



Appendix 2: Township of Clark

1 Planning Process and Participation

This appendix is part of the 2016 Union County Hazard Mitigation Plan (HMP) update, and includes only jurisdiction-specific information about the Township of Clark, which is one of the 20 municipalities within Union County that is participating in the plan update. Union County led the planning process and outreach for this update. For a detailed description of the planning process and the public outreach efforts for this update, see Section 3 of the HMP.

The County formed a Steering Committee, which was responsible for key decisions during the plan update. This committee sent a letter to the Mayor of each municipality within the County. The Mayors and local officials selected a single individual to represent the town in the broader process. This person was the point of contact for the plan update, but worked with other municipal employees, consultants, volunteers, and other stakeholders throughout the planning process. This collection of participants, considered the local planning committee, is listed below. The committee was responsible for various decisions that informed the development of this appendix, including: prioritizing the natural hazards that can affect the community, reviewing and prioritizing the mitigation actions that are included in Table 2-1, and informing community leaders about the status of the County mitigation plan update, including this appendix.

The Clark Township Planning Committee evaluated and identified the hazards of concern, completed the request for information (RFI), reviewed the plan documents and vulnerability assessment, identified local stakeholders for outreach, and worked collectively to update the mitigation strategy. In order to complete the update process, Clark Township attended the kickoff meeting held by Princeton Hydro in May 2014. To further the plan development, the Clark Township Planning Committee met with the Consultant to review the plan documents and revise the mitigation strategy in a workshop format on July 24th, 2014.

Table 2-1
Township of Clark Planning Committee Members

Name	Title	Organization	Role in Process
John Laezza	Twp. Business Administrator	Twp. of Clark	Responsible for all aspects of Twp. Admin.
Jerry Fewkes	Emergency Management Coordinator	Clark Office of Emergency Management	Responsible for Twp. Emergency Management Plans
David Testa	Engineer	Grotto Engineering	Twp. Engineering Firm



2. Community Profile

The Township of Clark has a total area of 4.49 square miles and is located in southern Union County, New Jersey. The Township is crossed by the Rahway River and contains the 150-acre Clark Reservoir on the Johnson's Branch of the Rahway River. The Clark Reservoir is part of the Union County Parks System.¹

As of 2010, the population was estimated at 14,756. This is a 1.09 percent increase from the 2000 population, which was estimated at 14,597. See Section 2 of the 2016 Plan update for a map of Union County.

Clark Township occupies land that was once used as hunting grounds for the Lenape Tribe. Clark was primarily a farming community, however over time larger farms subdivided into smaller farms. Development following WWII resulted in conversion of farmland into housing and commercial areas.

The Township of Clark was officially incorporated on March 23rd, 1864. The community had been designated as the 5th Ward of the City of Rahway since 1858, when the City incorporated. In 1864 residents of this district declared their independence from the City and established their own town. The name Clark was chosen for Abraham Clark, a signer of the Declaration of Independence.

A publically elected seven-member Township Council and a Mayor govern the Township. Four Council members represent each of the four wards in the Township. These Council members serve four-year terms, concurrently. The Mayor and three Council members represent the Township at-large. These positions serve four-year concurrent terms, and are staggered from the Ward representative elections.

2.1 Land Use and Development

Clark is a community of mixed use development, with 80 percent of its 4.45 square miles of land area classified as urban/developed. Ninety (90) percent of the parcels within Clark are classified as residential, based on tax assessment data. Between 2004 and 2012, 178 building permits were issued for residential homes within the Township. This is 2.16 percent of the total building permits issued for Union County during this time period. Just over sixty-four (64.04) percent of these permits were for 1- and 2-family homes. Clark has a population density of 3315 people per square mile. The 2010 census estimates that 7.9 percent of the housing within the Township was renter-occupied, much lower than the County average of 30.5 percent renter-occupied properties. The town reports that there has been some infill development with single family housing and a few mixed-use commercial projects, but there are regulations in place to minimize future risk to properties from flooding and stormwater. These recent projects are not located in areas with any known risk to hazards.

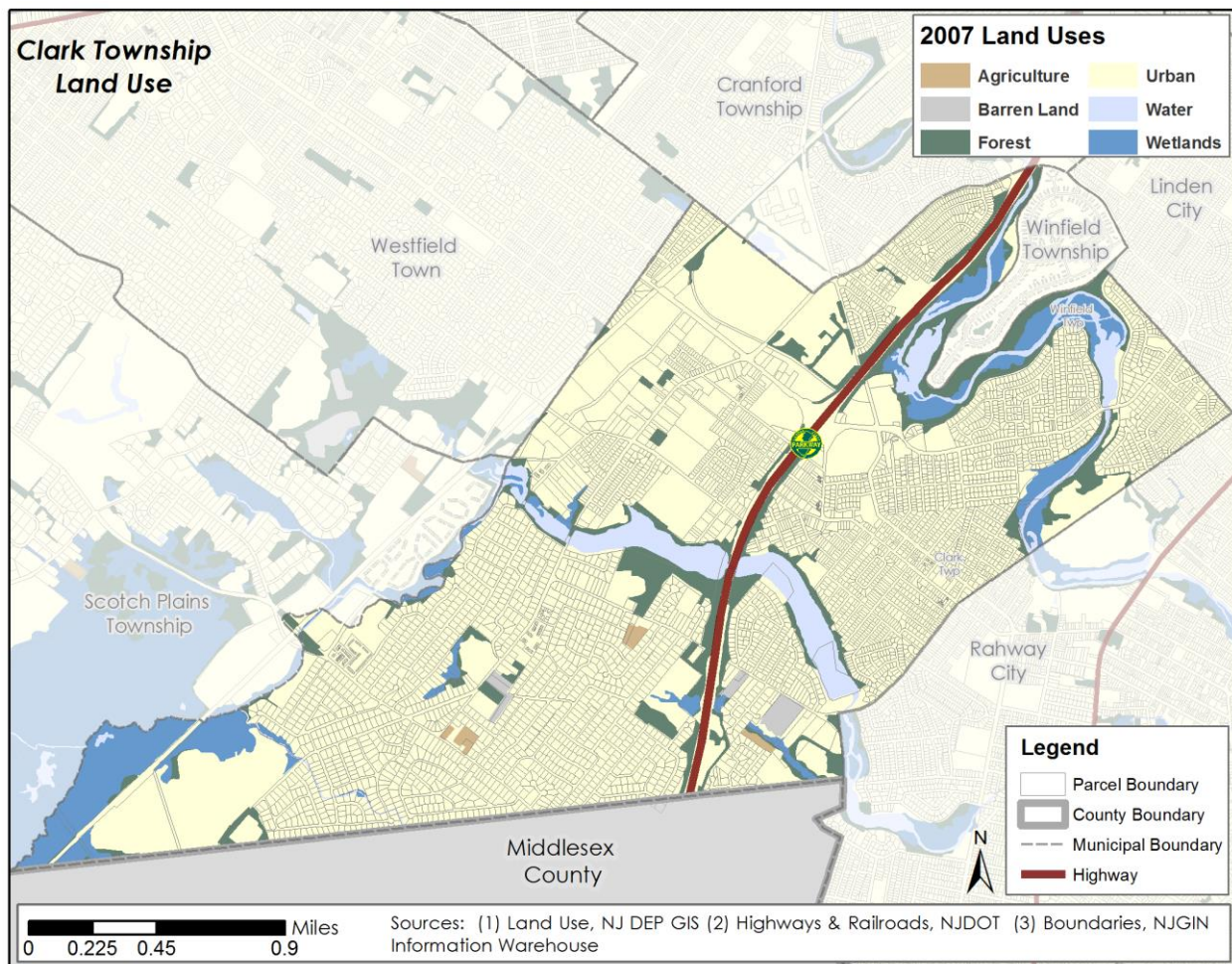
¹ County of Union, NJ. <http://www.ucnj.org/news/2008/0802reservoir.html> Retrieved 10/7/14.



Table 2-1:
Land Use/Land Cover Township of Clark

Land Cover Class	2002	2007	Percent Change	Percent of Total Land ²
Agriculture	17.11	8.67	-49.31%	0.00
Barren Land		15.27		0.01
Forest	238.18	228.50	-4.06%	0.08
Urban	2,279.23	2,282.87	0.16%	0.80
Water	137.33	138.53	0.88%	0.05
Wetlands	177.72	175.73	-1.12%	0.06

Figure 2-1:
Land Use/Land Cover Map Township of Clark



² Uses the 2007 land cover values



3. Hazard Identification and Risk Assessment

This section of the Clark mitigation plan appendix describes the natural hazards and risks that can affect the community. It should be noted that only the hazards with aspects that are unique to the community are included in detail in this appendix.

3.1 Background and Hazard Rankings

Like all the other jurisdictions in Union County, the Township of Clark is potentially subject to the effects of all the hazards that are considered in this mitigation plan. However, the majority of these hazards have minimal impacts on the area, and are discussed in detail in the County part of the mitigation plan. FEMA mitigation planning guidance requires that County mitigation plans include a risk assessment section that “assess[es] each jurisdiction’s risks where there vary from the risks facing the entire planning area” (44CFR 201.6 (c) (2) (iii)). Because the Union County HMP update includes separate appendices for each jurisdiction, this requirement is met in the appendices, while risks that affect the entire County uniformly are discussed in Section 4.

One of the first steps in developing this appendix was for Clark to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern.

Table 2-3 shows Clark’s hazard rankings. The level of discussion and detail about specific hazards in this section are based on these rankings. Hazards that are ranked *high* include the most detail, and to the extent possible include probabilistic assessments of risk, i.e. likely future damages in the community based on the likelihood of occurrence. Hazards that are ranked *medium* have less detail and may in some cases refer to Section 4; they usually do not have probabilistic risk assessments, although potential future losses are discussed based on best available data. Hazards ranked *low* and *none* are not addressed in this appendix, they are discussed Section 4 and there are no significant differences in risk between the County and the municipality.

Table 2-3
Township of Clark Hazard
Identification and Prioritization

Hazard	Priority
Flood	High
Hazmat release – fixed site	Med
Hazmat release – transportation	Med
Ice storm	Med
Severe storm – lightning	Med
Severe storm – winter weather	Med
Straight-line winds	Med
Dam failure	Low
Drought	Low
Earthquake / Geological	Low
Erosion	Low
Extreme temperature – cold	Low
Extreme temperature – heat	Low
Hail	Low
High wind – tornado	Low
Landslide (non-seismic)	Low
Storm surge	Low
Wildfire	Low

**Only the hazards ranked high and medium are analyzed in this appendix*



3.2 Flood Hazard

3.2.1 Type, Location and Extent

As shown in Figure 2-2 below, Clark Township has three significant areas of Special Flood Hazard Area (100-year floodplain). One of them is along the Rahway River, meandering along the north-eastern jurisdictional boundary. The other major SFHA zone is the Robinsons Branch, which can be divided into two segments; the lower, regulated reach is the Middlesex reservoir, controlled by dam and spillway on its southeastern end at the jurisdictional boundary. The upper reach of Robinsons Branch flows along Township's southwester boundary, and exhibits very wide floodplain that Clark shares with neighboring Scotch Plains Township. The fourth SFHA zone is the Pumpkin Patch Brook, a tributary of Robinsons Branch, located in the southwestern corner of the Township and frequently inundated by the backflow from Robinsons Branch. Based on the available NFIP claims, most of the flood losses seem to be along the Pumpkin Patch Brook, with some near the Valley Road bridge area of Robinsons Branch and few along the Rahway River. There are several reported flood losses that are probably caused by the poor interior drainage and backing up of streams, not identified as flooding sources.

The number of flood insurance claims (93) and the average amount of the claims (\$9,724) in Clark suggests a low to moderate level of vulnerability to floods in this community, in terms of both the numbers of claims versus the overall number of parcels (5,311) and the presumed severity of flooding based on the claims amounts.

One of the best resources for determining flood risk in a jurisdiction is Flood Insurance Rate Maps (FIRMs), which are produced by FEMA. The FIRM is the official map of a community on which FEMA has delineated both the special flood hazard areas (1% annual chance of flooding) and the risk premium zones applicable to the jurisdiction. The effective FIRM date for Union County is September 20th, 2006 and is shown in Figure 2-2. The Preliminary FIRM for Union County was released on January 30, 2015. The area within Clark was not studied as part of this map update; there are no changes between the Effective FIRM and the Preliminary FIRM for this Township.

Current FEMA guidance uses the term extent as analogous to potential severity. Clark has several potential flooding sources, but only few with reported losses. Although it is difficult to deduce potential severity accurately, it is safe to assume that the extent of flooding in Clark is relatively moderate; in more severe events such as tropical storms and nor'easters some areas along the Pumpkin Patch Brook and along the Township boundary with Scotch Plains can expect to have more severe flooding.

Table 2-4: Flood-prone Properties

Flood hazard area	Number of Parcels
100-year (1%) floodplain	106
500-year (0.2%) floodplain	35



Table 2-4 shows the number of parcels in Clark Township with at least 60% of their area in the 100-year (1% annual) and 500-year (0.2% annual) floodplain. Although these figures offer some insight into the flood hazard in this jurisdiction, they are not particularly reliable as a risk indicator because in many cases structures and infrastructure (where the risk-producing impacts occur) are not located in the specific areas that are in the floodplain.

3.2.2 Previous Occurrences and the Probability of Future Floods

Minor flooding occurs in Clark Township at least annually, although the severity of these frequent events is not significant. As discussed in Section 4, more significant events like tropical cyclones and nor-easters occur every few years, and can result in significant flooding. Notwithstanding the potential effects of climate change on weather patterns, the Township can probably expect to experience some level of flooding every year or two, with more significant events happening every five to ten years on average. A basic review of NFIP claims for Clark shows a wide range of claims dates, with high concentrations related to the remnants of Hurricane Floyd in 1999, Nor'easter of 2007 and Hurricane Irene in 2011. The main County HMP includes more information about events that have impacted this area.

3.2.3 Flood Impacts and Vulnerability to Flooding

As discussed elsewhere, flood impacts in Clark Township are low to moderate, based on various metrics such as NFIP claims, FEMA PA Program Project Worksheets, and the known history of flooding. There is some history of flood damage to Clark Public Schools by the Rahway River. The most vulnerable parts of the community are those that are in or adjacent to the floodplains of the Rahway, Robinsons Branch and Pumpkin Patch Brook. Although the majority of flood insurance claims in this community are not categorized as repetitive losses, there are nevertheless a few of repetitive claims on properties in the south western corner of the Township. As shown in Table 3-5 below, the jurisdiction has had 93 NFIP claims since 1978, which is relatively low, compared to other jurisdictions in Union County. The average amount of claims is also relatively moderate at \$9,724, which is well below the County average of \$17,407.

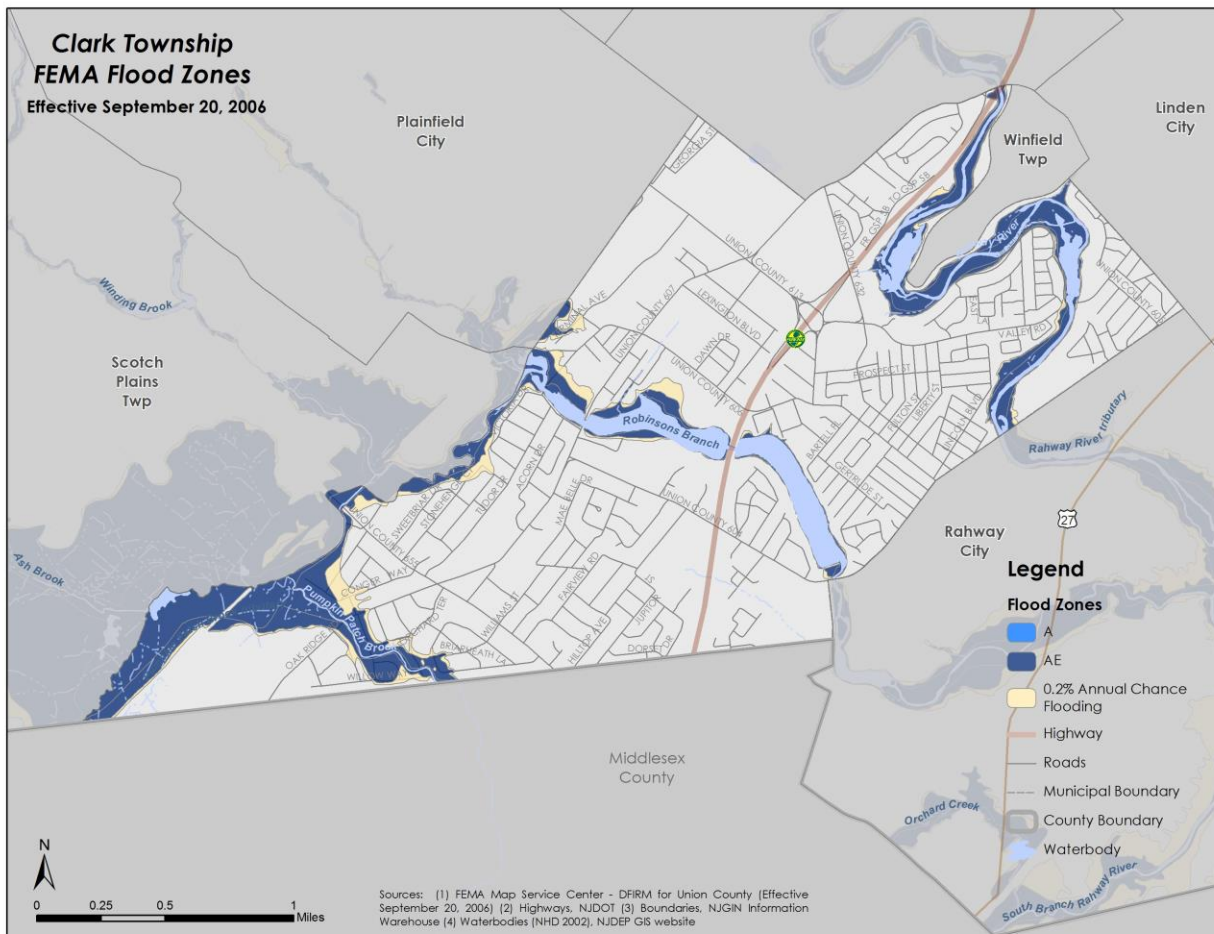
3.2.4 National Flood Insurance Program and Repetitive Loss Properties

To provide a sense of the flood risk in a community it is also beneficial to summarize the policies in force and claims statistics from the National Flood Insurance Program (NFIP). The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. Clark Township



has been a member of the NFIP since 1971.

Figure 2-2
Effective FIRM, dated September 20, 2006
(Source: FEMA)



FEMA NFIP statistics indicate that as of February 2014, federal flood insurance policies were in-force on 124 properties in Clark Township. This represents a dollar value of property and contents coverage totalling \$30,777,900. Between 1978 and 2014, there have been a total of 93 NFIP insurance claims in Clark Township with a total claims value of \$904,321. Table 2-5 compares the number of policies in-force and paid claims in the jurisdiction. The Table shows that Clark comprises 2% of the NFIP policies in-force in Union County.



Table 2-5
NFIP Policies and Claims

Number of Parcels:

Clark:	5,311
Union County:	199,489

Number of Policies In-Force:

Clark	121
Union County:	6,055

Number of Claims:

Clark:	93
Union County:	5,560

Total Paid Claims

Clark:	\$904,321
Union County:	\$96,782,279

Repetitive Loss Properties:

Clark:	11
Union County:	729

Total Building

Clark:	457,999
Union County:	\$46,560,646

Total Contents

Clark:	\$50,771
Union County:	\$46,560,646

Number of Claims

Clark:	35
Union County:	2,115

Average Claim

Clark:	\$14,536
Union County:	\$18,759,126

Clark Township is not a member of FEMA's Community Rating System (CRS), a voluntary program for communities participating in the NFIP. The CRS is an incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. For CRS participating communities, flood insurance premium rates are discounted in increments of 5% based on creditable activities. CRS communities are ranked between 1 and 10, with Class 1 communities receiving a 45% premium discount. The benefits of joining the CRS program were discussed with the Township at a workshop held on February 25, 2015. The Township felt that the relatively low flood risk did not justify the potentially significant staff time and cost associated with joining the program.

It should be noted that NFIP claims are not a direct or completely accurate proxy for flood risk in a community. The data does not include flood damages to structures that had no flood insurance. Also, in some cases, structures or contents may have been underinsured. The NFIP claims data also does not include any damages to public facilities, which may be insured via other means (such as self insurance or non-FEMA policies); such damages may also be addressed through other federal programs such as FEMA's Public Assistance Program.

FEMA requires a discussion of NFIP Repetitive Loss and Severe Repetitive flood loss statistics in hazard mitigation plans. The NFIP defines repetitive loss properties as those with two or more claims of more than \$1,000 each during any rolling ten-year period.

The flood risk assessment method is based on analysis of NFIP data on repetitive flood loss properties. The NFIP defines repetitive loss (RL) properties as those that have received at least two NFIP insurance payments of more than \$1,000 each in any rolling ten-year period. As of February 2014, Union County had 707 such properties based on a query of the FEMA BureauNet NFIP interface. Of this total, 11 were located within Clark Township; this comprises

1.6% of the County total. Table 2-5 provides a comparison of the residential repetitive loss claims for Union County and Clark Township. The tables below include the number of repetitive loss properties, building and contents damages, the total number of claims, and the average claim amounts.



In general, the RL claims can be broken down by focusing on specific areas in the jurisdiction where flood losses are concentrated. For the reasons of practicality, the areas of concentration are defined as streets with three or more repetitive loss properties. Table 2-6 provides a summary of the street with the most cumulative repetitive loss flood insurance claims in Clark. The table includes the building, contents, and total claims data for the properties. Address data about individual sites is omitted for reasons of confidentiality.

Table 2-6
Flood-prone Properties

Street Name	Building	Contents	Total	# Claims	Average
Brookside Terrace	\$85,508	\$3,123	\$88,631	6	\$14,772



3.2.5 Flood Risk to Repetitive Loss Properties in Clark

Residential flood risk is calculated by a simple methodology that uses the FEMA default present-value coefficients from the benefit-cost analysis software modules. To perform this calculation, the flood insurance claims data were reviewed to determine an approximate period over which the claims occurred. This method should be used only for very general estimates of flood risk because the NFIP data represents only part of the flood losses in any jurisdiction. This is because there are always properties that are uninsured or under-insured. Most of the flood claims in the most recent query occurred between 1999 and 2011, a period of 13 years.

As shown in Table 2-7, there have been 35 flood insurance claims in the 13-year period, for an average number of claims per year of 2.7. Based on a 100-year horizon and a present value coefficient of 14.27 (the coefficient for 100 years using the mandatory OMB discount rate of 7.0 percent), the projected flood risk to these properties is \$558,471. It must be understood that individuals can obtain and cancel flood insurance policies, and the flood hazard depends on many variables, including the weather, so this projection is simply an estimate of potential damages. Nevertheless, it offers a useful metric that can be used in assessing the potential cost effectiveness of mitigation actions, although in this case, site-specific loss estimates are fairly small, meaning that the amount of grant funds that could be expended on projects will probably be limited.

3.2.6 Flood Risk to Severe Repetitive Loss Properties in Clark

The definition of Severe Repetitive Flood Loss is included in the County portion of this mitigation plan. As of February 2014, Clark Township had one NFIP severe repetitive flood loss property. Data for this property is insufficient to perform a meaningful risk assessment.

Table 2-7
Projected 100-year Flood
based on Past Flood Insurance Claims

Data	Value
Period in years	13
Number of claims	35
Average claims per year	2.7
Total value of claims	\$508,770
Average value of claims per year	\$39,136
Projected risk, 100-year horizon	\$558,471



3.3 Hazardous Materials Releases – Fixed Sites and Transportation

3.3.1 Fixed Sites

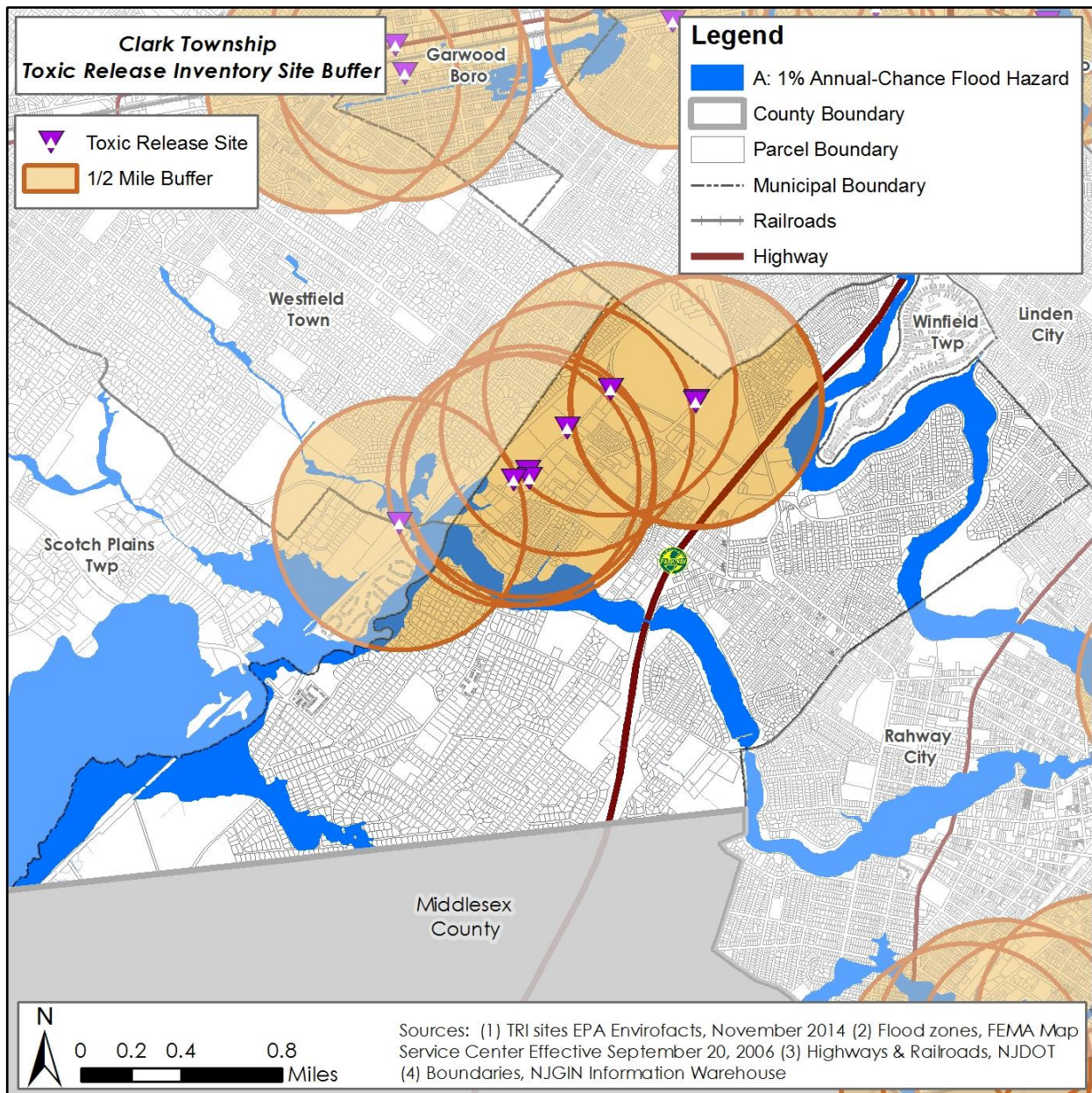
The US Environmental Protection Agency maintains a database of toxic releases by site. The database is known as the Toxic Release Inventory (TRI), and provides basic information about the locations, types and amounts of releases of hazardous materials. This is explained in detail in the County section of this mitigation plan. Union County has 138 such sites, seven of which are in Clark Township (and one on the outside within half-mile buffer). The following graphic shows the TRI sites in an around the jurisdiction, with a half-mile buffer depicted. The map shows five of the seven sites are located along Terminal Avenue in northwest Clark Township. This does not suggest a specific level of increased risk within the buffer, however, as the potential for exposure and possible effects are dependent on many factors, most of which are not explained in this appendix.

3.3.2 Transportation

Because of the large presence of the chemical and oil industries in eastern New Jersey, many major transportation routes and rail lines carry a high volume of hazardous materials, many of which could cause damage, death and injury to Union County under some circumstances. As noted, there are few open sources of information about the materials that are transported on these routes, the routes themselves, or the carriers' schedules. For more information, contact the New Jersey State Department of Environmental Protection or local Emergency Management offices.



Figure 2-4:
Map of Toxic Release Inventory Sites





3.4 Straight Line Wind Hazard

3.4.1 Type, Location, and Extent

The high wind – straight-line wind hazard (including type, location and extent) is uniform across Union County, and is discussed in detail in the County portion of this mitigation plan (see Section 4). For reasons of brevity these details are not repeated here. There are no wind hazards that are unique to Clark Township.

3.4.2 Previous Occurrences and the Probability of Future Occurrences

Previously occurrences and the probability of future events are the same for Clark Township as for Union County. Refer to Section 4 for that information at a County level.

3.4.3 Straight Line Wind Impacts and Vulnerabilities to the Hazard

Clark Township is a typical residential community, predominated by balloon-frame and unreinforced masonry residential structures, the majority of which have gable or hip roofs. As discussed in the County part of the plan, wind profiles in this area of the country indicate a relatively low potential for severe events, and adequate construction techniques and building codes have generally sufficed to keep risks low. There are two main sources of potential wind damage in such communities: (1) structural damage to residential and non-residential buildings, and (2) power losses, mainly due to trees falling on above-ground lines. There are established methodologies for completing general risk assessments for these hazards. These are explained in detail in the County portion of the plan (see Section 4). Table 2-8 below summarizes annual straight-line wind risks and cumulative risks over 50- and 100-year planning horizons in Clark Township. Risks are in seven discreet categories: building damages, contents damages, inventory loss, relocation costs, business income lost, rental income lost and wages lost.

**Table 2-8: Straight-line Wind Risks for Range of Loss Types,
Township of Clark
Annualized and 50- and 100-year Planning Horizons**

Occupancy Class	Total SF	Total Annualized Damages	50-year Risk	100-year Risk
Residential	7,947,540	\$214,391	\$2,958,811	\$3,059,146
Commercial	2,228,931	\$33,252	\$458,912	\$474,474
Industrial	713,716	\$9,649	\$133,166	\$137,682
Agricultural	56,196	\$738	\$10,192	\$10,537
Religious	168,698	\$2,387	\$32,943	\$34,060
Government	21,300	\$704	\$9,720	\$10,049
Education	180,103	\$2,233	\$30,819	\$31,864
Total	11,316,485	\$263,355	\$3,634,562	\$3,757,812



The next table shows power loss risks in Clark Township, again annualized and for 50- and 100-year planning horizons. The methodology for these calculations (and additional jurisdiction-level data) can be found in Section 4 of the County plan.

Table 2-9: Power Loss Horizons

Period	Risk Value
Annual	\$124,859
50-year planning horizon	\$1,723,147
100-year planning horizon	\$1,781,644

3.5 Winter Weather Hazard in the Community

3.51 Type, Location, and Extent

Because the hazards severe storm – winter weather, ice storms and extreme temperatures – cold are closely related, they are combined in this subsection of the appendix. Severe storms and winter weather risks are discussed in detail in Section 4 of the County portion of this mitigation plan. There are no significant differences in the type, location or extent of this hazard between the County and Clark Township, and there are no aspects of the hazard that are unique to this jurisdiction.

3.5.1 Previous Occurrences and the Probability of Future Occurrences

Previous occurrences of the severe storm-winter weather/ice storm/extreme temperature - cold hazards are discussed in detail in the County portion of this hazard mitigation plan (see Section 4), and for reasons of brevity are not repeated here. There are no meaningful differences between the County as a whole versus Clark Township with regard to occurrences or the future probability of these hazards.

3.5.2 Severe Storm – Winter Weather Impacts and Vulnerabilities to the Hazard

The impacts from these three hazards in Clark Township are substantially similar to the County as a whole, and include lost productivity, traffic accidents, downed trees (and related power losses), medical events (such as heart attacks), and hypothermia (which rarely causes any significant or long-term problems). The community has no unique or pronounced vulnerabilities to these hazards. Like most established communities, over time Clark Township has adapted its systems and infrastructure to minimize the effects of cold weather and associated meteorological effects. In rare cases, buildings may experience structural problems due to snow loads, and public or private infrastructure may fail due to freezing. However, these problems are usually minor and are addressed by private citizens (through their own work, or via insurance proceeds) or by the government in the case of infrastructure.

Perhaps the most significant potential impacts of winter weather are traffic accidents (with related injuries and fatalities), and power losses from ice and downed trees. For the most part, damage to vehicles is addressed via private insurance, records of which are proprietary. However, there are



national statistics regarding injuries and deaths related to such weather. Local values for injuries and deaths can be deduced from national statistics. Figures for Clark Township are displayed in the table below. Refer to the County portion of this mitigation plan for source citations and an explanation of the methodology.

**Table 2-10: Winter Storm-related Risks (traffic injuries and fatalities),
Township of Clark 50- and 100-year Planning Horizons**

	Injuries (combined)	Deaths
Snow/sleet	\$2,026,674	\$230,152
Icy pavement	\$1,576,768	\$173,587
Snow/sleet	\$1,519,822	\$152,936
Total annual risk (all hazards)	\$5,123,264	\$556,674
50-year risk	\$70,701,048	\$7,682,107
100-year risk	\$73,108,983	\$7,943,744

An additional source of risk from cold and winter weather is hypothermia deaths. Although the risk from this hazard is relatively small, it can nevertheless be calculated by deduction from national statistics. Annual deaths nationwide were obtained from a U.S. Centers for Disease Control report (National Health Statistics Reports, Deaths Attributed to Heat, Cold and Other Weather Events in the United States, 2006-2010).

**Table 2-11
Risks from Hypothermia: Annually and 50- and 100-year Planning Horizons**

2010 Population	% of US	Annual Death \$	50-year Horizon	100-year Horizon
14,756	0.0047%	\$398,172	\$5,494,771	\$5,681,912

3.6 Lightning

3.6.1 Type, Location and Extent

Lightning weather risks are discussed in detail in Section 4 of the County portion of this mitigation plan. There are no significant differences in the type, location or extent of this hazard between the County and Clark Township, and there are no aspects of the hazard that are unique to this jurisdiction.

3.6.2 Previous Occurrences and the Probability of Future Occurrences

Previous occurrences of the lightning hazard are discussed in detail in the County portion of this hazard mitigation plan (see Section 4), and for reasons of brevity are not repeated here. There are no meaningful differences between the County as a whole versus Clark Township with regard to occurrences or the future probability of this hazard.



3.6.3 Impacts and Vulnerabilities to the Hazard

Lightning impacts in Clark Township are substantially similar to the County as a whole. These include occasional impacts on electrical systems, and (very infrequently) damage to structures. The most common impact is damage to trees. The community has no unique or pronounced vulnerabilities to lightning, but it is possible to complete a basic quantitative estimate of potential risks from lightning deaths and damages based on open source information found in a publication entitled Lightning Fires and Lightning Strikes (Marty Ahrens, June 2013; National Fire Protection Association, Fire Analysis and Research Division). The County portion of this hazard mitigation plan includes citations and further discussion of the methodology and figures (See Section 4). The table below provides estimated risks in Clark Township from lightning deaths and damages based on statistics described in this publication.

Table 2-12
Lightning-related Risks, Clark Township
Annual, 50- and 100-year Planning Horizons

Horizon	Deaths	Damages
Annual risk	\$8,170	\$5,263
50-year risk	\$112,743	\$72,623
100-year risk	\$116,583	\$75,096



3.7 Public and Critical Facilities

The Township of Clark has no critical facilities in the floodplain and has no history of damage from any hazards.

Facility Name	Street Address
Valley Rd. Sch.	150 Valley Rd.
C.H. Kumpf Sch.	59 Mildred Ter.
Public Library	303 Westfield Ave
Post Office	1087 Raritan Rd.
Fire H.Q.	250 Broadway
St. John the Apostle Sch.	Valley Rd.
F.K. Hehnly Sch.	590 Raritan Rd.
Municipal Building	430 Westfield Ave
A.L. Johnson H.S.	365 Westfield Ave.
Police H.Q.	315 Westfield Ave
Fire Sta.	875 Raritan Rd.
Mother Seton Regional H.S.	Valley Road
St. Agnes Sch.	342 Madison Hill Road
Featherbed Lane School	801 Featherbed Lane
1 st Aid Squad	875 Raritan Rd
Nursing & Rehab Center	1213 Westfield Ave



4 Township of Clark Mitigation Strategy

This section contains goals, objectives, and action items for the Township of Clark, as part of the Union County Plan Update. The goals are similar to the goals outlined in the County plan, but the objectives are adjusted for the jurisdiction. The definitions for these terms can be found in Section 5 of the Union County Plan Update.

4.1 Goals

- Goal 1: Improve **LOCAL KNOWLEDGE** about the potential impacts of hazards, and the identification of specific measures that can be taken to reduce their impacts
- Goal 2: Improve **DATA COLLECTION, USE, AND SHARING** to reduce the impacts of hazards
- Goal 3: Improve **CAPABILITIES, COORDINATION, AND OPPORTUNITIES** to plan and implement risk reduction projects, programs, and activities
- Goal 4: Pursue a range of **MITIGATION OPPORTUNITIES**, including addressing NFIP repetitive and severe repetitive loss properties, and reducing risk to public properties and infrastructure

4.2 Objectives

- Objective 1.A: Increase risk awareness among officials and citizens.
- Objective 1.B: Maintain and improve jurisdiction-level awareness regarding funding opportunities for mitigation, including that provided by FEMA and other federal and State agencies.
- Objective 2.A: Improve the availability and accuracy of risk- and mitigation-related data at the local level, as the basis for planning and development of risk-reduction activities.
- Objective 2.B: Ensure that government officials and local practitioners have accurate and current information about best practices for hazard mitigation planning, project identification, and implementation.
- Objective 2.C: Develop and maintain detailed data about critical facilities, as the basis for risk assessment and development of mitigation options.
- Objective 3.A: Continue support of hazard mitigation planning, project identification, and implementation at the municipal level.
- Objective 3.B: Continue close coordination with the County in a range of risk-related areas, such as FEMA programs, mitigation planning, development of hazard mitigation projects, etc.
- Objective 3.C: Work towards increasing the integration of mitigation principles and activities in a range of local regulations, plans, ordinances and activities.
- Objective 3.D: Maintain and improve coordination with surrounding communities with regard to understanding and reducing risks.
- Objective 4.A: Facilitate development and timely submittal of project applications meeting state and federal guidelines for funding (1) for RL and SRL properties and (2) for hardening/retrofitting infrastructure that is at the highest risk.
- Objective 4.B: Maintain and enhance local planning and regulatory standards related to future development and investments.



4.3 Mitigation Strategy

4.3.1 New Mitigation Actions

The table below lists prioritized mitigation projects and actions identified by the Township of Clark. This is Clark's first mitigation strategy as part of a multi-jurisdictional hazard mitigation plan; all of the projects reflect current priorities and efforts.

Mitigation Action, Program, or Project	Hazard	Priority	Rationale/Benefit	Resources	Time Frame	Estimated Cost
Purchase generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building located at 430 Westfield Avenue	All-Hazards	High	Generator will maintain Township operations and while the building is used as shelter.	Grants/Capital Funds	As funding permits	1.5 million
Purchase generators for Police Station and Fire Station Headquarters and Fire Station #2.	All-Hazards	High	Generator will maintain critical Township operations	Grants/Capital Funds	As funding permits	1.2 million
Install generator at the Clark Public Library to better utilize that building as a warming center/charging station area.	All-Hazards	Medium	Improve options for population during a power outage event	Grants/Capital Funds	As funding permits	400,000
Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	All-Hazards	High	To improve awareness	OEM Coordinator	Ongoing	Staff Time
Acquisition/elevation of repetitive loss and severe repetitive loss properties in flood-prone areas.	Flood	High	Reduce exposure to flooding for properties and life	Grants	As funding permits	Varies



4.4 Capability Assessment

As part of this plan update each town self-assessed their existing planning and regulatory tools, communication and emergency response capabilities, staff and personnel, and their capabilities to leverage municipal funds to achieve hazard mitigation planning objectives. This capability assessment should be updated as part of the ongoing maintenance process.

4.4.1 Planning and Regulatory

Tool	Township Has (y/n)
Zoning Ordinance	Y- Codified 2011
Subdivision Ordinance	Y
Flood Damage Prevention Ordinance (per NFIP)	Y
Special Purpose Ordinances (e.g. wetlands, critical or sensitive areas)	N
Stormwater Management Plan/Ordinance	Y
Comprehensive Plan / Master Plan	Y
Capital Improvements Plan	Y
Site Plan Review Requirements	Y
Habitat Conservation Plan	N
Economic Development Plan	N
Local EOP	Y-8/2012
Continuity of Operations Plan	N
Post Disaster Recovery Plan or Ordinance	N
Wildfire Protection Plan	N/A
Real Estate Disclosure req.	Y – State requirement
Other (e.g. steep slope ordinance, local waterfront revitalization plan)	N
Freeboard	N
Cumulative Substantial Damages	N
Shoreline Management Plan	N/A
CERT Team	Y- Started in 2004

4.4.2 Communication and Emergency Response

	Does the Township have this (y/n)
Outdoor warning system	N
Nixle	N
Auto-Dialer/Reverse 911/Emailer	N
Social Media	N
Website Updates	Y
Other Emergency Communications	Y – radio
Mutual Aid Agreements	Y
Emergency Operations Center	Y
Evacuation Vehicles	Y
Swift-water rescue	N
Shallow water boats	N



4.4.3 Staff/Personnel

	Does this Township have this expertise on staff?
Staff with expertise or training in benefit/cost analysis	Y
Grant Writer(s)	N
Emergency Manager	EM Coordinator
Professionals trained in conducting damage assessments	Y
Scientist familiar with natural hazards in the municipality.	N
Personnel skilled or trained in "GIS" applications	N
Surveyor(s)	Y
NFIP Floodplain Administrator	Y – Engineer
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y

4.4.5 Fiscal Capabilities

Fiscal Mechanism	Does the Township have this capability?
Community development Block Grants (CDBG)	Y
Capital Improvements Project Funding	Y
Authority to Levy Taxes for specific purposes	N
User fees for water, sewer, gas or electric service	Y
Impact Fees for homebuyers or developers of new development/homes	N
Incur debt through general obligation bonds	Y
Incur debt through special tax bonds	Y
Incur debt through private activity bonds	N
Withhold public expenditures in hazard-prone areas mitigation grant programs	Y



5. Plan Maintenance and Adoption

5.1 Plan Maintenance

The Township of Clark will review this Appendix of the County's hazard mitigation plan appendix each year and give the County's HMP Coordinator an annual progress report. The Emergency Management Coordinator is responsible for convening the LPC, initiating the plan review, and submitting the annual progress report. The LPC may use worksheets #1 and #3 in the FEMA 386-4 guidance document, to facilitate the review and progress report. FEMA guidance worksheets are provided in Appendix G. Local progress reports shall be provided to the County HMP Coordinator at least two weeks prior to the annual plan review meeting.

Additionally, the LPC will convene and review the plan when major hazard events impact the jurisdiction, potentially yielding opportunities for mitigation grant funding, or when new information suggests that plan elements do not accurately reflect the community's risk or its mitigation priorities.

If necessary, the Emergency Management Coordinator will convene a meeting of the LPC to review and approve all changes. The Borough retains the discretion to implement minor changes to the document without formal procedures involving the Township Council subject to local policies and regulations.

In addition to the annual progress report, the Township of Clark will provide Union County with a copy of the written notice of any changes to the jurisdictional appendix at the time such changes are implemented.

The LPC shall document, as needed and appropriate:

- Hazard events and losses in Clark and the effects that mitigation actions have had on impacts and losses,
- Progress on the implementation of mitigation actions, including efforts to obtain outside funding for projects,
- Any obstacles or impediments to the implementation of actions,
- Additional mitigation actions believed to be appropriate and feasible,
- Any changes to local capabilities,
- Efforts to integrate the information included in this plan into other local planning mechanisms including, but not limited to, the comprehensive plan, capital improvement planning, budgeting, zoning amendments, and variance approvals,
- All public and stakeholder input and comment on the Plan that has been received by the Township.
- Copies of any grant applications filed on behalf of the Township



5.1.2 Continued Public Input

The Township of Clark is committed to incorporating public input into its ongoing hazard mitigation planning. The public will have an opportunity to comment on the Plan prior to any changes and during the 5-year plan update. The annual progress reports will be posted on the County mitigation website in addition to the adopted Plan. The Township will place a link to the plan on the municipal website.

All public comments and input on the plan will be recorded and addressed, as appropriate. Opportunity to comment on the plan will be provided directly through the County's website. Public comments can also be submitted in writing to the County's HMP Coordinator. All public comments shall be addressed to: Union County Office of Emergency Management c/o All Hazards Pre-Disaster Mitigation Plan Coordinator 300 North Ave East, Westfield, NJ 07090.

The Township of Clark's LPC shall ensure that:

- Copies of the latest approved Plan are available for review at Town Hall along with instructions to facilitate public input and comment on the Plan.
- Public notices are made as appropriate to inform the public of the availability of the Plan, particularly during Plan update cycles.
- For minor changes to this appendix, the Township of Clark will post a notice on the Township's website and invite the public to review and comment.
- For major changes involving Town Council approval, the Town will use its standard public notice procedures inviting the public to review the document and provide feedback.

5.2 Plan Integration

The Hazard Mitigation Plan is a critical tool to help identify vulnerabilities and develop specific projects to reduce studied risk within the jurisdiction. However, it is not the only tool that may help minimize the impact of future hazard events on the people, infrastructure, and economy in the community. Using the data included in this Plan update to inform future updates of its Comprehensive Plan, Capital Improvement Planning and annual budget, stormwater management, zoning and code updates, and variance and subdivision applications will improve the resiliency of the community and reduce future risk to persons and property. All efforts to integrate the plan into other local mechanisms can be reported to the Plan Coordinator at each annual update.

5.3 Plan Adoption

On [insert date] Union County submitted the initial draft of the 2016 Plan Update to NJOEM for review and comment. After addressing NJOEM comments in the document, the HMP was resubmitted for final consideration and approval by NJOEM and FEMA. FEMA approved the plan on [insert date], and the Plan update was forwarded to the Union County Board of Chosen Freeholders for adoption, which occurred on [insert date].



The Council approved the plan on [insert date]. The Township's resolution for adoption and the County's adoption resolution are provided as Appendix E of the 2016 HMP update. Following adoption, the plan update was resubmitted to FEMA for final approval, which occurred on [insert date]. The FEMA approval letter is included as Appendix D.