for those which were determined to be most important. Bloomfield Township identified the following mitigation strategies:

- ≡ Investigate funding opportunities and partnerships to rebuild drains and eliminate flooding problems in the Township.
- ≡ Provide members of the public safety departments with additional hazmat and communication equipment.

The Hazard Mitigation Plan was posted on the Township website for a period on 4 weeks to garner input from residents, businesses, and other interested parties. No input was received. The Plan was also presented to the Board on several occasions where the public was invited to comment, prior to adoption of the plan by the Township Board. Information regarding public input is included in Appendix B.

7.3 Alternatives Selected

The Township and response teams identified several mitigation strategies for consideration, based on input from the surveys, public comment, and the Oakland County Hazard Mitigation Report. These strategies are listed herein.

1. Install additional tornado sirens in the community.
2. Continue additional hazmat training.
3. Participate in mutual aid assistance with surrounding communities (including 911).
4. Encourage tree trimming and maintenance to prevent limb breakage and protect nearby utility lines.

5. Prepare Nursing Home evacuation plans.
6. Install additional vehicular tactical (V-TAC) network boosting systems on front line fire department emergency apparatus.
7. Acquire rail transportation knowledge.

These identified actions will help to protect both existing and new buildings and infrastructure. By continuing with hazmat training and participating in mutual aid assistance, hazards such as fires or emergencies that may occur could be reduced. The recommendations outlined in this report will help to reduce impacts based on rising levels in streams and rivers, and by following the guidelines set in the Floodplain section of the Zoning Ordinance will reduce impacts on future construction. By encouraging tree trimming and maintenance along utility lines, wind, rain, snow, or ice storms may not have such a detrimental effect on the system. This is discussed in more detail in the next section.

The Township handles all of the building and zoning requests in house. Therefore, they can review all plans for conformance with this plan. The flood plain has been mapped and restrictions regarding construction in the floodplain.

7.4 Flood Plan Mitigation Actions

A. Options and Costs

Many of the mitigation options were discussed in the previous section. The costs for these vary significantly based on the area or property affected. For example, the costs to purchase a parcel of property will be based on the market value of that property which varies with each property and may increase or decrease over time. The parcel and structure tables included in Appendix A include assessed and taxable values for all properties in the floodplain.

While some prioritization of projects is included in the previous sections, the following is a prioritization list of actions based on the assumed vulnerability.

Structures in the Floodplain

The assumed vulnerability of the structures in the floodplain is based on the extent to which the structure is located in the floodplain. For example, a structure located wholly within the 100-year floodplain is more vulnerable than a structure which is only partially located in the floodplain. The prioritization of these structures is as follows: Structures wholly within the 100-year floodplain, structures partially

within the 100-year and wholly within the 500-year floodplain, and structures partially within the floodplain. The list of properties within the floodplain is included in Appendix A, based on this prioritization method. A list of possible mitigation actions per property is also listed in Section B below. The Township will review all of the properties on a case by case basis to come up with technically feasible projects. As projects arise, the Township will review to determine whether the project is cost-beneficial prior to proceeding.

Sanitary Sewers and Storm Sewers in Floodplain

The assumed vulnerability of the sanitary sewer and storm sewers located in the floodplain is based on the service areas. Sanitary sewers are considered more vulnerable as failures could lead to basement backups or sanitary sewer overflows (SSOs). The recommended prioritization would be to inspect and floodproof all manholes within the floodplain and then investigate and rehabilitated the sewers in order to assure structural integrity. Lists of the sanitary and storm sewers, including structures, are including in Appendix A.

The Township is currently working with the County on a Long Term Corrective Action Plan in order to address inflow and infiltration (I/I) into their sanitary sewer system. This will primarily consist of storage and relief sewers to address SSOs. However, the Township will continue to look at other ways to reduce I/I, including manholes and mainline inspection. Since the original plan, the Township has performed several manhole rehabilitation and mainline sewer rehabilitation projects to remove I/I and increase the useful life of the system.

Water Mains in Floodplain

The assumed vulnerability of the water main in the floodplain has been prioritized as follows:

- ≡ Hydrants in the floodplain – These are considered a high priority as if during flooding conditions, the Fire Department may not be able to gain access. There are a total of 15 hydrants located in the floodplain (see Appendix A, Table 8). These should be relocated as to remove from floodplain and assure access, even during flooding conditions.
- ≡ Dead End Mains – These are considered a high priority as if there is damage to the mains which is difficult to repair, users may be out of water, and fire protection may not be provided.

Appendix A, Table 7 shows all water main lines prioritized by dead end mains, transmission mains, and the remainder of the mains.

- ≡ Transmission Mains – These are considered a high priority as any damage to these could cause loss of service for large portions on the Township. These are listed in Appendix A, Table 7.
- ≡ Gate Valves – These are the next priority due to the fact that if they are under water, the Township will not be able to access to shut down the water system if necessary. The gate wells are listed in Appendix A, Table 9.
- ≡ Remainder of water mains – These mains should be evaluated as funds are available. A list of all water mains is included in Appendix A, Table 7.

The Township is currently in the process of completing an Asset Management Plan (AMP) for the water system, which includes a Capital Improvement Program, which includes water main replacement. The AMP will include a review of all assets in terms of their risk and criticality. The utilities located in floodprone areas will be given a higher criticality and therefore may come up for replacement sooner. However, if these projects are completed during a larger project, they will be much more cost effective and therefore the Township will also review replacement as part of a subdivision wide program.

Roads in Floodplain

The assumed vulnerability of the roadways in the floodplain has been prioritized as follows and as shown on Appendix A, Table 10.

- ≡ Club Drive – As described in Section 8, one of the highest priority floodplain projects in the flooding between Forest Lake and Franklin Road which impacts Club Drive.
- ≡ Dead End Roads – The next priority is dead end roads which do not have other points of access should they need to be closed due to flooding.
- ≡ Major Roads – The next priority is major roads. Should these become flooded, there are major traffic impacts due to their high volumes.
- ≡ Other Roads – The remaining roads in the floodplain are primarily subdivision roads. While flooding is an inconvenience, traffic will still be able to get around and the impacts are not as great.

All of the roads within the Township are either under the jurisdiction of the Road Commission for Oakland County (RCOC) or the Michigan Department of Transportation (MDOT), or are private. Therefore, any projects will need to be coordinated with the appropriate department. The Township will look for any projects that can be completed using tri-party funding, or other funding mechanisms, or possibly look into creating Special Assessment Districts (SAD). As previously discussed, the highest priority road related project at this time is the Club Drive project. As other funding opportunities become available, the Township will look into doing other projects based on the above prioritization schedule.

Specific mitigation actions are shown on the following table, with costs provided:

| REHABILITATION OPTIONS AND COSTS | | |
|---|------------|----------|
| <u>Sanitary Sewer</u> | | |
| <i>Manholes</i> | | |
| <i>Floodproof</i> – Replace rubber gasket and seal frame of structure | \$525.00 | each |
| <i>Rehabilitate</i> – Includes Measures such as spray lining, pointing, replacement of chimney or frame, etc. to prevent storm water from entering or damaging the structure | \$1,050.00 | each |
| <i>Replace</i> – Total removal and replacement of structure located within the floodplain | \$2,625.00 | each |
| <i>Main Line Sewer</i> | | |
| <i>Rehabilitate</i> – Grouting or point liners to protect structural integrity of the line in specific sections | \$1,050.00 | each |
| <i>Reline</i> – Use cured in place pipe liner for entire length of pipe | \$52.50 | per foot |
| <i>Replace</i> – Total removal and replacement of the sewer line located within the designated flood area | \$126.00 | per foot |
| | | |
| <u>Water Main</u> | | |
| <i>Structures</i> | | |
| <i>Replace Hydrant</i> | \$2,310.00 | each |
| <i>Floodproof Gatewell</i> – Replace rubber gasket and seal frame of structure | \$525.00 | each |
| <i>Rehabilitate Gatewell</i> – Includes Measures such as spray lining, pointing, replacement of chimney or frame, etc. to prevent storm water from entering or damaging the structure | \$1,050.00 | each |
| <i>Replace Gatewell</i> | \$3,150.00 | each |
| <i>Main Line Water Main</i> | | |
| <i>Repair</i> – Repair damaged portions of the water main | \$1,575.00 | each |
| <i>Replace</i> – Total removal and replacement of the water line located within the designated flood area | \$84.00 | per foot |

| | | |
|---|------------|----------|
| | | |
| <u>Storm Sewer</u> | | |
| <i>Structures</i> | | |
| <i>Floodproof</i> – Replace rubber gasket and seal frame of structure | \$525.00 | each |
| <i>Rehabilitate</i> – Includes Measures such as spray lining, pointing, replacement of chimney or frame, etc. | \$1,050.00 | each |
| <i>Replace</i> – Total removal and replacement of structure located within the floodplain | \$2,625.00 | each |
| <u>Main Line Sewer</u> | | |
| <i>Rehabilitate</i> – Grouting or point liners to protect structural integrity of the line in specific sections | \$1,050.00 | each |
| <i>Reline</i> – Use cured in place pipe liner for entire length of pipe | \$52.50 | per foot |
| <i>Replace</i> – Total removal and replacement of the sewer line located within the designated flood area | \$84.00 | per foot |
| | | |
| <u>Roads</u> | | |
| <i>Rehabilitate Road</i> – Mill and Overlay | \$105.00 | per foot |
| <i>Replace Road</i> – Total removal and reconstruction of section of roadway in designated floodplain areas | \$315.00 | per foot |

B. Identification of Mitigation per Property

The following is a list of the 40 properties which have primary structures located in the designated floodplain and the mitigation options for each structure. These property locations are highlighted on the included map. Appendix A includes additional information for each property.

| <u>No.</u> | <u>Address</u> | <u>Option 1</u> | <u>Option 2</u> |
|------------|---------------------|-------------------------------------|---|
| A | 831 GREAT OAKS DR | Survey to see if LOMA/LOMR possible | Improve River Section between 847 and 834 Great Oaks |
| B | 847 GREAT OAKS DR | Survey to see if LOMA/LOMR possible | |
| C | 1034 EASTOVER DR | Perform detailed review | These lots are adjacent and a project could be investigated to mitigate all. Both lots could be filled to raise homes. |
| D | 1010 EASTOVER DR | Perform detailed review | |
| E | 977 DOWLING RD | Perform detailed review | |
| F | 1000 SATTERLEE RD | Perform detailed review | These homes are all adjacent to the same reach of the Rouge River. Projects would need to be investigated to address all of these together. |
| G | 1029 ROCK SPRING RD | Perform detailed review | |
| H | 1035 TOP VIEW RD | Survey to see if LOMA/LOMR possible | |
| I | 1025 TOP VIEW RD | Perform detailed review | |
| J | 628 PINE VALLEY WAY | Survey to see if LOMA/LOMR possible | Perform grading around home to remove from Floodplain. |
| K | 550 OVERBROOK RD | Survey to see if LOMA/LOMR possible | Fill area around house to raise above floodplain |
| L | 4368 STONELEIGH RD | Survey to see if LOMA/LOMR possible | These lots are adjacent and a project could be investigated to mitigate both. Both lots could be filled to raise homes. |
| M | 4408 ARDMORE DR | Survey to see if LOMA/LOMR possible | |
| N | 4428 ARDMORE CT | Survey to see if LOMA/LOMR possible | Fill area around house to raise above floodplain |
| O | 4615 STONELEIGH RD | Survey to see if LOMA/LOMR possible | These lots are adjacent and a project could be investigated to mitigate both. |
| P | 4625 STONELEIGH RD | Survey to see if LOMA/LOMR possible | |
| Q | 4831 BURNLEY DR | Survey to see if LOMA/LOMR possible | These homes are all adjacent to the same reach of the Rouge River. Projects would need to be investigated to address all of these together. |
| R | 4851 BURNLEY DR | Survey to see if LOMA/LOMR possible | |
| S | 5020 MOHR VALLEY LN | Survey to see if LOMA/LOMR possible | These homes are all adjacent to the same reach of the Rouge River. Projects would need to be investigated to address all of these together. |
| T | 5017 MOHR VALLEY LN | Survey to see if LOMA/LOMR possible | |
| U | 5049 MOHR VALLEY LN | Survey to see if LOMA/LOMR possible | |
| V | 5033 MOHR VALLEY LN | Survey to see if LOMA/LOMR possible | |
| W | 5119 IRON GATE RD | Survey to see if LOMA/LOMR possible | These homes are all adjacent to the same reach of the Rouge River. Projects would need to be investigated to address all of these together. |
| X | 5127 IRON GATE RD | Survey to see if LOMA/LOMR possible | |
| Y | 5135 IRON GATE RD | Survey to see if LOMA/LOMR possible | |

| | | | |
|----|-------------------------------|-------------------------------------|---|
| | | possible | |
| Z | 5169 IRON GATE RD | Survey to see if LOMA/LOMR possible | |
| AA | 866 SHADY HOLLOW CIR | Survey to see if LOMA/LOMR possible | Fill area around house to raise above floodplain |
| AB | 230 W BIG BEAVER RD | Survey to see if LOMA/LOMR possible | Fill area around house to raise above floodplain |
| AC | 5600 BROOKDALE RD | Survey to see if LOMA/LOMR possible | Fill area around house to raise above floodplain |
| AD | 111 MANOR RD | Survey to see if LOMA/LOMR possible | These homes are all adjacent to the same reach of the Rouge River. Projects would need to be investigated to address all of these together. |
| AE | 98 MANOR CT | Survey to see if LOMA/LOMR possible | |
| AF | 96 MANOR CT | Survey to see if LOMA/LOMR possible | |
| AG | 1205 HARROW CIR | Survey to see if LOMA/LOMR possible | These homes are all adjacent to the same reach of the Rouge River. Projects would need to be investigated to address all of these together. |
| AH | 125 MAYWOOD AVE | Survey to see if LOMA/LOMR possible | |
| AI | 166 MAYWOOD AVE | Survey to see if LOMA/LOMR possible | |
| AJ | 36000 WOODWARD AVE | Survey to see if LOMA/LOMR possible | These lots are adjacent and a project could be investigated to mitigate both. |
| AK | 35980 WOODWARD AVE STE 300 | Survey to see if LOMA/LOMR possible | |
| AL | 7450 FRANKLIN RD | Survey to see if LOMA/LOMR possible | These lots are adjacent and a project could be investigated to mitigate both. |
| AM | 7457 FRANKLIN RD | Survey to see if LOMA/LOMR possible | |
| AN | 175 DEVON RD | Survey to see if LOMA/LOMR possible | Fill area around house to raise above floodplain |

Section 8 - Action Plans

8.1 Recommended Mitigation Actions

Final Action Plans for each of the selected mitigation strategies is presented below. The Action Plans indicates the relevant hazards and the strategy to mitigate impacts.

8.1.1 Flood Management Plans

A. Strategy for Reducing Flood Risks

The first step for any structure identified as being within the floodplain is to have the structure surveyed to determine whether it can be removed from the flood hazard area through a Letter of Map Amendment (LOMA), Letter of Map Revision (LOMR), etc. if this has not been previously completed. Individual property owners can complete this on their own should their lenders require them to carry flood insurance. Should the structure still be found in the flood hazard area, there are several methods that could be employed to reduce flood risks. For example, for properties where the primary or secondary structure is located within the floodplain, creating berms or walls can be implemented to limit flooding damage. In areas where several homes are located in the floodway, it could be possible to enlarge a portion of the stream or waterway in order to reduce flooding of adjacent areas and create additional storage through the use of bioretention areas or other best management practices. In some situations, enclosure of a portion of a stream may be implemented. However, all attempts to keep the stream in its natural form would be investigated. Also, if a structure which is at risk for flooding is placed on the market, the property could be purchased and the structure relocated or removed to avoid possible flood damage and redevelopment of the property should be done respecting the floodplain limits. Relocation of structures can also be done by private property owners.

Roads located in the floodplain can be protected by raising the road and upsizing any culverts or bridges so that the road elevation is above the 100 year flood elevation. Roads which have been damaged by flooding already would need to be rehabilitated (i.e. milled and overlaid) or replaced (i.e. total reconstruction of the roadway). Flood surge protective measures such as revetment, channelized overflows, etc. can also be utilized.

Sanitary sewer, water main, or storm sewer components located in the floodplain may need to be repaired or replaced over time due to water damage. Rehabilitation options for sewers or water main can include point repairs, replacement, or relining. Rehabilitation options for structures may include flood proofing, repairing damage, or replacing the entire structure.

Costs for different rehabilitation/replacement options are included in the next section as is a list of prioritized projects.

The Township has several different permits and practices currently in place to reduce the effects of flooding on new developments. The Planning, Building and Ordinance Department requires a fill permit and floodplain permits are required for all work within a designated floodplain. Also, MDEQ permits are required for any work within a floodplain. In addition, the Township has a required wetlands permit that must be obtained separate from the MDEQ wetlands permit, for all work in a designated wetland area.

The Planning, Building and Ordinance Department also has requirements for new developments regarding storage for increased runoff. All new developments are required to provide storage and release at a rate no greater than the pre-development conditions.

B. Prioritizing Projects

As funds become available for mitigation projects, the priority list as provided herein will be reviewed and reassessed to be sure the most cost effective project is completed. The criteria for these projects will be based upon how projects directly improve public infrastructure and continuity of service of essential facilities to residents, and the size and related costs of these projects. For example, some years there may be a small amount of funds available and only smaller scale projects can be completed. In other years, there may be a larger amount of funding available for larger projects.

One of the highest priority projects will be the area of known flooding along Club Drive between Forest Lake and the Forest Lake Country Club. Due to the large amount of rain in the Spring of 2009, there have been several occasions when the lake has overtopped across Club Drive, undermining the integrity of the roadway. The Township has been pumping the water downstream to prevent damage to surrounding structures. This portion of the Township is within the designated floodplain. However, the Township applied for grant funding in 2015 to protect its residents from the damaging impacts of a washout on Club Drive and subsequent downstream flooding by proposing driving sheeting in Club Drive near the weir, but the funding was denied.

Another high priority project is the Amy Drain at the northeast corner of the Township. This area has seen flooding in the past and the drainage course is overgrown and not conveying water as originally designed. Furthermore, there is a detention basin that has been filled with sedimentation and is no longer functioning as designed. The Township has developed solutions to this, including cleaning out the drainage course, and dredging out the pond. The Township is currently working with Oakland County to construct a project to assist with this area. This project should be completed in 2017.

Infrastructure such as dead end roads with no alternate access or dead end water mains will be of high priority. These are of high priority as if there is a failure to these infrastructure items, it will cause access issues for residents and may produce a hazard as potable water will not be available. Once these projects are sufficiently handled, the other utilities within the floodplain will be evaluated and rehabilitated, repaired or replaced as necessary. Also, once the first priority projects are handled, the non-critical roads will be evaluated and repaired or replaced as necessary. Private structures and roads will be handled as other projects may arise in the area which could provide mitigation. If conditions change and a structure begins to be subjected to repetitive flooding, its priority will be raised.

C. Ensuring Implementation

The Township Engineering and Environmental Services Division will continue to prioritize projects and determine the amount of local funding available for flood mitigation projects. They will then look to the FEMA Flood Mitigation Assistance Program to determine what funding is available from that source. Projects will then be completed based on funding availability and need for completion.

The Township will also look at flood mitigation strategies as part of other Township projects that are completed. During these construction projects, measures may be taken to reduce or eliminate known flooding conditions should budgeting allow.

D. Reviewing Progress

The Township will review any flood mitigation projects that have been completed in the previous year. The overall list of projects will be updated as necessary to show what has been completed. The list may be reprioritized based on flooding events of the past year.

The Township is involved with the NFIP program and remains committed to our involvement in that program. The Township has recently been involved in the map updates that began in 2004 and came into effect in 2006. The Township has also worked with the MDEQ Floodplain Division to correct any violations that have been discovered. It is the intention of the Township to continue to work with MDEQ

to assure compliance with all floodplain regulations and to ensure the protection of the floodplain and other natural features.

This plan will be monitored and updated by the Township Engineering and Environmental Services Department and Department of Public Works. Every year, the Department will review the flooding that took place in the Township during the previous year and update the plans as necessary. During this time, input will be received from Township Fire, Police, and Public Works Departments, as they are the lead emergency management departments.

During the preparation of this Multi Hazard Mitigation Plan, all public input and public hearings will be completed. The entire Multi Hazard Plan will be reviewed by all departments at the Township. Updates to this plan will be made as necessary if new hazards or risks are present or as mitigation projects are completed.

8.1.2 Township Action Plans

Action Item No. 1 – Install Additional Tornado Sirens in the Township.

| | |
|-------------------------------|-------------------------------|
| Specific Hazard(s) Addressed: | Tornadoes and Severe Winds |
| Specific Vulnerability(ies): | Public (Homes and Businesses) |
| Primary Responsibility: | Oakland County |

Initiatives Needed: This is an Action Plan that should be coordinated with the County-wide effort. Currently, the County provides funding to replace existing sirens. However, it has been determined that County-wide, additional coverage is needed. The Township will need to assist the County in analyzing the need within the community. The County and communities will also need to develop programs or mechanisms to promote citizen involvement and awareness.

Implementation Tasks: Once the Oakland County ERP has completed its study regarding population densities and locations for new sirens, Bloomfield Township should meet with County representatives if additional siren coverage is needed in the Township.

Cost(s): Costs for sirens and installation (if needed in the Township), printing and postage for public awareness material.

Benefit(s): Full siren coverage could save lives by providing early warning in areas that may not currently be served. As this is a County-wide program, the costs will be reduced by being spread out across all communities. Therefore, this may be a relatively low cost for the Township and, as stated above, has the potential to save lives.

Anticipate Funding Source(s): County and local municipality general fund budgets, public/private partnerships, private grants, FEMA pre-mitigation grants, other federal grants.

Schedule: Review with County to determine if additional sirens are required in Bloomfield Township and work with County to finalize, if necessary.

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: The main benefit of this action would be the impact on safety as advanced warning would help to save lives. Effects on new or existing infrastructure or buildings would not be as great as it is difficult to predict the behavior of a tornado.

Action Item No. 2 – Implement Additional HazMat Training

Specific Hazard(s) Addressed: Fire-Natural, Structural, HazMat-Fixed, Transportation

Specific Vulnerability(s): Public, environment

Primary Responsibility: First Responders

Initiatives Needed: Bloomfield Township should continue with additional hazmat training programs for all first responders.

Implementation Tasks: Specific tasks to develop these initiatives include assessment of current training programs, identification of training needs, and providing additional training.

Cost(s): Staff time, mileage for meetings, costs for contractors/instructors,

Benefit(s): Protection of lives and the environment through enhanced response capabilities. By continuing training in-house, the Township will be able to save money by not having to contract this work out. Furthermore, due the proximity of Township response teams to various areas, the Township has the quickest response time, therefore possibly protecting buildings or infrastructure.

Anticipate Funding Source(s): Grants, Municipal General Funds.

Schedule: This is an on-going task due to employee turnover.

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: By participating in additional hazmat training, and by assuring that the appropriate number of staff members are adequately trained for response and clean up, both new and existing buildings and infrastructure can be better protected. By reducing the time that the hazardous situation occurs, the detrimental impact can be reduced. For example, proper containment and cleanup of a hazardous spill on a roadway can help reduce the damage to the roadway and prevent the material from entering the storm water system, thus protecting the infrastructure and natural features.

Action Item No. 3 – Participate in mutual aid agreements with surrounding communities

Specific Hazard(s) Addressed: All Hazards
Specific Vulnerability(ies): Citizens, Private Property, Infrastructure, Environment
Primary Responsibility: Bloomfield Township Fire Department

Initiatives Needed: Seek buy-in from emergency responders, public and private; obtain charter to conduct work; legislation at State level might be needed.

Implementation Tasks: Provide technical and logical support, communications, and coordination between neighboring communities in case of emergency.

Cost(s): Staff costs

Benefit(s): Increase response efficiency and effectiveness, improved protection of property and lives, and reduce capital expenditures through shared resources.

Anticipate Funding Source(s): Township general fund to possibly provide equipment and training for the effort.

Schedule: Work with neighboring communities to get in place as soon as possible. Emergency mutual aid response for fire and EMS emergency 9-1-1 is already in place through the OAKWAY mutual aid agreement and throughout the state with the mutual aid box alarm system (MABAS).

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: Should a large fire or hazardous material event occur in the Township, having mutual aid from neighboring communities will help to address these issues in a quicker manner, therefore possibly saving buildings or infrastructure from total destruction.

Action Item No. 4 – Encourage Continued Tree Trimming and Maintenance to Prevent Limb Breakage and Safeguard Nearby Utility Lines

Specific Hazard(s) Addressed: Tornadoes and Severe Winds, Winter Hazards, Thunderstorms
Specific Vulnerability(ies): Public (Homes and Businesses)
Primary Responsibility: Private Utility Companies, Implementation by DPW Director and Road Maintenance Personnel

Initiatives Needed: Bloomfield Township should work with utilities to identify critical areas of concern involving communication and transmission lines. Once identified, this can be provided to the location utility companies for clearing and maintenance activities.

Implementation Tasks: Identify and develop the following:

- ≡ Critical Areas
- ≡ Utility Jurisdictions/Responsibilities
- ≡ Communication between County and Utilities providing trimming services.
- ≡ Township shall facilitate by directing complaints or requests to the utilities providing trimming services.
- ≡ Commitments from utilities to prioritize tree trimming operations.

Township and utility company officials should work together to evaluate the program following severe weather to identify and correct shortcomings.

Cost(s): Staff costs, private company maintenance costs.

Benefit(s): Reduced disruptions in service during severe weather events, and reduced costs for re-establishing utility/communication service following severe weather events.

Anticipate Funding Source(s): Township general fund, possible grants, utility company maintenance budgets.

Schedule: On-going

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: By trimming branches away from utility lines, the lines will be less likely to be damaged during severe weather events, therefore saving infrastructure from damage and need for replacement. Also, this will help reduce downed power lines, and the damage caused by those events.

Action Item No. 5 – Implement Nursing Home Evacuation Plans

Specific Hazard(s) Addressed: All Hazards
Specific Vulnerability(s): Residents
Primary Responsibility: Nursing Home Owner and workers, First Responders

Initiatives Needed: Bloomfield Township should have evacuation plans in place in case of disaster and have a relocation readily available.

Implementation Tasks: Coming up with a plan of action and communication coordination between nursing home employees and first responders is critical so everyone is on the same page.

Cost(s): First responder costs, private company employee costs

Benefit(s): Protection of residents and workers of Nursing Home Facilities. First Responders will have a concrete plan of action to follow and know there is a relocation available to hold all residents. By having clear communication with the nursing home employees, everyone will be able to do their part in a timely manner if a disaster occurs. Having a plan of action and responding quicker can save lives.

Anticipate Funding Source(s): Township general fund, possible grants.

Schedule: On-going.

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: If a hazard occurs, first responders will have a plan of action for the residents with a quick response, and therefore, will be able to respond to damaging structure effects quicker.

Action Item No. 6 – Install additional vehicular tactical (V-TAC) network boosting systems in front line fire department emergency apparatus.

Specific Hazard(s) Addressed: Fire-Natural, Fire-Structural
Specific Vulnerability(s): Public, Structures, Environment
Primary Responsibility: Oakland County, Bloomfield Township, First Responders

Initiatives Needed: Funds available for the Fire Department needed to install additional V-TAC network boosting systems in all front line fire department emergency apparatus for better radio reception.

Implementation Tasks: Money set aside for the specific action of installing V-TAC networks.

Cost(s): Township costs for having company install V-TAC.

Benefit(s): Reliable communications are critical in all facets of emergency response. V-TAC network boosting systems provide extended connection range in the digital system that is utilized throughout Oakland County. Reception is compromised and in some cases nonexistent in many of our commercial buildings in Bloomfield Township. First responders will be able to safely communicate with incident command and dispatch while performing emergency care.

Anticipate Funding Source(s): Township general fund, possible grants.

Schedule: On-going.

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: More reliable communication while performing emergency functions in buildings provides a safer environment for emergency workers and for civilians. If radio communications are poor, emergency workers are taking unnecessary risks and cannot provide for safe emergency response. Reliable communications are vital to the success of any emergency response.

Action Item No. 7 – Acquire Rail Transportation Knowledge

Specific Hazard(s) Addressed: Transportation Accidents – Rail

Specific Vulnerability(s): Public on and surrounding railways, railway structures

Primary Responsibility: Oakland County, Bloomfield Township, First Responders

Initiatives Needed: Communication between rail transportation companies and first responders so emergency responders know what is travelling up and down the lines in case of a hazard. Currently, one of the rail lines runs right next to a nursing home facility.

Implementation Tasks: Township and first responders reaching out to rail transportation companies to figure out what is going through on the rail cars.

Cost(s): Staff costs, rail transportation staff costs

Benefit(s): Having knowledge of what is being travelled through the Township will be beneficial when responding to emergencies. Quicker response, how to handle the hazard, and what items are needed will be thought through before the hazard occurs, instead of being left in the dark and the first responders not knowing what to expect.

Anticipate Funding Source(s): Township general fund

Schedule: On-going.

Reduction of Hazard Effects on New and Existing Buildings and Infrastructure: Knowing what is passing through on rail cars is beneficial for surrounding structures and buildings, along with the rail infrastructure because first responders will have a quicker response on how to handle the situation.

8.2 Implementation and Incorporation into Other Township Programs

Actions discussed in this plan will be monitored, evaluated, and updated by the Engineering and Environmental Services Department, with input from the committee that was formed during the preparation from this plan. As discussed earlier in the plan, the plan will be reviewed and updated annually and re-adopted on a five-year basis.

The Township Building and Planning Department will use the Zoning ordinance which they enforce in order to protect new construction and redevelopment from flooding hazards. As additional funding opportunities become available, the Township will pursue projects for stream improvements, or possible enclosures, to reduce flooding impacts. The ordinances in place already preclude construction within floodplain areas.

The Township will continue to work with the County to develop additional tornado siren coverage in the Township. The public safety employees will continue to participate in hazmat training.

Resources:

Oakland County Hazard Mitigation Plan

FEMA Mitigation Ideas

**APPENDIX A – PROPERTY,
STRUCTURE, AND UTILITY
INFORMATION**

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

- Notes:
1. Data came from the HRC, Bloomfield Township and Oakland County GIS Databases. Floodplain information from FEMA DFIRM maps.
 2. Data was developed on November 15, 2016.
 3. The Assessed Value is 50% of the true market value of the home.
 4. The Taxable Value is lesser of the State Equalized Value or the Capped Value. The capped value is the value established from the prior year taxable value, including adjustments for additions and losses and taking into account inflation.

| Parcel ID | Property Owner | Site Address | Assessed Value | Taxable Value |
|------------|------------------------------|-----------------------|----------------|---------------|
| 1913276003 | OTTO KERN | 1000 SATTERLEE RD | \$ 212,980 | \$ 167,430 |
| 1913227001 | GARY L WALKER | 1010 EASTOVER DR | \$ 206,350 | \$ 158,250 |
| 1913277003 | JAMES H HERBST | 1010 ROCK SPRING RD | \$ 185,250 | \$ 118,630 |
| 1913228006 | KATHLEEN ENGELHART | 1011 SATTERLEE RD | \$ 352,310 | \$ 253,670 |
| 1913226002 | WAMIDH J ZORA | 1015 EASTOVER DR | \$ 132,950 | \$ 99,840 |
| 1913276012 | ROBERT C SAVAGE | 1015 ROCK SPRING RD | \$ 185,980 | \$ 124,120 |
| 1913228002 | THERESA H SPEAR | 1020 DOWLING RD | \$ 267,550 | \$ 178,930 |
| 1912101001 | B HILLS SCHOOL DIST NO 2 | 1020 E SQUARE LAKE RD | \$ - | \$ - |
| 1913227007 | KENNETH J EARLY | 1021 DOWLING RD | \$ 221,060 | \$ 215,300 |
| 1913227002 | SHAILESH B VORA | 1022 EASTOVER DR | \$ 282,710 | \$ 182,330 |
| 1913277004 | ROBERT CHORAK | 1024 ROCK SPRING RD | \$ 197,440 | \$ 156,160 |
| 1913277013 | MICHAEL BASKIN | 1025 TOP VIEW RD | \$ 225,900 | \$ 151,450 |
| 1913226003 | THOMAS BENDER | 1027 EASTOVER DR | \$ 198,540 | \$ 145,070 |
| 1913276013 | RAYMOND SOHN | 1029 ROCK SPRING RD | \$ 202,230 | \$ 125,410 |
| 1913227003 | CARL J SCHILLER | 1034 EASTOVER DR | \$ 219,940 | \$ 159,340 |
| 1913277014 | MARC ARENS | 1035 TOP VIEW RD | \$ 190,700 | \$ 119,840 |
| 1913226004 | JOHN HOAGLAND | 1041 EASTOVER DR | \$ 237,780 | \$ 178,570 |
| 1913227004 | GEOFFREY S GALLINGER | 1046 EASTOVER DR | \$ 226,390 | \$ 226,390 |
| 1912101002 | SHERMAN PROGRAM, INC. | 1050 E SQUARE LAKE RD | \$ - | \$ - |
| 1913227005 | VICTOR MARIANA HALMAGHI | 1058 EASTOVER DR | \$ 237,650 | \$ 173,420 |
| 1925126020 | ADAM C CROFT | 111 MANOR RD | \$ 316,450 | \$ 316,450 |
| 1912126001 | GHAUS MALIK | 1130 E SQUARE LAKE RD | \$ 724,280 | \$ 623,450 |
| 1901276028 | DENNIS A NOVINSKEY | 1161 HILLPOINTE CIR | \$ 138,280 | \$ 84,370 |
| 1916353002 | JOSEPH MCCLOSKEY | 1167 COPPERWOOD DR | \$ 412,170 | \$ 341,810 |
| 1909233004 | JOHN HART | 117 DEVON RD | \$ 353,120 | \$ 262,780 |
| 1916353001 | KEDRICK ADKINS | 1173 COPPERWOOD DR | \$ 533,260 | \$ 449,470 |
| 1925176036 | THOMAS J FLESZAR | 1175 HARROW CIR | \$ 337,760 | \$ 242,700 |
| 1917477004 | DONALD EPSTEIN | 1179 COPPERWOOD DR | \$ 443,740 | \$ 370,180 |
| 1917477003 | VASUDEV R GARLAPATY | 1185 COPPERWOOD DR | \$ 437,060 | \$ 358,040 |
| 1908427011 | MARK BUDAY | 1200 CLUB DR | \$ 253,610 | \$ 197,040 |
| 1917477019 | ALAN ZEKELMAN | 1201 WATER CLIFF DR | \$ 684,270 | \$ 585,630 |
| 1925176035 | ANNAMARIE ACIERNO YOUNG | 1205 HARROW CIR | \$ 333,640 | \$ 266,410 |
| 1908476016 | PAUL ARSLANIAN | 1207 CLUB DR | \$ 799,330 | \$ 614,820 |
| 1920227006 | YAHYA ALBEER | 1207 HIDDEN LAKE DR | \$ 817,300 | \$ 689,640 |
| 1920227005 | SAFIUL HASAN | 1208 HIDDEN LAKE DR | \$ 676,560 | \$ 631,330 |
| 1908476015 | STEPHEN HOUGHAM | 1209 CLUB DR | \$ 729,440 | \$ 511,780 |
| 1917477018 | NABIL KHOURY | 1209 WATER CLIFF DR | \$ 732,660 | \$ 627,680 |
| 1908476017 | MICHAEL VLASIC | 1211 CLUB DR | \$ 1,359,730 | \$ 1,014,370 |
| 1920227004 | RAJESH GULATI | 1212 HIDDEN LAKE DR | \$ 521,140 | \$ 489,740 |
| 1908427006 | AARON M GRAY II | 1215 CEDARHOLM LN | \$ 220,860 | \$ 163,930 |
| 1917477006 | WIM PETER VAN ACKER | 1217 WATER CLIFF DR | \$ 601,170 | \$ 504,720 |
| 1901376006 | BLOOMFIELD HILLS SCHOOL DIST | 1219 E SQUARE LAKE RD | \$ - | \$ - |
| 1917276033 | GARY VALADE | 1222 W LONG LAKE RD | \$ 963,950 | \$ 757,300 |
| 1908427005 | MATAMY CONSTRUCTION INC | 1223 CEDARHOLM LN | \$ 177,410 | \$ 177,410 |
| 1920227003 | RAAD KATHAWA | 1224 HIDDEN LAKE DR | \$ 621,870 | \$ 583,650 |
| 1925176052 | THOMAS V RICELLI | 1225 HARROW CIR | \$ 2,002,250 | \$ 1,684,180 |
| 1917477007 | BRYAN A BECKER | 1225 WATER CLIFF DR | \$ 508,450 | \$ 422,270 |
| 1925126028 | GREGORY V SOBOL | 123 MANOR RD | \$ 394,370 | \$ 287,490 |
| 1908427004 | DARLENE S LARSEN | 1231 CEDARHOLM LN | \$ 139,850 | \$ 99,520 |
| 1917477008 | ERIC N BACKOS | 1233 WATER CLIFF DR | \$ 571,340 | \$ 478,060 |
| 1908427003 | BARBARA MAYER | 1235 CEDARHOLM LN | \$ 162,750 | \$ 116,760 |
| 1920227002 | LAWRENCE ALAN ULREY | 1236 HIDDEN LAKE DR | \$ 533,310 | \$ 499,310 |
| 1908451020 | ROGER S PENSKE TRUST | 1241 CLUB DR | \$ 1,964,780 | \$ 1,937,870 |
| 1917477009 | AVRAHAM YAZDI | 1241 WATER CLIFF DR | \$ 638,020 | \$ 537,700 |
| 1908427002 | EILEEN P GILBERT | 1245 CEDARHOLM LN | \$ 176,550 | \$ 157,710 |
| 1908451019 | JOEL MILLER | 1247 CLUB DR | \$ 1,340,080 | \$ 830,480 |
| 1917477010 | PHILIP VESTEVICH | 1249 WATER CLIFF DR | \$ 500,000 | \$ 413,840 |
| 1925176045 | DANIEL R MARGULIS | 125 MAYWOOD AVE | \$ 351,980 | \$ 257,400 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|--------------------------|---------------------|----|-----------|----|-----------|
| 1908427013 | MARY J KOVACS | 1250 CLUB DR | \$ | 278,560 | \$ | 217,280 |
| 1917276032 | DAVID T FISCHER | 1250 W LONG LAKE RD | \$ | 1,097,160 | \$ | 819,250 |
| 1920227001 | ROBERT T CLARK | 1252 HIDDEN LAKE DR | \$ | 491,430 | \$ | 459,170 |
| 1908451015 | JOSEPH L CHAO | 1253 CLUB DR | \$ | 600,940 | \$ | 414,430 |
| 1908451014 | TUSAR K DESAI TRUST | 1257 CLUB DR | \$ | 740,180 | \$ | 532,590 |
| 1917477011 | DONALD KEGLEY | 1257 WATER CLIFF DR | \$ | 609,160 | \$ | 511,230 |
| 1917453005 | JOSEPH W HODGES | 1258 WATER CLIFF DR | \$ | 403,800 | \$ | 346,360 |
| 1908426012 | REBECCA M SPIRO | 1260 CEDARHOLM LN | \$ | 197,610 | \$ | 139,440 |
| 1908451013 | JAY VICTOR | 1261 CLUB DR | \$ | 625,340 | \$ | 444,070 |
| 1908451012 | OSCAR H FELDMAN | 1265 CLUB DR | \$ | 761,360 | \$ | 546,820 |
| 1917477012 | THOMAS VESTEVIICH | 1265 WATER CLIFF DR | \$ | 536,340 | \$ | 435,510 |
| 1917453006 | VIMAL P PURI | 1266 WATER CLIFF DR | \$ | 441,670 | \$ | 370,800 |
| 1908451011 | PAVEL DATSYUK | 1267 CLUB DR | \$ | 1,889,670 | \$ | 1,283,760 |
| 1917276031 | SPENCER PATRICH | 1268 W LONG LAKE RD | \$ | 1,164,220 | \$ | 898,840 |
| 1917453007 | AMIT BATRA | 1272 WATER CLIFF DR | \$ | 615,800 | \$ | 524,430 |
| 1917477013 | WALLACE W CREEK | 1273 WATER CLIFF DR | \$ | 539,070 | \$ | 449,940 |
| 1908451010 | WILLIAM F MUIR | 1275 CLUB DR | \$ | 1,167,210 | \$ | 839,290 |
| 1925176032 | MARTY BERNSTEIN | 1277 HARROW CIR | \$ | 280,870 | \$ | 207,060 |
| 1917477014 | CHRISTOPHER W LORD | 1281 WATER CLIFF DR | \$ | 489,610 | \$ | 404,860 |
| 1908451008 | STEVEN G PITSILLOS | 1285 PORTERS LN | \$ | 508,070 | \$ | 345,280 |
| 1908401004 | JOSEPH P JOHNS | 1288 CIRCLE CT | \$ | 203,890 | \$ | 152,890 |
| 1917276030 | PHILLIP FISHER | 1288 W LONG LAKE RD | \$ | 1,463,200 | \$ | 1,123,260 |
| 1908451007 | MELVIN VANDERBRUG | 1291 PORTERS LN | \$ | 547,230 | \$ | 390,070 |
| 1908401005 | HENRY W SAAD | 1292 CIRCLE CT | \$ | 1,038,180 | \$ | 819,730 |
| 1920227011 | P SURULI NARAYANASAMI | 1292 HIDDEN LAKE DR | \$ | 572,920 | \$ | 489,580 |
| 1908451006 | DONALD R KLEIN | 1299 PORTERS LN | \$ | 614,660 | \$ | 364,730 |
| 1917276027 | FALCON LIVING TRUST | 1300 KIRKWAY RD | \$ | 1,028,380 | \$ | 1,028,230 |
| 1908451005 | FAHD AL-SAGHIR | 1303 PORTERS LN | \$ | 1,082,280 | \$ | 780,920 |
| 1908451004 | RICHARD K RAPPLEYE | 1307 PORTERS LN | \$ | 623,460 | \$ | 407,080 |
| 1917251006 | LAWRENCE A YOUNG | 1309 KIRKWAY RD | \$ | 877,560 | \$ | 635,970 |
| 1908451003 | DARIOUCHE MOHAMMADI | 1311 PORTERS LN | \$ | 508,370 | \$ | 314,540 |
| 1908402001 | GOLDEN E HULLINGER | 1314 PORTERS LN | \$ | 378,310 | \$ | 298,850 |
| 1908451002 | TED R NAMAN | 1315 PORTERS LN | \$ | 1,248,080 | \$ | 889,550 |
| 1908451001 | DONALD URBAS | 1319 CLUB DR | \$ | 1,347,600 | \$ | 949,700 |
| 1917451005 | KENNETH LIZUT | 1327 ECHO CT | \$ | 450,620 | \$ | 360,210 |
| 1917451003 | GARY W NOVARA | 1335 ECHO CT | \$ | 726,950 | \$ | 560,880 |
| 1917451010 | GEORGE R GROSE | 1340 RAVENWICKE WAY | \$ | 256,150 | \$ | 201,980 |
| 1917251005 | KIRK IN THE HILLS | 1340 W LONG LAKE RD | \$ | - | \$ | - |
| 1917251004 | MRS WILLIAM D SINGLETON | 1341 KIRKWAY RD | \$ | 716,030 | \$ | 523,450 |
| 1908301013 | GERRIT B LEMMEN | 1343 CLUB DR | \$ | 291,980 | \$ | 189,220 |
| 1908301012 | FREDE BALDIN | 1347 CLUB DR | \$ | 333,670 | \$ | 227,450 |
| 1917201012 | SIDNEY FORBES | 1350 KIRKWAY RD | \$ | 1,419,860 | \$ | 1,154,620 |
| 1908301016 | STEVEN K GREKIN | 1350 LOCHRIDGE RD | \$ | 1,062,980 | \$ | 750,430 |
| 1917451012 | ROBERT C LEVY | 1350 RAVENWICKE WAY | \$ | 572,920 | \$ | 441,260 |
| 1908301011 | JEFFREY S BARKER TRUST | 1351 CLUB DR | \$ | 243,610 | \$ | 158,560 |
| 1917251009 | MURALI M KOSARAJU | 1351 KIRKWAY RD | \$ | 261,610 | \$ | 193,300 |
| 1908301010 | CUTLER, NINA E TRUSTEE | 1355 CLUB DR | \$ | 401,990 | \$ | 248,940 |
| 1917201011 | TERRY PODOLSKY | 1356 KIRKWAY RD | \$ | 1,200,950 | \$ | 950,470 |
| 1917376043 | RAYMOND E PUTNAM | 1361 CEDAR BEND DR | \$ | 407,640 | \$ | 270,940 |
| 1908301009 | ROSALIE J WITTBOLD TRUST | 1361 CLUB DR | \$ | 198,640 | \$ | 198,640 |
| 1917201010 | RICHARD SLOAN | 1362 KIRKWAY RD | \$ | 1,261,490 | \$ | 927,660 |
| 1908151020 | BARTON B BURNS | 1367 CLUB DR | \$ | 276,960 | \$ | 199,410 |
| 1917201009 | R BART SANGAL | 1370 KIRKWAY RD | \$ | 1,378,540 | \$ | 1,002,270 |
| 1917376044 | KURT MCCOURT | 1371 CEDAR BEND DR | \$ | 227,680 | \$ | 172,630 |
| 1908151019 | TERENCE COUNIHAN | 1371 CLUB DR | \$ | 290,670 | \$ | 196,930 |
| 1917251002 | ALKA SHAH | 1371 KIRKWAY RD | \$ | 979,430 | \$ | 544,390 |
| 1908151018 | HERMANN SALENBAUCH | 1375 CLUB DR | \$ | 302,520 | \$ | 203,740 |
| 1908151017 | BASHAR SUCCAR | 1379 CLUB DR | \$ | 364,250 | \$ | 364,250 |
| 1917377010 | JOYCE A PIPPEL | 1381 CEDAR BEND DR | \$ | 219,850 | \$ | 165,620 |
| 1908151016 | LINDA B PIFER | 1383 CLUB DR | \$ | 316,590 | \$ | 217,180 |
| 1908151015 | EFTHEMIA STEELE | 1387 CLUB DR | \$ | 427,270 | \$ | 291,800 |
| 1917201008 | EUGENE FRIEDMAN | 1390 KIRKWAY RD | \$ | 1,493,150 | \$ | 1,096,810 |
| 1917377009 | DAVID COHEN | 1391 CEDAR BEND DR | \$ | 255,760 | \$ | 197,220 |
| 1920126040 | KENNETH BARNETT | 1400 ECHO LN | \$ | 371,620 | \$ | 304,270 |
| 1917201007 | LUAY SAYED | 1400 INWOODS CIR | \$ | 1,875,580 | \$ | 1,286,320 |
| 1917377008 | SANDRA BOTVINICK | 1401 CEDAR BEND DR | \$ | 352,470 | \$ | 263,740 |
| 1908151022 | FOREST LAKE COUNTRY CLUB | 1401 CLUB DR | \$ | 445,790 | \$ | 429,180 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|---------------------------------------|---------------------|----|-----------|----|-----------|
| 1920126025 | MR ELIEZER DORFMAN | 1401 ECHO LN | \$ | 959,780 | \$ | 705,660 |
| 1917251001 | MOHAMMADREZA KAHNAMOU EI | 1401 KIRKWAY RD | \$ | 414,760 | \$ | 342,270 |
| 1917377011 | GUY R PUPP | 1409 CEDAR BEND DR | \$ | 457,560 | \$ | 345,800 |
| 1917128009 | PETER ZIERINGER | 1411 KIRKWAY RD | \$ | 709,150 | \$ | 606,470 |
| 1908351010 | SUZANNE M WELLS | 1411 LOCHRIDGE RD | \$ | 1,039,140 | \$ | 758,640 |
| 1920126021 | MAREN II L.L.C. | 1412 ECHO LN | \$ | 233,440 | \$ | 233,440 |
| 1917201006 | GEORGE D LANTHORNE | 1412 INWOODS CIR | \$ | 491,690 | \$ | 288,640 |
| 1920126024 | BRETT TREMAIN | 1415 ECHO LN | \$ | 223,140 | \$ | 223,140 |
| 1917201005 | HORMOZ ALIZADEH | 1416 INWOODS CIR | \$ | 718,410 | \$ | 514,430 |
| 1917377005 | AYESHA AHSAN RAFIQ | 1417 CEDAR BEND DR | \$ | 467,350 | \$ | 467,350 |
| 1917201004 | ANNA MARIA MOLLICONE LIVING TRUST | 1418 INWOODS CIR | \$ | 1,211,460 | \$ | 1,051,390 |
| 1917301010 | KIRK IN THE HILLS PRESBYTERIAN CHURCH | 1420 W LONG LAKE RD | \$ | - | \$ | - |
| 1917128008 | DUNIA DAVID REVOCABLE LIVING TRUST | 1421 KIRKWAY RD | \$ | 480,730 | \$ | 351,050 |
| 1908351009 | HARVEY L SOLWAY | 1421 LOCHRIDGE RD | \$ | 993,760 | \$ | 727,320 |
| 1920126022 | JOSEPH R NEMETH | 1424 ECHO LN | \$ | 345,990 | \$ | 259,150 |
| 1917201003 | FERRAS ZENI | 1424 INWOODS CIR | \$ | 1,180,640 | \$ | 1,180,640 |
| 1908301008 | TAE SUN HONG | 1424 LOCHRIDGE RD | \$ | 532,000 | \$ | 370,820 |
| 1917377004 | ANGELO GIAMPETRONI | 1425 CEDAR BEND DR | \$ | 296,370 | \$ | 218,050 |
| 1920126023 | ALLAN NACHMAN | 1425 ECHO LN | \$ | 427,440 | \$ | 324,850 |
| 1917128007 | FERANDO G DIAZ MD | 1427 KIRKWAY RD | \$ | 552,910 | \$ | 465,170 |
| 1917201002 | MICHAEL ROTH | 1430 INWOODS CIR | \$ | 1,661,820 | \$ | 1,140,870 |
| 1917377003 | STEVEN STRAUB | 1433 CEDAR BEND DR | \$ | 264,310 | \$ | 194,060 |
| 1917128006 | CHRISTOPHER J PARDI | 1433 KIRKWAY RD | \$ | 1,136,530 | \$ | 765,900 |
| 1908351008 | ROBERT P WHITE | 1433 LOCHRIDGE RD | \$ | 692,650 | \$ | 692,650 |
| 1917128005 | NORMAN RAUTIOLA | 1439 KIRKWAY RD | \$ | 1,359,230 | \$ | 1,246,720 |
| 1908301007 | MARY BUCHZEIGER | 1440 LOCHRIDGE RD | \$ | 986,530 | \$ | 986,530 |
| 1917301009 | GREGORY M CAPLER | 1440 W LONG LAKE RD | \$ | 705,640 | \$ | 470,060 |
| 1917377002 | ALAYNE BATSAKES | 1441 CEDAR BEND DR | \$ | 275,150 | \$ | 202,700 |
| 1908351007 | WAEI A SAKR | 1441 LOCHRIDGE RD | \$ | 738,030 | \$ | 531,450 |
| 1917201001 | ARVIND SABHARWAL | 1442 INWOODS CIR | \$ | 1,412,680 | \$ | 970,640 |
| 1917128004 | MICHELLE M MAYNE | 1445 KIRKWAY RD | \$ | 709,990 | \$ | 513,780 |
| 1908151009 | SURESH AGGARWAL | 1447 CLUB DR | \$ | 1,091,270 | \$ | 698,860 |
| 1901276004 | ERIC JOHNSON | 1448 ASHOVER DR | \$ | 179,990 | \$ | 179,990 |
| 1908376003 | HANS SCHWARZ | 1448 INWOODS CIR | \$ | 564,490 | \$ | 359,910 |
| 1917377001 | LUCY MERRITT | 1449 CEDAR BEND DR | \$ | 263,140 | \$ | 194,130 |
| 1908376002 | DAVID L WAY TRUSTEE | 1452 INWOODS CIR | \$ | 1,658,640 | \$ | 1,060,190 |
| 1917128003 | JOSEPH A GEORGE | 1455 KIRKWAY RD | \$ | 1,545,760 | \$ | 1,532,470 |
| 1908351006 | SURENDRA S KHAMBETE | 1455 LOCHRIDGE RD | \$ | 299,580 | \$ | 299,580 |
| 1908301006 | ROBERT YOUNING WEI | 1456 LOCHRIDGE RD | \$ | 1,187,830 | \$ | 1,142,010 |
| 1920126006 | PHYLLIS H TWINNEY | 1457 CEDAR BEND DR | \$ | 222,130 | \$ | 169,780 |
| 1908151008 | ALEXANDER D BEGIN | 1457 CLUB DR | \$ | 246,190 | \$ | 246,190 |
| 1901276005 | GARY SMITH | 1460 ASHOVER DR | \$ | 174,530 | \$ | 123,590 |
| 1917301008 | STEPHEN READ | 1460 W LONG LAKE RD | \$ | 1,500,610 | \$ | 813,270 |
| 1908376001 | FAWAZ AL-EJEL | 1462 INWOODS CIR | \$ | 832,990 | \$ | 645,720 |
| 1920126005 | GUNTHER HERBIG | 1465 CEDAR BEND DR | \$ | 242,070 | \$ | 185,230 |
| 1908351005 | THOMAS H COBB | 1467 LOCHRIDGE RD | \$ | 911,580 | \$ | 636,110 |
| 1917126004 | ANUP K POPAT | 1468 INWOODS CIR | \$ | 840,870 | \$ | 560,470 |
| 1908151007 | FRANKLIN WEBSTER | 1471 CLUB DR | \$ | 335,480 | \$ | 228,850 |
| 1917126003 | ANTHONY HOPP | 1474 INWOODS CIR | \$ | 770,310 | \$ | 546,200 |
| 1920126030 | CAROL B LEVIN TRUST | 1474 SODON CT | \$ | 221,660 | \$ | 168,410 |
| 1908151052 | ADRIA IANNOTTI | 1475 CLUB DR | \$ | 565,870 | \$ | 397,910 |
| 1908351004 | ALBERTO COHEN | 1477 LOCHRIDGE RD | \$ | 708,810 | \$ | 477,080 |
| 1920226008 | ALAN STRICKSTEIN | 1478 HIGH CT | \$ | 355,970 | \$ | 278,260 |
| 1920126029 | DIANA M CONSTANCE | 1478 SODON CT | \$ | 193,020 | \$ | 145,120 |
| 1908301005 | AARON MARTIN | 1482 LOCHRIDGE RD | \$ | 527,800 | \$ | 371,440 |
| 1920126028 | STEVEN L TRONSTEIN | 1482 SODON CT | \$ | 266,100 | \$ | 204,680 |
| 1917126002 | SERGEI KUZNETSOV | 1484 INWOODS CIR | \$ | 1,428,690 | \$ | 1,213,300 |
| 1908151051 | SHIVA S RAU | 1485 CLUB DR | \$ | 947,250 | \$ | 629,390 |
| 1917128011 | ROBERT S TAUBMAN KIRKWAY PROPERTY TR | 1485 KIRKWAY RD | \$ | - | \$ | - |
| 1908351003 | RAKESH MAHAJAN | 1485 LOCHRIDGE RD | \$ | 821,750 | \$ | 618,850 |
| 1920126027 | SHATZMAN FAMILY LTD PARTNER | 1486 SODON CT | \$ | 224,810 | \$ | 169,800 |
| 1917126001 | SHEEL V WALVEKAR | 1490 KIRKWAY RD | \$ | 383,820 | \$ | 209,260 |
| 1908301004 | ERIC DAVIES | 1490 LOCHRIDGE RD | \$ | 216,940 | \$ | 216,940 |
| 1920126026 | ROBERT L RUSKIN | 1490 SODON LAKE DR | \$ | 286,970 | \$ | 219,540 |
| 1917301024 | BARBARA J COBURN TRUST | 1490 W LONG LAKE RD | \$ | 1,256,380 | \$ | 808,470 |
| 1917301023 | WARREN BRANDES | 1492 W LONG LAKE RD | \$ | 935,060 | \$ | 592,340 |
| 1901276008 | H COLEMAN MCGEHEE JR | 1496 ASHOVER DR | \$ | 163,880 | \$ | 116,030 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|-------------------------------|------------------------|----|-----------|----|-----------|
| 1920126019 | JEFFERY FISCHGRUND | 1496 SODON LAKE DR | \$ | 951,250 | \$ | 732,200 |
| 1908351002 | GREGORY A HUMMON | 1497 LOCHRIDGE RD | \$ | 950,830 | \$ | 950,830 |
| 1908352010 | THAMMADI RAVIKANT | 1500 KIRKWAY RD | \$ | 390,520 | \$ | 187,380 |
| 1917301022 | THEODORE SCHREIBER | 1500 W LONG LAKE RD | \$ | 1,068,650 | \$ | 752,580 |
| 1920126018 | JUDITH LAWSON REVOCABLE TRUST | 1504 SODON LAKE DR | \$ | 801,640 | \$ | 611,430 |
| 1920126017 | JODI CADEN | 1508 SODON LAKE DR | \$ | 439,140 | \$ | 330,590 |
| 1920126016 | J ROBERT HAWKINS | 1512 SODON LAKE DR | \$ | 422,960 | \$ | 344,010 |
| 1908351001 | RAINER JUECKSTOCK | 1515 LOCHRIDGE RD | \$ | 668,050 | \$ | 668,050 |
| 1917301017 | W F HUBNER | 1516 W LONG LAKE RD | \$ | 1,021,130 | \$ | 636,140 |
| 1908352009 | GERHARDT KNODEL | 1522 KIRKWAY RD | \$ | 573,810 | \$ | 339,290 |
| 1920126015 | WALTER COHEN | 1524 TATOR CT | \$ | 405,190 | \$ | 285,280 |
| 1907427009 | PHILIP A KUBIK | 1527 LOCHRIDGE RD | \$ | 686,300 | \$ | 476,800 |
| 1920126014 | EUGENE BROOKS | 1528 TATOR CT | \$ | 248,440 | \$ | 191,010 |
| 1908352008 | MAZIN YONAN | 1530 KIRKWAY RD | \$ | 1,636,310 | \$ | 1,455,200 |
| 1917301025 | VICTOR OBOT UBOM | 1530 W LONG LAKE RD | \$ | 936,200 | \$ | 626,340 |
| 1917101017 | PAUL A VLASIC | 1535 ISLAND LN | \$ | 2,023,900 | \$ | 1,362,800 |
| 1908352005 | RIZWAN DANISH | 1536 KIRKWAY RD | \$ | 287,270 | \$ | 287,270 |
| 1901276010 | DAVID O EVANS | 1538 ASHOVER CIR | \$ | 154,410 | \$ | 109,210 |
| 1907427008 | GAIL CLARKSON | 1539 LOCHRIDGE RD | \$ | 853,200 | \$ | 463,820 |
| 1901276011 | JAMES R QUINN | 1546 ASHOVER CIR | \$ | 129,240 | \$ | 91,440 |
| 1908301003 | JAMES STUDINGER | 1546 INDIANWOOD CT | \$ | 470,000 | \$ | 470,000 |
| 1917101031 | HELLEN L COHEN TRUST | 1547 ISLAND LN | \$ | 1,280,820 | \$ | 861,200 |
| 1917101030 | JEFFREY D FORMAN | 1549 ISLAND LN | \$ | 864,750 | \$ | 611,260 |
| 1908352011 | NATHAN J KERNER | 1550 KIRKWAY RD | \$ | 502,180 | \$ | 338,480 |
| 1907427007 | SUDIPTA MISRA | 1551 LOCHRIDGE RD | \$ | 374,480 | \$ | 374,340 |
| 1917101024 | HADAR GRANADER | 1553 ISLAND LN | \$ | 487,020 | \$ | 363,440 |
| 1901276012 | RAYMOND LATOVICK | 1554 ASHOVER CIR | \$ | 141,540 | \$ | 100,270 |
| 1917101023 | SATISH TUMMALA | 1555 ISLAND LN | \$ | 1,315,890 | \$ | 653,270 |
| 1908301002 | MICHAEL SOMAND | 1560 INDIANWOOD CT | \$ | 579,100 | \$ | 383,990 |
| 1918229001 | KIRKWAY PROPERTIES LLC | 1565 KIRKWAY RD | \$ | 357,710 | \$ | 314,950 |
| 1908352004 | HELEN WACHLER | 1566 KIRKWAY RD | \$ | 482,150 | \$ | 291,760 |
| 1918230009 | ILIJA LETICA | 1567 ISLAND LN | \$ | 1,404,000 | \$ | 1,324,760 |
| 1908301001 | MIRJA L PRZYBYLSKI | 1574 INDIANWOOD CT | \$ | 700,260 | \$ | 478,650 |
| 1925201005 | FRANCIS RODRIGUEZ | 1575 OXFORD RD | \$ | 318,900 | \$ | 308,050 |
| 1908352003 | DONALD GLUSH | 1576 APPLE LN | \$ | 1,453,220 | \$ | 1,271,540 |
| 1918230008 | NED W GREENBERG | 1577 ISLAND LN | \$ | 695,370 | \$ | 475,140 |
| 1917301014 | JAMES DOCKERY | 1580 W LONG LAKE RD | \$ | 598,760 | \$ | 501,040 |
| 1908352002 | HAROLD WEISS | 1582 APPLE LN | \$ | 1,153,400 | \$ | 709,240 |
| 1908352001 | MICHAEL MARK MANLEY | 1586 APPLE LN | \$ | 1,187,110 | \$ | 1,177,900 |
| 1907426009 | JOHN R PHILLIPS | 1588 INDIANWOOD CT | \$ | 490,800 | \$ | 328,750 |
| 1918230007 | AVIVA A ROBINSON | 1589 KIRKWAY RD | \$ | 730,120 | \$ | 570,160 |
| 1907476015 | DR MICHAEL T KEEFE | 1590 APPLE LN | \$ | 602,090 | \$ | 400,870 |
| 1907476014 | THEODORE A GOLDEN | 1594 APPLE LN | \$ | 1,006,520 | \$ | 724,310 |
| 1918230006 | GHAZWAN ATTO | 1595 KIRKWAY RD | \$ | 467,590 | \$ | 346,100 |
| 1935403002 | VIRGINIA CLOHSET | 1595 NORTHLAWN BLVD | \$ | 302,300 | \$ | 198,860 |
| 1925201004 | BARBARA M LIVY | 1595 OXFORD RD | \$ | 119,960 | \$ | 69,750 |
| 1907476013 | MICHAEL R KRAMER | 1600 APPLE LN | \$ | 948,700 | \$ | 675,510 |
| 1917301011 | HOWARD O FRETTER | 1600 W LONG LAKE RD | \$ | 764,340 | \$ | 467,460 |
| 1918230005 | MICHAEL B COURTNEY | 1601 KIRKWAY RD | \$ | 1,598,660 | \$ | 1,073,270 |
| 1907476012 | ALAA OWAINATI | 1606 APPLE LN | \$ | 837,360 | \$ | 617,820 |
| 1918230004 | ALAN W SOLWAY | 1607 KIRKWAY RD | \$ | 746,250 | \$ | 489,960 |
| 1907476011 | E J CHIDIAC | 1612 APPLE LN | \$ | 1,165,560 | \$ | 837,340 |
| 1907426008 | RITCHARD HOMBERG | 1612 LOCHRIDGE RD | \$ | 426,250 | \$ | 420,420 |
| 1907476010 | JOHN W ARTHURS | 1616 APPLE LN | \$ | 974,650 | \$ | 684,310 |
| 1918230003 | MURRAY C PITT | 1617 KIRKWAY RD | \$ | 785,140 | \$ | 585,860 |
| 1907426007 | MICHAEL HECKER | 1624 LOCHRIDGE RD | \$ | 672,730 | \$ | 442,450 |
| 1907427010 | SAM WILLIAMS | 1625 LOCHRIDGE RD | \$ | 1,256,950 | \$ | 941,990 |
| 1935403001 | AMY KANTGIAS | 1625 NORTHLAWN BLVD | \$ | 212,390 | \$ | 143,680 |
| 1918230002 | GARY WARR | 1627 KIRKWAY RD | \$ | 515,920 | \$ | 381,660 |
| 1907426006 | JAMES ROSS | 1636 LOCHRIDGE RD | \$ | 600,650 | \$ | 590,890 |
| 1907476009 | LEONARD B SAVOY | 1638 APPLE LN | \$ | 585,650 | \$ | 343,720 |
| 1910151019 | CRAIG L RATHMAN | 164 W HICKORY GROVE RD | \$ | 149,400 | \$ | 93,730 |
| 1918276007 | NAHID MAZHARI | 1645 KIRKWAY LN | \$ | 945,880 | \$ | 562,410 |
| 1907427004 | LANNY A JARDINE | 1645 LOCHRIDGE RD | \$ | 1,056,790 | \$ | 897,640 |
| 1907426005 | JEFFREY T JACOB | 1648 LOCHRIDGE RD | \$ | 527,920 | \$ | 351,940 |
| 1907476008 | ZVI KENNET | 1650 APPLE LN | \$ | 363,180 | \$ | 266,480 |
| 1907427003 | MORDECHAI LEV | 1657 LOCHRIDGE RD | \$ | 580,600 | \$ | 367,930 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|---------------------------------------|-------------------------|----|-----------|----|-----------|
| 1925177013 | WILLIAM LOIZON | 166 MAYWOOD AVE | \$ | 163,150 | \$ | 108,330 |
| 1907476016 | FRANCES SMITH | 1660 APPLE LN | \$ | 1,388,170 | \$ | 913,060 |
| 1907426004 | DOUGLAS RICHMAN | 1660 LOCHRIDGE RD | \$ | 972,410 | \$ | 659,620 |
| 1918276014 | RUELBA M BREDE | 1660 STANDISH CT | \$ | 411,850 | \$ | 270,590 |
| 1918276008 | BARBARA D BERRY REVOCABLE INTER-VIVOS | 1665 KIRKWAY LN | \$ | 395,930 | \$ | 277,320 |
| 1918276002 | DENNIS I BOJRAB | 1670 KIRKWAY LN | \$ | 1,061,340 | \$ | 702,130 |
| 1907427015 | STUART FRANKEL | 1671 LOCHRIDGE RD | \$ | 958,580 | \$ | 958,580 |
| 1907426003 | BENJAMIN HELLER | 1672 LOCHRIDGE RD | \$ | 589,940 | \$ | 395,170 |
| 1907426002 | JOAN M KARR | 1684 LOCHRIDGE RD | \$ | 447,650 | \$ | 296,620 |
| 1907401015 | STEVEN G GORDON | 1701 HERON RIDGE DR | \$ | 924,340 | \$ | 824,130 |
| 1907401016 | NITIN C DOSHI | 1704 HERON RIDGE DR | \$ | 618,020 | \$ | 475,060 |
| 1907401014 | STEVEN G GORDON | 1705 HERON RIDGE DR | \$ | 202,590 | \$ | 180,990 |
| 1907401017 | GREGG H SOLOMON TRUST | 1708 HERON RIDGE DR | \$ | 592,110 | \$ | 453,900 |
| 1907451019 | IRVIN J GASTMAN | 1710 MORNINGSIDE WAY | \$ | 332,380 | \$ | 299,570 |
| 1907401013 | J MICHAEL LOSH | 1711 HERON RIDGE DR | \$ | 543,710 | \$ | 492,930 |
| 1907451023 | SALAH ZOMA | 1711 MORNINGSIDE WAY | \$ | 613,020 | \$ | 560,180 |
| 1907401018 | GERALD L SEIZERT | 1716 HERON RIDGE DR | \$ | 472,850 | \$ | 355,970 |
| 1907401012 | CAROLYN ROSS | 1717 HERON RIDGE DR | \$ | 695,240 | \$ | 627,200 |
| 1907451018 | MOHAMMAD A MUBEEN | 1718 MORNINGSIDE WAY | \$ | 309,040 | \$ | 281,710 |
| 1910151018 | SHERYL A MCGEE | 172 W HICKORY GROVE RD | \$ | 178,240 | \$ | 112,800 |
| 1907451022 | KATHLEEN DASS | 1721 MORNINGSIDE WAY | \$ | 320,100 | \$ | 292,840 |
| 1907401011 | CAROLYN ROSS | 1723 HERON RIDGE DR | \$ | 208,020 | \$ | 186,680 |
| 1907401019 | THE M.O.S.S. TRUST | 1724 HERON RIDGE DR | \$ | 543,360 | \$ | 413,090 |
| 1907451017 | DONALD S JOHNSON | 1726 MORNINGSIDE WAY | \$ | 393,870 | \$ | 361,290 |
| 1907401010 | SHAILESH DOSHI | 1729 HERON RIDGE DR | \$ | 212,430 | \$ | 190,530 |
| 1907401020 | MARTIN STONEMAN | 1730 HERON RIDGE DR | \$ | 621,830 | \$ | 474,370 |
| 1907451021 | FIDELITY BUILDERS | 1733 MORNINGSIDE WAY | \$ | 48,610 | \$ | 30,100 |
| 1907401021 | CHI KENG TSAI | 1734 HERON RIDGE DR | \$ | 609,150 | \$ | 461,820 |
| 1907451016 | GILBERT SPILMAN | 1734 MORNINGSIDE WAY | \$ | 410,070 | \$ | 359,920 |
| 1907401009 | MARK A HAGMANN | 1735 HERON RIDGE DR | \$ | 742,430 | \$ | 670,250 |
| 1907401022 | FARAH DAWOOD-FARAH | 1738 HERON RIDGE DR | \$ | 626,940 | \$ | 523,610 |
| 1907401028 | NAGESH PALAKURTHI | 1741 HERON RIDGE DR | \$ | 1,438,840 | \$ | 1,283,460 |
| 1907401023 | JAMES K GRAHAM | 1744 HERON RIDGE DR | \$ | 813,060 | \$ | 611,420 |
| 1907401027 | SHAILESH DOSHI | 1745 HERON RIDGE DR | \$ | 1,580,100 | \$ | 1,580,100 |
| 1907451015 | CHAN WANG KIN | 1745 MORNINGSIDE WAY | \$ | 677,620 | \$ | 619,310 |
| 1907401007 | PUSHPALATHA DEVIREDDY | 1747 HERON RIDGE DR | \$ | 1,079,260 | \$ | 961,330 |
| 1909233003 | ROBERT JONES | 175 DEVON RD | \$ | 537,670 | \$ | 407,250 |
| 1907401024 | SANJEEV CHOPRA | 1750 HERON RIDGE DR | \$ | 608,360 | \$ | 462,090 |
| 1935376001 | BIRMINGHAM COUNTRY CLUB | 1750 SAXON DR | \$ | 4,126,360 | \$ | 2,038,100 |
| 1907401006 | CHAKRADHAR C REDDY | 1753 HERON RIDGE DR | \$ | 1,144,440 | \$ | 1,013,500 |
| 1907377004 | D SREEDHAREN NAIR | 1754 LONG LAKE SHORE DR | \$ | 3,700 | \$ | 2,880 |
| 1907401005 | SUSAN GAIL LEWIS | 1759 HERON RIDGE DR | \$ | 887,350 | \$ | 793,920 |
| 1907401029 | SALMA AFTAB | 1760 HERON RIDGE DR | \$ | 932,650 | \$ | 737,640 |
| 1907401004 | SEEMA DOSHI | 1765 HERON RIDGE DR | \$ | 707,980 | \$ | 641,090 |
| 1907377003 | PJETER STANAJ | 1770 LONG LAKE SHORE DR | \$ | 3,770 | \$ | 2,930 |
| 1907251006 | JOEL MARVIN DORFMAN REVOCABLE TRUST | 1771 BLUE HERON CT | \$ | 819,110 | \$ | 689,110 |
| 1907252001 | JOSE MARIA ALAPONT | 1772 HERON RIDGE DR | \$ | 542,740 | \$ | 407,540 |
| 1907251005 | KIRIT VORA | 1777 BLUE HERON CT | \$ | 969,700 | \$ | 864,280 |
| 1907251004 | SHRIKANT MEHTA | 1783 BLUE HERON CT | \$ | 1,397,910 | \$ | 1,229,700 |
| 1907251003 | OLIVIER FRANCOIS | 1789 BLUE HERON CT | \$ | 745,610 | \$ | 681,110 |
| 1907377002 | CAROL A ROBINSON LIVING TRUST | 1794 LONG LAKE SHORE DR | \$ | 3,680 | \$ | 2,860 |
| 1910151017 | MICHAEL SCHAFER | 180 W HICKORY GROVE RD | \$ | 244,680 | \$ | 144,310 |
| 1907176012 | ULLE, RECORD/REGISTERED AGENT | 1801 LONG POINTE DR | \$ | - | \$ | - |
| 1907176011 | DON ROGER COBB | 1807 LONG POINTE DR | \$ | 308,060 | \$ | 227,190 |
| 1907326010 | ABDUL R HASAN | 1808 LONG LAKE SHORE DR | \$ | 873,380 | \$ | 579,420 |
| 1907176010 | NOREEN ABERLY | 1813 LONG POINTE DR | \$ | 489,280 | \$ | 322,720 |
| 1907326009 | FADI DEMASHKIEH | 1816 LONG LAKE SHORE DR | \$ | 1,149,530 | \$ | 764,050 |
| 1907176009 | ADNAN ALNAIMI | 1819 LONG POINTE DR | \$ | 307,630 | \$ | 222,090 |
| 1907176008 | EUGENE FRIEDMAN MD | 1825 LONG POINTE DR | \$ | 356,880 | \$ | 350,600 |
| 1907176007 | JEAN LAMIA | 1831 LONG POINTE DR | \$ | 261,960 | \$ | 189,910 |
| 1907326008 | ALEX GOLDIS | 1832 LONG LAKE SHORE DR | \$ | 1,103,600 | \$ | 752,420 |
| 1907176006 | MARKUS KNOERR | 1837 LONG POINTE DR | \$ | 373,740 | \$ | 286,790 |
| 1907326007 | MICHAEL ZOUSER | 1840 LONG LAKE SHORE DR | \$ | 1,298,140 | \$ | 1,244,290 |
| 1907176005 | VICTOR CERNIS | 1843 LONG POINTE DR | \$ | 477,620 | \$ | 395,220 |
| 1907326006 | RICHARD LEEBOVE | 1848 LONG LAKE SHORE DR | \$ | 1,266,700 | \$ | 891,250 |
| 1907176004 | MICHAEL A SAVIN | 1849 LONG POINTE DR | \$ | 315,960 | \$ | 237,150 |
| 1907176003 | MICHAEL WEST | 1855 LONG POINTE DR | \$ | 329,820 | \$ | 250,000 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|---|-------------------------|----|-----------|----|-----------|
| 1907326005 | GHAIDA S KHODHER | 1856 LONG LAKE SHORE DR | \$ | 1,264,660 | \$ | 877,760 |
| 1907176002 | MIRIAM DUJOVNY | 1859 LONG POINTE DR | \$ | 366,560 | \$ | 279,260 |
| 1907176001 | THOMAS J BETRUS | 1863 LONG POINTE DR | \$ | 888,050 | \$ | 725,760 |
| 1907326004 | ABDULRAHMAN HABBAL | 1864 LONG LAKE SHORE DR | \$ | 865,460 | \$ | 865,460 |
| 1907151018 | SCORE 7 PROPERTY TRUST, ATTN: FRANK FAI | 1867 LONG POINTE DR | \$ | 1,189,220 | \$ | 1,090,950 |
| 1907326003 | CINDY WEINGARTEN | 1870 LONG LAKE SHORE DR | \$ | 505,990 | \$ | 342,700 |
| 1906301022 | PAUL H BIBEAU | 1870 S HAMMOND LAKE DR | \$ | 292,850 | \$ | 245,500 |
| 1907151017 | LENORE E READ | 1871 LONG POINTE DR | \$ | 379,160 | \$ | 271,150 |
| 1907151016 | RONALD J COUSINEAU | 1875 LONG POINTE DR | \$ | 378,290 | \$ | 275,220 |
| 1907151015 | DANIEL P BERESH | 1879 LONG POINTE DR | \$ | 294,260 | \$ | 210,710 |
| 1907252008 | WALTER CZARNECKI | 1880 HERON RIDGE DR | \$ | 120,960 | \$ | 75,960 |
| 1907326011 | JEFFREY COHEN | 1880 LONG LAKE SHORE DR | \$ | 634,910 | \$ | 626,250 |
| 1906301023 | MARK GLAZER | 1880 S HAMMOND LAKE DR | \$ | 211,050 | \$ | 174,810 |
| 1907303014 | EUGENE & REGINA NEUGEBOHR QUALIFIED PE | 1885 LONG LAKE SHORE DR | \$ | 379,930 | \$ | 279,960 |
| 1907151014 | WILLIAM S GOLDSTEIN | 1885 LONG POINTE DR | \$ | 409,520 | \$ | 381,290 |
| 1907252007 | WALTER CZARNECKI | 1886 HERON RIDGE DR | \$ | 790,280 | \$ | 672,630 |
| 1907252006 | MUHAMMAD QURESHI | 1890 HERON RIDGE DR | \$ | 831,970 | \$ | 708,830 |
| 1906301024 | LOUIS W GEISLING | 1890 S HAMMOND LAKE DR | \$ | 204,270 | \$ | 169,570 |
| 1907151013 | ROBERT A SHAYA | 1893 LONG POINTE DR | \$ | 405,890 | \$ | 299,220 |
| 1907252005 | REGINA MOMGAUDAS | 1894 HERON RIDGE DR | \$ | 895,040 | \$ | 769,140 |
| 1907252004 | TUSHAR VAKHARIYA | 1898 HERON RIDGE DR | \$ | 843,030 | \$ | 843,030 |
| 1906301025 | IRWIN LIPWORTH | 1900 S HAMMOND LAKE DR | \$ | 207,340 | \$ | 171,650 |
| 1907252002 | ROCK HOMES LLC | 1902 HERON RIDGE DR | \$ | 27,870 | \$ | 15,290 |
| 1907252003 | ROCK HOMES LLC | 1902 HERON RIDGE DR | \$ | 156,760 | \$ | 90,050 |
| 1907151012 | WARREN CHAPPELL | 1905 LONG POINTE DR | \$ | 679,030 | \$ | 530,070 |
| 1906155005 | DONALD B SMITH JR | 1905 N HAMMOND LAKE DR | \$ | 201,800 | \$ | 167,000 |
| 1907301011 | MANUEL DUJOVNY | 1906 LONG LAKE SHORE DR | \$ | 554,510 | \$ | 355,520 |
| 1907303012 | NORMAN SINCLAIR | 1907 LONG LAKE SHORE DR | \$ | 360,190 | \$ | 271,720 |
| 1906301026 | CHERYL KAROLAK | 1910 S HAMMOND LAKE DR | \$ | 208,710 | \$ | 189,380 |
| 1907303015 | DAVID L BROWN | 1912 BAYOU DR | \$ | 328,950 | \$ | 226,190 |
| 1907151011 | MARION A HONER | 1913 LONG POINTE DR | \$ | 565,780 | \$ | 426,780 |
| 1907301010 | SUSAN MARIE TURNER | 1914 LONG LAKE SHORE DR | \$ | 668,040 | \$ | 452,150 |
| 1907303011 | NEIL R SHERMAN | 1915 LONG LAKE SHORE DR | \$ | 788,600 | \$ | 669,020 |
| 1907303016 | MOUAL RAZOKY | 1920 BAYOU DR | \$ | 616,220 | \$ | 453,470 |
| 1907227010 | HUMERA ATHAR | 1920 HERON RIDGE DR | \$ | 4,960 | \$ | 2,710 |
| 1907227011 | HUMERA ATHAR | 1920 HERON RIDGE DR | \$ | 62,010 | \$ | 48,200 |
| 1906301027 | JEFFREY FORREST | 1920 S HAMMOND LAKE DR | \$ | 303,490 | \$ | 252,410 |
| 1907151010 | RONALD R PAWCZUK | 1921 LONG POINTE DR | \$ | 428,870 | \$ | 315,530 |
| 1906155004 | ALBERT F HERMANN | 1921 N HAMMOND LAKE DR | \$ | 293,570 | \$ | 234,410 |
| 1907301009 | DAVID KAHAN | 1922 LONG LAKE SHORE DR | \$ | 971,130 | \$ | 679,630 |
| 1907227006 | HAZEM NASSIF | 1924 HERON RIDGE DR | \$ | 25,840 | \$ | 24,430 |
| 1907227005 | HAZEM NASSIF | 1924 HERON RIDGE DR | \$ | 850,170 | \$ | 728,560 |
| 1907303010 | KAROL ZAKALIK | 1925 LONG LAKE SHORE DR | \$ | 395,390 | \$ | 297,850 |
| 1907303017 | PHILIP WOLOK | 1928 BAYOU DR | \$ | 336,260 | \$ | 253,880 |
| 1907227003 | SEETHA SINDHURA VAKHARIYA | 1928 HERON RIDGE DR | \$ | 859,660 | \$ | 834,570 |
| 1907227004 | SEETHA SINDHURA VAKHARIYA | 1928 HERON RIDGE DR | \$ | 25,010 | \$ | 25,010 |
| 1907151009 | FRANCIS PATRICK DEVINE | 1929 LONG POINTE DR | \$ | 364,140 | \$ | 260,660 |
| 1907301008 | RICHARD S RAVID | 1930 LONG LAKE SHORE DR | \$ | 565,780 | \$ | 368,620 |
| 1907227002 | PETER C COLE | 1932 HERON RIDGE DR | \$ | 26,070 | \$ | 26,070 |
| 1907303009 | JAYSON FIELD | 1933 LONG LAKE SHORE DR | \$ | 411,180 | \$ | 302,630 |
| 1907303018 | CHRISTOPHER CONNELLY | 1936 BAYOU DR | \$ | 318,680 | \$ | 265,810 |
| 1907301007 | DR BURTON S STILLMAN | 1938 LONG LAKE SHORE DR | \$ | 596,640 | \$ | 388,550 |
| 1906301028 | LOUIS DEGENNARO | 1940 S HAMMOND LAKE DR | \$ | 225,330 | \$ | 190,270 |
| 1901176008 | SANDRA S LAPADOT | 1941 SQUIRREL RD | \$ | 266,200 | \$ | 184,850 |
| 1907303019 | ROBERT N ROTENBERG | 1944 BAYOU DR | \$ | 639,370 | \$ | 414,130 |
| 1907151007 | KEVIN MOORE | 1945 LONG POINTE DR | \$ | 543,690 | \$ | 428,950 |
| 1907301006 | MARTIN R HAYES | 1946 LONG LAKE SHORE DR | \$ | 584,610 | \$ | 584,610 |
| 1907303008 | DAVID SCHWARTZENFELD | 1947 LONG LAKE SHORE DR | \$ | 514,420 | \$ | 369,060 |
| 1906155003 | GERALD NEFF | 1947 N HAMMOND LAKE DR | \$ | 297,610 | \$ | 238,000 |
| 1906301029 | MARK S DOMAN | 1950 S HAMMOND LAKE DR | \$ | 273,460 | \$ | 224,080 |
| 1907303020 | BRUCE GURSKY | 1952 BAYOU DR | \$ | 419,150 | \$ | 308,570 |
| 1907151006 | JAMES LYIJYNE | 1953 LONG POINTE DR | \$ | 454,730 | \$ | 341,210 |
| 1907301005 | DENNIS A PARK | 1954 LONG LAKE SHORE DR | \$ | 512,780 | \$ | 334,610 |
| 1906301030 | TAREK GAYAR | 1960 S HAMMOND LAKE DR | \$ | 379,880 | \$ | 304,060 |
| 1907303007 | KENNETH F NEUMAN | 1961 LONG LAKE SHORE DR | \$ | 665,030 | \$ | 461,710 |
| 1907151005 | ROBERT LEVINE | 1961 LONG POINTE DR | \$ | 330,920 | \$ | 287,420 |
| 1907301004 | DONALD I VAN DUIJVENBOODE VARKEVISSER | 1962 LONG LAKE SHORE DR | \$ | 605,610 | \$ | 595,840 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|-------------------------------------|-------------------------|----|-----------|----|---------|
| 1906155002 | KIMBERLY FAE SMALL | 1965 N HAMMOND LAKE DR | \$ | 263,140 | \$ | 215,940 |
| 1907303022 | KURT A DELFIN | 1966 BAYOU DR | \$ | 326,410 | \$ | 247,230 |
| 1907151004 | MICHAEL O'REILLY | 1969 LONG POINTE DR | \$ | 406,220 | \$ | 285,870 |
| 1907301003 | PAUL E CARRICK JR | 1970 LONG LAKE SHORE DR | \$ | 527,370 | \$ | 344,650 |
| 1907303006 | DEBORAH C BANOONI | 1971 LONG LAKE SHORE DR | \$ | 663,010 | \$ | 464,110 |
| 1907303023 | RICHARD A HEIDRICH | 1974 BAYOU DR | \$ | 387,190 | \$ | 293,460 |
| 1906155001 | JOHN B SAINDON | 1975 N HAMMOND LAKE DR | \$ | 230,410 | \$ | 209,620 |
| 1907151003 | BALAKRISHNA PAI | 1977 LONG POINTE DR | \$ | 676,700 | \$ | 514,920 |
| 1907301002 | SUBHASH DHAR | 1978 LONG LAKE SHORE DR | \$ | 633,750 | \$ | 419,910 |
| 1907303005 | SHELDON YELLEN | 1981 LONG LAKE SHORE DR | \$ | 1,150,350 | \$ | 771,390 |
| 1907151002 | BHALCHANDRA SATA | 1985 LONG POINTE DR | \$ | 658,320 | \$ | 493,050 |
| 1907303025 | LEE THOMAS COOKE | 1986 BAYOU DR | \$ | 375,000 | \$ | 295,020 |
| 1907301012 | MICHAEL LAFFER | 1986 LONG LAKE SHORE DR | \$ | 1,030,020 | \$ | 503,580 |
| 1907303004 | HOWARD H CRUMIT JR | 1989 LONG LAKE SHORE DR | \$ | 356,240 | \$ | 243,870 |
| 1907151001 | MICHAEL BISSON | 1993 LONG POINTE DR | \$ | 964,640 | \$ | 744,920 |
| 1907303003 | OREN NEUGEBOHR | 1997 LONG LAKE SHORE DR | \$ | 537,390 | \$ | 397,630 |
| 1907303002 | CHRISTOPHER L MCPEAK | 1999 LONG LAKE SHORE DR | \$ | 353,510 | \$ | 346,200 |
| 1925127001 | YUSEF ALCODRAY | 200 W BIG BEAVER RD | \$ | 251,530 | \$ | 159,270 |
| 1906301031 | THOMAS E CAMPAU | 2000 S HAMMOND LAKE DR | \$ | - | \$ | - |
| 1906301032 | JOSEPH W CUNNINGHAM | 2020 S HAMMOND LAKE DR | \$ | 85,850 | \$ | 70,020 |
| 1925202001 | JAMES CLARKE | 205 HARROW CIR | \$ | 436,660 | \$ | 331,150 |
| 1925251001 | JEFFREY EBLING | 210 HARROW CIR | \$ | 358,080 | \$ | 252,580 |
| 1909276005 | ADAM C LEE | 220 APPLEWOOD LN | \$ | 95,150 | \$ | 69,720 |
| 1906301002 | ROBERTA BEAUDET | 2220 E HAMMOND LAKE DR | \$ | 269,430 | \$ | 220,950 |
| 1906301003 | SACHCHIDANAND KAVEESHVAR | 2230 E HAMMOND LAKE DR | \$ | 468,150 | \$ | 361,960 |
| 1906301004 | ALBERT BRADFORD BABBITT | 2240 E HAMMOND LAKE DR | \$ | 212,090 | \$ | 175,330 |
| 1925202002 | MITCHELL SWAYZE | 225 HARROW CIR | \$ | 766,150 | \$ | 544,390 |
| 1906301005 | AUGUST HOFBAUER | 2250 E HAMMOND LAKE DR | \$ | 211,560 | \$ | 175,400 |
| 1906301006 | AUGUST HOFBAUER | 2260 E HAMMOND LAKE DR | \$ | 217,110 | \$ | 180,430 |
| 1906301007 | ZVI YANIV | 2270 E HAMMOND LAKE DR | \$ | 229,490 | \$ | 192,040 |
| 1906301008 | KEVIN F MCPHERSON | 2286 E HAMMOND LAKE DR | \$ | 244,760 | \$ | 205,240 |
| 1925201002 | JAMES BROWN | 230 W BIG BEAVER RD | \$ | 688,410 | \$ | 505,070 |
| 1906301009 | THEODORE J KANAKIS | 2300 E HAMMOND LAKE DR | \$ | 235,170 | \$ | 196,110 |
| 1906301010 | ELIEZER BASSE | 2310 E HAMMOND LAKE DR | \$ | 299,160 | \$ | 238,590 |
| 1906301011 | CHARLES A SCHIFFER | 2320 E HAMMOND LAKE DR | \$ | 238,490 | \$ | 199,180 |
| 1906301012 | ANDERS LUNDBERG | 2340 E HAMMOND LAKE DR | \$ | 235,560 | \$ | 195,500 |
| 1906301013 | WILLIAM TUCKER CLEMENTS | 2350 E HAMMOND LAKE DR | \$ | 250,230 | \$ | 213,470 |
| 1906301014 | ISMAT KARMO | 2360 E HAMMOND LAKE DR | \$ | 150,940 | \$ | 128,450 |
| 1906301015 | NEERAN BAJOUKA | 2370 E HAMMOND LAKE DR | \$ | 480,490 | \$ | 393,510 |
| 1902477001 | MICHAEL V COLETTA | 2377 LOCH CREEK WAY | \$ | 242,130 | \$ | 192,720 |
| 1906301016 | HERBERT M GARDNER | 2380 E HAMMOND LAKE DR | \$ | 276,610 | \$ | 230,960 |
| 1906301017 | PHILLIP UCHNO | 2390 E HAMMOND LAKE DR | \$ | 254,230 | \$ | 209,340 |
| 1906301018 | WALTER EISENBERG | 2398 E HAMMOND LAKE DR | \$ | 238,010 | \$ | 195,060 |
| 1906301019 | PANKAJ G MAVANI | 2410 E HAMMOND LAKE DR | \$ | 333,470 | \$ | 265,830 |
| 1906301020 | LOIS MOTYLINSKI | 2420 E HAMMOND LAKE DR | \$ | 221,660 | \$ | 185,220 |
| 1906301021 | BRENT K HALL | 2448 E HAMMOND LAKE DR | \$ | 275,790 | \$ | 226,900 |
| 1911229001 | ROBERT THOMAS | 2550 LAMPLIGHTER LN | \$ | 171,980 | \$ | 169,740 |
| 1911226028 | CHARLES J MASCARI | 2551 GINGER CT | \$ | 660,260 | \$ | 470,380 |
| 1911228005 | DEUTSCHE BANK NATIONAL TRUST CMPANY | 2553 LAMPLIGHTER LN | \$ | 187,060 | \$ | 187,060 |
| 1902476001 | SCOTT C WOODBURY | 2554 ESSEX LN | \$ | 154,740 | \$ | 128,790 |
| 1911229002 | J R PONTIUS | 2564 LAMPLIGHTER LN | \$ | 163,190 | \$ | 111,310 |
| 1911226027 | SANJEEV KAUL | 2573 GINGER CT | \$ | 717,910 | \$ | 567,350 |
| 1912126002 | HEATHER I IRVINE | 2593 SQUIRREL RD | \$ | 168,760 | \$ | 131,040 |
| 1911226026 | ROBERT CASADEI | 2595 GINGER CT | \$ | 562,840 | \$ | 403,590 |
| 1909234021 | EDWARD HOLOWINSKA | 2610 LAHSER RD | \$ | 123,800 | \$ | 104,450 |
| 1909234022 | NEIL KESSLER | 2630 LAHSER RD | \$ | 120,110 | \$ | 100,460 |
| 1925201006 | MASAT IZU | 265 MANOR RD | \$ | 419,070 | \$ | 313,360 |
| 1909234023 | MICHAEL JADDOU | 2650 LAHSER RD | \$ | 315,080 | \$ | 315,080 |
| 1931452002 | KATHY L MYERS | 26600 W 14 MILE RD | \$ | 271,620 | \$ | 225,830 |
| 1931452001 | EMILY J REID | 26628 W 14 MILE RD | \$ | 176,470 | \$ | 135,070 |
| 1931376016 | ELAINE M SWENSON | 26656 W 14 MILE RD | \$ | 136,670 | \$ | 94,820 |
| 1931376015 | FARIDEH HOSSEINI | 26780 W 14 MILE RD | \$ | 176,410 | \$ | 129,850 |
| 1931376014 | JOHN JAMES KRCMARIK LIVING TRUST | 26814 W 14 MILE RD | \$ | 195,900 | \$ | 175,400 |
| 1931376013 | JOHN JAMES KRCMARIK LIVING TRUST | 26832 W 14 MILE RD | \$ | 48,620 | \$ | 12,220 |
| 1912101003 | A GOOD YEAR TRUST | 2700 SQUIRREL RD | \$ | 642,140 | \$ | 266,180 |
| 1931353019 | DAVID H SHERMAN | 27000 W 14 MILE RD | \$ | 231,470 | \$ | 178,930 |
| 1931353018 | WM E SCHEPPLER JR | 27050 W 14 MILE RD | \$ | 208,950 | \$ | 159,060 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|---------------------------------------|----------------------|----|-----------|----|---------|
| 1931353017 | PAUL ZIEGLER | 27070 W 14 MILE RD | \$ | 452,280 | \$ | 386,790 |
| 1907129014 | ACT SIX, LLC | 2733 TURTLE LAKE DR | \$ | 217,000 | \$ | 193,100 |
| 1907129015 | JOHN SAMANI | 2739 TURTLE LAKE DR | \$ | 1,056,910 | \$ | 954,050 |
| 1907129011 | JOE YUN | 2741 TURTLE LAKE DR | \$ | 795,260 | \$ | 714,710 |
| 1907129010 | JOHN C LUCE | 2747 TURTLE LAKE DR | \$ | 756,970 | \$ | 682,990 |
| 1907129009 | STEVEN ALMANY | 2753 TURTLE LAKE DR | \$ | 769,000 | \$ | 691,290 |
| 1907129008 | TODD BERTUZZI | 2761 TURTLE LAKE DR | \$ | 211,550 | \$ | 211,550 |
| 1907129007 | RAJENDRA PRASAD | 2767 TURTLE LAKE DR | \$ | 874,460 | \$ | 783,590 |
| 1911151001 | B HILLS SCHOOL DIST NO 2 | 2800 KENSINGTON RD | \$ | - | \$ | - |
| 1909233001 | BLOOMFIELD HILLS SCHOOL DISTRICT NO 2 | 2800 LAHSER RD | \$ | - | \$ | - |
| 1909276001 | B HILLS SCHOOL DIST NO 2 | 2800 LAHSER RD | \$ | - | \$ | - |
| 1911276029 | SAMUEL E CLARK | 2812 DOWNDERRY CT | \$ | 223,000 | \$ | 155,000 |
| 1911276018 | JOHN DENNIS STARR | 2816 DOWNDERRY CT | \$ | 227,670 | \$ | 165,750 |
| 1911276007 | MARK J WEISSMAN | 2817 WOODCREEK WAY | \$ | 245,120 | \$ | 176,730 |
| 1911276033 | EDWARD FORD | 2820 DOWNDERRY CT | \$ | 266,840 | \$ | 194,240 |
| 1909204001 | KAREN CLANCY | 2822 CHESTNUT RUN DR | \$ | 580,550 | \$ | 458,420 |
| 1912151018 | TIMOTHY M GALLAGHER | 2826 MASEFIELD DR | \$ | 226,580 | \$ | 127,280 |
| 1909202014 | ALAA SHARRAK | 2831 CHESTNUT RUN DR | \$ | 495,970 | \$ | 392,560 |
| 1911276008 | CARALYN RICCO | 2831 WOODCREEK WAY | \$ | 269,770 | \$ | 212,950 |
| 1911276027 | MICHAEL S WESTERMAN | 2832 SEVERN LN | \$ | 269,810 | \$ | 195,730 |
| 1912151017 | GREGORY WITT | 2834 MASEFIELD DR | \$ | 233,080 | \$ | 125,100 |
| 1909202015 | ZHANNA MUCHNIK | 2835 CHESTNUT RUN DR | \$ | 536,170 | \$ | 470,390 |
| 1911276023 | DEBRA BORNE | 2836 SEVERN LN | \$ | 236,880 | \$ | 166,780 |
| 1909202016 | JOHN M SCHAFFER | 2839 CHESTNUT RUN DR | \$ | 530,090 | \$ | 367,770 |
| 1911276031 | TIM G JAEGER | 2840 SEVERN LN | \$ | 242,610 | \$ | 177,320 |
| 1912151016 | THOMAS AZONI | 2842 MASEFIELD DR | \$ | 298,580 | \$ | 164,480 |
| 1911276009 | PYARA CHAUHAN | 2845 WOODCREEK WAY | \$ | 193,970 | \$ | 143,180 |
| 1909202017 | ARINDAM BANERJEE | 2847 CHESTNUT RUN DR | \$ | 528,780 | \$ | 398,570 |
| 1909202018 | MARK D GARCIA | 2855 CHESTNUT RUN DR | \$ | 525,140 | \$ | 396,580 |
| 1912151014 | CHRISTOPHER BERESFORD | 2858 MASEFIELD CT | \$ | 310,250 | \$ | 168,020 |
| 1911276010 | JOHN KNIGHT | 2859 WOODCREEK WAY | \$ | 224,560 | \$ | 162,110 |
| 1909202019 | DILIP MOONKA | 2863 CHESTNUT RUN DR | \$ | 580,800 | \$ | 438,440 |
| 1912151013 | JOAN M BAER | 2864 MASEFIELD CT | \$ | 239,950 | \$ | 135,590 |
| 1909202020 | MOHINDER K DIWAN | 2871 CHESTNUT RUN DR | \$ | 594,450 | \$ | 450,500 |
| 1911276011 | PRAMOTE TANSWAI | 2875 WOODCREEK WAY | \$ | 269,910 | \$ | 193,390 |
| 1909202021 | DOMINICK SHOHA | 2879 CHESTNUT RUN DR | \$ | 586,160 | \$ | 457,240 |
| 1909202022 | SAMIR SALMAN | 2887 CHESTNUT RUN DR | \$ | 429,210 | \$ | 377,510 |
| 1911276012 | CARLOS F PETROZZI | 2887 WOODCREEK WAY | \$ | 220,050 | \$ | 160,250 |
| 1909202023 | LAWRENCE OSWALD | 2895 CHESTNUT RUN DR | \$ | 561,410 | \$ | 423,220 |
| 1911276013 | BAHMAN MIRSHAB | 2901 WOODCREEK WAY | \$ | 272,670 | \$ | 214,190 |
| 1909202024 | ALSTON GERMAN | 2903 CHESTNUT RUN DR | \$ | 487,300 | \$ | 375,990 |
| 1910151013 | KOOGWON KWUN | 2905 LAHSER RD | \$ | 125,570 | \$ | 79,310 |
| 1909202010 | THOMAS DUPUIS | 291 WILSHIRE DR | \$ | 552,790 | \$ | 411,000 |
| 1909202025 | JAMES O FUTTERKNECHT | 2911 HEATHER CT | \$ | 622,970 | \$ | 434,380 |
| 1911276014 | QAMRUL HODA | 2911 WOODCREEK WAY | \$ | 252,090 | \$ | 187,300 |
| 1909202026 | SUZANNE MARKS | 2919 HEATHER CT | \$ | 508,040 | \$ | 382,870 |
| 1911255006 | TOWNSHIP OF BLOOMFIELD | 2925 WOODCREEK WAY | \$ | - | \$ | - |
| 1909202027 | MICHAEL C KOSCH | 2927 HEATHER CT | \$ | 575,600 | \$ | 575,600 |
| 1909202009 | RIZWAN DANISH | 293 WILSHIRE DR | \$ | 898,000 | \$ | 681,730 |
| 1911255004 | WILLIAM D PINTER | 2941 WOODCREEK WAY | \$ | 291,480 | \$ | 229,460 |
| 1911255003 | SHARON L ZIMMER TRUST | 2949 WOODCREEK WAY | \$ | 261,790 | \$ | 206,800 |
| 1911276035 | VIKRAM R REDDY | 2950 EASTWAYS RD | \$ | 499,990 | \$ | 398,730 |
| 1911276036 | DOUGLAS ALEXANDER DONALDSON | 2960 EASTWAYS RD | \$ | 253,940 | \$ | 218,180 |
| 1909202008 | FRANK HOLECEK | 297 WILSHIRE DR | \$ | 634,930 | \$ | 634,930 |
| 1910151016 | JON BEASLEY | 2985 LAHSER RD | \$ | 264,020 | \$ | 199,100 |
| 1908151035 | KIRIT PATEL | 3008 HERON POINTE DR | \$ | 465,150 | \$ | 439,110 |
| 1909301026 | EMMA SOGOIAN TRUST | 3019 E RIDGE CT | \$ | 286,850 | \$ | 252,600 |
| 1908151034 | NARINDER SHERMA | 3026 HERON POINTE DR | \$ | 125,450 | \$ | 97,860 |
| 1908151042 | DIVAKAR PAI | 3030 HERON PL | \$ | 1,288,520 | \$ | 886,180 |
| 1908151033 | DILIP DESAI | 3038 HERON POINTE DR | \$ | 886,460 | \$ | 605,210 |
| 1909202007 | DILIP SAMARAPUNGAVAN | 305 WILSHIRE DR | \$ | 481,330 | \$ | 363,750 |
| 1908151041 | BASHAR G YALDO | 3050 HERON PL | \$ | 810,610 | \$ | 564,450 |
| 1908151032 | ANAND NAMASAYYA HIREMATH | 3054 HERON POINTE DR | \$ | 1,083,510 | \$ | 732,250 |
| 1908151049 | CHINNA REDDY MIDDELA | 3072 HERON POINTE DR | \$ | 1,015,680 | \$ | 698,510 |
| 1908151029 | TIBOR L GYARMATI | 3075 HERON POINTE DR | \$ | 1,290,590 | \$ | 879,210 |
| 1908151050 | DAVID KEARNEY | 3089 HERON POINTE DR | \$ | 902,000 | \$ | 617,610 |
| 1909301002 | VANEE TALLA TRUST | 3115 FRANKLIN RD | \$ | 283,470 | \$ | 190,340 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|---------------------------------------|-----------------------|----|-----------|----|-----------|
| 1909202013 | YAN FU | 315 WILSHIRE DR | \$ | 475,000 | \$ | 429,000 |
| 1909326007 | PARESH R PATEL | 3158 DEVON BROOK DR | \$ | 38,570 | \$ | 27,650 |
| 1908426010 | PRAVIN M PATEL | 3165 AYRSHIRE DR | \$ | 53,290 | \$ | 36,040 |
| 1908426011 | J PHILIP LOWMAN | 3185 AYRSHIRE DR | \$ | 207,320 | \$ | 148,010 |
| 1909301003 | COLIN GOLDSMITH | 3185 FRANKLIN RD | \$ | 343,750 | \$ | 275,470 |
| 1908427001 | DAVID W CHRISTENSEN | 3195 AYRSHIRE DR | \$ | 356,270 | \$ | 271,900 |
| 1909326008 | ADAM HOSLER | 3200 DEVON BROOK DR | \$ | 115,040 | \$ | 72,310 |
| 1908427009 | SAMIR I LACHINE | 3224 FRANKLIN RD | \$ | 221,000 | \$ | 221,000 |
| 1909326009 | WILLIAM A MCPHARLIN | 3230 DEVON BROOK DR | \$ | 126,020 | \$ | 79,770 |
| 1909326010 | DANIEL J MARTEL | 3260 DEVON BROOK DR | \$ | 156,550 | \$ | 156,550 |
| 1909202012 | THOMAS DEKAR | 329 WILSHIRE DR | \$ | 585,650 | \$ | 442,780 |
| 1909326011 | HEATHER M HAUSMANN | 3290 DEVON BROOK DR | \$ | 143,480 | \$ | 142,350 |
| 1909202004 | J DONALD ALLEN | 331 WILSHIRE DR | \$ | 488,340 | \$ | 385,210 |
| 1909326012 | CHELSEA M RUSSELL | 3320 DEVON BROOK DR | \$ | 169,970 | \$ | 96,570 |
| 1908476008 | VICTORIA ANN GALLUP | 3320 FRANKLIN RD | \$ | 535,870 | \$ | 338,170 |
| 1909326014 | HIKMAT F MAHMOOD | 3321 BARLYN LN | \$ | 105,160 | \$ | 68,130 |
| 1909301022 | BLOOMFIELD HILLS SCHOOL DISTRICT NO 2 | 3325 FRANKLIN RD | \$ | - | \$ | - |
| 1909202003 | DALE J OFFENBECHER | 335 WILSHIRE DR | \$ | 573,040 | \$ | 428,640 |
| 1908451018 | RAJENDRA B VATTIKUTI | 3350 EASTPOINTE LN | \$ | 2,466,870 | \$ | 1,872,220 |
| 1908476009 | EVA ABIADAL MITRI | 3350 FRANKLIN RD | \$ | 605,310 | \$ | 410,030 |
| 1908476004 | MONTE L FALCOFF | 3351 EASTPOINTE LN | \$ | 1,187,130 | \$ | 989,580 |
| 1909326015 | ERIC K CASSADY | 3355 BARLYN LN | \$ | 175,090 | \$ | 103,450 |
| 1907451009 | GANGADHAR NADELLA | 3358 INDIAN SUMMER DR | \$ | 275,490 | \$ | 249,970 |
| 1909326013 | JAMES V MORIARTY | 3360 DEVON BROOK DR | \$ | 224,210 | \$ | 135,510 |
| 1907451008 | NOSHABA MOHSIN | 3372 INDIAN SUMMER DR | \$ | 345,350 | \$ | 314,860 |
| 1908476002 | GREG NAMAN | 3375 EASTPOINTE LN | \$ | 1,361,510 | \$ | 1,152,640 |
| 1908476010 | MTANIUS SULTANI | 3376 FRANKLIN RD | \$ | 1,861,810 | \$ | 1,272,230 |
| 1909327044 | MIRIAM ALI | 3380 CHICKERING LN | \$ | 254,990 | \$ | 167,130 |
| 1907451007 | BERND BOISTEN | 3386 INDIAN SUMMER DR | \$ | 392,710 | \$ | 359,890 |
| 1908476001 | MALAZ ALMSADDI | 3395 EASTPOINTE LN | \$ | 382,340 | \$ | 185,040 |
| 1907451006 | AMIT BHAN | 3398 INDIAN SUMMER DR | \$ | 350,440 | \$ | 318,850 |
| 1909327045 | TOUFIQ AHMED | 3400 CHICKERING LN | \$ | 187,970 | \$ | 142,800 |
| 1909327015 | JEFFREY R JUCEWICZ | 3401 DEVON BROOK DR | \$ | 134,920 | \$ | 86,080 |
| 1909326016 | EMIL KOESTER | 3406 DEVON BROOK DR | \$ | 111,110 | \$ | 65,300 |
| 1909327016 | DENNIS M FERGUSON | 3415 DEVON BROOK DR | \$ | 131,370 | \$ | 87,320 |
| 1909327046 | JENNETTE BREAUULT | 3422 CHICKERING LN | \$ | 145,630 | \$ | 132,300 |
| 1908476011 | FRANK L WALDRON MARITAL TRUST | 3424 FRANKLIN RD | \$ | 1,196,750 | \$ | 848,300 |
| 1909327017 | GJOVANA PERKAJ | 3431 DEVON BROOK DR | \$ | 133,430 | \$ | 102,580 |
| 1912351009 | WALBRI, LLC | 3440 WALBRI DR | \$ | 221,090 | \$ | 211,480 |
| 1909202002 | JOSEPHINE COSTANTINI | 345 WILSHIRE DR | \$ | 438,110 | \$ | 340,480 |
| 1908476012 | BALKRISHNA RAMKUMAR | 3456 FRANKLIN RD | \$ | 1,337,910 | \$ | 1,156,430 |
| 1908476013 | HIKMAT F MAHMOOD | 3490 FRANKLIN RD | \$ | 1,363,580 | \$ | 890,410 |
| 1912351003 | MICHAEL LOBSINGER | 3501 LAKECREST DR | \$ | 733,680 | \$ | 501,860 |
| 1912351010 | JUDITH D DARIN REVOCABLE TRUST | 3504 WALBRI DR | \$ | 637,550 | \$ | 435,390 |
| 1912351002 | LINDA LIN | 3511 LAKECREST DR | \$ | 447,660 | \$ | 324,770 |
| 1907377017 | C KYRIAKOPOUOS | 3514 RIDGEVIEW CT | \$ | 642,310 | \$ | 477,610 |
| 1907451001 | TODD GLANCE | 3515 RIDGEVIEW CT | \$ | 581,270 | \$ | 527,090 |
| 1908476014 | JAMES A WILLIAMS | 3518 FRANKLIN RD | \$ | 790,410 | \$ | 584,580 |
| 1913101015 | STEPHEN PRUCHER | 3526 WALBRI DR | \$ | 250,000 | \$ | 250,000 |
| 1907451002 | WOOK KIM | 3527 RIDGEVIEW CT | \$ | 271,120 | \$ | 241,550 |
| 1909202001 | LINDA J THURSFIELD | 353 WILSHIRE DR | \$ | 700,490 | \$ | 550,940 |
| 1916201025 | MICHAEL J WILSON | 3530 BROOKSIDE DR | \$ | 264,850 | \$ | 252,630 |
| 1917276001 | DOUGLAS E EBERT | 3530 FRANKLIN RD | \$ | 1,144,450 | \$ | 862,340 |
| 1913201009 | JEFFREY GARVIN | 3540 GREENTREE RD | \$ | 383,930 | \$ | 250,910 |
| 1912351001 | THEODORE J CANNIS | 3541 LAKECREST DR | \$ | 907,420 | \$ | 907,420 |
| 1907451003 | YATINDER SINGHAL | 3541 RIDGEVIEW CT | \$ | 501,650 | \$ | 457,250 |
| 1917276002 | WENDY POWERS | 3544 FRANKLIN RD | \$ | 841,900 | \$ | 599,090 |
| 1918230001 | BAHN MANAGEMENT COMPANY LLC | 3545 KIRKWAY RD | \$ | 511,730 | \$ | 378,360 |
| 1913101016 | R U ORDONA MD | 3548 WALBRI DR | \$ | 836,410 | \$ | 556,940 |
| 1913101017 | JAMES MACKENZIE | 3570 WALBRI DR | \$ | 837,850 | \$ | 572,520 |
| 1907451005 | JANA MCQUEEN | 3574 WABEEK LAKE DR W | \$ | 425,490 | \$ | 385,300 |
| 1916201026 | CHRISTOPHER G MALLEY | 3580 BROOKSIDE DR | \$ | 315,030 | \$ | 315,030 |
| 1907451004 | YOUSIF S MANSOUR | 3584 WABEEK LAKE DR W | \$ | 462,690 | \$ | 419,500 |
| 1913101018 | TERRY J SALCICCIOLI TRUST | 3592 WALBRI DR | \$ | 482,280 | \$ | 351,530 |
| 1925177018 | 35980-36050 WOORWARD, LLC | 35980 WOODWARD AVE | \$ | 1,360,560 | \$ | 1,337,340 |
| 1916201027 | EDWARD D GOLD | 3600 BROOKSIDE DR | \$ | 355,990 | \$ | 289,620 |
| 1925177017 | JAMES E BOERKOEL | 36000 WOODWARD AVE | \$ | 166,790 | \$ | 112,150 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|--------------------------------|-----------------------|----|-----------|----|-----------|
| 1917276003 | SCOTT J CLIFFORD | 3610 FRANKLIN RD | \$ | 350,450 | \$ | 350,450 |
| 1907377012 | VIJAY SAIGAL | 3611 SHOREVIEW CT | \$ | 635,670 | \$ | 484,050 |
| 1907377011 | DR M RABBANI | 3612 SHOREVIEW CT | \$ | 390,770 | \$ | 349,850 |
| 1916126005 | SHALLOW BONES, LLC | 3617 SHALLOW BROOK DR | \$ | 107,260 | \$ | 85,120 |
| 1913101019 | KRISHNA K SAWHNEY | 3618 WALBRI DR | \$ | 525,000 | \$ | 380,580 |
| 1916126006 | SULafa ROUMAYAH-ELIA | 3627 SHALLOW BROOK DR | \$ | 83,820 | \$ | 72,880 |
| 1917276004 | GERALD BRICE | 3630 FRANKLIN RD | \$ | 456,150 | \$ | 331,500 |
| 1913101020 | ZACHARY J ENDRESS JR | 3636 WALBRI DR | \$ | 832,920 | \$ | 531,200 |
| 1916126007 | ANDREW XAVIER | 3637 SHALLOW BROOK DR | \$ | 84,140 | \$ | 84,140 |
| 1916126008 | ANDREW XAVIER | 3647 SHALLOW BROOK DR | \$ | 144,990 | \$ | 143,400 |
| 1913101001 | ROBERT W TRUXELL | 3653 LAKECREST DR | \$ | 620,560 | \$ | 397,730 |
| 1913101021 | LOIS E BICE | 3654 WALBRI DR | \$ | 450,280 | \$ | 319,910 |
| 1916126009 | KHASHAYAR HONARKHAH | 3657 SHALLOW BROOK DR | \$ | 224,130 | \$ | 184,790 |
| 1917276036 | WILLIAM H WHITE | 3660 FRANKLIN RD | \$ | 415,570 | \$ | 291,630 |
| 1913101002 | AMELIA QUELAS | 3665 LAKECREST DR | \$ | 509,170 | \$ | 339,680 |
| 1916126010 | ALFRED C MONDELLO | 3665 SHALLOW BROOK DR | \$ | 126,930 | \$ | 105,880 |
| 1913101022 | GWEN E GILBERT | 3672 WALBRI DR | \$ | 669,270 | \$ | 454,810 |
| 1913101003 | RICHARD A JOHNSON FAMILY TRUST | 3677 LAKECREST DR | \$ | 627,690 | \$ | 431,330 |
| 1913101004 | RUDOLF ESCHBACH | 3689 LAKECREST DR | \$ | 637,300 | \$ | 444,200 |
| 1916201016 | MAJD A ABURABIA | 3690 BROOKSIDE DR | \$ | 398,710 | \$ | 398,710 |
| 1916201017 | ERMANN0 G DAMIANI | 3700 BROOKSIDE DR | \$ | 242,630 | \$ | 201,720 |
| 1918276003 | ROBERT CARSON | 3700 KIRKWAY LN | \$ | 723,420 | \$ | 488,070 |
| 1913101005 | MARCUS JUZYCH | 3701 LAKECREST DR | \$ | 802,880 | \$ | 802,880 |
| 1916201028 | ESAKU KONDO | 3701 SHALLOW BROOK DR | \$ | 274,450 | \$ | 207,090 |
| 1916201018 | JOHN O'BRIEN | 3710 BROOKSIDE DR | \$ | 176,550 | \$ | 176,550 |
| 1916201029 | PEARL RISSMAN | 3715 SHALLOW BROOK DR | \$ | 338,830 | \$ | 262,960 |
| 1913101006 | LINDA CHARFOOS | 3717 LAKECREST DR | \$ | 872,600 | \$ | 489,960 |
| 1918276001 | JOSEPH A GEORGE | 3719 KIRKWAY RD | \$ | 656,270 | \$ | 414,130 |
| 1916201030 | STANISLAV CHLADEK | 3721 SHALLOW BROOK DR | \$ | 252,640 | \$ | 190,470 |
| 1913101028 | DENNIS RIEMER | 3727 LAKECREST DR | \$ | 812,180 | \$ | 542,710 |
| 1916201019 | GEORGE MURPHY | 3732 BROOKSIDE DR | \$ | 956,600 | \$ | 956,600 |
| 1917276017 | GREGORY GROSE | 3734 FRANKLIN RD | \$ | 4,060 | \$ | 1,980 |
| 1913101029 | RICHARD D WEBER | 3737 LAKECREST DR | \$ | 776,820 | \$ | 484,640 |
| 1916201004 | CAROL SWIFT | 3741 SHALLOW BROOK DR | \$ | 173,130 | \$ | 159,640 |
| 1916201020 | PHYLLIS M PORTER TRUST | 3748 BROOKSIDE DR | \$ | 237,370 | \$ | 205,090 |
| 1916201005 | ORLANDO A RIVERO | 3751 SHALLOW BROOK DR | \$ | 269,400 | \$ | 241,610 |
| 1916276013 | WILLIAM LAWLER | 3760 BURNING TREE DR | \$ | 209,120 | \$ | 165,460 |
| 1913101008 | DAVIDE IACOBELLI | 3761 LAKECREST DR | \$ | 686,190 | \$ | 466,980 |
| 1916201006 | RAYMOND J MARCIL | 3761 SHALLOW BROOK DR | \$ | 152,500 | \$ | 109,540 |
| 1916201021 | RONALD KASPRZYK | 3770 BROOKSIDE DR | \$ | 392,720 | \$ | 354,050 |
| 1913101009 | LAKECREST, LLC | 3773 LAKECREST DR | \$ | 189,710 | \$ | 161,120 |
| 1916201007 | HAROLD SULLIVAN | 3775 SHALLOW BROOK DR | \$ | 1,340,200 | \$ | 1,103,300 |
| 1916276014 | KATHRYN Z KITTIDES | 3780 BURNING TREE DR | \$ | 203,100 | \$ | 154,860 |
| 1916201022 | DR PAUL C FEINBERG | 3790 BROOKSIDE DR | \$ | 266,260 | \$ | 210,720 |
| 1916276015 | KIRK L FISHER | 3790 BURNING TREE DR | \$ | 164,240 | \$ | 131,730 |
| 1918276009 | SONIA FERNANDO | 3791 KIRKWAY RD | \$ | 540,090 | \$ | 386,990 |
| 1918278001 | SHLOMO SAM MANDEL | 3800 LAKELAND LN | \$ | 736,390 | \$ | 550,950 |
| 1918279001 | ISMAT KARMO | 3801 LAKELAND LN | \$ | 361,600 | \$ | 361,600 |
| 1916201023 | JOHN OBRIEN | 3810 BROOKSIDE DR | \$ | 247,670 | \$ | 197,380 |
| 1918279002 | VIJAY GOBURDHUN | 3821 LAKELAND LN | \$ | 778,240 | \$ | 501,530 |
| 1918276010 | LEONARD LEMBERG | 3825 KIRKWAY RD | \$ | 463,710 | \$ | 327,710 |
| 1916201024 | ROBERT CIRANNA | 3830 BROOKSIDE DR | \$ | 223,680 | \$ | 223,680 |
| 1918279003 | RODMAN JAY MYERS | 3833 LAKELAND LN | \$ | 628,770 | \$ | 377,300 |
| 1924226032 | JOHN WINTHROP WALKER | 3841 N ADAMS RD | \$ | 194,310 | \$ | 128,820 |
| 1924226031 | MARK W FREY | 3851 N ADAMS RD | \$ | 218,340 | \$ | 147,720 |
| 1918276011 | REID SCOTT | 3855 KIRKWAY RD | \$ | 651,100 | \$ | 409,780 |
| 1916201010 | STEVEN C AJLUNI | 3855 VALLEY HILL RD | \$ | 843,520 | \$ | 839,000 |
| 1924226030 | EVELYN JEAN TADIAN | 3861 N ADAMS RD | \$ | 198,390 | \$ | 130,080 |
| 1924226061 | GREGORY PELLEGRAM | 3871 N ADAMS RD | \$ | 243,560 | \$ | 169,190 |
| 1918280002 | RAM K KANCHARLA | 3875 LAKELAND LN | \$ | 502,370 | \$ | 412,890 |
| 1916201011 | NANCY JEANINE ANDREWS | 3877 VALLEY HILL RD | \$ | 526,290 | \$ | 326,620 |
| 1917276037 | HORACIO G LARDO | 3880 FRANKLIN RD | \$ | 746,040 | \$ | 532,140 |
| 1924226062 | MARILYN F GRAHAM | 3881 N ADAMS RD | \$ | 200,570 | \$ | 200,570 |
| 1916201012 | MARVIN WALKON | 3890 BROOKSIDE DR | \$ | 826,640 | \$ | 683,690 |
| 1913404020 | F WILLIAM SHEA | 3910 ORCHARD HILL DR | \$ | 169,580 | \$ | 125,140 |
| 1918280006 | VINCENT YU | 3921 KIRKLAND CT | \$ | 716,040 | \$ | 651,950 |
| 1924226065 | BEJOICE THOMAS | 3925 N ADAMS RD | \$ | 223,900 | \$ | 158,620 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|----------------------------------|----------------------------|----|-----------|----|---------|
| 1913404001 | DERREK E BRAUN | 3933 FAR HILL DR | \$ | 165,260 | \$ | 109,890 |
| 1917301002 | DAVID M WATHEN | 3933 KIRKLAND CT | \$ | 390,990 | \$ | 342,340 |
| 1913404021 | SAMUEL R JACKSON | 3940 ORCHARD HILL DR | \$ | 269,470 | \$ | 196,410 |
| 1917301003 | MARILYN FLINT | 3945 KIRKLAND CT | \$ | 642,720 | \$ | 444,920 |
| 1924226027 | MARY JOAN BURKE PARRES | 3945 N ADAMS RD | \$ | 239,200 | \$ | 155,080 |
| 1917276038 | AYAD GEORGE | 3950 FRANKLIN RD | \$ | 1,120,330 | \$ | 929,820 |
| 1917301004 | PRANAV KOTHARI | 3955 KIRKLAND CT | \$ | 1,034,470 | \$ | 864,200 |
| 1916252030 | DOUGLAS RUDEN | 3960 NEARBROOK RD | \$ | 367,270 | \$ | 280,950 |
| 1913404002 | ANTHONY GOUGH | 3963 FAR HILL DR | \$ | 209,580 | \$ | 138,130 |
| 1913404022 | BARRY KLUCZYK | 3970 ORCHARD HILL DR | \$ | 187,020 | \$ | 137,870 |
| 1916252031 | CAROL D SOLE | 3973 NEARBROOK RD | \$ | 545,260 | \$ | 484,930 |
| 1916252032 | PAUL D HASELHUHN | 3985 NEARBROOK RD | \$ | 201,660 | \$ | 183,960 |
| 1913404003 | DANIEL J MYERS | 3989 FAR HILL DR | \$ | 198,640 | \$ | 144,060 |
| 1913404023 | BARBU GEORGE JELER | 3990 ORCHARD HILL DR | \$ | 176,110 | \$ | 129,070 |
| 1913404024 | JOHN WILLIAM KENDRICK III | 4020 ORCHARD HILL DR | \$ | 197,310 | \$ | 144,670 |
| 1913404004 | AYAD JABBORI | 4023 FAR HILL DR | \$ | 208,700 | \$ | 154,420 |
| 1913404005 | ALAN F GILES | 4045 FAR HILL DR | \$ | 210,210 | \$ | 153,460 |
| 1913404025 | ACR, LLC | 4046 ORCHARD HILL DR | \$ | 145,360 | \$ | 103,360 |
| 1913404006 | MARY EILEEN GALVIN-BOARD | 4067 FAR HILL DR | \$ | 156,540 | \$ | 114,900 |
| 1913404007 | RICHARD C SPINA | 4079 FAR HILL DR | \$ | 258,750 | \$ | 170,110 |
| 1909181003 | RYAN M KRAVETZ | 411 WILSHIRE DR | \$ | 155,250 | \$ | 139,660 |
| 1913404026 | LYNN M RICE | 4110 ORCHARD HILL DR | \$ | - | \$ | - |
| 1913404008 | STEPHEN SIATCZYNSKI | 4129 FAR HILL DR | \$ | 224,870 | \$ | 165,300 |
| 1913404027 | JOHN C DOLINSHEK | 4130 ORCHARD HILL DR | \$ | 205,080 | \$ | 157,800 |
| 1913404009 | CHARLES R SCHOTTHOEFER | 4143 FAR HILL DR | \$ | 211,960 | \$ | 154,980 |
| 1913404028 | AMY E JENNETTE | 4156 ORCHARD HILL DR | \$ | 211,730 | \$ | 211,730 |
| 1913404010 | MARCIN G BOECKL | 4157 FAR HILL DR | \$ | 321,650 | \$ | 235,000 |
| 1913404011 | BRIAN BADALUCCO | 4171 FAR HILL DR | \$ | 200,760 | \$ | 129,510 |
| 1913404030 | BRADFORD H STROHM | 4190 ORCHARD HILL DR | \$ | 156,830 | \$ | 114,970 |
| 1913404031 | WENDY WEIR-BEECHER | 4222 ORCHARD HILL DR | \$ | 196,620 | \$ | 144,480 |
| 1913404032 | CHARLES STELTENKAMP | 4250 ORCHARD HILL DR | \$ | 229,440 | \$ | 160,250 |
| 1916452009 | GEORGE PASCUT JR | 4270 STONELEIGH RD | \$ | 489,960 | \$ | 352,350 |
| 1916452008 | ELDRED G ZOBL | 4275 COMPTON WAY | \$ | 411,780 | \$ | 301,990 |
| 1916452010 | LUCINE HARTUNIAN | 4276 STONELEIGH RD | \$ | 379,620 | \$ | 274,070 |
| 1916351013 | BLOOMFIELD TOWNSHIP | 4280 TELEGRAPH RD | \$ | - | \$ | - |
| 1916452011 | FIROOZ BANOONI | 4282 STONELEIGH RD | \$ | 313,830 | \$ | 190,440 |
| 1916452012 | ZUBAR RATHUR | 4288 STONELEIGH RD | \$ | 490,710 | \$ | 264,510 |
| 1913404033 | TABITHA A SAUTIUT | 4290 ORCHARD HILL DR | \$ | 144,930 | \$ | 105,810 |
| 1916452013 | ERIK LEENDERS | 4296 STONELEIGH RD | \$ | 280,690 | \$ | 273,150 |
| 1916452007 | PAMELA D JOHNSON | 4299 COMPTON WAY | \$ | 287,330 | \$ | 177,360 |
| 1916452014 | ROBERT G BURGESS | 4302 STONELEIGH RD | \$ | 348,760 | \$ | 252,470 |
| 1917453003 | WILLIAM JAY LAMPING | 4314 COPPER CLIFF CT | \$ | 451,630 | \$ | 356,340 |
| 1916452015 | TIMOTHY B SMITH | 4318 STONELEIGH RD | \$ | 335,770 | \$ | 241,120 |
| 1913404034 | VERDUN P CHAGNON | 4328 ORCHARD HILL DR | \$ | 199,770 | \$ | 145,300 |
| 1916452006 | CRAIG SINGER | 4331 COMPTON WAY | \$ | 281,920 | \$ | 216,160 |
| 1916452016 | MARK J UZANSKY | 4334 STONELEIGH RD | \$ | 267,580 | \$ | 162,780 |
| 1913404035 | JOHN W HOKE | 4348 ORCHARD HILL DR | \$ | 212,990 | \$ | 155,180 |
| 1916452017 | ERIK S STAMELL | 4350 STONELEIGH RD | \$ | 250,900 | \$ | 182,250 |
| 1916452005 | PRAKASH TAMHANEY | 4351 COMPTON WAY | \$ | 381,110 | \$ | 291,350 |
| 1917452008 | IRWIN KRINSKY | 4355 ECHO RD | \$ | 316,890 | \$ | 248,940 |
| 1916377027 | VALENTIN ENACHE | 4359 S WILLOWAY ESTATES CT | \$ | 241,590 | \$ | 162,160 |
| 1913404019 | CARNEGIE FAMILY REVOCABLE TRUST | 4364 ORCHARD HILL DR | \$ | 220,930 | \$ | 161,380 |
| 1916452004 | CHRISTINE R YARABEK FAMILY TRUST | 4365 COMPTON WAY | \$ | 312,210 | \$ | 225,930 |
| 1916377017 | CARL D SPRESSER | 4366 SUNNINGDALE DR | \$ | 254,740 | \$ | 180,430 |
| 1916452018 | DAVID DALE | 4368 STONELEIGH RD | \$ | 296,150 | \$ | 214,000 |
| 1916377028 | HARRY MARDIROSIAN | 4371 S WILLOWAY ESTATES CT | \$ | 249,950 | \$ | 50,030 |
| 1916477007 | JOHN E NEMAZI | 4373 STONELEIGH RD | \$ | 253,980 | \$ | 184,750 |
| 1917452009 | SYED AHSON | 4375 ECHO RD | \$ | 425,000 | \$ | 425,000 |
| 1916452003 | WOO SHIN KIM | 4377 COMPTON WAY | \$ | 303,700 | \$ | 219,820 |
| 1913404018 | JOSEPH D GRUNDMAN | 4378 ORCHARD HILL DR | \$ | 162,780 | \$ | 110,340 |
| 1916377018 | ALEXANDER GRABOWSKI | 4384 SUNNINGDALE DR | \$ | 235,430 | \$ | 227,500 |
| 1916477008 | GREGORY J KILLEEN | 4385 STONELEIGH RD | \$ | 257,800 | \$ | 187,480 |
| 1916378016 | LORENZO LORENZETTI | 4385 SUNNINGDALE DR | \$ | 234,780 | \$ | 175,120 |
| 1916452001 | YUAN DU | 4386 COMPTON WAY | \$ | 346,690 | \$ | 265,040 |
| 1916452002 | ULRICH ELTER | 4389 COMPTON WAY | \$ | 304,370 | \$ | 220,610 |
| 1916377010 | MICHELE M MITCHELL | 4401 S WILLOWAY ESTATES CT | \$ | 223,900 | \$ | 165,660 |
| 1916452039 | STEPHEN W WHITE | 4408 ARDMORE DR | \$ | 235,330 | \$ | 157,610 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|--------------------------|----------------------------|----|---------|----|---------|
| 1913404017 | LYUDMILA KART | 4409 W ORCHARD HILL DR | \$ | 187,710 | \$ | 157,210 |
| 1913452005 | JULIEN MOUROU | 4412 PARKLANE CT | \$ | 164,700 | \$ | 119,890 |
| 1920126004 | JONATHAN SZCZUPAK | 4423 PINE TREE TRL | \$ | 240,410 | \$ | 240,410 |
| 1916377009 | E DALE WILSON | 4423 S WILLOWAY ESTATES CT | \$ | 193,800 | \$ | 144,120 |
| 1916452038 | PARIS PAVLOU | 4428 ARDMORE CT | \$ | 263,140 | \$ | 191,010 |
| 1916479006 | SANDRA M BRANCH | 4429 STONELEIGH RD | \$ | 257,070 | \$ | 186,370 |
| 1913452001 | KIM V FRONRATH | 4433 TARRY LN | \$ | 174,280 | \$ | 116,760 |
| 1916452037 | CHERYL M SELLERS | 4436 ARDMORE CT | \$ | 289,340 | \$ | 209,880 |
| 1913452006 | JOHN P SOLVERSON | 4440 PARKLANE CT | \$ | 168,440 | \$ | 123,390 |
| 1916452036 | MALCOLM S SUTHERLAND | 4444 ARDMORE CT | \$ | 276,250 | \$ | 202,410 |
| 1916452042 | HOWARD J GOURWITZ | 4452 ARDMORE CT | \$ | 318,860 | \$ | 230,870 |
| 1913452002 | MARGO B OWENS | 4455 TARRY LN | \$ | 156,370 | \$ | 114,300 |
| 1913452007 | BRIAN S MYERS | 4462 PARKLANE CT | \$ | 203,790 | \$ | 149,790 |
| 1916478008 | ROBERT PADILLA | 4466 STONELEIGH RD | \$ | 314,770 | \$ | 227,220 |
| 1916479016 | NARENDRA P DESHPANDE | 4470 BARCHESTER DR | \$ | 289,260 | \$ | 289,260 |
| 1916479015 | JULES J DEPORRE | 4473 CONMOORE CT | \$ | 250,250 | \$ | 182,630 |
| 1913452003 | JOHN HOUGHTON | 4477 TARRY LN | \$ | 167,510 | \$ | 122,410 |
| 1916479014 | JEFFREY DITKOFF | 4481 CONMOORE CT | \$ | 277,440 | \$ | 277,440 |
| 1916452033 | DR WASIM RATHUR | 4484 ARDMORE CT | \$ | 714,350 | \$ | 502,560 |
| 1913452008 | IVERY MOORER CALHOUN | 4485 PARKLANE CT | \$ | 128,090 | \$ | 93,590 |
| 1913452004 | WAYNE E PARKER | 4499 TARRY LN | \$ | 156,310 | \$ | 113,700 |
| 1916452032 | ANTHONY CUCCHI | 4506 BRIGHTMORE RD | \$ | 341,400 | \$ | 297,700 |
| 1916452031 | PATRICIA M BARRICK | 4518 BRIGHTMORE RD | \$ | 291,120 | \$ | 220,170 |
| 1921203008 | BHAARATH MANDALURI REDDY | 4524 STONELEIGH RD | \$ | 975,120 | \$ | 683,600 |
| 1916478009 | RONALD KLEIN | 4526 STONELEIGH RD | \$ | 445,750 | \$ | 318,690 |
| 1924226002 | JOHN A STANO | 4535 BURNLEY DR | \$ | 142,540 | \$ | 98,720 |
| 1916452030 | JULIE MARCANO | 4536 BRIGHTMORE RD | \$ | 302,130 | \$ | 181,570 |
| 1921203002 | KIMBERLY L HRAMIEC | 4539 ARDMORE DR | \$ | 429,540 | \$ | 319,510 |
| 1924226003 | THOMAS P SAUNDERS | 4539 BURNLEY DR | \$ | 175,350 | \$ | 127,770 |
| 1924202018 | CHRISTOPHER KEENAN | 4540 BURNLEY DR | \$ | 169,270 | \$ | 119,950 |
| 1920201004 | MARK BACKONEN | 4540 ECHO RD | \$ | 696,470 | \$ | 509,520 |
| 1920126008 | MICHAEL KLEIN | 4547 GRINDLEY CT | \$ | 483,060 | \$ | 349,830 |
| 1916452029 | JOSHUA SHERBIN | 4548 BRIGHTMORE RD | \$ | 393,150 | \$ | 304,110 |
| 1921203003 | JOSEPH LODUCA | 4551 ARDMORE DR | \$ | 733,780 | \$ | 503,160 |
| 1924226004 | JONATHAN SIMON | 4553 BURNLEY DR | \$ | 155,070 | \$ | 114,700 |
| 1931476008 | SANFORD I HANSELL | 4555 PRIVATE LAKE DR | \$ | 880,420 | \$ | 672,970 |
| 1921226001 | JEFFREY ABOOD | 4555 STONELEIGH RD | \$ | 377,890 | \$ | 375,810 |
| 1916452028 | FOREST WOLFE | 4560 BRIGHTMORE RD | \$ | 283,430 | \$ | 181,960 |
| 1921203009 | JAY Y MANDEL | 4560 STONELEIGH RD | \$ | 403,900 | \$ | 305,760 |
| 1924226005 | DEAN WOOD | 4567 BURNLEY DR | \$ | 190,690 | \$ | 130,170 |
| 1924202017 | THOMAS SMYTH | 4570 BURNLEY DR | \$ | 183,210 | \$ | 124,800 |
| 1916452027 | RAFFI DERBABIAN | 4572 BRIGHTMORE RD | \$ | 275,000 | \$ | 275,000 |
| 1921228007 | JAMES WAGNER | 4580 LAHSER RD | \$ | 309,840 | \$ | 219,060 |
| 1924226006 | THADEUS J LOJEK | 4581 BURNLEY DR | \$ | 182,400 | \$ | 127,400 |
| 1916452026 | CHARLES MASCARI | 4590 BRIGHTMORE RD | \$ | 290,800 | \$ | 192,250 |
| 1921203010 | ALAN D RAY | 4590 STONELEIGH RD | \$ | 335,820 | \$ | 253,580 |
| 1924226007 | CHRISTIAN MUSTILL | 4595 BURNLEY DR | \$ | 216,800 | \$ | 147,080 |
| 1921228008 | STEFAN WANCZYK | 4600 LAHSER RD | \$ | 725,370 | \$ | 714,400 |
| 1916452025 | JONATHAN HILLMAN | 4602 BRIGHTMORE RD | \$ | 356,330 | \$ | 258,780 |
| 1924226008 | MICHAEL A CARROLL | 4611 BURNLEY DR | \$ | 174,800 | \$ | 128,030 |
| 1921228001 | FARSHAD FOTUHI | 4615 STONELEIGH RD | \$ | 311,520 | \$ | 215,050 |
| 1921203011 | MICHAEL DEMATTIA | 4616 STONELEIGH RD | \$ | 369,350 | \$ | 274,020 |
| 1921228036 | NICHOLAS DIFAZIO | 4618 LAHSER RD | \$ | 781,610 | \$ | 568,210 |
| 1921228011 | DOUGLAS M ROUFF | 4625 STONELEIGH RD | \$ | 386,510 | \$ | 275,690 |
| 1921203012 | BILL KIM | 4626 STONELEIGH RD | \$ | 286,440 | \$ | 198,010 |
| 1924226009 | JAMES A GROVE | 4631 BURNLEY DR | \$ | 192,130 | \$ | 131,540 |
| 1916452024 | JOHN A JENNINGS | 4642 BRIGHTMORE RD | \$ | 281,830 | \$ | 205,670 |
| 1931451010 | JOHN MARK FRANK | 4647 PRIVATE LAKE DR | \$ | 754,210 | \$ | 582,790 |
| 1916452023 | GORDON ELIASSEN | 4650 BRIGHTMORE RD | \$ | 353,960 | \$ | 255,340 |
| 1921228037 | A T DECONINCK | 4650 LAHSER RD | \$ | 541,840 | \$ | 408,590 |
| 1924226010 | MARK V IMPROTA | 4651 BURNLEY DR | \$ | 223,360 | \$ | 151,640 |
| 1916452022 | LAWRENCE D MCCARTER | 4658 BRIGHTMORE RD | \$ | 327,660 | \$ | 238,950 |
| 1931451043 | KIRK N MARTIN | 4659 RAVINE DR | \$ | 534,590 | \$ | 441,970 |
| 1931451038 | ARTHUR M CIAGNE | 4662 CHELSEA LN | \$ | 510,980 | \$ | 421,910 |
| 1931451042 | GREGORY MCINTOSH | 4669 RAVINE DR | \$ | 557,710 | \$ | 530,630 |
| 1924226011 | STEPHANIE KERCORIAN | 4671 BURNLEY DR | \$ | 253,650 | \$ | 168,890 |
| 1931451041 | HADI ABOU-RASS | 4673 RAVINE DR | \$ | 596,560 | \$ | 455,870 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|-----------------------------------|---------------------|----|-----------|----|-----------|
| 1931402001 | BARRY ROSEN | 4675 PICKERING RD | \$ | 290,280 | \$ | 290,280 |
| 1931451040 | AFAF BATAYNEH | 4679 RAVINE DR | \$ | 559,330 | \$ | 466,190 |
| 1931401001 | ALLEN WOLF | 4680 PICKERING RD | \$ | 262,620 | \$ | 187,770 |
| 1931451039 | JOON K KIM | 4683 RAVINE DR | \$ | 562,260 | \$ | 424,060 |
| 1931327007 | ESTHER ROSE KRYSTAL | 4690 PICKERING RD | \$ | 200,530 | \$ | 128,790 |
| 1924226012 | JAMES TOMARO | 4691 BURNLEY DR | \$ | 244,950 | \$ | 163,440 |
| 1921228029 | SAHIR MALKI | 4700 LAHSER RD | \$ | 1,475,610 | \$ | 1,475,610 |
| 1924226013 | SHERYL A CHINN TRUSTEE | 4711 BURNLEY DR | \$ | 255,760 | \$ | 184,180 |
| 1924226014 | PATRICK D LEE | 4727 BURNLEY DR | \$ | 298,800 | \$ | 211,550 |
| 1921228012 | CON AND SHARON GAUCI FAMILY TRUST | 4737 STONELEIGH RD | \$ | 468,000 | \$ | 355,090 |
| 1921227008 | MARTIN G WALDMAN | 4740 STONELEIGH RD | \$ | 606,170 | \$ | 458,980 |
| 1924226015 | JULIET A MULLENMEISTER | 4743 BURNLEY DR | \$ | 192,010 | \$ | 182,130 |
| 1924226016 | SHARIF G FARHAT | 4759 BURNLEY DR | \$ | 181,890 | \$ | 148,730 |
| 1921228013 | JIM SAFLEDINE | 4767 STONELEIGH RD | \$ | 476,120 | \$ | 371,560 |
| 1924226017 | ROBERT Y WELLER II | 4775 BURNLEY DR | \$ | 163,740 | \$ | 119,290 |
| 1931376018 | DAVID C NORDSTROM | 4782 PICKERING RD | \$ | 388,620 | \$ | 254,840 |
| 1931376019 | DAVID HERSKOVIC | 4786 PICKERING RD | \$ | 350,590 | \$ | 241,750 |
| 1931376020 | BRUCE A LURIA | 4790 PICKERING RD | \$ | 319,370 | \$ | 319,370 |
| 1931451047 | ANTHONY SHIELDS | 4794 PICKERING RD | \$ | 425,050 | \$ | 278,300 |
| 1924226018 | JASON W ZBANEK | 4795 BURNLEY DR | \$ | 202,590 | \$ | 172,930 |
| 1921227002 | DAVID M MOSS | 4801 N HARSDALE RD | \$ | 456,950 | \$ | 456,180 |
| 1924226019 | JAMES ELSMAN | 4811 BURNLEY DR | \$ | 229,400 | \$ | 151,730 |
| 1924226020 | GEORGEANNE M TR ZACHARA | 4831 BURNLEY DR | \$ | 182,700 | \$ | 138,580 |
| 1924226021 | WILLIAM FRANCIS MALARNEY | 4851 BURNLEY DR | \$ | 150,890 | \$ | 110,710 |
| 1924226022 | PATRICK MONTGOMERY | 4871 BURNLEY DR | \$ | 142,040 | \$ | 114,440 |
| 1916426028 | BERNARD F STEWART | 500 OVERBROOK RD | \$ | 231,960 | \$ | 185,090 |
| 1924401015 | DAVID MENDELSON | 5017 MOHR VALLEY LN | \$ | 244,290 | \$ | 152,530 |
| 1924401014 | TIMOTHY G GREEN | 5020 MOHR VALLEY LN | \$ | 205,840 | \$ | 131,010 |
| 1924401016 | AERI PAE | 5033 MOHR VALLEY LN | \$ | 197,490 | \$ | 125,650 |
| 1924401013 | EDWIN GEORGE | 5036 MOHR VALLEY LN | \$ | 212,970 | \$ | 133,060 |
| 1924401017 | BRIAN E SCHAAF | 5049 MOHR VALLEY LN | \$ | 218,430 | \$ | 136,300 |
| 1916476012 | SCOTT MCGINN | 507 OVERBROOK RD | \$ | 251,890 | \$ | 230,950 |
| 1916426027 | MARLENE S YEAGER | 510 OVERBROOK RD | \$ | 238,220 | \$ | 206,850 |
| 1924401018 | KARLA K MURRAY | 5103 IRON GATE RD | \$ | 209,670 | \$ | 131,260 |
| 1924401019 | CAROL SWOPE | 5111 IRON GATE RD | \$ | 201,600 | \$ | 129,690 |
| 1924401020 | BRUCE A PANTALEO | 5119 IRON GATE RD | \$ | 240,110 | \$ | 151,820 |
| 1924401021 | CHARLES K CALLAM | 5127 IRON GATE RD | \$ | 213,790 | \$ | 133,250 |
| 1924401022 | GINO M DICLEMENTE | 5135 IRON GATE RD | \$ | 233,900 | \$ | 145,550 |
| 1924401023 | ROBERT D AKROYD | 5151 IRON GATE RD | \$ | 213,830 | \$ | 134,100 |
| 1924401024 | GOKUL TAYADE | 5169 IRON GATE RD | \$ | 236,780 | \$ | 150,250 |
| 1924401025 | DOUGLAS MOSELEY | 5175 IRON GATE RD | \$ | 193,030 | \$ | 121,380 |
| 1924401037 | STEVEN HANE | 5183 IRON GATE RD | \$ | 240,600 | \$ | 142,990 |
| 1924401038 | DANIELLE L WHITE | 5191 IRON GATE RD | \$ | 184,330 | \$ | 142,510 |
| 1916426026 | DAVID G ONG | 524 OVERBROOK RD | \$ | 267,280 | \$ | 242,750 |
| 1919301010 | ELLIOTT C SCHUBINER | 5260 INKSTER RD | \$ | 223,740 | \$ | 184,350 |
| 1924476038 | RICHARD DAVIS | 5311 HICKORY BND | \$ | 184,220 | \$ | 126,350 |
| 1916426025 | MICHAEL E CAULEY | 532 OVERBROOK RD | \$ | 306,050 | \$ | 282,430 |
| 1924476004 | MICHAEL R MADER | 5333 HICKORY BND | \$ | 184,410 | \$ | 127,260 |
| 1924476005 | THEODORE WILLETT | 5345 HICKORY BND | \$ | 458,110 | \$ | 304,650 |
| 1916426024 | MILA MARTINEZ MOJARES | 540 OVERBROOK RD | \$ | 357,420 | \$ | 332,550 |
| 1916426023 | JUANITA T RAY | 550 OVERBROOK RD | \$ | 293,350 | \$ | 241,820 |
| 1925126030 | SAMUEL J SCAVONE | 5513 PINE BROOKE CT | \$ | 277,000 | \$ | 208,700 |
| 1925126016 | LARRY D MARTENS | 5520 BROOKDALE RD | \$ | 211,660 | \$ | 149,820 |
| 1925126017 | JOSIANE M PRANTERA | 5550 BROOKDALE RD | \$ | 246,200 | \$ | 174,910 |
| 1925126018 | CATHERINE A STRUMBOS | 5570 BROOKDALE RD | \$ | 289,000 | \$ | 208,810 |
| 1916426022 | BARRY D BRONSTEIN | 558 OVERBROOK RD | \$ | 323,960 | \$ | 275,630 |
| 1925126019 | IAN HENDRY | 5600 BROOKDALE RD | \$ | 432,060 | \$ | 305,820 |
| 1916426021 | ROBERT C SVENSON | 566 OVERBROOK RD | \$ | 273,610 | \$ | 225,280 |
| 1916426020 | RENITA R LINKNER REV LIV TR | 574 OVERBROOK RD | \$ | 277,390 | \$ | 254,610 |
| 1916426013 | WILLIAM HERRMANN | 579 PINE VALLEY WAY | \$ | 345,330 | \$ | 286,710 |
| 1916426019 | JOHAN WESSLEN | 582 OVERBROOK RD | \$ | 308,710 | \$ | 286,060 |
| 1916426012 | GREGORY J WILLIAMS | 587 PINE VALLEY WAY | \$ | 304,510 | \$ | 277,800 |
| 1916426011 | CUTLER LIVING TRUST | 595 PINE VALLEY WAY | \$ | 324,700 | \$ | 298,470 |
| 1916426010 | WEI WANG | 603 PINE VALLEY WAY | \$ | 180,030 | \$ | 154,890 |
| 1916426018 | YAPING WANG | 606 OVERBROOK RD | \$ | 342,950 | \$ | 320,010 |
| 1916426009 | WILLIAM R HANNA | 611 PINE VALLEY WAY | \$ | 363,630 | \$ | 337,130 |
| 1916426017 | DORIS JACOBS | 620 OVERBROOK RD | \$ | 238,970 | \$ | 209,850 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|--|------------------------|----|---------|----|---------|
| 1916426004 | JANET KOPRINCE | 628 PINE VALLEY WAY | \$ | 239,510 | \$ | 196,910 |
| 1916426016 | WILLIAM ALLEN | 630 OVERBROOK RD | \$ | 276,770 | \$ | 256,400 |
| 1916252039 | JAINENDER JAIN | 635 SOUTH HILLS RD | \$ | 524,460 | \$ | 524,460 |
| 1916426015 | JASON DENNY | 638 OVERBROOK RD | \$ | 327,740 | \$ | 254,830 |
| 1916426003 | FARHAT A OSMAN | 640 PINE VALLEY WAY | \$ | 245,250 | \$ | 217,740 |
| 1916252036 | STACEY WANCHING HE | 643 SOUTH HILLS RD | \$ | 753,110 | \$ | 753,110 |
| 1924202006 | MICHAEL KOSCIUK | 662 WATTLES RD | \$ | 131,150 | \$ | 131,150 |
| 1916252035 | STANLEY FRANKEL | 663 SOUTH HILLS RD | \$ | 911,700 | \$ | 855,600 |
| 1924202007 | ERIC C DOUSE | 674 WATTLES RD | \$ | 126,430 | \$ | 100,920 |
| 1916252033 | LLOYD E REUSS | 691 SOUTH HILLS RD | \$ | 271,850 | \$ | 252,830 |
| 1931128039 | JAMES WRIGHT | 6956 VALLEY SPRING RD | \$ | 292,150 | \$ | 196,360 |
| 1931128016 | RYAN SHERMAN | 6969 MEADOWLAKE RD | \$ | 767,790 | \$ | 703,570 |
| 1931128040 | MARC PIPER | 6970 VALLEY SPRING RD | \$ | 255,510 | \$ | 215,540 |
| 1931202016 | SURESHA BANDARA | 6971 VALLEY SPRING RD | \$ | 259,440 | \$ | 216,180 |
| 1931128017 | CHRISTOPHER CIAGNE | 6995 MEADOWLAKE RD | \$ | 255,520 | \$ | 212,490 |
| 1924426001 | MICHAEL J MCDERMOTT | 701 N SHADY HOLLOW CIR | \$ | 232,930 | \$ | 148,350 |
| 1924276016 | ERIK M KAFARSKI | 702 BROWNING CT | \$ | 521,480 | \$ | 485,540 |
| 1924276015 | LENA ROSE EPSTEIN | 706 BROWNING CT | \$ | 432,060 | \$ | 402,400 |
| 1916252016 | OMOLHS, LLC | 708 W LONG LAKE RD | \$ | 96,990 | \$ | 96,990 |
| 1924426002 | WILLIAM M MOCERI | 709 N SHADY HOLLOW CIR | \$ | 249,670 | \$ | 154,870 |
| 1924276014 | OMAR KADRO | 710 BROWNING CT | \$ | 398,610 | \$ | 306,780 |
| 1931451001 | MARK KLEIN | 7111 FAIRHILL RD | \$ | 223,420 | \$ | 139,340 |
| 1924276013 | RAYMOND LOPE | 714 BROWNING CT | \$ | 408,070 | \$ | 312,360 |
| 1931451002 | ALAN P KITZENS | 7141 FAIRHILL RD | \$ | 236,260 | \$ | 158,730 |
| 1931451003 | JUNG S LEE | 7169 FAIRHILL RD | \$ | 200,000 | \$ | 200,000 |
| 1924276012 | RODGER D MACARTHUR | 718 BROWNING CT | \$ | 388,970 | \$ | 300,120 |
| 1912351004 | VESNA DELJOSEVIC | 718 E LONG LAKE RD | \$ | 214,590 | \$ | 205,530 |
| 1931451004 | DENNIS J COONEY | 7185 FAIRHILL RD | \$ | 235,800 | \$ | 175,460 |
| 1931451005 | JAMES G COOK | 7201 FAIRHILL RD | \$ | 271,510 | \$ | 184,290 |
| 1924276011 | DAVID WILLISON COMPANY | 722 BROWNING CT | \$ | 391,320 | \$ | 301,740 |
| 1931451006 | CARL VONENDE | 7243 FAIRHILL RD | \$ | 263,140 | \$ | 178,330 |
| 1924276010 | WILLIAM PITTAS | 726 TENNYSON DOWNS CT | \$ | 302,960 | \$ | 286,640 |
| 1931451007 | MATTHEW D STEIN | 7285 KINGSWOOD DR | \$ | 256,100 | \$ | 194,820 |
| 1931451008 | ISABELLE BELIAN TRUSTEE | 7297 KINGSWOOD DR | \$ | 353,870 | \$ | 254,140 |
| 1931451009 | GLORIA S L HSU | 7309 KINGSWOOD DR | \$ | 247,370 | \$ | 166,900 |
| 1931451012 | MARC D ZUPMORE | 7310 KINGSWOOD DR | \$ | 260,000 | \$ | 250,920 |
| 1924276009 | SANDRA EBLING | 734 TENNYSON DOWNS CT | \$ | 438,740 | \$ | 320,710 |
| 1931353006 | DAVID L KENDRA | 7343 LINDENMERE DR | \$ | 209,760 | \$ | 175,810 |
| 1921228004 | ROBERT FINKEL | 735 OAKLEIGH DR | \$ | 290,490 | \$ | 205,150 |
| 1924226047 | TINA M WOYCIK | 735 ROBINHOOD CIR | \$ | 167,380 | \$ | 128,760 |
| 1931353005 | NANCY F STOCKMANN QUALIFIED PERSONAL I | 7357 LINDENMERE DR | \$ | 661,850 | \$ | 533,640 |
| 1912351005 | CRAIG A MATICHUK | 736 E LONG LAKE RD | \$ | 210,000 | \$ | 210,000 |
| 1931353004 | LUIS NEGRETE | 7371 LINDENMERE DR | \$ | 273,120 | \$ | 228,600 |
| 1931353003 | BRIAN L RIBANDO | 7385 LINDENMERE DR | \$ | 206,570 | \$ | 169,700 |
| 1921226005 | CHRISTOPHER BARBAT | 740 OAKLEIGH DR | \$ | 276,380 | \$ | 276,380 |
| 1924226067 | JUDITH KRUGER | 740 WATTLES RD | \$ | 323,430 | \$ | 230,120 |
| 1931452010 | JOHN C THOMPSON | 7401 FRANKLIN CT | \$ | 253,410 | \$ | 197,060 |
| 1931476003 | PHILLIP B MAGUIRE | 7410 FRANKLIN RD | \$ | 274,250 | \$ | 216,540 |
| 1931452018 | BASHAR QALIEH | 7415 FRANKLIN CT | \$ | 597,970 | \$ | 382,670 |
| 1931376039 | DAVID FARBER | 7420 INNER CIRCLE DR | \$ | - | \$ | - |
| 1924226046 | CHRISTOPHER PRICE | 743 ROBINHOOD CIR | \$ | 156,710 | \$ | 117,700 |
| 1931452008 | WILLIAM R MAHER | 7430 FRANKLIN CT | \$ | 190,390 | \$ | 145,910 |
| 1931452019 | JAMES R BIZER | 7433 FRANKLIN CT | \$ | 290,520 | \$ | 228,720 |
| 1931476005 | JACK PELTZ | 7450 FRANKLIN RD | \$ | 240,270 | \$ | 225,350 |
| 1931477002 | NORTH LANE ASSOCIATES, LLC | 7457 FRANKLIN RD | \$ | 837,500 | \$ | 823,210 |
| 1925176044 | SILVIU PALA | 75 MAYWOOD AVE | \$ | 300,000 | \$ | 300,000 |
| 1921226008 | JOSEPH SHEENA | 750 OAKLEIGH DR | \$ | 812,820 | \$ | 592,480 |
| 1924226045 | GREGORY DEGORSKY | 751 ROBINHOOD CIR | \$ | 135,730 | \$ | 135,730 |
| 1921228003 | ALDO FOZZATI | 755 OAKLEIGH DR | \$ | 393,670 | \$ | 274,720 |
| 1924226044 | CHRISTOPHER ANTHONY DEAN | 759 ROBINHOOD CIR | \$ | 153,930 | \$ | 113,680 |
| 1921228002 | ALAN GREGORY | 765 OAKLEIGH DR | \$ | 818,900 | \$ | 770,810 |
| 1924226043 | THEODORE HOAG ELLIS | 767 ROBINHOOD CIR | \$ | 152,880 | \$ | 115,050 |
| 1912351007 | WALBRI, LLC | 772 E LONG LAKE RD | \$ | 225,740 | \$ | 208,730 |
| 1924226042 | JAY M JONES | 777 ROBINHOOD CIR | \$ | 181,650 | \$ | 134,430 |
| 1921226002 | WILLIAM THOMAS LEE JR | 780 OAKLEIGH DR | \$ | 302,110 | \$ | 185,750 |
| 1924226041 | DOUGLAS W LEAHY | 783 ROBINHOOD CIR | \$ | 220,120 | \$ | 161,540 |
| 1924426012 | EUGENE HEALY | 802 SHADY HOLLOW CIR | \$ | 235,650 | \$ | 147,180 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | | |
|------------|---------------------------|----------------------|----|-----------|----|---------|
| 1924426013 | ANDREW R FARAH | 810 SHADY HOLLOW CIR | \$ | 219,570 | \$ | 170,120 |
| 1911227025 | GORDON J WALKER | 815 GREAT OAKS DR | \$ | 231,980 | \$ | 157,000 |
| 1924426014 | DAVID P SCHNEIDER | 822 SHADY HOLLOW CIR | \$ | 208,430 | \$ | 130,810 |
| 1924426015 | MARGARET E WILSON TRUSTEE | 830 SHADY HOLLOW CIR | \$ | 189,330 | \$ | 120,240 |
| 1911227026 | PATRICK D MULLIGAN | 831 GREAT OAKS DR | \$ | 252,530 | \$ | 252,530 |
| 1911227008 | ANDREW JON DURREN | 836 FOXHALL RD | \$ | 202,720 | \$ | 138,940 |
| 1924426016 | MICHAEL J CROWE | 842 SHADY HOLLOW CIR | \$ | 212,470 | \$ | 134,970 |
| 1911227016 | VAUGHN FRICK | 847 GREAT OAKS DR | \$ | 302,150 | \$ | 200,670 |
| 1925176028 | ROBERT D HANDELSMAN | 85 JUDY LN | \$ | 395,730 | \$ | 286,800 |
| 1911276015 | STEPHEN BARTOLI | 850 GREAT OAKS DR | \$ | 360,430 | \$ | 281,940 |
| 1924426017 | GREGORY GARRETT | 850 SHADY HOLLOW CIR | \$ | 273,280 | \$ | 168,160 |
| 1924426018 | STEVEN J LYONS | 854 SHADY HOLLOW CIR | \$ | 245,650 | \$ | 245,650 |
| 1911226008 | RHETT K HEBERLING | 855 FOXHALL RD | \$ | 193,940 | \$ | 131,940 |
| 1911227009 | SCOTT MERCHANT | 856 FOXHALL RD | \$ | 194,290 | \$ | 175,260 |
| 1924426019 | BRYANT D OXENDINE JR | 858 SHADY HOLLOW CIR | \$ | 236,740 | \$ | 146,680 |
| 1921227015 | SAFWAN KASSAS | 859 SUNNINGDALE DR | \$ | 1,329,010 | \$ | 625,000 |
| 1911226013 | MARK E HUBBARD | 860 PALMS RD | \$ | 615,920 | \$ | 444,990 |
| 1924426025 | STEVEN M TACK | 862 SHADY HOLLOW CIR | \$ | 258,400 | \$ | 236,430 |
| 1924426024 | JOHN M AVERILL | 866 SHADY HOLLOW CIR | \$ | 323,760 | \$ | 206,450 |
| 1924426026 | BARBARA ANN OLLESHEIMER | 870 SHADY HOLLOW CIR | \$ | 227,030 | \$ | 146,150 |
| 1924426027 | NICHOLAS JOHNSON | 874 SHADY HOLLOW CIR | \$ | 185,800 | \$ | 149,690 |
| 1911227010 | MICHAEL G ERNAT | 878 FOXHALL RD | \$ | 196,840 | \$ | 137,400 |
| 1911226009 | CAREN ANN FREDAL | 879 FOXHALL RD | \$ | 204,460 | \$ | 139,710 |
| 1921203015 | ROBERT PAQUETTE | 890 SUNNINGDALE DR | \$ | 497,850 | \$ | 456,680 |
| 1911227017 | NISHAN K BEYLERIAN | 892 FOXHALL RD | \$ | 189,250 | \$ | 129,600 |
| 1911226010 | ANITA WILLIS | 893 FOXHALL RD | \$ | 189,500 | \$ | 130,940 |
| 1911229009 | JOSEPH A BELLANCA | 916 CANDLESTICK CT | \$ | 230,450 | \$ | 230,450 |
| 1911229004 | PAUL MOORADIAN | 917 CANDLESTICK CT | \$ | 167,700 | \$ | 123,270 |
| 1911228001 | CLIFFORD T GAGNON JR | 920 E SQUARE LAKE RD | \$ | 137,020 | \$ | 101,870 |
| 1913201018 | KAREN ANN SHARPE | 925 EASTOVER DR | \$ | 255,710 | \$ | 190,130 |
| 1911229008 | CHARLES R COSTANTINO | 938 CANDLESTICK CT | \$ | 185,500 | \$ | 135,100 |
| 1911229005 | RAMIZ KOZOUZ | 939 CANDLESTICK CT | \$ | 233,690 | \$ | 171,610 |
| 1925176009 | RICHARD J PERRY | 94 MANOR CT | \$ | 263,820 | \$ | 186,120 |
| 1925176008 | SORAYA GHAEMI | 96 MANOR CT | \$ | 714,280 | \$ | 582,040 |
| 1911229007 | CAROLE A HAMMETT | 960 CANDLESTICK CT | \$ | 183,190 | \$ | 131,230 |
| 1911229006 | CYNTHIA SACCO | 961 CANDLESTICK CT | \$ | 201,970 | \$ | 136,390 |
| 1913228005 | SAMIR W HANNA | 962 DOWLING RD | \$ | 385,410 | \$ | 268,550 |
| 1916452020 | DAVID POLITO | 968 SANDHURST RD | \$ | 297,010 | \$ | 218,030 |
| 1913251031 | LEONARD EVANS | 973 SATTERLEE RD | \$ | 228,940 | \$ | 151,220 |
| 1913227010 | RAYMOND FARRAR | 977 DOWLING RD | \$ | 214,920 | \$ | 158,110 |
| 1925176007 | MARK D BERMAN | 98 MANOR CT | \$ | 408,930 | \$ | 296,260 |
| 1916452019 | 980 SANDHURST ROAD LLC | 980 SANDHURST RD | \$ | 166,950 | \$ | 166,950 |
| 1913276002 | CHARLES A AMANN | 984 SATTERLEE RD | \$ | 183,350 | \$ | 116,200 |
| 1913228003 | SHIH HWANG WU | 992 DOWLING RD | \$ | 522,850 | \$ | 453,630 |
| 1925177035 | WILLIAM LOIZON | | \$ | 41,610 | \$ | 22,420 |
| 1921203013 | MARIE GUIDOS | | \$ | 5,260 | \$ | 4,020 |
| 1919301002 | LONE PINE ASSOCIATION | | \$ | - | \$ | - |
| 1925176031 | DANIEL MARGULLIS | | \$ | 16,870 | \$ | 10,740 |
| 1917276020 | TERI L FENNER | | \$ | 7,280 | \$ | 3,140 |
| 1917276041 | JUSTIN B HOLTON | | \$ | 6,110 | \$ | 2,970 |
| 1931353020 | PRAETORIAN CAPITAL LLC | | \$ | 1,610 | \$ | 1,610 |
| 1924476001 | HICKORY HOLLOW SUB | | \$ | - | \$ | - |
| 1919301009 | BROOKE MEATHE | | \$ | 2,510 | \$ | 2,440 |
| 1925251024 | | | | | | |
| 1925251010 | | | | | | |
| 1907426012 | TOWNSHIP OF BLOOMFIELD | | \$ | - | \$ | - |
| 1917276011 | JAMES R BOWERS | | \$ | 4,060 | \$ | 1,480 |
| 1917276012 | CHARLES K HEMLOCK | | \$ | 4,060 | \$ | 1,480 |
| 1917276018 | THERESA M BOLINGER | | \$ | 4,060 | \$ | 1,980 |
| 1917276035 | JAMES E DICHTING | | \$ | 5,730 | \$ | 2,340 |
| 1931353021 | PRASHANTH BALUSU | | \$ | 1,600 | \$ | 1,600 |
| 1931353015 | TIMOTHY S BLAIR | | \$ | 2,320 | \$ | 2,320 |
| 1931353016 | PAUL R ZIEGLER | | \$ | 4,280 | \$ | 4,280 |
| 1931353012 | KENNETH L YEASTING | | \$ | 770 | \$ | 540 |
| 1917301012 | HOWARD O FRETTER | | \$ | 183,980 | \$ | 134,100 |
| 1907377001 | RICHARD SHENKAN | | \$ | - | \$ | - |
| 1909234031 | FREDERICK RANDOLPH | | \$ | 2,880 | \$ | 1,600 |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | | | |
|------------|---------------------------------------|----|-----------|----|---------|
| 1916476011 | VAHAN KARIBIAN | \$ | 78,190 | \$ | 57,580 |
| 1908126005 | FOREST LAKE COUNTRY CLUB | \$ | 604,870 | \$ | 288,180 |
| 1908151046 | VICTOR INT'L CORPORATION | \$ | - | \$ | - |
| 1908151047 | VICTOR INT'L CORPORATION | \$ | - | \$ | - |
| 1911226029 | EASTWAYS LAND DEVELOPMENT CO | \$ | - | \$ | - |
| 1925177015 | 35980-36050 WOODWARD, LLC | \$ | 328,590 | \$ | 278,770 |
| 1925201003 | BLOOMFIELD MANOR PARK | \$ | - | \$ | - |
| 1907151008 | ULLE, RECORD/REGISTERED AGENT | \$ | - | \$ | - |
| 1913227008 | KATHY MICALLEF | \$ | 2,250 | \$ | 1,140 |
| 1913227009 | KATHY MICALLAF | \$ | 2,080 | \$ | 1,060 |
| 1921228038 | A T DECONINCK | \$ | 80,720 | \$ | 50,130 |
| 1901251007 | ADAMS WOODS COMMUNITY ASSOC | \$ | - | \$ | - |
| 1917276040 | GEOFFREY M EATON | \$ | 7,470 | \$ | 3,650 |
| 1917301001 | ISLAND LAKE WOODS ASSOCIATION | \$ | - | \$ | - |
| 1909301050 | BLOOMFIELD HILLS | \$ | - | \$ | - |
| 1907427016 | STEVE G GORDON | \$ | 129,370 | \$ | 62,710 |
| 1925177020 | MICHAEL P DEIGHAN | \$ | 230 | \$ | 40 |
| 1925177019 | MICHAEL P DEIGHAN | \$ | 400 | \$ | 90 |
| 1925177021 | DANIEL ARONOFF | \$ | 330 | \$ | 90 |
| 1913404029 | BLOOMFIELD TOWNSHIP | \$ | - | \$ | - |
| 1917276013 | COLIN GOLDSMITH | \$ | 4,060 | \$ | 1,980 |
| 1916252015 | OMOLHS, LLC | \$ | 43,870 | \$ | 25,470 |
| 1908426009 | FOREST LAKE COUNTRY CLUB | \$ | 406,960 | \$ | 254,640 |
| 1908451009 | WILLIAM F MUIR | \$ | 1,090 | \$ | 520 |
| 1925176037 | DANIEL MARGULLIS | \$ | 510 | \$ | 400 |
| 1925201001 | BLOOMFIELD TWP | \$ | - | \$ | - |
| 1921203014 | LIBERTY TITLE CO. | \$ | 6,750 | \$ | 3,330 |
| 1931451032 | FRANKLIN SUBWATERSHED DRAIN | \$ | - | \$ | - |
| 1901326007 | ADAMS WOODS COMMUNITY ASSOC | \$ | - | \$ | - |
| 1917276010 | CARON TRESE | \$ | 4,060 | \$ | 1,480 |
| 1917276015 | JOHN H LITTLE | \$ | 4,060 | \$ | 1,480 |
| 1917276007 | AREZO AMIRIKIA | \$ | 4,060 | \$ | 1,980 |
| 1917276009 | ABUBAKAR SHEIKH | \$ | 4,060 | \$ | 4,060 |
| 1917276014 | JOHN H LITTLE | \$ | 4,060 | \$ | 1,480 |
| 1917301005 | KIRK IN THE HILLS PRESBYTERIAN CHURCH | \$ | - | \$ | - |
| 1918278002 | SHLOMO SAM MANDEL | \$ | 13,890 | \$ | 10,130 |
| 1916252013 | OMOLHS, LLC | \$ | 72,430 | \$ | 49,920 |
| 1918276013 | ISLAND LAKE WOODS ASSOCIATION | \$ | - | \$ | - |
| 1917276008 | GABRIEL LOCHER | \$ | 4,060 | \$ | 1,480 |
| 1917276016 | VANEE TALLA TRUST | \$ | 4,060 | \$ | 1,480 |
| 1918277001 | SHLOMO SAM MANDEL | \$ | 1,850 | \$ | 1,350 |
| 1917276019 | JERRY WAGNER | \$ | 5,230 | \$ | 2,550 |
| 1918279004 | ISLAND LAKE WOODS ASSOCIATION | \$ | - | \$ | - |
| 1916201009 | ERIC GUIDOBONO | \$ | 12,410 | \$ | 6,780 |
| 1917251008 | SIDNEY FORBES | \$ | 55,540 | \$ | 40,570 |
| 1902400017 | THE HEATHERS CLUB | \$ | 1,141,610 | \$ | 506,510 |
| 1917276022 | CORNELIU IACOBAN | \$ | 10,260 | \$ | 10,260 |
| 1917276023 | DEVON GABLES | \$ | - | \$ | - |
| 1916252014 | OMOLHS, LLC | \$ | 67,020 | \$ | 53,500 |
| 1916252012 | OMOLHS, LLC | \$ | 410 | \$ | 370 |
| 1917276034 | ASHLEY H FARR | \$ | 9,750 | \$ | 4,760 |
| 1917276042 | FALCON LIVING TRUST | \$ | 64,220 | \$ | 64,220 |
| 1912351006 | WALBRI, LLC | \$ | 172,730 | \$ | 164,330 |
| 1907227007 | TURTLE LAKE DEVELOPMENT LLC | \$ | - | \$ | - |
| 1916426014 | OVERBROOK SUB ASSOC | \$ | - | \$ | - |
| 1907227012 | TURTLE LAKE DEVELOPMENT LLC | \$ | - | \$ | - |
| 1910151014 | MEKETA MOTUS SCHLEGA | \$ | 48,600 | \$ | 28,290 |
| 1906155006 | CIVIC ASSOC OF HAMM LK EST | \$ | - | \$ | - |
| 1907176013 | ULLE, RECORD/REGISTERED AGENT | \$ | - | \$ | - |
| 1901276027 | ADAMS WOODS COMMUNITY ASSOC | \$ | - | \$ | - |
| 1910151015 | MEKETA SCHLEGA | \$ | 53,130 | \$ | 29,610 |
| 1906301001 | CIVIC ASSOC OF HAMM LK EST | \$ | - | \$ | - |
| 1911255005 | TOWNSHIP OF BLOOMFIELD | \$ | - | \$ | - |
| 1906155007 | CIVIC ASSOC OF HAMM LK EST | \$ | - | \$ | - |
| 1931353014 | PAUL R ZIEGLER | \$ | 3,270 | \$ | 3,270 |
| 1925177027 | | | | | |
| 1925177022 | | | | | |

**Table 1 - Parcels in Bloomfield Township
Located Wholly or Partially in Floodplain**

| | | | |
|------------|-------------------------------|----------------|----------------|
| 1925177023 | | | |
| 1925251021 | | | |
| 1925177024 | | | |
| 1925177025 | | | |
| 1925177026 | | | |
| 1925177028 | | | |
| 1907303001 | PHILIP C KOSTOFF | \$ - | \$ - |
| 1931376012 | DAVID FARBER | \$ 660 | \$ 660 |
| 1907451014 | CHRYSLER WABEEK DEV CO | \$ - | \$ - |
| 1907303013 | DAVID P GOODE | \$ 3,050 | \$ 1,170 |
| 1916201015 | MAJD A ABURABIA | \$ 59,960 | \$ 59,960 |
| 1931128038 | MEADOWLAKE CIVIC ASSOC | \$ - | \$ - |
| 1909234030 | NABIL SIBLANI | \$ 2,410 | \$ 1,330 |
| 1908476003 | SUPERVISORS PLAT NO 7 | \$ - | \$ - |
| 1907303021 | BOB ROTENBERG | \$ - | \$ - |
| 1907303024 | DAVID P GOODE | \$ 1,250 | \$ 190 |
| 1907151019 | ULLE, RECORD/REGISTERED AGENT | \$ - | \$ - |
| 1908151048 | VICTOR INTERNATIONAL CORP. | \$ - | \$ - |
| 1909327047 | BARBARA CELESTE SHUMAN | \$ 48,350 | \$ 48,350 |
| 1917477017 | ECHO PARK HOMEOWNERS ASSOC | \$ - | \$ - |
| TOTALS | | \$ 459,397,700 | \$ 352,949,260 |

**Table 2 - Structures in Bloomfield Township
Located Partially or Wholly in the Floodplain**

Notes:

1. Data came from the HRC, Bloomfield Township and Oakland County GIS Databases. Floodplain information from FEMA DFIRM maps.
2. Data was developed on November 15, 2016.
3. The Assessed Value is 50% of the true market value of the home.
4. The Taxable Value is lesser of the State Equalized Value or the Capped Value.

| <u>Parcel Number</u> | <u>Property Owner</u> | <u>Address</u> | <u>Assessed Value</u> | <u>Taxable Value</u> |
|---|----------------------------|---------------------------------------|-----------------------|----------------------|
| <u>PRIMARY STRUCTURES IN FLOODPLAIN</u> | | | | |
| <i>Entire House in Floodplain (First Priority)</i> | | | | |
| 1911276036 | DOUGLAS ALEXANDER DONALD | 2960 EASTWAYS RD | \$ 253,940 | \$ 218,180 |
| 1908402001 | GOLDEN E HULLINGER | 1314 PORTERS LN | \$ 378,310 | \$ 298,850 |
| 1913227001 | GARY L WALKER | 1010 EASTOVER DR | \$ 206,350 | \$ 158,250 |
| 1916452039 | STEPHEN W WHITE | 4408 ARDMORE DR | \$ 235,330 | \$ 157,610 |
| 1916452038 | PARIS PAVLOU | 4428 ARDMORE CT | \$ 263,140 | \$ 191,010 |
| 1921228011 | DOUGLAS M ROUFF | 4625 STONELEIGH RD | \$ 386,510 | \$ 275,690 |
| 1925126019 | IAN HENDRY | 5600 BROOKDALE RD | \$ 432,060 | \$ 305,820 |
| 1925126020 | ADAM C CROFT | 111 MANOR RD | \$ 316,450 | \$ 316,450 |
| 1925177013 | WILLIAM LOIZON | 166 MAYWOOD AVE | \$ 163,150 | \$ 108,330 |
| 1913227003 | CARL J SCHILLER | 1034 EASTOVER DR | \$ 219,940 | \$ 159,340 |
| <i>Part of House in 100-Year Floodplain, Remainder in 500-year (Second Priority)</i> | | | | |
| 1919301002 | LONE PINE ASSOCIATION | | \$ - | \$ - |
| 1931477002 | NORTH LANE ASSOCIATES, LLC | 7457 FRANKLIN RD 1907 LONG LAKE | \$ 837,500 | \$ 823,210 |
| 1907303012 | NORMAN SINCLAIR | SHORE DR | \$ 360,190 | \$ 271,720 |
| 1924226020 | GEORGEANNE M TR ZACHARA | 4831 BURNLEY DR | \$ 182,700 | \$ 138,580 |
| 1924226021 | WILLIAM FRANCIS MALARNEY | 4851 BURNLEY DR | \$ 150,890 | \$ 110,710 |
| 1924401014 | TIMOTHY G GREEN | 5020 MOHR VALLEY LN | \$ 205,840 | \$ 131,010 |
| 1924401015 | DAVID MENDELSON | 5017 MOHR VALLEY LN | \$ 244,290 | \$ 152,530 |
| 1924401016 | AERI PAE | 5033 MOHR VALLEY LN | \$ 197,490 | \$ 125,650 |
| 1924401017 | BRIAN E SCHAAF | 5049 MOHR VALLEY LN | \$ 218,430 | \$ 136,300 |
| 1924401020 | BRUCE A PANTALEO | 5119 IRON GATE RD | \$ 240,110 | \$ 151,820 |
| 1924401021 | CHARLES K CALLAM | 5127 IRON GATE RD | \$ 213,790 | \$ 133,250 |
| 1924401022 | GINO M DICLEMENTE | 5135 IRON GATE RD | \$ 233,900 | \$ 145,550 |
| 1924401024 | GOKUL TAYADE | 5169 IRON GATE RD 866 SHADY HOLLOW | \$ 236,780 | \$ 150,250 |
| 1924426024 | JOHN M AVERILL | CIR | \$ 323,760 | \$ 206,450 |
| 1925201002 | JAMES BROWN | 230 W BIG BEAVER RD | \$ 688,410 | \$ 505,070 |
| 1925201002 | JAMES BROWN | 230 W BIG BEAVER RD | \$ 688,410 | \$ 505,070 |
| 1925176007 | MARK D BERMAN | 98 MANOR CT | \$ 408,930 | \$ 296,260 |
| 1925176008 | SORAYA GHAEMI | 96 MANOR CT | \$ 714,280 | \$ 582,040 |
| 1925176035 | ANNAMARIE ACIERNO YOUNG | 1205 HARROW CIR | \$ 333,640 | \$ 266,410 |
| 1925176028 | ROBERT D HANDELSMAN | 85 JUDY LN | \$ 395,730 | \$ 286,800 |
| 1925176045 | DANIEL R MARGULIS | 125 MAYWOOD AVE | \$ 351,980 | \$ 257,400 |
| 1925177018 | 35980-36050 WOORWARD, LLC | 35980 WOODWARD AVE | \$ 1,360,560 | \$ 1,337,340 |
| <i>Part of House in 100-Year Floodplain (Third Priority)</i> | | | | |
| 1911227026 | PATRICK D MULLIGAN | 831 GREAT OAKS DR | \$ 252,530 | \$ 252,530 |
| 1911227016 | VAUGHN FRICK | 847 GREAT OAKS DR | \$ 302,150 | \$ 200,670 |
| 1913227010 | RAYMOND FARRAR | 977 DOWLING RD | \$ 214,920 | \$ 158,110 |
| 1913276003 | OTTO KERN | 1000 SATTERLEE RD | \$ 212,980 | \$ 167,430 |
| 1913276013 | RAYMOND SOHN | 1029 ROCK SPRING RD | \$ 202,230 | \$ 125,410 |
| 1913277014 | MARC ARENS | 1035 TOP VIEW RD | \$ 190,700 | \$ 119,840 |

**Table 2 - Structures in Bloomfield Township
Located Partially or Wholly in the Floodplain**

HRC Job No. 20150283

| <u>Parcel Number</u> | <u>Property Owner</u> | <u>Address</u> | <u>Assessed Value</u> | <u>Taxable Value</u> |
|----------------------|-----------------------|---------------------|-----------------------|----------------------|
| 1913277013 | MICHAEL BASKIN | 1025 TOP VIEW RD | \$ 225,900 | \$ 151,450 |
| 1916426004 | JANET KOPRINCE | 628 PINE VALLEY WAY | \$ 239,510 | \$ 196,910 |
| 1916426023 | JUANITA T RAY | 550 OVERBROOK RD | \$ 293,350 | \$ 241,820 |
| 1916452018 | DAVID DALE | 4368 STONELEIGH RD | \$ 296,150 | \$ 214,000 |
| 1921228001 | FARSHAD FOTOUHI | 4615 STONELEIGH RD | \$ 311,520 | \$ 215,050 |
| 1925177017 | JAMES E BOERKOEL | 36000 WOODWARD AVE | \$ 166,790 | \$ 112,150 |
| 1931476005 | JACK PELTZ | 7450 FRANKLIN RD | \$ 240,270 | \$ 225,350 |
| 1909233003 | ROBERT JONES | 175 DEVON RD | \$ 537,670 | \$ 407,250 |

SECONDARY STRUCTURES IN FLOODPLAIN

Secondary Structure in Floodplain

| | | | | |
|------------|-------------------------|---------------------|--------------|--------------|
| 1906301005 | AUGUST HOFBAUER | 2250 E HAMMOND LAKE | \$ 211,560 | \$ 175,400 |
| 1935376001 | BIRMINGHAM COUNTRY CLUB | 1750 SAXON | \$ 4,126,360 | \$ 2,038,100 |

Swimming Pool and Patio in Floodplain

| | | | | |
|------------|-------------------|--------------------|------------|------------|
| 1909327045 | TOUFIQ AHMED | 3400 CHICKERING LN | \$ 187,970 | \$ 142,800 |
| 1924226005 | DEAN WOOD | 4567 BURNLEY DR | \$ 190,690 | \$ 130,170 |
| 1924226006 | THADEUS J LOJEK | 4581 BURNLEY DR | \$ 182,400 | \$ 127,400 |
| 1924226007 | CHRISTIAN MUSTILL | 4595 BURNLEY DR | \$ 216,800 | \$ 147,080 |

Patio in Floodplain

| | | | | |
|------------|---------------|---------------|------------|------------|
| 1907303022 | KURT A DELFIN | 1966 BAYOU DR | \$ 326,410 | \$ 247,230 |
|------------|---------------|---------------|------------|------------|

TOTALS \$ 5,442,190.00 \$ 3,008,180.00

**Table 2 - Structures in Bloomfield Township
Located Partially or Wholly in the Floodplain**

HRC Job No. 20150283

| <u>Parcel Number</u> | <u>Property Owner</u> | <u>Address</u> | <u>Assessed Value</u> | <u>Taxable Value</u> |
|--|-----------------------|-------------------|-----------------------|----------------------|
| <u>SHOWED UP AS BEING IN FLOODPLAIN - MAP AMENDMENTS PENDING OR LOMAS FOUND</u> | | | | |
| 1924401025 | DOUGLAS MOSELEY | 5175 IRON GATE RD | \$ 193,030 | \$ 121,380 |
| 1913227002 | SHAILESH B VORA | 1022 EASTOVER DR | \$ 282,710 | \$ 182,330 |
| 1924401023 | ROBERT D AKROYD | 5151 IRON GATE RD | \$ 213,830 | \$ 134,100 |
| 1924401037 | STEVEN HANE | 5183 IRON GATE RD | \$ 240,600 | \$ 142,990 |
| | | TOTALS | \$ 930,170.00 | \$ 580,800.00 |

**Table 3 - Bloomfield Township Flood Mitigation Project Plan
Lateral Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Sewer Type</u> |
|---------------|-----------------|--------------------------|--------------------------|--------------|-------------------|
| N25044 | 8 | 103.2 | 103.2 | Gravity Main | Lateral |
| N25045 | 8 | 187.5 | 106.9 | Gravity Main | Lateral |
| S16023 | 12 | 279.7 | 36.6 | Gravity Main | Lateral |
| S24075 | 12 | 221.3 | 221.3 | Gravity Main | Lateral |
| S24077 | 12 | 16.3 | 16.3 | Gravity Main | Lateral |
| N25010 | 8 | 304.9 | 119.7 | Gravity Main | Lateral |
| N25015 | 8 | 64.4 | 59.5 | Gravity Main | Lateral |
| S16118 | 8 | 296.0 | 1.7 | Gravity Main | Lateral |
| S16119 | 12 | 221.8 | 221.8 | Gravity Main | Lateral |
| N11051 | 8 | 93.3 | 93.3 | Gravity Main | Lateral |
| S24048 | 8 | 107.9 | 107.9 | Gravity Main | Lateral |
| S24049 | 8 | 348.7 | 110.5 | Gravity Main | Lateral |
| S24052 | 10 | 309.1 | 236.7 | Gravity Main | Lateral |
| S02083 | 15 | 324.8 | 261.2 | Gravity Main | Lateral |
| S02084 | 15 | 295.8 | 267.7 | Gravity Main | Lateral |
| S16096 | 15 | 237.7 | 9.9 | Gravity Main | Lateral |
| S16097 | 15 | 159.7 | 100.2 | Gravity Main | Lateral |
| N25028 | 10 | 63.5 | 63.5 | Gravity Main | Lateral |
| N25035 | 8 | 34.2 | 34.2 | Gravity Main | Lateral |
| N25036 | 8 | 172.6 | 172.6 | Gravity Main | Lateral |
| N25037 | 8 | 154.4 | 36.7 | Gravity Main | Lateral |
| N13080 | 8 | 116.6 | 48.3 | Gravity Main | Lateral |
| N13081 | 8 | 288.7 | 132.8 | Gravity Main | Lateral |
| N11052 | 8 | 241.4 | 240.9 | Gravity Main | Lateral |
| N13093 | 10 | 239.6 | 60.8 | Gravity Main | Lateral |
| S13078 | 10 | 294.2 | 122.7 | Gravity Main | Lateral |
| N24091 | 12 | 400.7 | 118.5 | Gravity Main | Lateral |
| N24092 | 12 | 107.0 | 107.0 | Gravity Main | Lateral |
| S13083 | 12 | 320.6 | 320.6 | Gravity Main | Lateral |
| S13084 | 12 | 188.1 | 188.1 | Gravity Main | Lateral |
| S13085 | 12 | 151.4 | 131.3 | Gravity Main | Lateral |
| S13086 | 12 | 72.9 | 65.5 | Gravity Main | Lateral |
| S13087 | 12 | 121.7 | 121.7 | Gravity Main | Lateral |
| S13088 | 12 | 116.1 | 116.1 | Gravity Main | Lateral |
| S13089 | 8 | 147.0 | 72.3 | Gravity Main | Lateral |
| S13095 | 12 | 251.9 | 251.9 | Gravity Main | Lateral |
| S13096 | 12 | 244.5 | 244.5 | Gravity Main | Lateral |
| N11038 | 8 | 290.8 | 155.2 | Gravity Main | Lateral |
| N11043 | 8 | 300.4 | 30.9 | Gravity Main | Lateral |
| N11046 | 12 | 250.2 | 250.2 | Gravity Main | Lateral |
| N11047 | 12 | 106.7 | 106.7 | Gravity Main | Lateral |
| N11048 | 12 | 287.8 | 71.4 | Gravity Main | Lateral |
| N01008 | 12 | 347.0 | 127.6 | Gravity Main | Lateral |
| S09089 | 15 | 341.0 | 338.4 | Gravity Main | Lateral |
| S13097 | 12 | 301.9 | 301.9 | Gravity Main | Lateral |
| S13098 | 12 | 272.4 | 272.4 | Gravity Main | Lateral |
| S13099 | 12 | 344.4 | 344.4 | Gravity Main | Lateral |
| S13100 | 12 | 293.5 | 233.5 | Gravity Main | Lateral |
| N13073 | 8 | 240.1 | 39.0 | Gravity Main | Lateral |
| N13074 | 8 | 135.6 | 41.6 | Gravity Main | Lateral |

**Table 3 - Bloomfield Township Flood Mitigation Project Plan
Lateral Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Sewer Type</u> |
|---------------|-----------------|--------------------------|--------------------------|--------------|-------------------|
| N17046 | 15 | 196.0 | 54.7 | Gravity Main | Lateral |
| N17047 | 16 | 260.0 | 74.6 | Gravity Main | Lateral |
| N17051 | 15 | 65.0 | 6.5 | Gravity Main | Lateral |
| N17052 | 16 | 150.6 | 38.0 | Gravity Main | Lateral |
| S09079 | 10 | 296.2 | 110.5 | Gravity Main | Lateral |
| S09088 | 15 | 110.4 | 57.0 | Gravity Main | Lateral |
| N25025 | 10 | 196.5 | 5.9 | Gravity Main | Lateral |
| N25026 | 10 | 204.8 | 204.8 | Gravity Main | Lateral |
| N25027 | 10 | 47.0 | 47.0 | Gravity Main | Lateral |
| S02014 | 15 | 177.0 | 1.5 | Gravity Main | Lateral |
| N24075 | 10 | 64.9 | 64.9 | Gravity Main | Lateral |
| N24076 | 10 | 215.6 | 74.9 | Gravity Main | Lateral |
| N24044 | 8 | 117.4 | 117.4 | Gravity Main | Lateral |
| N24047 | 8 | 23.9 | 23.9 | Gravity Main | Lateral |
| N24051 | 8 | 137.7 | 134.9 | Gravity Main | Lateral |
| N24054 | 8 | 295.2 | 91.2 | Gravity Main | Lateral |
| S24074 | 12 | 269.8 | 85.8 | Gravity Main | Lateral |
| N13084 | 10 | 181.9 | 84.7 | Gravity Main | Lateral |
| N13085 | 10 | 289.5 | 289.5 | Gravity Main | Lateral |
| N13086 | 10 | 317.2 | 83.1 | Gravity Main | Lateral |
| N13088 | 10 | 229.9 | 57.2 | Gravity Main | Lateral |
| N13089 | 10 | 229.7 | 229.7 | Gravity Main | Lateral |
| N13090 | 8 | 190.1 | 190.1 | Gravity Main | Lateral |
| N13091 | 8 | 261.0 | 239.4 | Gravity Main | Lateral |
| N25055 | 10 | 140.2 | 89.1 | Gravity Main | Lateral |
| N25056 | 10 | 248.4 | 248.4 | Gravity Main | Lateral |
| N25057 | 10 | 167.9 | 167.9 | Gravity Main | Lateral |
| N25058 | 10 | 108.0 | 108.0 | Gravity Main | Lateral |
| N25060 | 8 | 36.4 | 36.4 | Gravity Main | Lateral |
| N25062 | 8 | 177.2 | 177.2 | Gravity Main | Lateral |
| N24029 | 12 | 217.1 | 30.4 | Gravity Main | Lateral |
| N24030 | 12 | 218.7 | 218.7 | Gravity Main | Lateral |
| N24007 | 8 | 68.1 | 1.8 | Gravity Main | Lateral |
| N24008 | 8 | 193.4 | 193.4 | Gravity Main | Lateral |
| N24032 | 10 | 313.9 | 228.5 | Gravity Main | Lateral |
| N11034 | 10 | 219.6 | 73.1 | Gravity Main | Lateral |
| N11035 | 10 | 73.4 | 73.4 | Gravity Main | Lateral |
| S24024 | 8 | 121.3 | 65.0 | Gravity Main | Lateral |
| S24028 | 8 | 225.0 | 123.3 | Gravity Main | Lateral |
| N16053 | 8 | 140.8 | 7.8 | Gravity Main | Lateral |
| N16057 | 15 | 35.6 | 35.6 | Gravity Main | Lateral |
| N16058 | 15 | 208.6 | 208.6 | Gravity Main | Lateral |
| N16059 | 15 | 109.2 | 109.2 | Gravity Main | Lateral |
| N16060 | 15 | 230.2 | 208.9 | Gravity Main | Lateral |
| S08061 | 15 | 176.0 | 69.2 | Gravity Main | Lateral |
| S08063 | 15 | 176.4 | 75.0 | Gravity Main | Lateral |
| S13111 | 8 | 239.3 | 94.5 | Gravity Main | Lateral |
| N11070 | 10 | 213.9 | 91.2 | Gravity Main | Lateral |
| N11073 | 10 | 237.3 | 2.3 | Gravity Main | Lateral |
| N11079 | 10 | 222.1 | 7.0 | Gravity Main | Lateral |
| S16004 | 12 | 158.6 | 133.8 | Gravity Main | Lateral |

**Table 3 - Bloomfield Township Flood Mitigation Project Plan
Lateral Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Sewer Type</u> |
|---------------|-----------------|--------------------------|--------------------------|--------------|-------------------|
| S16005 | 12 | 228.3 | 77.4 | Gravity Main | Lateral |
| S16012 | 10 | 322.4 | 70.8 | Gravity Main | Lateral |
| S16013 | 10 | 99.7 | 17.6 | Gravity Main | Lateral |
| N16043 | 8 | 166.4 | 71.7 | Gravity Main | Lateral |
| N16044 | 15 | 100.1 | 100.1 | Gravity Main | Lateral |
| N16045 | 15 | 236.4 | 236.4 | Gravity Main | Lateral |
| N16046 | 15 | 140.6 | 140.6 | Gravity Main | Lateral |
| N16047 | 8 | 93.0 | 76.5 | Gravity Main | Lateral |
| N16048 | 15 | 54.3 | 54.3 | Gravity Main | Lateral |
| N10196 | 8 | 233.9 | 18.9 | Gravity Main | Lateral |
| S07043 | 10 | 200.0 | 103.0 | Gravity Main | Lateral |
| N17001 | 16 | 206.3 | 32.2 | Gravity Main | Lateral |
| N09051 | 8 | 193.2 | 7.3 | Gravity Main | Lateral |
| N17058 | 10 | 204.9 | 72.3 | Gravity Main | Lateral |
| S07021 | 15 | 258.0 | 175.5 | Gravity Main | Lateral |
| S07022 | 15 | 279.0 | 61.8 | Gravity Main | Lateral |
| N07004 | 15 | 41.2 | 41.2 | Gravity Main | Lateral |
| N08069 | 15 | 225.0 | 53.9 | Gravity Main | Lateral |
| N07005 | 15 | 229.0 | 179.4 | Gravity Main | Lateral |
| N07006 | 15 | 293.8 | 293.8 | Gravity Main | Lateral |
| N18149 | 12 | 229.1 | 168.9 | Gravity Main | Lateral |
| S09090 | 15 | 148.6 | 148.6 | Gravity Main | Lateral |
| S09091 | 15 | 236.0 | 236.0 | Gravity Main | Lateral |
| N09133 | 10 | 134.2 | 37.6 | Gravity Main | Lateral |
| N09142 | 10 | 185.9 | 11.8 | Gravity Main | Lateral |
| N09143 | 10 | 169.6 | 134.2 | Gravity Main | Lateral |
| S16120 | 12 | 133.6 | 103.8 | Gravity Main | Lateral |
| S16121 | 10 | 200.5 | 141.9 | Gravity Main | Lateral |
| S16122 | 10 | 191.6 | 50.7 | Gravity Main | Lateral |
| S31021 | 10 | 247.0 | 141.3 | Gravity Main | Lateral |
| S31022 | 10 | 281.0 | 82.4 | Gravity Main | Lateral |
| S31002 | 10 | 301.0 | 301.0 | Gravity Main | Lateral |
| S31003 | 10 | 304.0 | 304.0 | Gravity Main | Lateral |
| S31004 | 10 | 218.0 | 124.5 | Gravity Main | Lateral |
| S31005 | 10 | 216.9 | 155.4 | Gravity Main | Lateral |
| N09096 | 10 | 190.5 | 77.6 | Gravity Main | Lateral |
| S16140 | 8 | 172.5 | 172.5 | Gravity Main | Lateral |
| S16141 | 8 | 279.2 | 125.4 | Gravity Main | Lateral |
| N21020 | 10 | 188.1 | 188.1 | Gravity Main | Lateral |
| N21021 | 10 | 175.7 | 175.7 | Gravity Main | Lateral |
| N21022 | 8 | 44.3 | 44.3 | Gravity Main | Lateral |
| N21023 | 8 | 361.9 | 22.8 | Gravity Main | Lateral |
| N21024 | 15 | 195.4 | 195.4 | Gravity Main | Lateral |
| N21025 | 15 | 167.3 | 167.3 | Gravity Main | Lateral |
| N21027 | 15 | 165.6 | 165.6 | Gravity Main | Lateral |
| N21028 | 15 | 230.0 | 230.0 | Gravity Main | Lateral |
| N21040 | 15 | 131.5 | 131.5 | Gravity Main | Lateral |
| N21041 | 8 | 147.4 | 50.5 | Gravity Main | Lateral |
| N21042 | 15 | 288.0 | 183.8 | Gravity Main | Lateral |
| S31091 | 10 | 80.2 | 46.0 | Gravity Main | Lateral |
| S31095 | 15 | 12.0 | 12.0 | Gravity Main | Lateral |

**Table 3 - Bloomfield Township Flood Mitigation Project Plan
Lateral Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Sewer Type</u> |
|---------------|-----------------|--------------------------|--------------------------|--------------|-------------------|
| N31028 | 10 | 275.8 | 79.8 | Gravity Main | Lateral |
| S31104 | 10 | 169.9 | 16.9 | Gravity Main | Lateral |
| S31105 | 10 | 231.0 | 189.7 | Gravity Main | Lateral |
| N31030 | 10 | 35.5 | 35.5 | Gravity Main | Lateral |
| N31031 | 10 | 134.1 | 134.1 | Gravity Main | Lateral |
| N31032 | 10 | 34.5 | 34.5 | Gravity Main | Lateral |
| N21029 | 15 | 259.8 | 236.3 | Gravity Main | Lateral |
| N21030 | 15 | 170.0 | 18.9 | Gravity Main | Lateral |
| N21036 | 10 | 112.0 | 43.3 | Gravity Main | Lateral |
| N21037 | 10 | 209.4 | 54.4 | Gravity Main | Lateral |
| N21038 | 10 | 85.0 | 29.5 | Gravity Main | Lateral |
| S16052 | 12 | 198.5 | 112.6 | Gravity Main | Lateral |
| S16053 | 12 | 233.4 | 19.5 | Gravity Main | Lateral |
| S16068 | 12 | 204.2 | 15.3 | Gravity Main | Lateral |
| N09052 | 8 | 307.3 | 307.3 | Gravity Main | Lateral |
| N10190 | 8 | 102.1 | 18.8 | Gravity Main | Lateral |
| N09057 | 8 | 124.7 | 6.0 | Gravity Main | Lateral |
| N09062 | 8 | 300.9 | 10.5 | Gravity Main | Lateral |
| S16163 | 15 | 252.0 | 118.4 | Gravity Main | Lateral |
| S16164 | 15 | 346.2 | 60.9 | Gravity Main | Lateral |
| S16168 | 8 | 113.6 | 108.4 | Gravity Main | Lateral |
| S16169 | 8 | 188.6 | 11.1 | Gravity Main | Lateral |
| S16138 | 8 | 364.9 | 13.7 | Gravity Main | Lateral |
| S16139 | 15 | 209.3 | 209.3 | Gravity Main | Lateral |
| S08077 | 16 | 152.7 | 128.2 | Gravity Main | Lateral |
| S08078 | 16 | 92.8 | 57.6 | Gravity Main | Lateral |
| S08082 | 16 | 97.5 | 50.1 | Gravity Main | Lateral |
| S16181 | 15 | 181.9 | 160.6 | Gravity Main | Lateral |
| N16187 | 15 | 95.3 | 7.9 | Gravity Main | Lateral |
| N16188 | 10 | 29.3 | 3.4 | Gravity Main | Lateral |
| N16189 | 10 | 45.9 | 9.1 | Gravity Main | Lateral |
| N16190 | 15 | 28.4 | 2.4 | Gravity Main | Lateral |
| S08020 | 10 | 97.2 | 0.3 | Gravity Main | Lateral |
| S08021 | 10 | 136.5 | 0.7 | Gravity Main | Lateral |
| S08025 | 15 | 217.0 | 29.9 | Gravity Main | Lateral |
| S09112 | 15 | 232.7 | 90.0 | Gravity Main | Lateral |
| S09113 | 15 | 338.3 | 158.1 | Gravity Main | Lateral |
| S08044 | 15 | 203.3 | 46.7 | Gravity Main | Lateral |
| S08045 | 15 | 114.7 | 114.7 | Gravity Main | Lateral |
| S08046 | 15 | 202.1 | 25.5 | Gravity Main | Lateral |
| S16154 | 15 | 122.3 | 31.0 | Gravity Main | Lateral |
| S16155 | 15 | 115.1 | 104.4 | Gravity Main | Lateral |
| S15001 | 15 | 124.4 | 60.5 | Gravity Main | Lateral |
| S16156 | 15 | 211.3 | 161.2 | Gravity Main | Lateral |
| S16159 | 8 | 174.8 | 22.0 | Gravity Main | Lateral |
| S16160 | 15 | 201.7 | 44.5 | Gravity Main | Lateral |
| S16161 | 15 | 201.5 | 190.8 | Gravity Main | Lateral |
| S16162 | 15 | 254.9 | 199.4 | Gravity Main | Lateral |
| N16051 | 15 | 261.2 | 225.6 | Gravity Main | Lateral |
| N16052 | 8 | 300.6 | 28.6 | Gravity Main | Lateral |
| S09104 | 10 | 158.0 | 28.3 | Gravity Main | Lateral |

**Table 3 - Bloomfield Township Flood Mitigation Project Plan
Lateral Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Sewer Type</u> |
|---------------|-----------------|--------------------------|--------------------------|--------------|-------------------|
| S09105 | 10 | 86.3 | 57.1 | Gravity Main | Lateral |
| S09071 | 10 | 230.5 | 87.8 | Gravity Main | Lateral |
| N16078 | 8 | 275.2 | 58.8 | Gravity Main | Lateral |
| N16079 | 15 | 173.2 | 132.0 | Gravity Main | Lateral |
| N16080 | 15 | 346.7 | 346.7 | Gravity Main | Lateral |
| N16104 | 15 | 122.2 | 28.8 | Gravity Main | Lateral |
| N16105 | 15 | 271.0 | 136.9 | Gravity Main | Lateral |
| N16106 | 15 | 105.4 | 87.9 | Gravity Main | Lateral |
| N16107 | 15 | 134.2 | 10.6 | Gravity Main | Lateral |
| N09207 | 6 | 369.4 | 108.9 | Gravity Main | Lateral |
| S08083 | 16 | 238.6 | 131.8 | Gravity Main | Lateral |
| N07007 | 15 | 231.0 | 231.0 | Gravity Main | Lateral |
| N07008 | 15 | 223.0 | 24.6 | Gravity Main | Lateral |
| N08070 | 15 | 362.9 | 24.3 | Gravity Main | Lateral |
| N08071 | 15 | 318.9 | 132.8 | Gravity Main | Lateral |
| N08026 | 15 | 202.0 | 62.1 | Gravity Main | Lateral |
| S08065 | 15 | 337.5 | 125.9 | Gravity Main | Lateral |
| S08068 | 15 | 196.6 | 48.9 | Gravity Main | Lateral |
| S08069 | 15 | 192.8 | 30.6 | Gravity Main | Lateral |
| S08070 | 15 | 26.0 | 6.2 | Gravity Main | Lateral |
| S08071 | 15 | 133.2 | 44.7 | Gravity Main | Lateral |
| N16108 | 15 | 153.0 | 153.0 | Gravity Main | Lateral |
| N16109 | 15 | 196.1 | 196 | Gravity Main | Lateral |
| N16110 | 15 | 97.7 | 98 | Gravity Main | Lateral |
| N16111 | 10 | 222.4 | 38 | Gravity Main | Lateral |
| S09041 | 10 | 109.3 | 64.4 | Gravity Main | Lateral |
| S09043 | 15 | 138.3 | 51.1 | Gravity Main | Lateral |
| S09044 | 15 | 168.9 | 111.7 | Gravity Main | Lateral |
| S09045 | 15 | 299.4 | 163.4 | Gravity Main | Lateral |
| S09046 | 15 | 346.9 | 292.9 | Gravity Main | Lateral |
| N17054 | 10 | 160.6 | 136.8 | Gravity Main | Lateral |
| S07072 | 10 | 181.8 | 10.0 | Gravity Main | Lateral |

**Table 3 - Bloomfield Township Flood Mitigation Project Plan
Lateral Sewers in Floodplain**

| | | | |
|----------------------|----------|-----------|----------|
| Total Number of Runs | | 242 | 80.66667 |
| 8" | 6718 lft | | |
| 10" | 7986 lft | | |
| 12" | 5961 lft | | |
| 15" | 9865 lft | | |
| 16" | 512 lft | | |
| | | 31,042.46 | 128.27 |

Rehabilitation Options

| | | | |
|-------------------|----|----------|----------|
| Rehabilitate Line | \$ | 1,050.00 | each |
| Reline Sewer | \$ | 52.50 | per foot |
| Replace Sewer | \$ | 126.00 | per foot |

Rehabilitate

| | | |
|-------|----|--------------|
| 71 | \$ | 74,550.00 |
| 11330 | \$ | 594,825.00 |
| 5000 | \$ | 630,000.00 |
| | \$ | 1,299,375.00 |

**Table 4 - Bloomfield Township Flood Mitigation Project Plan
Interceptor Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Interceptor Designation</u> | <u>Classification</u> |
|---------------|-----------------|--------------------|--------------------------|--------------|--------------------------------|-----------------------|
| N25041 | 24 | 220.0 | 220.0 | Gravity Main | E-F | Interceptor |
| N25042 | 24 | 326.6 | 326.6 | Gravity Main | E-F | Interceptor |
| N25043 | 24 | 217.7 | 217.7 | Gravity Main | E-F | Interceptor |
| S24076 | 24 | 399.2 | 399.2 | Gravity Main | E-F | Interceptor |
| S24078 | 24 | 129.0 | 129.0 | Gravity Main | E-F | Interceptor |
| N25007 | 24 | 208.0 | 208.0 | Gravity Main | E-F | Interceptor |
| N25008 | 24 | 280.3 | 280.3 | Gravity Main | E-F | Interceptor |
| N25011 | 36 | 363.0 | 31.5 | Gravity Main | E-F | Interceptor |
| S24009 | 24 | 276.3 | 218.9 | Gravity Main | E-F | Interceptor |
| N24041 | 24 | 159.8 | 45.1 | Gravity Main | E-F | Interceptor |
| N24090 | 24 | 197.8 | 197.8 | Gravity Main | E-F | Interceptor |
| S24047 | 24 | 329.0 | 329.0 | Gravity Main | E-F | Interceptor |
| N10018 | 15 | 185.7 | 166.5 | Gravity Main | E-F | Interceptor |
| N10019 | 15 | 229.4 | 203.2 | Gravity Main | E-F | Interceptor |
| N10020 | 8 | 165.1 | 38.3 | Gravity Main | E-F | Interceptor |
| N25029 | 24 | 114.1 | 114.1 | Gravity Main | E-F | Interceptor |
| N25030 | 24 | 294.0 | 294.0 | Gravity Main | E-F | Interceptor |
| N25031 | 24 | 237.6 | 237.6 | Gravity Main | E-F | Interceptor |
| N25032 | 24 | 62.4 | 62.4 | Gravity Main | E-F | Interceptor |
| N25033 | 24 | 202.8 | 202.8 | Gravity Main | E-F | Interceptor |
| N25034 | 24 | 241.0 | 241.0 | Gravity Main | E-F | Interceptor |
| N09151 | 15 | 99.0 | 1.5 | Gravity Main | E-F | Interceptor |
| S24057 | 36 | 332.1 | 332.1 | Gravity Main | E-F | Interceptor |
| S24058 | 24 | 243.1 | 243.1 | Gravity Main | E-F | Interceptor |
| S24059 | 24 | 219.4 | 219.4 | Gravity Main | E-F | Interceptor |
| S24060 | 24 | 331.0 | 331.0 | Gravity Main | E-F | Interceptor |
| N11037 | 15 | 301.4 | 301.4 | Gravity Main | E-F | Interceptor |
| N11042 | 15 | 304.4 | 124.5 | Gravity Main | E-F | Interceptor |
| S24079 | 24 | 240.6 | 240.6 | Gravity Main | E-F | Interceptor |
| S24080 | 24 | 89.8 | 89.8 | Gravity Main | E-F | Interceptor |
| S02022 | 15 | 386.1 | 97.2 | Gravity Main | E-F | Interceptor |
| N11170 | 15 | 197.4 | 197.4 | Gravity Main | E-F | Interceptor |
| N24070 | 24 | 264.0 | 264.0 | Gravity Main | E-F | Interceptor |
| N24071 | 24 | 196.9 | 196.9 | Gravity Main | E-F | Interceptor |
| N24072 | 24 | 119.7 | 119.7 | Gravity Main | E-F | Interceptor |
| N24073 | 24 | 189.2 | 189.2 | Gravity Main | E-F | Interceptor |
| N24074 | 24 | 450.0 | 450.0 | Gravity Main | E-F | Interceptor |
| N24043 | 24 | 75.5 | 75.5 | Gravity Main | E-F | Interceptor |
| N24045 | 24 | 245.3 | 245.3 | Gravity Main | E-F | Interceptor |
| N24046 | 24 | 134.9 | 134.9 | Gravity Main | E-F | Interceptor |
| N24048 | 24 | 125.6 | 125.6 | Gravity Main | E-F | Interceptor |
| N24049 | 24 | 282.3 | 282.3 | Gravity Main | E-F | Interceptor |
| N24050 | 21 | 49.5 | 49.5 | Gravity Main | E-F | Interceptor |
| N24018 | 24 | 290.5 | 290.5 | Gravity Main | E-F | Interceptor |
| N25059 | 24 | 248.1 | 248.1 | Gravity Main | E-F | Interceptor |
| N25061 | 24 | 204.6 | 204.6 | Gravity Main | E-F | Interceptor |
| N25063 | 24 | 161.8 | 161.8 | Gravity Main | E-F | Interceptor |
| N24015 | 24 | 177.1 | 177.1 | Gravity Main | E-F | Interceptor |

**Table 4 - Bloomfield Township Flood Mitigation Project Plan
Interceptor Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Interceptor Designation</u> | <u>Classification</u> |
|---------------|-----------------|--------------------|--------------------------|--------------|--------------------------------|-----------------------|
| N24016 | 24 | 176.3 | 176.3 | Gravity Main | E-F | Interceptor |
| N24017 | 24 | 202.3 | 202.3 | Gravity Main | E-F | Interceptor |
| N24042 | 24 | 176.3 | 176.3 | Gravity Main | E-F | Interceptor |
| N24031 | 24 | 210.6 | 210.6 | Gravity Main | E-F | Interceptor |
| N11036 | 15 | 101.7 | 101.7 | Gravity Main | E-F | Interceptor |
| S24025 | 24 | 52.3 | 52.3 | Gravity Main | E-F | Interceptor |
| S24026 | 24 | 281.6 | 281.6 | Gravity Main | E-F | Interceptor |
| S24027 | 24 | 14.9 | 14.9 | Gravity Main | E-F | Interceptor |
| N11068 | 15 | 180.0 | 180.0 | Gravity Main | E-F | Interceptor |
| N11069 | 15 | 205.0 | 205.0 | Gravity Main | E-F | Interceptor |
| N11071 | 15 | 395.5 | 280.7 | Gravity Main | E-F | Interceptor |
| N11072 | 15 | 172.3 | 50.8 | Gravity Main | E-F | Interceptor |
| N11074 | 15 | 339.4 | 95.6 | Gravity Main | E-F | Interceptor |
| N11075 | 15 | 382.0 | 280.6 | Gravity Main | E-F | Interceptor |
| N11062 | 15 | 388.2 | 371.1 | Gravity Main | E-F | Interceptor |
| S02110 | 15 | 60.1 | 7.0 | Gravity Main | E-F | Interceptor |
| N09079 | 15 | 50.0 | 34.3 | Gravity Main | E-F | Interceptor |
| N09080 | 15 | 50.0 | 50.0 | Gravity Main | E-F | Interceptor |
| N09081 | 15 | 41.9 | 41.9 | Gravity Main | E-F | Interceptor |
| N09109 | 15 | 218.4 | 66.1 | Gravity Main | E-F | Interceptor |
| S31035 | 15 | 125.0 | 26.1 | Gravity Main | E-F | Interceptor |
| S31036 | 15 | 180.0 | 180.0 | Gravity Main | E-F | Interceptor |
| S31037 | 15 | 310.0 | 310.0 | Gravity Main | E-F | Interceptor |
| S31025 | 15 | 286.0 | 43.1 | Gravity Main | E-F | Interceptor |
| S31026 | 15 | 147.5 | 147.5 | Gravity Main | E-F | Interceptor |
| S31027 | 15 | 80.0 | 10.6 | Gravity Main | E-F | Interceptor |
| S31030 | 15 | 231.0 | 18.6 | Gravity Main | E-F | Interceptor |
| N09064 | 15 | 134.1 | 134.1 | Gravity Main | E-F | Interceptor |
| S31092 | 15 | 93.5 | 93.5 | Gravity Main | E-F | Interceptor |
| S31093 | 15 | 272.0 | 272.0 | Gravity Main | E-F | Interceptor |
| N10191 | 15 | 138.1 | 138.1 | Gravity Main | E-F | Interceptor |
| N10192 | 15 | 80.2 | 21.7 | Gravity Main | E-F | Interceptor |
| N09066 | 15 | 320.0 | 162.1 | Gravity Main | E-F | Interceptor |
| N09067 | 15 | 323.0 | 323.0 | Gravity Main | E-F | Interceptor |
| N09068 | 15 | 227.4 | 227.4 | Gravity Main | E-F | Interceptor |
| N10193 | 15 | 220.4 | 40.6 | Gravity Main | E-F | Interceptor |

**Table 4 - Bloomfield Township Flood Mitigation Project Plan
Interceptor Sewers in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Length (ft)</u> | <u>Length in FP (ft)</u> | <u>Type</u> | <u>Interceptor Designation</u> | <u>Classification</u> |
|----------------------|-----------------|--------------------|--------------------------|-------------|--------------------------------|-----------------------|
| Total Number of Runs | | 83.0 | 27.7 | | | |
| 8" | 38 lft | | | | | |
| 15" | 5005 lft | | | | | |
| 21" | 49 lft | | | | | |
| 24" | 9127 lft | | | | | |
| 36" | 363.6 lft | | | | | |
| | 14,583 | | 175.7 | | | |

Rehabilitation Options

| | | |
|-------------------|-------------|----------|
| Rehabilitate Line | \$ 1,050.00 | each |
| Reline Sewer | \$ 52.50 | per foot |
| Replace Sewer | \$ 126.00 | per foot |

Rehabilitate

| | | |
|-------|----|--------------|
| 37 | \$ | 38,850.00 |
| 10000 | \$ | 525,000.00 |
| 4600 | \$ | 579,600.00 |
| | \$ | 1,143,450.00 |

**Table 5 - Bloomfield Township Flood Mitigation Project Plan
Lateral Manholes in Floodplain**

| <u>Owner</u> | <u>Maintenance</u> | <u>Identification</u> | <u>Status</u> |
|--------------|--------------------|-----------------------|---------------|
| BLT | BLT | S02049 | In Floodplain |
| BLT | BLT | S02109 | In Floodplain |
| BLT | BLT | S08005 | In Floodplain |
| BLT | BLT | S08006 | In Floodplain |
| BLT | BLT | S09015 | In Floodplain |
| BLT | BLT | S09031 | In Floodplain |
| BLT | BLT | S09038 | In Floodplain |
| BLT | BLT | S09051 | In Floodplain |
| BLT | BLT | S09055 | In Floodplain |
| BLT | BLT | N09111 | In Floodplain |
| BLT | BLT | N11064 | In Floodplain |
| BLT | BLT | N11065 | In Floodplain |
| BLT | BLT | N11066 | In Floodplain |
| BLT | BLT | N11067 | In Floodplain |
| BLT | BLT | N11073 | In Floodplain |
| BLT | BLT | N11074 | In Floodplain |
| BLT | BLT | N11075 | In Floodplain |
| BLT | BLT | N11076 | In Floodplain |
| BLT | BLT | N11150 | In Floodplain |
| BLT | BLT | N11151 | In Floodplain |
| BLT | BLT | N11152 | In Floodplain |
| BLT | BLT | N11167 | In Floodplain |
| BLT | BLT | N11168 | In Floodplain |
| BLT | BLT | S13045 | In Floodplain |
| BLT | BLT | S13046 | In Floodplain |
| BLT | BLT | S13047 | In Floodplain |
| BLT | BLT | S13056 | In Floodplain |
| BLT | BLT | S13057 | In Floodplain |
| BLT | BLT | S13058 | In Floodplain |
| BLT | BLT | S13066 | In Floodplain |
| BLT | BLT | S13067 | In Floodplain |
| BLT | BLT | S13068 | In Floodplain |
| BLT | BLT | S13069 | In Floodplain |
| BLT | BLT | S13070 | In Floodplain |
| BLT | BLT | S13071 | In Floodplain |
| BLT | BLT | N13009 | In Floodplain |
| BLT | BLT | N13012 | In Floodplain |
| BLT | BLT | N13013 | In Floodplain |
| BLT | BLT | N13016 | In Floodplain |
| BLT | BLT | N13017 | In Floodplain |
| BLT | BLT | N13078 | In Floodplain |
| BLT | BLT | N13083 | In Floodplain |
| BLT | BLT | N16023 | In Floodplain |
| BLT | BLT | N17001 | In Floodplain |
| BLT | BLT | S24011 | In Floodplain |
| BLT | BLT | S24012 | In Floodplain |
| BLT | BLT | S24028 | In Floodplain |
| BLT | BLT | S24029 | In Floodplain |
| BLT | BLT | S24030 | In Floodplain |

**Table 5 - Bloomfield Township Flood Mitigation Project Plan
Lateral Manholes in Floodplain**

| <u>Owner</u> | <u>Maintenance</u> | <u>Identification</u> | <u>Status</u> |
|--------------|--------------------|-----------------------|---------------|
| BLT | BLT | S24038 | In Floodplain |
| BLT | BLT | S24039 | In Floodplain |
| BLT | BLT | S24040 | In Floodplain |
| BLT | BLT | S24041 | In Floodplain |
| BLT | BLT | S24042 | In Floodplain |
| BLT | BLT | S24043 | In Floodplain |
| BLT | BLT | S24049 | In Floodplain |
| BLT | BLT | N21142 | In Floodplain |
| BLT | BLT | N21031 | In Floodplain |
| BLT | BLT | N21033 | In Floodplain |
| BLT | BLT | N21041 | In Floodplain |
| BLT | BLT | N21042 | In Floodplain |
| BLT | BLT | N21043 | In Floodplain |
| BLT | BLT | N21044 | In Floodplain |
| BLT | BLT | N21045 | In Floodplain |
| BLT | BLT | N21046 | In Floodplain |
| BLT | BLT | N21047 | In Floodplain |
| BLT | BLT | N21048 | In Floodplain |
| BLT | BLT | S24071 | In Floodplain |
| BLT | BLT | S24072 | In Floodplain |
| BLT | BLT | S24073 | In Floodplain |
| BLT | BLT | S24074 | In Floodplain |
| BLT | BLT | N24020 | In Floodplain |
| BLT | BLT | N24021 | In Floodplain |
| BLT | BLT | N24022 | In Floodplain |
| BLT | BLT | N24023 | In Floodplain |
| BLT | BLT | N24024 | In Floodplain |
| BLT | BLT | N24025 | In Floodplain |
| BLT | BLT | N24029 | In Floodplain |
| BLT | BLT | N24030 | In Floodplain |
| BLT | BLT | N24046 | In Floodplain |
| BLT | BLT | N24047 | In Floodplain |
| BLT | BLT | N24010 | In Floodplain |
| BLT | BLT | N24011 | In Floodplain |
| BLT | BLT | N24012 | In Floodplain |
| BLT | BLT | N24013 | In Floodplain |
| BLT | BLT | N24076 | In Floodplain |
| BLT | BLT | N24077 | In Floodplain |
| BLT | BLT | N24078 | In Floodplain |
| BLT | BLT | N24079 | In Floodplain |
| BLT | BLT | N24080 | In Floodplain |
| BLT | BLT | N24085 | In Floodplain |
| BLT | BLT | N24086 | In Floodplain |
| BLT | BLT | N24097 | In Floodplain |
| BLT | BLT | N25007 | In Floodplain |
| BLT | BLT | N25008 | In Floodplain |
| BLT | BLT | N25009 | In Floodplain |
| BLT | BLT | N25010 | In Floodplain |
| BLT | BLT | N25011 | In Floodplain |
| BLT | BLT | N25014 | In Floodplain |
| BLT | BLT | N25015 | In Floodplain |

**Table 5 - Bloomfield Township Flood Mitigation Project Plan
Lateral Manholes in Floodplain**

| <u>Owner</u> | <u>Maintenance</u> | <u>Identification</u> | <u>Status</u> |
|--------------|--------------------|-----------------------|---------------|
| BLT | BLT | N25016 | In Floodplain |
| BLT | BLT | N25021 | In Floodplain |
| BLT | BLT | N25022 | In Floodplain |
| BLT | BLT | N25023 | In Floodplain |
| BLT | BLT | N25024 | In Floodplain |
| BLT | BLT | N25025 | In Floodplain |
| BLT | BLT | N25026 | In Floodplain |
| BLT | BLT | N25027 | In Floodplain |
| BLT | BLT | N25028 | In Floodplain |
| BLT | BLT | N25029 | In Floodplain |
| BLT | BLT | N25041 | In Floodplain |
| BLT | BLT | N25042 | In Floodplain |
| BLT | BLT | N25043 | In Floodplain |
| BLT | BLT | N25044 | In Floodplain |
| BLT | BLT | N25045 | In Floodplain |
| BLT | BLT | N25046 | In Floodplain |
| BLT | BLT | N25047 | In Floodplain |
| BLT | BLT | N25062 | In Floodplain |
| BLT | BLT | S31034 | In Floodplain |
| BLT | BLT | S31035 | In Floodplain |
| BLT | BLT | S31049 | In Floodplain |
| BLT | BLT | S31050 | In Floodplain |
| BLT | BLT | S31051 | In Floodplain |
| BLT | BLT | S31052 | In Floodplain |
| BLT | BLT | S31053 | In Floodplain |
| BLT | BLT | S31093 | In Floodplain |
| BLT | BLT | S31094 | In Floodplain |
| BLT | BLT | S31095 | In Floodplain |
| BLT | BLT | S31096 | In Floodplain |
| BLT | BLT | N31008 | In Floodplain |
| BLT | BLT | N31009 | In Floodplain |
| BLT | BLT | N31010 | In Floodplain |
| BLT | BLT | N31011 | In Floodplain |
| BLT | BLT | S07036 | In Floodplain |
| BLT | BLT | S07062 | In Floodplain |
| BLT | BLT | S07063 | In Floodplain |
| BLT | BLT | N07056 | In Floodplain |
| BLT | BLT | N07057 | In Floodplain |
| BLT | BLT | N07058 | In Floodplain |
| BLT | BLT | N07039 | In Floodplain |
| BLT | BLT | N07040 | In Floodplain |
| BLT | BLT | S08054 | In Floodplain |
| BLT | BLT | S08058 | In Floodplain |
| BLT | BLT | S08060 | In Floodplain |
| BLT | BLT | S08062 | In Floodplain |
| BLT | BLT | S08074 | In Floodplain |
| BLT | BLT | S09111 | In Floodplain |
| BLT | BLT | N09158 | In Floodplain |
| BLT | BLT | N09161 | In Floodplain |
| BLT | BLT | N09162 | In Floodplain |
| BLT | BLT | N09163 | In Floodplain |

**Table 5 - Bloomfield Township Flood Mitigation Project Plan
Lateral Manholes in Floodplain**

| <u>Owner</u> | <u>Maintenance</u> | <u>Identification</u> | <u>Status</u> |
|--------------|--------------------|-----------------------|---------------|
| BLT | BLT | N09164 | In Floodplain |
| BLT | BLT | N09168 | In Floodplain |
| BLT | BLT | N09169 | In Floodplain |
| BLT | BLT | N09174 | In Floodplain |
| BLT | BLT | N10172 | In Floodplain |
| BLT | BLT | N10173 | In Floodplain |
| BLT | BLT | N10203 | In Floodplain |
| BLT | BLT | S16007 | In Floodplain |
| BLT | BLT | S16027 | In Floodplain |
| BLT | BLT | S16028 | In Floodplain |
| BLT | BLT | S16029 | In Floodplain |
| BLT | BLT | S16164 | In Floodplain |
| BLT | BLT | S16171 | In Floodplain |
| BLT | BLT | N16143 | In Floodplain |
| BLT | BLT | N16144 | In Floodplain |
| BLT | BLT | N16145 | In Floodplain |
| BLT | BLT | N16147 | In Floodplain |
| BLT | BLT | N16172 | In Floodplain |
| BLT | BLT | N16175 | In Floodplain |
| BLT | BLT | N16176 | In Floodplain |
| BLT | BLT | N16118 | In Floodplain |
| BLT | BLT | N16119 | In Floodplain |
| BLT | BLT | N16120 | In Floodplain |
| BLT | BLT | N16121 | In Floodplain |
| BLT | BLT | N16130 | In Floodplain |
| BLT | BLT | N16131 | In Floodplain |
| BLT | BLT | N24098 | In Floodplain |

Total Number of Manholes in Floodplain 186

Rehabilitation Options and Costs

| | |
|------------------------|-------------|
| Flood Proof Structure | \$ 525.00 |
| Rehabilitate Structure | \$ 1,050.00 |
| Replace Structure | \$ 2,625.00 |

**Table 6 - Bloomfield Township Flood Mitigation Project Plan
Interceptor Manholes in the Floodplain**

| <u>Owner</u> | <u>Maintenance</u> | <u>Identification</u> | <u>Status</u> |
|--------------|--------------------|-----------------------|---------------|
| RCOC | BLT | N25041 | In FP |
| RCOC | BLT | N25042 | In FP |
| RCOC | BLT | N25043 | In FP |
| RCOC | BLT | S24076 | In FP |
| RCOC | BLT | S24078 | In FP |
| RCOC | BLT | N25007 | In FP |
| RCOC | BLT | N25008 | In FP |
| RCOC | BLT | N25011 | In FP |
| RCOC | BLT | S24009 | In FP |
| RCOC | BLT | N24041 | In FP |
| RCOC | BLT | N24090 | In FP |
| RCOC | BLT | S24047 | In FP |
| RCOC | BLT | N10018 | In FP |
| RCOC | BLT | N10019 | In FP |
| RCOC | BLT | N25029 | In FP |
| RCOC | BLT | N25030 | In FP |
| RCOC | BLT | N25031 | In FP |
| RCOC | BLT | N25032 | In FP |
| RCOC | BLT | N25033 | In FP |
| RCOC | BLT | N25034 | In FP |
| RCOC | BLT | N09151 | In FP |
| RCOC | BLT | S24057 | In FP |
| RCOC | BLT | S24058 | In FP |
| RCOC | BLT | S24059 | In FP |
| RCOC | BLT | S24060 | In FP |
| RCOC | BLT | N11037 | In FP |
| RCOC | BLT | N11042 | In FP |
| RCOC | BLT | S24079 | In FP |
| RCOC | BLT | S24080 | In FP |
| RCOC | BLT | S02022 | In FP |
| RCOC | BLT | N11170 | In FP |
| RCOC | BLT | N24070 | In FP |
| RCOC | BLT | N24071 | In FP |
| RCOC | BLT | N24072 | In FP |
| RCOC | BLT | N24073 | In FP |
| RCOC | BLT | N24074 | In FP |
| RCOC | BLT | N24043 | In FP |
| RCOC | BLT | N24045 | In FP |
| RCOC | BLT | N24046 | In FP |
| RCOC | BLT | N24048 | In FP |
| RCOC | BLT | N24049 | In FP |
| RCOC | BLT | N24050 | In FP |
| RCOC | BLT | N24018 | In FP |
| RCOC | BLT | N25059 | In FP |
| RCOC | BLT | N25061 | In FP |
| RCOC | BLT | N25063 | In FP |
| RCOC | BLT | N24015 | In FP |

**Table 6 - Bloomfield Township Flood Mitigation Project Plan
Interceptor Manholes in the Floodplain**

| <u>Owner</u> | <u>Maintenance</u> | <u>Identification</u> | <u>Status</u> |
|--------------|--------------------|-----------------------|---------------|
| RCOC | BLT | N24016 | In FP |
| RCOC | BLT | N24017 | In FP |
| RCOC | BLT | N24042 | In FP |
| RCOC | BLT | N24031 | In FP |
| RCOC | BLT | N11036 | In FP |
| RCOC | BLT | S24025 | In FP |
| RCOC | BLT | S24026 | In FP |
| RCOC | BLT | S24027 | In FP |
| RCOC | BLT | N11068 | In FP |
| RCOC | BLT | N11069 | In FP |
| RCOC | BLT | N11071 | In FP |
| RCOC | BLT | N11072 | In FP |
| RCOC | BLT | N11074 | In FP |
| RCOC | BLT | N11075 | In FP |
| RCOC | BLT | N11062 | In FP |
| RCOC | BLT | S02110 | In FP |
| RCOC | BLT | N09079 | In FP |
| RCOC | BLT | N09080 | In FP |
| RCOC | BLT | N09081 | In FP |
| RCOC | BLT | N09109 | In FP |
| RCOC | BLT | N09064 | In FP |
| RCOC | BLT | N10191 | In FP |
| RCOC | BLT | N10192 | In FP |
| RCOC | BLT | N09066 | In FP |
| RCOC | BLT | N09067 | In FP |
| RCOC | BLT | N09068 | In FP |
| RCOC | BLT | N10193 | In FP |

Total Number of Manholes in Floodplain 74

Rehabilitation Options and Costs

| | | |
|------------------------|----|----------|
| Flood Proof Structure | \$ | 525.00 |
| Rehabilitate Structure | \$ | 1,050.00 |
| Replace Structure | \$ | 2,625.00 |

**Table 7 - Bloomfield Township Flood Mitigation Project Plan
Water Lines in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> |
|----------------------------------|-----------------|--------------------------|--------------------------|
| <i>Dead End Mains</i> | | | |
| N09191 | 8 | 136 | 9.2 |
| N09192 | 8 | 465 | 51.1 |
| N16118 | 8 | 723 | 13.1 |
| S07078 | 8 | 365 | 50 |
| S31139 | 8 | 369 | 30 |
| <i>Transmission Mains</i> | | | |
| N01185 | 12 | 965 | 170 |
| N09015 | 16 | 1251 | 139 |
| N09028 | 16 | 1216 | 18 |
| N10018 | 12 | 159 | 93 |
| N10028 | 12 | 461 | 72 |
| N24013 | 72 | 1210 | 469 |
| S02078 | 12 | 378 | 25 |
| S08013 | 12 | 56 | 48 |
| S08014 | 12 | 271 | 50 |
| S08031 | 12 | 349 | 50 |
| S08034 | 12 | 304 | 152 |
| S08035 | 12 | 1063 | 209 |
| S13118 | 12 | 675 | 254 |
| <i>Other Mains</i> | | | |
| N09186 | 8 | 388 | 107 |
| N09187 | 6 | 586 | 80 |
| N09224 | 8 | 136 | 9 |
| N10029 | 6 | 9 | 9 |
| N10036 | 8 | 1064 | 161 |
| N11019 | 8 | 18 | 18 |
| N11098 | 8 | 333 | 75 |
| N11099 | 8 | 21 | 21 |
| N11100 | 6 | 228 | 228 |
| N11117 | 8 | 147 | 147 |
| N11118 | 8 | 4 | 4 |
| N11119 | 8 | 7 | 7 |
| N11126 | 8 | 225 | 225 |
| N11127 | 8 | 57 | 57 |
| N11128 | 8 | 144 | 144 |
| N11134 | 6 | 30 | 30 |
| N11135 | 8 | 63 | 18 |
| N11151 | 8 | 12 | 12 |
| N11167 | 8 | 526 | 182 |
| N11171 | 8 | 273 | 141 |
| N11217 | 8 | 363 | 208 |
| N13013 | 6 | 465 | 141 |
| N13016 | 8 | 313 | 67 |
| N13078 | 6 | 155 | 36 |
| N13079 | 6 | 592 | 212 |
| N13080 | 6 | 138 | 20 |
| N13081 | 8 | 80 | 80 |

**Table 7 - Bloomfield Township Flood Mitigation Project Plan
Water Lines in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> |
|----------------------------|-----------------|--------------------------|--------------------------|
| N13127 | 8 | 692 | 240 |
| N13128 | 8 | 515 | 94 |
| N13137 | 8 | 369 | 333 |
| N13143 | 8 | 18 | 18 |
| N13144 | 8 | 134 | 134 |
| N17009 | 8 | 317 | 30 |
| N21052 | 8 | 14 | 14 |
| N21053 | 8 | 12 | 12 |
| N21108 | 8 | 128 | 128 |
| N21109 | 8 | 461 | 47 |
| N21110 | 8 | 149 | 149 |
| N21123 | 8 | 224 | 134 |
| N21124 | 8 | 185 | 185 |
| N21140 | 8 | 436 | 154 |
| N24038 | 6 | 541 | 124 |
| N24043 | 8 | 840 | 450 |
| N24068 | 12 | 7 | 7 |
| N24069 | 12 | 7 | 1 |
| N24084 | 6 | 22 | 9 |
| N24096 | 6 | 1334 | 91 |
| N24097 | 12 | 354 | 203 |
| N25034 | 8 | 275 | 110 |
| N25050 | 8 | 31 | 31 |
| N25051 | 8 | 24 | 24 |
| N25064 | 8 | 290 | 32 |
| N25065 | 8 | 541 | 541 |
| N25067 | 8 | 533 | 445 |
| S02160 | 8 | 509 | 220 |
| S02161 | 8 | 382 | 175 |
| S08039 | 6 | 592 | 33 |
| S13120 | 6 | 251 | 158 |
| S16027 | 8 | 66 | 54 |
| S16055 | 8 | 417 | 267 |
| S16159 | 6 | 65 | 33 |
| S16161 | 8 | 162 | 162 |
| S16188 | 8 | 214 | 30 |
| S16191 | 6 | 606 | 26 |
| S16193 | 6 | 603 | 61 |
| S16196 | 8 | 410 | 283 |
| S16203 | 8 | 467 | 131 |
| S24022 | 8 | 540 | 324 |
| S24064 | 8 | 208 | 208 |
| S24081 | 8 | 585 | 151 |
| S24104 | 8 | 179 | 92 |
| S31056 | 8 | 821 | 206 |
| S31057 | 8 | 242 | 190 |
| S31072 | 4 | 40 | 7 |
| Total Length in Floodplain | | | 10,892 |
| Total Number of Runs | | | 92 |

**Table 7 - Bloomfield Township Flood Mitigation Project Plan
Water Lines in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (ft)</u> | <u>Length in FP (ft)</u> |
|------------------------|-----------------|--------------------------|--------------------------|
| Rehabilitation Options | | | |
| Repair | \$ 1,575.00 | each | \$ 72,450.00 |
| Replace | \$ 8.00 | per foot | \$ 43,568.00 |

**Table 8 - Bloomfield Township Flood Mitigation Project Plan
Hydrants in Floodplain**

| <u>ID No.</u> | <u>1/4 Section</u> | <u>Status</u> |
|---------------|--------------------|---------------|
| S08007 | S 8 | In Floodplain |
| S16055 | S 16 | In Floodplain |
| N11003 | N 11 | In Floodplain |
| N11035 | N 11 | In Floodplain |
| N13032 | N 13 | In Floodplain |
| N13039 | N 13 | In Floodplain |
| S13049 | S 13 | In Floodplain |
| S16083 | S 16 | In Floodplain |
| N21038 | N 21 | In Floodplain |
| S24011 | S 24 | In Floodplain |
| N25006 | N 25 | In Floodplain |
| N25012 | N 25 | In Floodplain |
| N25025 | N 25 | In Floodplain |
| N25008 | N 25 | In Floodplain |
| S35003 | S 35 | In Floodplain |

Total Number of Hydrants 15

Rehabilitation Options

Replace Hydrant \$ 2,310.00 each

Costs of Replacement

15 @ \$2310.00 \$34,650.00

**Table 9 - Bloomfield Township Flood Mitigation Project Plan
Gate Valves in Floodplain**

HRC Job No. 20150283

| <u>ID No.</u> | <u>Status</u> | | |
|---------------|---------------|--|------------------|
| N10008 | In floodplain | Total Number of Gatewells in Floodplain | 22 |
| N11004 | In floodplain | | |
| N11051 | In floodplain | Rehabilitation Options | |
| N11053 | In floodplain | | |
| N11054 | In floodplain | Floodproof | \$ 525.00 each |
| N11056 | In floodplain | Rehabilitate | \$ 1,050.00 each |
| N13026 | In floodplain | Replace | \$ 3,150.00 each |
| N13029 | In floodplain | | |
| S16036 | In floodplain | Assume that 1/3 need flood proofing, 1/3 need rehabilitation and 1/3 need replacement | |
| N21027 | In floodplain | | |
| N21028 | In floodplain | | |
| N21030 | In floodplain | Floodproofing | \$ 3,675.00 |
| N21031 | In floodplain | Rehabilitation | \$ 6,300.00 |
| S24012 | In floodplain | Replacement | \$ 18,900.00 |
| S24020 | In floodplain | | |
| N24004 | In floodplain | TOTAL | \$28,875.00 |
| S31021 | In floodplain | | |
| S08012 | In floodplain | | |
| S31042 | In floodplain | | |
| S13096 | In floodplain | | |
| N13071 | In floodplain | | |
| S13079 | In floodplain | | |

**Table 10 - Bloomfield Township Flood Mitigation Project Plan
Road Sections in Floodplain**

| <u>Road Name</u> | <u>Length in Floodplain</u> | <u>Section</u> |
|---|-----------------------------|----------------|
| <i>Prioritized Project</i> | | |
| CLUB DR | 55.7 | Sec8 |
| CLUB DR | 23.8 | Sec8 |
| <i>Dead End Roads</i> | | |
| CANDLESTICK CT | 316.2 | Sec11 |
| PALMS RD | 165.8 | Sec11 |
| CONMOORE CT | 6.7 | Sec16 |
| ARDMORE CT | 123.0 | Sec16 |
| LOCHCREEK WAY | 21.4 | Sec2 |
| SUDBURY WAY | 151.2 | Sec2 |
| MANOR RD | 449.7 | Sec25 |
| MANOR RD | 332.1 | Sec25 |
| LOCHRIDGE RD | 54.6 | Sec8 |
| APPLEWOOD LN | 57.4 | Sec9 |
| <i>Major Roads</i> | | |
| EASTWAYS RD | 67.4 | Sec11 |
| KENSINGTON RD | 657.1 | Sec24 |
| WATTLES RD | 192.6 | Sec24 |
| W BIG BEAVER RD | 253.4 | Sec25 |
| FOURTEEN MILE RD | 39.2 | Sec31 |
| FOURTEEN MILE RD | 24.4 | Sec31 |
| FOURTEEN MILE RD | 48.7 | Sec31 |
| FRANKLIN RD | 118.6 | Sec31 |
| LAHSER RD | 74.8 | Sec9 |
| LAHSER RD | 34.4 | Sec9 |
| LAHSER RD | 164.6 | Sec9 |
| LAHSER RD | 98.3 | Sec9 |
| N ADAMS RD | 469.8 | Sec24 |
| EASTWAYS RD | 251.3 | Sec11 |
| EASTWAYS RD | 137.0 | Sec11 |
| <i>Other Roads in Floodplain</i> | | |
| LAMPLIGHTER LN | 415.0 | Sec11 |
| EASTWAYS RD | 168.6 | Sec11 |
| W ORCHARD HILL DR | 81.8 | Sec13 |
| ROCK SPRING RD | 223.9 | Sec8 |
| SATTERLEE RD | 43.4 | Sec13 |
| SATTERLEE RD | 120.2 | Sec13 |
| GREENTREE RD | 98.7 | Sec13 |
| DOWLING RD | 184.6 | Sec13 |
| EASTOVER DR | 21.6 | Sec13 |
| GREENTREE RD | 278.0 | Sec13 |
| GREENTREE RD | 65.7 | Sec13 |
| EASTOVER DR | 427.5 | Sec13 |
| SUNNINGDALE DR | 23.5 | Sec16 |
| STONELEIGH RD | 506.1 | Sec16 |
| ARDMORE DR | 21.3 | Sec16 |
| STONELEIGH RD | 363.8 | Sec16 |

**Table 10 - Bloomfield Township Flood Mitigation Project Plan
Road Sections in Floodplain**

| <u>Road Name</u> | <u>Length in Floodplain</u> | <u>Section</u> |
|---------------------------------------|-----------------------------|----------------|
| ARDMORE DR | 25.2 | Sec16 |
| STONELEIGH RD | 314.2 | Sec16 |
| OVERBROOK | 59.8 | Sec16 |
| KIRKWAY RD | 21.2 | Sec17 |
| STONELEIGH RD | 404.0 | Sec16 |
| OAKLEIGH DR | 156.3 | Sec21 |
| IRON GATE RD | 16.2 | Sec24 |
| BURNLEY DR | 113.8 | Sec24 |
| MAYWOOD ST | 117.0 | Sec25 |
| BROOKDALE RD | 560.4 | Sec25 |
| LONG LAKE SHORE DR | 51.5 | Sec7 |
| PORTERS LN | 311.7 | Sec8 |
| FOXHALL RD | 135.3 | Sec11 |
| Total Length of Roadway in Floodplain | | 9,720 |
| Rehabilitation Options | | |
| Rehabilitate Road (Mill and Overlay) | \$ | 105.00 |
| Replace Road | \$ | 315.00 |

**Table 11 - Bloomfield Township Flood Mitigation Project Plan
Storm Sewer Runs in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (per GIS)</u> | <u>Length in Floodplain</u> |
|---------------|-----------------|-------------------------------|-----------------------------|
| N11077 | NA | 96.4 | 54.0 |
| N11071 | NA | 39.2 | 39.2 |
| N11072 | NA | 72.9 | 72.9 |
| N11087 | NA | 56.9 | 35.3 |
| N11277 | NA | 37.2 | 8.2 |
| N11135 | NA | 81.4 | 17.6 |
| N21001 | NA | 249.2 | 217.3 |
| N21018 | NA | 170.0 | 170.0 |
| N21011 | NA | 129.3 | 129.3 |
| N21003 | NA | 156.4 | 156.4 |
| S17097 | NA | 78.7 | 31.9 |
| S16392 | NA | 316.8 | 316.8 |
| S16418 | NA | 169.2 | 22.3 |
| S16423 | NA | 30.4 | 24.4 |
| S09078 | NA | 258.8 | 10.5 |
| N11014 | NA | 46.2 | 46.2 |
| S16425 | NA | 135.0 | 135.0 |
| S16422 | NA | 67.5 | 21.4 |
| N11069 | 8 | 23.2 | 23.2 |
| S24058 | 8 | 163.4 | 163.4 |
| S24057 | 8 | 156.5 | 156.5 |
| N25078 | 10 | 481.4 | 286.6 |
| S07004 | 10 | 259.1 | 151.3 |
| S24056 | 10 | 45.5 | 45.5 |
| N11240 | 12 | 180.7 | 35.8 |
| S24052 | 12 | 130.0 | 45.9 |
| S02167 | 12 | 115.4 | 24.9 |
| S02102 | 12 | 29.0 | 0.8 |
| N24006 | 12 | 423.0 | 222.4 |
| N24004 | 12 | 19.2 | 19.2 |
| N24003 | 12 | 85.9 | 85.9 |
| N25107 | 12 | 121.7 | 28.6 |
| N25115 | 12 | 80.3 | 24.6 |
| N25118 | 12 | 125.6 | 125.6 |
| N25123 | 12 | 54.0 | 54.0 |
| N24036 | 12 | 142.4 | 142.4 |
| N11040 | 12 | 25.7 | 25.7 |
| N11045 | 12 | 80.2 | 80.2 |
| N01234 | 12 | 180.0 | 30.6 |
| S16396 | 12 | 149.9 | 17.6 |
| S16427 | 12 | 27.0 | 6.4 |
| S16424 | 12 | 49.0 | 48.1 |
| S16387 | 12 | 41.0 | 41.0 |
| S16388 | 12 | 36.3 | 36.3 |
| N10223 | 12 | 20.1 | 1.8 |
| S16302 | 12 | 214.7 | 89.1 |
| S16357 | 12 | 196.4 | 196.4 |
| S08011 | 12 | 22.9 | 22.9 |
| N24005 | 12 | 57.3 | 57.3 |
| S24014 | 15 | 125.3 | 54.6 |

**Table 11 - Bloomfield Township Flood Mitigation Project Plan
Storm Sewer Runs in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (per GIS)</u> | <u>Length in Floodplain</u> |
|---------------|-----------------|-------------------------------|-----------------------------|
| N11197 | 15 | 169.1 | 23.6 |
| S16410 | 15 | 188.1 | 4.0 |
| S16421 | 15 | 52.3 | 13.0 |
| N16100 | 15 | 32.0 | 11.3 |
| N09184 | 15 | 222.8 | 15.6 |
| S07029 | 15 | 105.0 | 7.9 |
| S24031 | 18 | 132.9 | 23.2 |
| N25067 | 18 | 217.6 | 187.6 |
| N25066 | 18 | 27.3 | 14.5 |
| N25059 | 18 | 114.7 | 8.4 |
| N11023 | 18 | 329.7 | 329.7 |
| S16401 | 18 | 218.5 | 9.8 |
| S16393 | 18 | 254.4 | 45.7 |
| N09297 | 18 | 212.4 | 4.7 |
| N09181 | 18 | 190.6 | 1.0 |
| S16312 | 18 | 154.3 | 12.5 |
| N25085 | 21 | 344.0 | 48.4 |
| N25082 | 21 | 20.4 | 20.4 |
| S01062 | 21 | 310.0 | 134.6 |
| S24001 | 21 | 190.0 | 40.6 |
| N11055 | 21 | 61.5 | 14.3 |
| S16420 | 21 | 96.1 | 13.7 |
| S16077 | 21 | 135.6 | 9.9 |
| N09209 | 21 | 264.8 | 12.7 |
| N08131 | 21 | 112.8 | 18.1 |
| N25075 | 24 | 156.9 | 156.9 |
| N25074 | 24 | 30.0 | 30.0 |
| N01225 | 24 | 100.0 | 23.1 |
| N11084 | 24 | 38.3 | 4.0 |
| N11070 | 24 | 39.1 | 39.1 |
| N11276 | 24 | 74.5 | 33.2 |
| S09048 | 24 | 383.6 | 6.6 |
| S08009 | 24 | 87.0 | 18.0 |
| N11016 | 24 | 37.2 | 37.2 |
| S31136 | 30 | 94.1 | 20.2 |
| N09279 | 30 | 226.0 | 29.5 |
| S13048 | 36 | 279.1 | 132.9 |
| S13088 | 36 | 42.8 | 25.2 |
| S16368 | 36 | 136.0 | 128.5 |
| N09218 | 36 | 116.5 | 116.5 |
| N09256 | 36 | 43.6 | 19.8 |
| S31130 | 38 | 68.7 | 68.7 |
| S31131 | 38 | 68.7 | 68.7 |
| N24069 | 42 | 183.0 | 141.2 |
| N11298 | 42 | 90.3 | 7.1 |
| S17098 | 42 | 179.6 | 7.2 |
| N09210 | 48 | 98.2 | 65.2 |
| S09093 | 48 | 72.9 | 8.0 |
| S08010 | 48 | 47.4 | 9.4 |
| N16150 | 48 | 74.2 | 1.2 |

**Table 11 - Bloomfield Township Flood Mitigation Project Plan
Storm Sewer Runs in Floodplain**

| <u>ID No.</u> | <u>Diameter</u> | <u>Total Length (per GIS)</u> | <u>Length in Floodplain</u> |
|---------------|-----------------|-------------------------------|-----------------------------|
| S16004 | 48 | 34.4 | 15.1 |
| S15001 | 48 | 40.0 | 36.7 |
| N24001 | 48 | 60.7 | 60.7 |
| N10209 | 50 | 46.8 | 24.6 |
| S02001 | | 850.7 | 185.1 |
| | | Total Length | 6398 |
| | | Total Count | 105 |

Rehabilitation Options

| | | | |
|-------------------|----|----------|----------|
| Rehabilitate Line | \$ | 1,050.00 | each |
| Reline Sewer | \$ | 52.50 | per foot |
| Replace Sewer | \$ | 84.00 | per foot |

Rehabilitate

| | | |
|------|----|--------------|
| 45 | \$ | 47,250.00 |
| 2800 | \$ | 147,000.00 |
| 1400 | \$ | 117,600.00 |
| | | \$311,850.00 |

**Table 12 - Bloomfield Township Flood Mitigation Project Plan
Storm Sewer Structures in Floodplain**

| <u>1/4 Section</u> | <u>ID No.</u> | <u>Status</u> |
|--------------------|---------------|---------------|
| N 11 | N11097 | In FP |
| S 17 | S17007 | In FP |
| S 16 | S16038 | In FP |
| N 16 | N16047 | In FP |
| N 11 | N11003 | In FP |
| N 11 | N11011 | In FP |
| N 11 | N11015 | In FP |
| N 25 | N25013 | In FP |
| N 10 | N10027 | In FP |
| S 16 | S16034 | In FP |
| S 16 | S16019 | In FP |
| N 11 | N11161 | In FP |
| N 21 | N21089 | In FP |
| N 1 | N01008 | In FP |
| N 1 | N01002 | In FP |
| S 2 | S02010 | In FP |
| S 2 | S02006 | In FP |
| S 2 | S02008 | In FP |
| N 11 | N11013 | In FP |
| N 11 | N11017 | In FP |
| N 11 | N11012 | In FP |
| N 11 | N11007 | In FP |
| N 11 | N11006 | In FP |
| N 11 | N11005 | In FP |
| S 13 | S13002 | In FP |
| N 21 | N21003 | In FP |
| S 24 | S24003 | In FP |
| S 24 | S24005 | In FP |
| S 24 | S24002 | In FP |
| N 24 | N24003 | In FP |
| N 24 | N24002 | In FP |
| N 24 | N24001 | In FP |
| N 25 | N25003 | In FP |
| S 31 | S31001 | In FP |
| S 7 | S07002 | In FP |
| S 8 | S08003 | In FP |
| N 9 | N09003 | In FP |
| N 9 | N09004 | In FP |
| N 9 | N09007 | In FP |
| N 9 | N09010 | In FP |
| N 9 | N09011 | In FP |
| N 9 | N09012 | In FP |
| S 16 | S16007 | In FP |
| S 16 | S16006 | In FP |
| S 16 | S16005 | In FP |
| S 16 | S16001 | In FP |
| S 16 | S16011 | In FP |
| S 16 | S16002 | In FP |
| N 16 | N16002 | In FP |
| S 17 | S17005 | In FP |
| S 13 | S13003 | In FP |

**Table 12 - Bloomfield Township Flood Mitigation Project Plan
Storm Sewer Structures in Floodplain**

| | | |
|------|--------|-------|
| N 11 | N11057 | In FP |
| N 11 | N11044 | In FP |
| N 11 | N11043 | In FP |
| N 11 | N11042 | In FP |
| N 21 | N21010 | In FP |
| N 21 | N21009 | In FP |
| N 21 | N21008 | In FP |
| N 24 | N24028 | In FP |
| N 25 | N25030 | In FP |
| N 25 | N25032 | In FP |
| N 25 | N25041 | In FP |
| N 25 | N25042 | In FP |
| N 25 | N25043 | In FP |
| S 9 | S09047 | In FP |
| S 16 | S16014 | In FP |
| S 16 | S16016 | In FP |
| S 16 | S16067 | In FP |
| S 16 | S16018 | In FP |
| S 16 | S16102 | In FP |
| S 8 | S08002 | In FP |

Total Number of Structures in the Floodplain 71

Rehabilitation Options and Costs

| | | |
|------------------------|----|----------|
| Flood Proof Structure | \$ | 525.00 |
| Rehabilitate Structure | \$ | 1,050.00 |
| Replace Structure | \$ | 2,625.00 |

Assume that 1/3 need flood proofing, 1/3 need rehabilitation and 1/3 need replacement (10 each)

| | | |
|--------------|-----------|------------------|
| Flood Proof | \$ | 5,250.00 |
| Rehabilitate | \$ | 10,500.00 |
| Replace | \$ | 26,250.00 |
| TOTAL | \$ | 42,000.00 |

**APPENDIX B – INFORMATION FROM
PUBLIC OUTREACH AND MEETINGS**

SIGN IN SHEET

| Name | Department | Email |
|----------------------|------------|--|
| Noah Mehalski | DPW | nmehalski@bloomfieldtwp.org |
| Jim Allen | Assessing | jallen@bloomfield.org |
| Dan Edwards | Police | D.Edwards@BloomfieldTwp.org |
| Rich Davis | DPW | rdavis@bloomfieldtwp.org |
| Olivia Olsztyu-Budny | EESD | olsztyu-budny@gmail.com bloomfieldtwp.org |
| Gregoire Kilpatrick | PRBO | GILKIPATRICK@BloomfieldTwp.org |
| John LeRoy | Fire | JLeRoy@Bloomfieldtwp.org |
| Peter Vlahos | FIRE | pvlahos@bloomfieldtwp.org |
| Karen Stichel | HRC | kstichel@hrc-engr.com |

| Possible Hazards and Emergencies | Risk Level (None, Low, Moderate, or High) | How can risk be reduced? | Who is at risk? | Frequency/Probability of Occurrence | Area Impacted | Economic Impact |
|--|---|--------------------------|-----------------|-------------------------------------|---------------|-----------------|
| Natural Hazards | | | | | | |
| 1. Floods | | | | | | |
| 2. Drought | | | | | | |
| 3. Hurricanes | | | | | | |
| 4. Thunderstorms and Lightning <ul style="list-style-type: none"> • Power outage, severe wind | | | | | | |
| 5. Tornadoes | | | | | | |

| Possible Hazards and Emergencies | Risk Level (None, Low, Moderate, or High) | How can risk be reduced? | Who is at risk? | Frequency/Probability of Occurrence | Area Impacted | Economic Impact |
|---|---|--------------------------|-----------------|-------------------------------------|---------------|-----------------|
| 6. Winter Storms and Extreme Cold <ul style="list-style-type: none"> • Hail, Ice | | | | | | |
| 7. Extreme Heat | | | | | | |
| 8. Earthquakes | | | | | | |
| 9. Landslides and Debris Flow | | | | | | |
| 10. Fires | | | | | | |
| 11. Wildfires | | | | | | |

| Possible Hazards and Emergencies | Risk Level (None, Low, Moderate, or High) | How can risk be reduced? | Who is at risk? | Frequency/Probability of Occurrence | Area Impacted | Economic Impact |
|----------------------------------|---|--------------------------|-----------------|-------------------------------------|---------------|-----------------|
| 12. Climate Change Adaptation | | | | | | |
| Technological Hazards | | | | | | |
| 1. Hazardous Material Incidents | | | | | | |
| 2. Nuclear Power Plants | | | | | | |
| 3. Infrastructure Failures | | | | | | |
| 4. Oil & Gas Well Accidents | | | | | | |
| 5. Pipeline Accidents | | | | | | |

| Possible Hazards and Emergencies | Risk Level (None, Low, Moderate, or High) | How can risk be reduced? | Who is at risk? | Frequency/Probability of Occurrence | Area Impacted | Economic Impact |
|----------------------------------|---|--------------------------|-----------------|-------------------------------------|---------------|-----------------|
| 6. Subsidence | | | | | | |
| 7. Power Outages | | | | | | |
| 8. Sanitary & Storm Sewers | | | | | | |
| Terrorism | | | | | | |
| 1. Explosions | | | | | | |
| 2. Biological Threats | | | | | | |

| Possible Hazards and Emergencies | Risk Level (None, Low, Moderate, or High) | How can risk be reduced? | Who is at risk? | Frequency/Probability of Occurrence | Area Impacted | Economic Impact |
|--|---|--------------------------|-----------------|-------------------------------------|---------------|-----------------|
| 3. Chemical Threats | | | | | | |
| 4. Nuclear Blasts | | | | | | |
| 5. Radiological Dispersion Device (RDD) | | | | | | |
| Human Hazards | | | | | | |
| 1. Transportation Accidents <ul style="list-style-type: none"> • Air, car, public transit, marine | | | | | | |

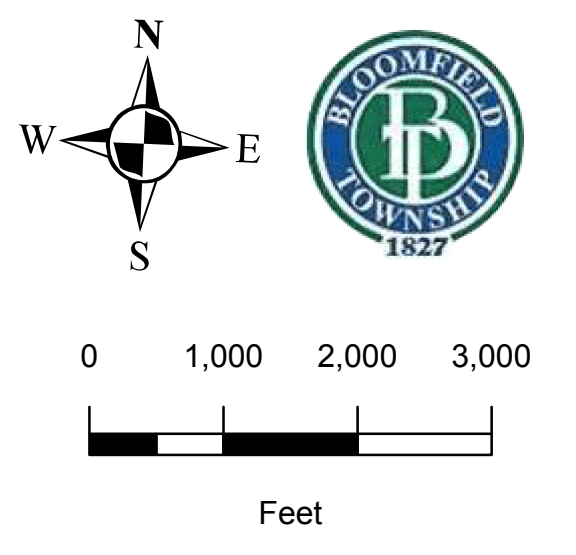
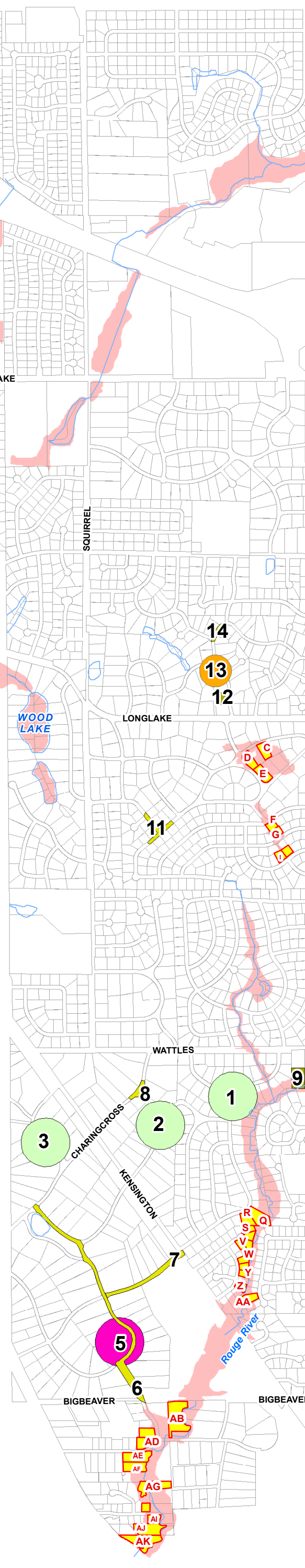
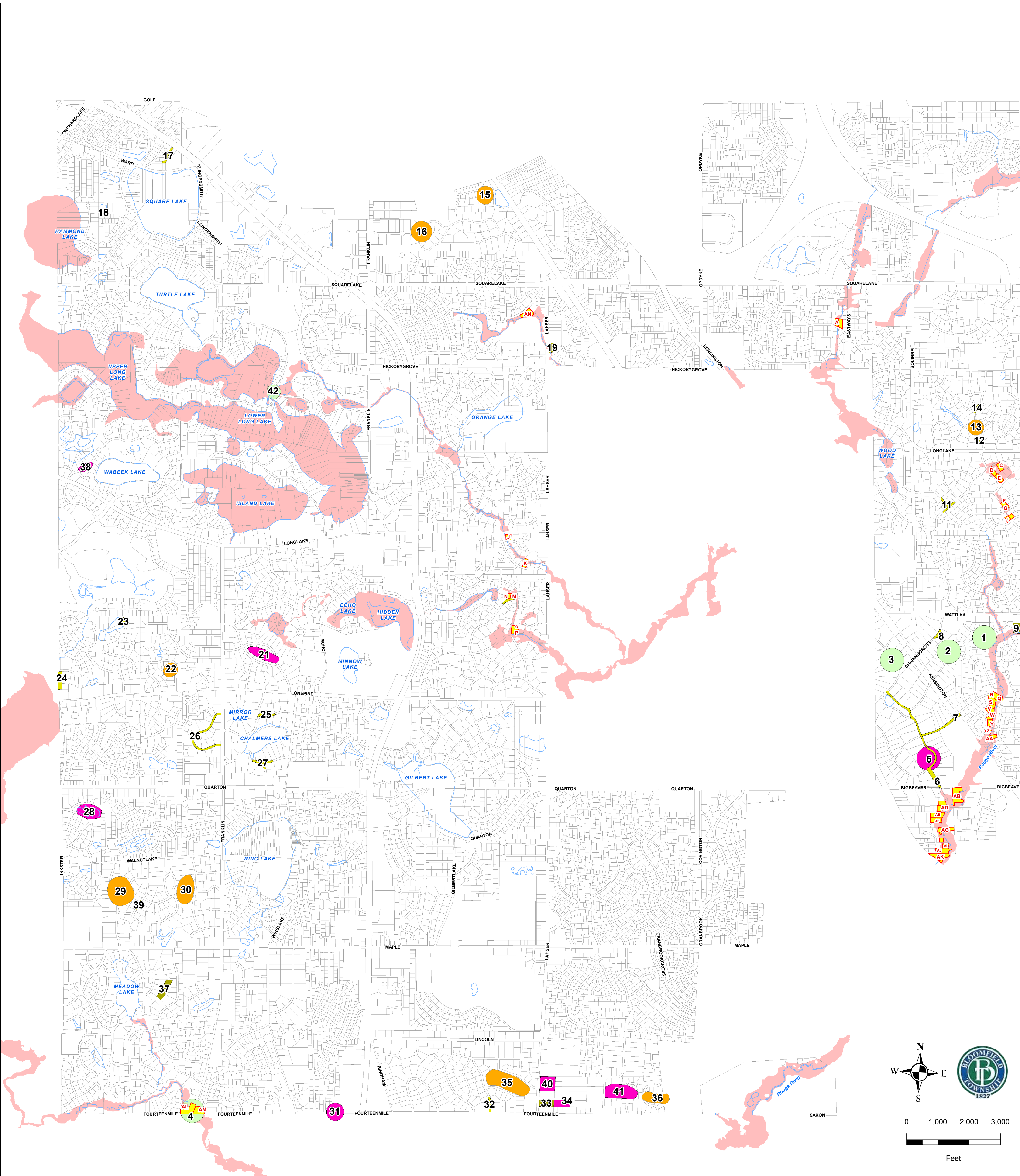
| Possible Hazards and Emergencies | Risk Level (None, Low, Moderate, or High) | How can risk be reduced? | Who is at risk? | Frequency/Probability of Occurrence | Area Impacted | Economic Impact |
|----------------------------------|---|--------------------------|-----------------|-------------------------------------|---------------|-----------------|
| 2. Civil Disturbance | | | | | | |
| 3. Criminal Acts | | | | | | |

Other things to consider:

- Project purpose and goals
- Resources
 - How much?
- Community Outreach
- Communication Plan
- Warning Systems
 - Sirens, radio, tv, etc.

- Evacuation Plans
 - Schools, Community, Workplace
- Escape Routes
 - Where to meet, where to go
- Special Needs Plan
 - Blind, deaf, etc.
- Animals
- Shelters
 - Managing food, water, power and space
- Reaction Time

APPENDIX C – TOWNSHIP MAP



- Properties with Structures in Floodplain
- Lakes & Streams
- Areas of Known Flooding (multiple sources)
- EES
- Road Dept.
- Ordinance Dept.
- Building Dept.
- Parcels
- Floodplain
- 37 Identification Numbers

| | | |
|--|--|---------------|
| Bloomfield Township FEMA Project Plan | | FIGURE |
| JOB NO. 20150283 | HRC HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS SINCE 1915 | 1 |
| DATE January 2017 | | |

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