4.3.7 HAZARDOUS MATERIALS RELEASE

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the hazardous materials hazard in Sussex County.

2021 HMP Changes

- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2015 and 2020.
- A vulnerability assessment was conducted for the hazardous materials hazard and it now directly follows the hazard profile.

Profile

Hazard Description

Hazardous substances are materials that are considered severely harmful to human health and the environment, as defined by the United States Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Superfund Law). Many are commonly used substances which are harmless in their normal uses but are quite dangerous if released. The Superfund law designates more than 800 substances as hazardous and identifies many more as potentially hazardous due to their characteristics and the circumstances of their release (USEPA 2013). Superfund's definition of a hazardous substance includes the following:

- Any element, compound, mixture, solution, or substance designated as hazardous under section 102 of CERCLA.
- Any hazardous substance designated under section 311(b)(2)(a) of the Clean Water Act (CWA), or any toxic pollutant listed under section 307(a) of the CWA. There are over 400 substances designated as either hazardous or toxic under the CWA.
- Any hazardous waste having the characteristics identified or listed under section 3001 of the Resource Conservation and Recovery Act.
- Any hazardous air pollutant listed under section 112 of the Clean Air Act, as amended. There are over 200 substances listed as hazardous air pollutants under the Clean Air Act (CAA).
- Any imminently hazardous chemical substance or mixture which the EPA Administrator has "taken action under" section 7 of the Toxic Substances Control Act (USEPA 2013).

If released or misused, hazardous substances can cause death, serious injury, long-lasting health effects, and damage to structures and other properties, as well as the environment. Many products containing hazardous substances are used and stored in homes and these products are shipped daily on highways, railroads, waterways, and pipelines.

Transportation of hazardous substances on highways involves tanker trucks or trailers, which are responsible for the greatest number of hazard substance release incidents. New Jersey is composed of approximately 39,000 miles of highway, many of which are used to transport hazardous substances (New Jersey Department of Transportation [NJDOT] 2019). These roads cross rivers and streams at many points; hazardous substance spills on roads have the potential to pollute watersheds that serve as domestic water supplies for parts of the State. Potential also exists for hazardous substance releases to occur along rail lines as collisions and derailments of train cars can result in large spills.

Additionally, oil is shipped by rail throughout New Jersey. The adoption of hydraulic fracturing ("fracking") to extract oil and gas has led to an increase in the production and shipment of energy products. Lack of pipelines connecting the energy-producing regions with refineries or ports, coupled with the flexibility that railroad transportation provides, have resulted in significant shipments of oil by rail. Major commodities shipped by rail include petrochemicals (including plastic pellets and crude oil), construction materials, food products, raw materials and finished goods for manufacturers (NJ DOT 2018).

Pipelines can also transport hazardous liquids and flammable substances such as natural gas and petroleum. Incidents can occur when pipes corrode, when they are damaged during excavation, incorrectly operated, or damaged by other forces. In New Jersey, most of the large pipeline leaks have been caused by marine traffic hitting or the anchors of ships effecting pipelines in the waterways. In addition, hazardous substances can be transported by aircraft or by watercraft. Crashes, spills of materials, and fires on these vessels can pose a hazard.

Nuclear incidents can also be considered a form of environmental hazard. Nuclear incidents generally refer to incidents involving (1) release of significant levels of radioactive materials or (2) exposure of workers or the general public to radiation. Primary concerns following a nuclear incident or accident are: impact on public health from direct exposure to a radioactive plume; inhalation of radioactive materials; ingestion of contaminated food, water, and milk; and long-term exposure to deposited radioactive materials in the environment that may lead to either acute (radiation sickness or death) or chronic (cancer) health effects.

The Sussex County Hazardous Materials (HAZMAT) Team was developed to support the County in the response of any HAZMAT or Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) incident. The team is comprised of approximately 20 full-time County employees who have completed the Hazardous Materials Technician course and is a collaborative effort between the County's Sheriff's Office, Office of the Prosecutor, Division of Public Works, and Department of Environmental and Public Health Services. It has also been recognized by the New Jersey Department of Environmental Protection as a Model Program for HAZMAT response (Sussex County 2015).

Location

The following provides information regarding the location of hazardous substance incidents.

Hazardous Substances Fixed Site

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These types of substances are most often released as a result of transportation accidents or a chemical spill at a facility. Many products containing hazardous materials are also used and stored in homes.

In response to concerns regarding health and environmental risks, Congress established the Superfund program in 1980 to clean up these sites. The Superfund program is administered by the USEPA in cooperation with individual states. In New Jersey, the Department of Environmental Protection (NJDEP) Site Remediation Program oversees the Superfund program (NJDEP 2013).

Federal regulations include the CERCLA and the Superfund Amendments and Reauthorization Act (SARA) required that a National Priorities List (NPL) of sites throughout the United States be maintained and revised at least annually (NJDEP 2013).

Fixed-site facilities that use, manufacture, or store hazardous substances in New Jersey pose risk and must comply with Title III of the federal SARA. SARA was signed into law on October 17, 1986. It is a federal law that applies nationwide. It must be realized that this law is linked to N.J.S.A. 34:5A, the New Jersey Worker and Community Right to Know Act. SARA requires the governor of each state to establish a State Emergency

Response Commission (SERC). New Jersey's SERC was established by Executive Order on February 13, 1987. SARA also requires that the emergency planning districts be established by the SERC. The Act specified that these districts can be existing political subdivisions. The function of the emergency planning district is to facilitate preparation and implementation of emergency plans. In New Jersey, all municipalities and counties have been designated emergency planning districts (total of 588). The Local Emergency Planning Committees (LEPC) is the policy body for the emergency planning district (New Jersey Division of Fire Safety 2011).

The State enacted the Toxic Catastrophe Prevention Act (TCPA), N.J.S.A. 13:1K-19 et seq. Currently, implementation of the requirements established under this Act is facilitated by the TCPA Program. Certain industrial facilities using materials considered extraordinarily hazardous must take steps to prevent releases and protect public safety. New Jersey has also mandated that facilities storing large quantities of hazardous substances take preventative measures to reduce the likelihood of a leak or discharge. Established under the New Jersey Spill Compensation and Control Act (N.J.S.A. 58:10-23.11), these requirements include testing and inspection of storage tanks, training of employees, and emergency response planning. The Discharge Prevention Containment and Countermeasure (DPCC) program facilitates implementation of these requirements. Regulations related to reporting of chemical and petroleum discharges are also administered under this program. The Program is sometimes referred to by the acronym DPCC, which refers to an important preparedness document that major facilities develop under the program (NJDEP 2018).

The Community Right to Know (CRTK) program collects, processes, and disseminates the chemical inventory, environmental release and materials accounting data required to be reported under the New Jersey Worker and Community Right to Know Act, N.J.S.A.34:5A and the federal Emergency Planning and Community Right to Know Act of 1986 (EPCRA). EPCRA is also known as Title III of the SARA. This information is used by the public, emergency planners, and first responders to determine the chemical hazards in the community (NJDEP 2012).

The U.S. EPA Hazardous Waste Report, which is a biennial report, collects data on the generation, management, and minimization of hazardous waste. This report provides detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage, and disposal facilities. This report lists 27 facilities in Sussex County (U.S. EPA 2019).

Superfund is a program administered by the U.S. EPA to locate, investigate, and cleanup the worst hazardous waste sites throughout the U.S. Data from the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database indicated that Sussex County has three Superfund sites located in Sparta Township, Byram, and Franklin Borough (U.S. EPA 2020).

New Jersey employers, whose businesses are assigned North American Industry Classification System (NAICS) codes listed in the New Jersey Worker and Community Right to Know (CRTK) regulations, are required to submit CRTK surveys listing the environmental hazardous substances (EHSs) present at their facilities in quantities that exceed 500 pounds, unless the EHS is on the federal Emergency Planning and Community Right to Know Act (EPCRA) Section 302 list of extremely hazardous substances with a lower reporting threshold. In addition, Section 312 of EPCRA requires owners and operators of federal facilities and private sector facilities that are subject to the United States Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard to report their inventories of any chemical that requires a Materials Safety Data Sheet (MSDS) and is present on site in quantities that exceed 10,000 pounds, unless the chemical is an Extremely Hazardous Substance with a lower reporting threshold (NJDEP 2014).

Owners and operators of manufacturing, and select non-manufacturing companies, having the equivalent of 10 or more full-time employees, and manufacturing, importing, processing or otherwise using toxic chemicals listed

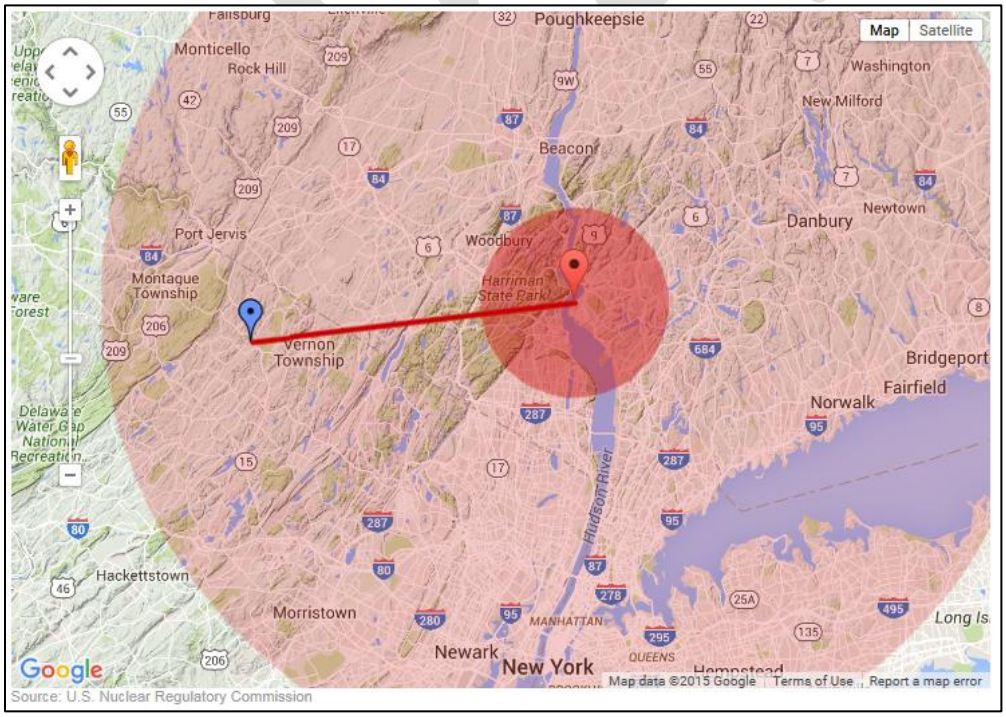
on the EPCRA Section 313 (TRI) list in quantities that exceed specified thresholds, are required to annually report their releases of these chemicals for the previous year. Approximately 500 New Jersey companies are required to file federal Toxic Chemical Release Inventory (TRI) forms. TRI Form R requires the listing of environmental releases, on-site waste management and off-site transfers while the simplified Form A Certification Statement requires the listing of the chemical only. These companies are also required to submit to NJDEP the Release and Pollution Prevention Report (RPPR) listing the quantities of environmental release, on-site waste management, waste transfer, and chemical throughput information. Most of these facilities are also subject to Pollution Prevention Planning Requirements and, therefore, required to report pollution prevention progress information on the RPPR (NJDEP 2014).

Nuclear Facilities

Although there are no nuclear facilities within Sussex County limits, the County is within 50 miles of Indian Point Energy Center. Indian Point Energy Center is located in Buchanan, New York, and provides about 25 percent of New York City and Westchester County New York's power (Safe.Secure.Vital 2015).

In nuclear preparedness planning, the 10 mile and 50 mile radiuses around nuclear facilities are important location boundaries. The Nuclear Regulatory Commission encourages the use of Probabilistic Risk Assessments (PRA) to estimate quantitatively the potential risk to public health and safety considering the design, operations, and maintenance practices at nuclear power plants. Preparedness plans typically consider the Plume Exposure Pathway Emergency Planning Zone (EPZ), which has a radius of 10 miles from the facility, and the Ingestion Exposure Pathway (IEP), which has a radius of 50 miles from each facility. Sussex County is located within the 50-mile IEP. Should an accident occur at the Indian Point Energy Center, the area within the IEP could receive some radioactive contamination. Figure 4.3.7-1 displays where Sussex County falls in Indian Point Energy Center's EPZ and IEP.

Figure 4.3.7-1. Indian Point Energy Center's EPZ and IEP



Source: CNN 2015

Note: The red marker indicates the nuclear facility and the blue marker indicates a location in Sussex, NJ.

Hazardous Substances In-Transit

Incidents involving hazardous substances in transit can occur anywhere in Sussex County. Major highways in the Cunty over which hazardous materials are transported daily include U.S. Route 206 and State Highway 15. A very small portion of Interstate 80 runs through and near the southern portion of the County, and U.S. Route 209 runs parallel and close to the northwestern border of Sussex County although it does not enter County limits. While Sussex County does not offer passenger service, it does maintain freight rail. This freight rail is operated by regional and short line railroads. The rail lines move between 100,001 and 300,000 tons of inbound rail freight and less than 10,000 tons of outbound rail freight (New Jersey Rail System 2012).

Hazardous substances can also be transported via pipeline across the State. New Jersey has an extensive network of natural gas and petroleum pipelines. Several of the petroleum pipelines originate in the Gulf Coast region (Colonial Pipeline and Buckeye Pipeline). Figure 4.3.7-2 shows the extent and locations of pipelines throughout the northeastern United States.

Extent

The extent of a hazardous substance release will depend on whether it is from a fixed or mobile source, the size of impact, the toxicity and properties of the substance, duration of the release, and the environmental conditions (for example, wind and precipitation, terrain, etc.).

Hazardous substance releases can contaminate air, water, and soils, possibly resulting in death and/or injuries. Dispersion can take place rapidly when the hazardous substance is transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events. Hazardous substances can include toxic chemicals, radioactive substances, infectious substances, and hazardous wastes. Such releases can affect nearby populations and contaminate critical or sensitive environmental areas.

With a hazardous substance release, whether accidental or intentional, several potentially exacerbating or mitigating circumstances will affect its severity or impact. Mitigating conditions are precautionary measures taken in advance to reduce the impact of a release on the surrounding environment. Primary and secondary containment or shielding by sheltering-in-place measures protects people and property from the harmful effects of a hazardous substance release. Exacerbating conditions, characteristics that can enhance or magnify the effects of a hazardous substance release, include:

- Weather conditions, which affect how the hazard occurs and develops
- Micro-meteorological effects of buildings and terrain, which alters dispersion of hazardous substances on-compliance with applicable codes (such as building or fire codes)
- Maintenance failures (such as fire protection and containment features), which can substantially increase the damage to the facility itself and to surrounding buildings

As discussed earlier, the severity of the incident is dependent not only on the circumstances described above, but also with the type of substance released and the distance and related response time for emergency response teams. The areas proximate to the releases are generally at greatest risk; however, depending on the agent, a release can travel great distances or remain present in the environment for a long period of time (i.e. centuries to millennia).

Figure 4.3.7-2. Major Transportation in Sussex County

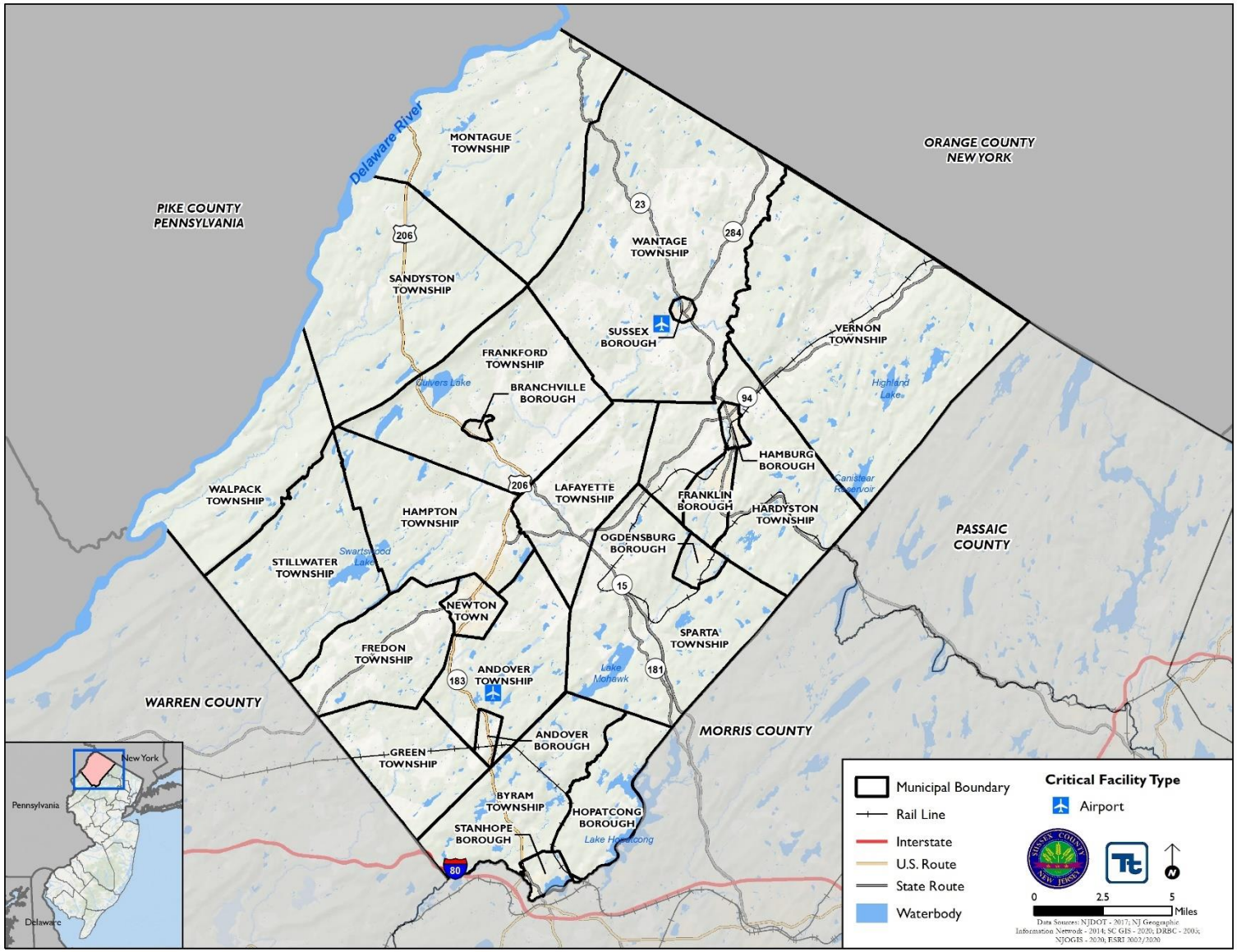
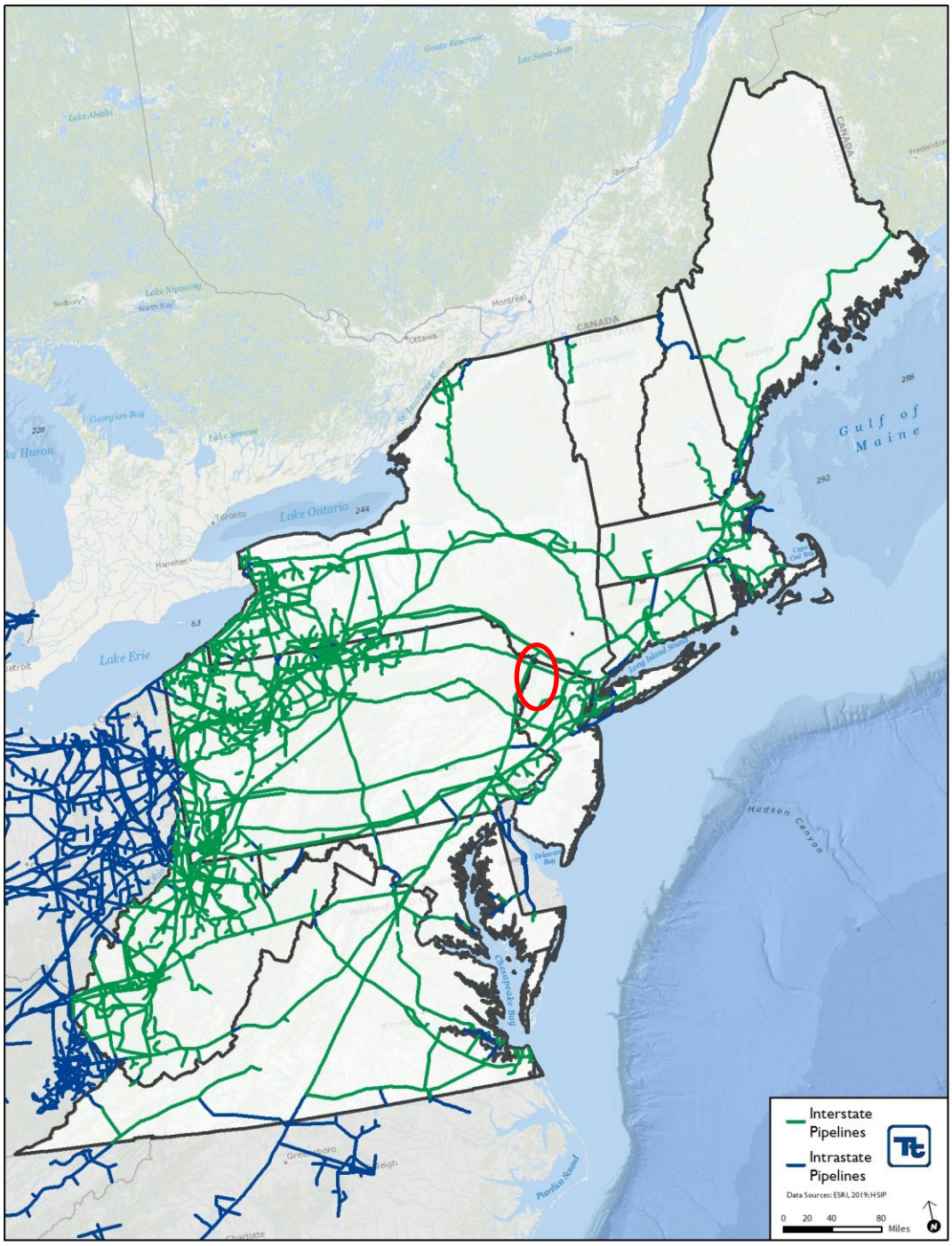


Figure 4.3.7-3. Interstate Natural Gas Pipelines in the Northeast



Source: NJDOT, n.d.

Note: The approximate location of Sussex County is indicated by the red circle.

Figure 4.3.7-4. Hazardous Material Sites with One Mile Buffer in Sussex County

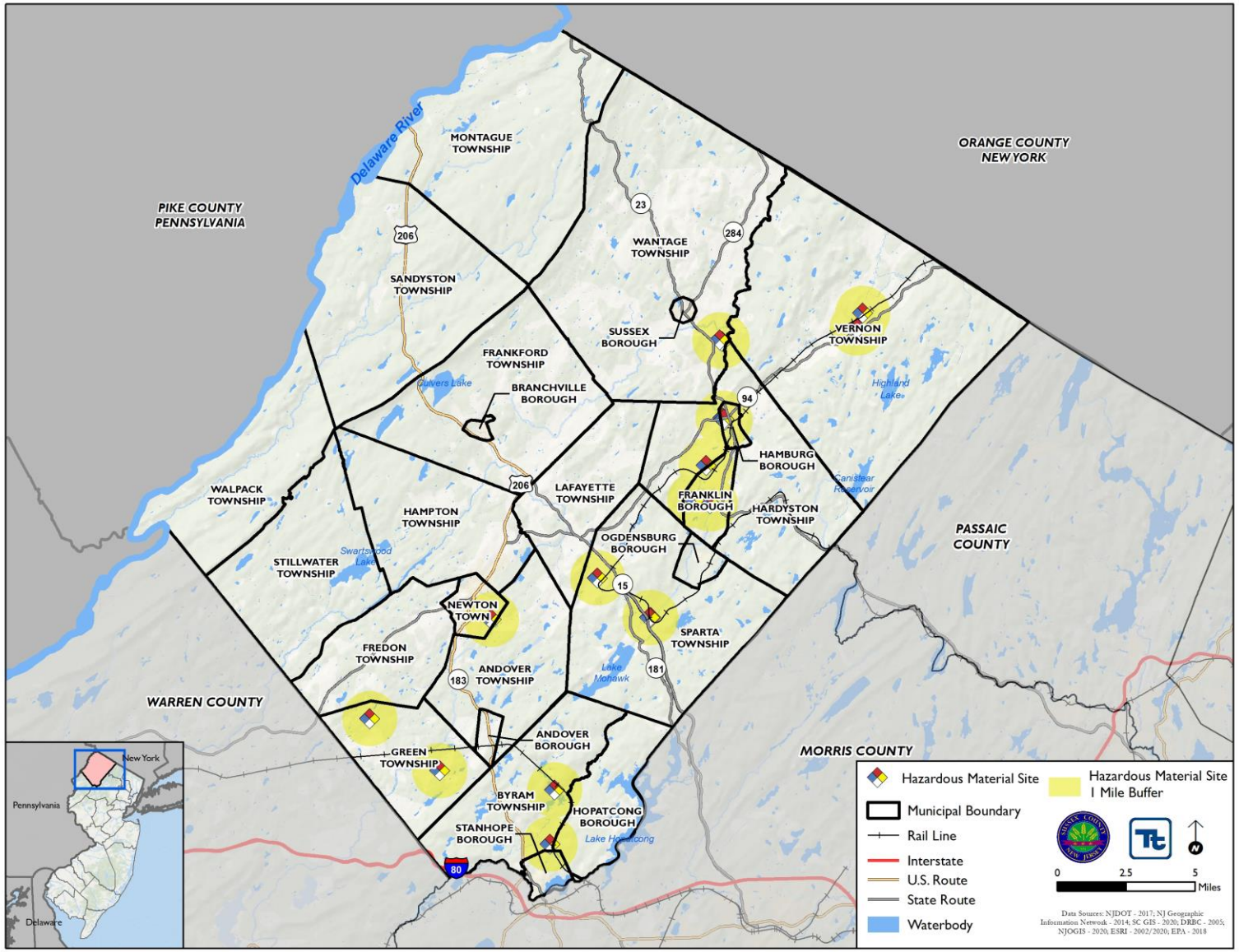


Figure 4.3.7-5 Railways with One Mile Buffer in Sussex County

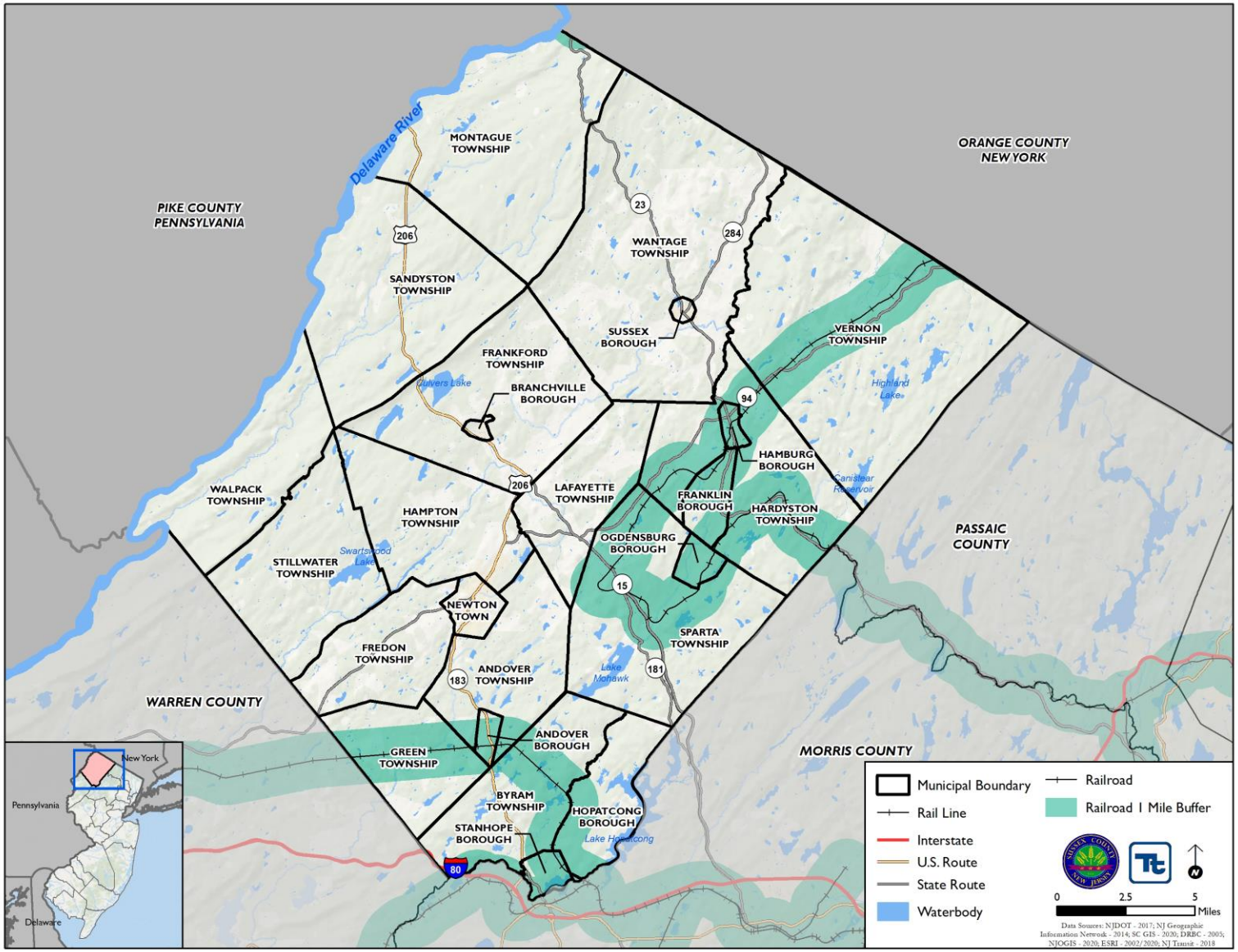
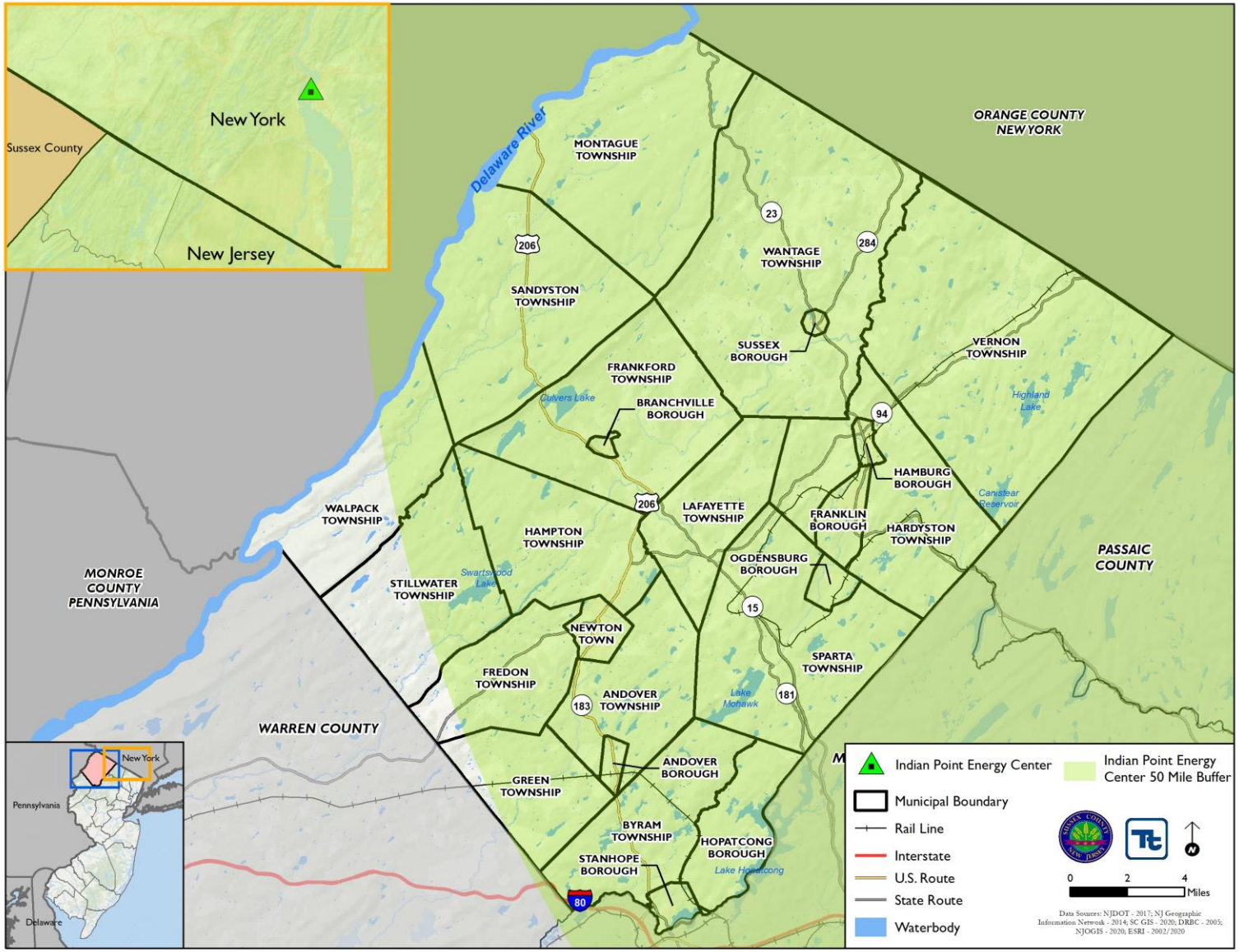


Figure 4.3.7-6 Indian Point Energy Center with Fifty Mile Buffer



Previous Occurrences and Losses

For the 2020 HMP update, known hazardous substances incidents that have impacted Sussex County between 2015 and 2020 are identified in 4.3.7-1. Refer to Section (Jurisdictional Annex) 9 for detailed information regarding impacts and losses to each municipality, where available.

FEMA Disaster Declarations

Between 1954 and 2020, the State of New Jersey was not included in any FEMA declared disasters (DR) or emergencies (EM) related to hazardous substances incidents (FEMA 20).

USDA Disaster Declarations

Agriculture-related disasters are quite common. The USDA Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county. From 2015 to 2020, Sussex County was not included in any agriculture-related disasters (USDA 2020).

Table 4.3.7-1. Hazardous Substances Events in Sussex County, 2015 to 2020

Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	Sussex County Designated?	Description
2015	Chemical Release	N/A	N/A	In 2015, 11,374 pounds of chemicals were released on-site in Sussex County.
2015	Accidents involving hazardous materials	N/A	N/A	In 2015, Sussex County experienced 1 rail accident involving hazardous materials.
2016	Chemical Release	N/A	N/A	In 2016, 10,578 pounds of chemicals were released on-site in Sussex County.
2017	Chemical Release	N/A	N/A	In 2017, 8,853 pounds of chemicals were released on-site in Sussex County.
2018	Chemical Release	N/A	N/A	In 2018, 6,155 pounds of chemicals were released on-site in Sussex County.
2019	Chemical Release	N/A	N/A	In 2019, 261 pounds of chemicals were released on-site in Sussex County.

Source: NJ HMP 2019; EPA TRI Explorer 2020
With hazardous substances incidents for New Jersey and Sussex County being so extensive, not all sources have been identified or researched. Therefore, not all events that have occurred in the County may be included.

Probability of Future Occurrences

Predicting future hazardous substance incidents in Sussex County is difficult. They can occur at anytime and anywhere in the county. Incidents can be sudden without any warning or slowly develop. Small spills, both fixed site and in-transit, occur throughout the year and the probability for these events are high. The risk of major incidents in a given year is rare. It is estimated that the county will continue to experience direct and indirect impacts of hazardous substance incidents annually that may induce secondary hazards such as infrastructure deterioration or failure, water quality and supply concerns, and transportation delays, accidents and inconveniences.

According to the 2011 HMP, the Right-to-Know Network database, and the Pipeline and Hazardous Materials Safety Administration (PHMSA), Sussex County experienced 96 hazardous material incidents (fixed site and in-

transit) between 1950 and 2015. Please note that only readily available data was used for the calculations and not all events may have been included. Based on the number of occurrences, the county has a 145.45 percent chance of a hazardous material incident (fixed site or in-transit) of occurring in any given year. The table below shows these statistics, as well as the annual average number of events and the percent chance of these incidents occurring in Sussex County in future years (Sussex County HMP 2011; Right-to-Know Network 2016; PHMSA 2016).

Table 4.3.7-2. Probability of Future Hazardous Materials Incidents

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years) (# Years/Number of Events)	Probability of Event in any given year	Percent chance of occurrence in any given year
Hazardous Materials (fixed site)	54	0.83	1.2	0.82	81.8%
Hazardous Materials (in-transit)	42	0.65	1.6	0.64	63.6%

Source: Sussex County HMP 2011; Right-to-Know Network 2016; PHMSA 2016

In Section 4.4, the identified hazards of concern for Sussex County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for the hazardous substances hazard in the county is considered 'frequent' (100 percent annual probability; a hazard event may occur multiple times per year, as presented in Table 4.4-1). The ranking of the hazardous substances hazard for individual municipalities is presented in the jurisdictional annexes.

Climate Change Impacts

Hazardous substance incidents are non-natural incidents; however, their release may be the result from natural hazard events. As noted in the risk assessment, climate change may potentially increase the frequency and magnitude of flood and severe weather events which may lead to an increased release of hazardous substances at both fixed sites and in-transit. Secondary impacts, such as excessive heat on containers may occur, but also can occur during normal fluctuations in temperature.

Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable to the identified hazard. Sussex County's vulnerability to the hazardous materials hazard was evaluated by conducting an exposure analysis of the County's assets (i.e., population, buildings, critical facilities, and new development) built within a 1-mile buffer of identified hazardous material facilities, within 1 mile of all railways, and within 50 miles of the Indian Point Energy Center.

Impact on Life, Health and Safety

Depending on the type and quantity of chemicals released and the weather conditions, an incident can affect larger areas that cross jurisdictional boundaries. When hazardous substances are released in the air, water or on land they may contaminate the environment and pose greater danger to human health. Exposure may be either acute or chronic, depending upon the nature of the substance and extent of release and contamination.

Due to the varied location of different hazardous substances and waste sites in Sussex County, the entire County is considered vulnerable to this hazard. Those particularly vulnerable include populations located along railways routes because of the quantities of chemicals transported on these major thoroughfares. Potential losses from

hazardous substances incidences include human health and life and property resources. These types of incidents can lead to injury, illnesses, and/or death from both the involved persons and those living in the impacted areas.

An exposure analysis estimates there are 39,025 persons, 19,301 persons, and 140,839 persons living within 1 mile of railways, within 1 mile of hazardous material sites, and within 50 miles of the Indian Point Energy Center, respectively. The Township of Vernon has the greatest number of people living within 1 mile of railways and 50 miles of the Indian Point Energy Center, with 7,740 and 22,369 persons, respectively. The Town of Newton has the greatest number of people living within 1 mile of a hazardous material site (4,825 persons). Refer to Table 4.3.7-3 for population exposure to hazardous material incidents by jurisdiction

Table 4.3.7-3. Estimated Number of Persons Living Near Hazardous Materials Hazard Areas

Jurisdiction	Total Population	Population Exposed to Hazardous Material Release Incidents					
		Within a Mile of a Railroad		Within a Mile of a Hazardous Site		Within 50 Miles of Indian Point Energy Center	
		Number of People	Percent of Total	Number of People	Percent of Total	Number of People	Percent of Total
Andover (B)	594	510	85.9%	0	0.0%	594	100.0%
Andover (Twp)	5,996	148	2.5%	596	9.9%	5,996	100.0%
Branchville (B)	896	0	0.0%	0	0.0%	896	100.0%
Byram (Twp)	8,010	3,688	46.0%	1,657	20.7%	8,010	100.0%
Frankford (Twp)	5,361	0	0.0%	0	0.0%	5,361	100.0%
Franklin (B)	4,807	4,648	96.7%	3,898	81.1%	4,807	100.0%
Fredon (Twp)	3,214	0	0.0%	42	1.3%	3,034	94.4%
Green (Twp)	3,495	1,612	46.1%	1,008	28.8%	3,264	93.4%
Hamburg (B)	3,152	3,152	100.0%	2,807	89.1%	3,152	100.0%
Hampton (Twp)	4,916	0	0.0%	0	0.0%	4,916	100.0%
Hardyston (Twp)	7,886	5,064	64.2%	1,088	13.8%	7,886	100.0%
Hopatcong (B)	14,362	3,825	26.6%	259	1.8%	14,362	100.0%
Lafayette (Twp)	2,390	95	4.0%	107	<0.1%	2,390	100.0%
Montague (Twp)	3,716	12	0.3%	0	0.0%	3,716	100.0%
Newton (T)	7,895	0	0.0%	4,825	61.1%	7,895	100.0%
Ogdensburg (B)	2,314	2,222	96.0%	0	0.0%	2,314	100.0%
Sandyston (Twp)	1,925	0	0.0%	0	0.0%	1,925	100.0%
Sparta (Twp)	18,841	3,166	16.8%	1,212	6.4%	18,841	100.0%
Stanhope (B)	3,377	3,144	93.1%	984	29.1%	3,377	100.0%
Stillwater (Twp)	3,936	0	0.0%	0	0.0%	2,893	73.5%
Sussex (B)	1,854	0	0.0%	0	0.0%	1,854	100.0%
Vernon (Twp)	22,369	7,740	34.6%	686	3.1%	22,369	100.0%
Walpack (Twp)	6	0	0.0%	0	0.0%	1	18.2%
Wantage (Twp)	10,986	0	0.0%	132	1.2%	10,986	100.0%
Sussex County (Total)	**142,298**	**39,025**	**27.4%**	**19,301**	**13.6%**	**140,839**	**99.0%**

Source: Sussex County GIS 2020; American Community Survey 2018; EPA 2018; NJ Transit - 2018
Note: B – Borough; T – Town; Twp – Township; % - Percent

Impact on General Building Stock

Potential losses to the general building stock caused by a hazardous substance releases, whether in transit or at fixed sites, is difficult to quantify. The degree of damages depends on the scale of the incident. Potential losses may include inaccessibility, loss of service, contamination and/or potential structural and content losses if an explosion occurs. The closure of waterways, railroads, airports and highways as a result of a hazardous substance incident has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may be local, regional, or statewide depending on the magnitude of the event and level of service disruptions.

An exposure analysis estimates there are 20,025 buildings or approximately $17.1 billion, 9,087 buildings or approximately $13.2 billion, and 70,919 buildings or approximately $59.1 billion living within 1 mile of all railways, within 1 mile of hazardous material sites, and within 50 miles of the Indian Point Energy Center, respectively. The Township of Vernon has the greatest number of buildings within 1 mile of a railway and 50 miles of the Indian Point Energy Center, with 4,337 and 12,039 structures, respectively. The Borough of Franklin has the greatest number of buildings located within 1 mile of a hazardous material site (1,700 structures). Refer to Table 4.3.7-4 for building exposure to hazardous material incidents by jurisdiction.

Impact on Critical Facilities and Lifelines

Potential losses to critical assets caused by a hazardous substances incident is difficult to quantify. Potential losses may include inaccessibility, loss of service, contamination and/or potential structural and content losses if an explosion occurs.

An exposure analysis estimates there are 164 critical facilities, 108 critical facilities, and 571 critical facilities built within 1 mile of all railways, within 1 mile of hazardous material sites, and within 50 miles of the Indian Point Energy Center, respectively. The Township of Sparta have the greatest number of critical facilities within 1 mile of railways, within 1 mile of hazardous material sites, and within 50 miles of the Indian Point Energy Center (i.e. 36, 20, and 74 critical facilities, respectively). Refer to Tables 4.3.7-5 through 4.3.7-9 to review the number of critical facilities and lifelines located within 1-mile of railways, 1-mile of hazardous material sites and 50-miles of the Indian Point Energy Center.

Table 4.3.7-4 Estimated Number of Buildings and Replacement Cost Value Within Hazardous Material Hazard Areas

Jurisdiction	Total Number of Buildings	Total Replacement Cost Value (RCV)	Estimated Building Stock Exposed to Hazardous Material Release Incidents											
			Within 1 Mile of a Railroad				Within 1 Mile of a Hazardous Site				Within 50 Miles of Indian Point Energy Center			
			Number of Buildings	Percent of Total	Replacement Cost Value	Percent of Total	Number of Buildings	Percent of Total	Replacement Cost Value	Percent of Total	Number of Buildings	Percent of Total	Replacement Cost Value	Percent of Total
Andover (B)	328	$628,463,030	282	86.0%	$599,020,631	95.3%	0	0.0%	$0	0.0%	328	100.0%	$628,463,030	100.0%
Andover (Twp)	2,584	$3,609,679,724	91	3.5%	$179,023,505	5.0%	263	10.2%	$740,570,967	20.5%	2,584	100.0%	$3,609,679,724	100.0%
Branchville (B)	426	$532,377,368	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	426	100.0%	$532,377,368	100.0%
Byram (Twp)	3,676	$2,746,550,446	1,643	44.7%	$728,047,473	26.5%	742	20.2%	$383,785,519	14.0%	3,676	100.0%	$2,746,550,446	100.0%
Frankford (Twp)	3,537	$3,129,888,305	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	3,537	100.0%	$3,129,888,305	100.0%
Franklin (B)	2,061	$1,921,211,856	1,997	96.9%	$1,884,969,797	98.1%	1,700	82.5%	$1,790,111,458	93.2%	2,061	100.0%	$1,921,211,856	100.0%
Fredon (Twp)	1,615	$1,372,050,934	0	0.0%	$0	0.0%	27	1.7%	$30,659,161	2.2%	1,478	91.5%	$1,230,166,866	89.7%
Green (Twp)	1,698	$1,598,635,804	799	47.1%	$861,097,973	53.9%	503	29.6%	$468,407,040	29.3%	1,559	91.8%	$1,466,080,766	91.7%
Hamburg (B)	1,594	$1,588,049,291	1,594	100.0%	$1,588,049,291	100.0%	1,425	89.4%	$1,522,084,690	95.8%	1,594	100.0%	$1,588,049,291	100.0%
Hampton (Twp)	2,763	$2,196,131,598	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	2,763	100.0%	$2,196,131,598	100.0%
Hardyston (Twp)	4,403	$3,183,033,542	2,891	65.7%	$2,104,880,498	66.1%	685	15.6%	$760,054,379	23.9%	4,403	100.0%	$3,183,033,542	100.0%
Hopatcong (B)	8,040	$2,888,571,676	2,148	26.7%	$739,629,680	25.6%	162	2.0%	$79,936,104	2.8%	8,040	100.0%	$2,888,571,676	100.0%
Lafayette (Twp)	1,462	$1,958,174,065	70	4.8%	$77,989,545	4.0%	46	3.1%	$64,839,631	3.3%	1,462	100.0%	$1,958,174,065	100.0%
Montague (Twp)	2,175	$1,459,611,020	35	1.6%	$186,920,148	12.8%	0	0.0%	$0	0.0%	2,175	100.0%	$1,459,611,020	100.0%
Newton (T)	2,679	$5,093,275,807	0	0.0%	$0	0.0%	1,627	60.7%	$2,907,448,945	57.1%	2,679	100.0%	$5,093,275,807	100.0%
Ogdensburg (B)	992	$819,879,629	953	96.1%	$803,135,745	98.0%	0	0.0%	$0	0.0%	992	100.0%	$819,879,629	100.0%
Sandyston (Twp)	1,528	$1,212,626,664	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	1,528	100.0%	$1,212,626,664	100.0%
Sparta (Twp)	8,132	$9,070,094,285	1,731	21.3%	$4,096,771,630	45.2%	786	9.7%	$3,143,814,758	34.7%	8,132	100.0%	$9,070,094,285	100.0%
Stanhope (B)	1,557	$1,051,183,581	1,454	93.4%	$1,023,418,544	97.4%	444	28.5%	$203,269,350	19.3%	1,557	100.0%	$1,051,183,581	100.0%
Stillwater (Twp)	2,493	$1,417,579,398	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	1,688	67.7%	$812,676,244	57.3%
Sussex (B)	678	$1,945,578,916	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	678	100.0%	$1,945,578,916	100.0%
Vernon (Twp)	12,039	$5,658,971,163	4,337	36.0%	$2,217,043,699	39.2%	547	4.5%	$612,142,727	10.8%	12,039	100.0%	$5,658,971,163	100.0%
Walpack (Twp)	51	$63,691,550	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	30	58.8%	$27,664,744	43.4%
Wantage (Twp)	5,510	$4,877,543,885	0	0.0%	$0	0.0%	130	2.4%	$533,499,414	10.9%	5,510	100.0%	$4,877,543,885	100.0%

Jurisdiction	Total Number of Buildings	Total Replacement Cost Value (RCV)	Estimated Building Stock Exposed to Hazardous Material Release Incidents											
			Within 1 Mile of a Railroad				Within 1 Mile of a Hazardous Site				Within 50 Miles of Indian Point Energy Center			
			Number of Buildings	Percent of Total	Replacement Cost Value	Percent of Total	Number of Buildings	Percent of Total	Replacement Cost Value	Percent of Total	Number of Buildings	Percent of Total	Replacement Cost Value	Percent of Total
Sussex County (Total)	**72,021**	**$60,022,853,539**	**20,025**	**27.8%**	**$17,089,998,162**	**28.5%**	**9,087**	**12.6%**	**$13,240,624,142**	**22.1%**	**70,919**	**98.5%**	**$59,107,484,471**	**98.5%**

Source: Sussex County GIS 2020; RS Means 2020; EPA 2018; NJ Transit - 2018
Note: B – Borough; T – Town; Twp – Township; % - Percent

Table 4.3.7-5. Estimated Number of Critical Facilities Located within 1-mile of Rail Lines, Hazardous Material Facilities and 50-Miles of Indian Point Energy Center

Jurisdiction	Total Critical Facilities and Lifelines Located in Jurisdiction	Hazardous Material Release Incident - Within 1 Mile of Railroads		Hazardous Material Release Incident - Within 1 Mile of Hazardous Material Facilities		Hazardous Material Release Incident - Within 50 Miles of Indian Point Energy Center	
		Number of Critical Facilities and Lifelines	Percent of Total Critical Facilities and Lifelines	Number of Critical Facilities and Lifelines	Percent of Total Critical Facilities and Lifelines	Number Critical Facilities and Lifelines	Percent of Total Critical Facilities and Lifelines
Andover (B)	12	10	83.3%	0	0.0%	12	100.0%
Andover (Twp)	37	2	5.4%	0	0.0%	37	100.0%
Branchville (B)	4	0	0.0%	0	0.0%	4	100.0%
Byram (Twp)	37	19	51.4%	16	43.2%	37	100.0%
Frankford (Twp)	23	0	0.0%	0	0.0%	23	100.0%
Franklin (B)	10	10	100.0%	10	100.0%	10	100.0%
Fredon (Twp)	17	0	0.0%	1	5.9%	12	70.6%
Green (Twp)	21	10	47.6%	2	9.5%	20	95.2%
Hamburg (B)	19	19	100.0%	18	94.7%	19	100.0%
Hampton (Twp)	20	0	0.0%	0	0.0%	20	100.0%
Hardyston (Twp)	27	22	81.5%	9	33.3%	27	100.0%
Hopatcong (B)	22	6	27.3%	2	9.1%	22	100.0%
Lafayette (Twp)	14	0	0.0%	0	0.0%	14	100.0%
Montague (Twp)	32	0	0.0%	0	0.0%	32	100.0%
Newton (T)	39	0	0.0%	17	43.6%	39	100.0%
Ogdensburg (B)	7	7	100.0%	0	0.0%	7	100.0%
Sandyston (Twp)	28	0	0.0%	0	0.0%	28	100.0%
Sparta (Twp)	74	36	48.6%	20	27.0%	74	100.0%
Stanhope (B)	7	7	100.0%	2	28.6%	7	100.0%
Stillwater (Twp)	24	0	0.0%	0	0.0%	13	54.2%
Sussex (B)	8	0	0.0%	0	0.0%	8	100.0%
Vernon (Twp)	74	16	21.6%	9	12.2%	74	100.0%
Walpack (Twp)	11	0	0.0%	0	0.0%	3	27.3%
Wantage (Twp)	29	0	0.0%	2	6.9%	29	100.0%
Sussex County (Total)	**596**	**164**	**27.5%**	**108**	**18.1%**	**571**	**95.8%**

Source: Sussex County GIS 2020; EPA 2018; NJ Transit - 2018
Note: B – Borough; T – Town; Twp – Township

Table 4.3.7-6. Distribution of Critical Facilities by Type Built Within 1 Mile of a Railway

Jurisdiction	Facility Types																					
	Communication Facility	Dam	DPW	Electrical Substation	EMS	EOC	Fire Station	Food Pantry	Fuel	Government Building	Hazardous Material	Health/Medical Center	Police Station	Post Office	Potable Pump Station	Potable Water Treatment	Primary Education	Secondary Education	Senior Center	Shelter	Wastewater Pump	Wastewater Treatment	Well
Andover (B)	1	1	0	1	0	0	1	0	2	1	0	0	0	0	0	1	0	0	1	1	0	0	0
Andover (Twp)	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Branchville (B)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Byram (Twp)	0	5	0	0	0	1	1	0	0	1	2	0	1	0	0	0	2	0	0	2	4	0	0
Frankford (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Franklin (B)	0	1	0	0	1	0	1	0	0	1	2	0	1	0	0	0	2	0	0	1	0	0	0
Fredon (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green (Twp)	0	1	1	0	0	1	1	0	0	1	1	0	0	1	0	0	2	0	0	1	0	0	0
Hamburg (B)	0	2	1	1	1	0	1	0	0	2	4	0	1	0	1	0	1	0	0	1	2	0	1
Hampton (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardyston (Twp)	0	10	1	0	2	0	1	0	0	2	1	1	1	0	0	0	2	0	0	1	0	0	0
Hopatcong (B)	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0
Lafayette (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Montague (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Newton (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ogdensburg (B)	0	2	0	0	1	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0
Sandyston (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sparta (Twp)	0	10	2	1	1	1	0	1	0	1	5	0	1	0	2	0	4	1	1	1	2	1	1
Stanhope (B)	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	2	0	0	1	0	0	0
Stillwater (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sussex (B)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vernon (Twp)	0	5	1	0	1	0	2	0	0	1	2	0	1	0	0	0	0	0	0	3	0	0	0
Walpack (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wantage (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sussex County (Total)	**1**	**41**	**7**	**3**	**8**	**3**	**10**	**1**	**2**	**12**	**17**	**1**	**8**	**1**	**3**	**1**	**17**	**1**	**3**	**13**	**8**	**1**	**2**

Source: Sussex County GIS 2020; NJ Transit - 2018
Note: B – Borough; T – Town; Twp – Township

Table 4.3.7-7. Distribution of Critical Facilities by Type Built Within 1 Mile of Hazardous Material Sites

Jurisdiction	Facility Types																		
	Dam	DPW	Electrical Substation	EMS	EOC	Fire Station	Food Pantry	Government Building	Hazardous Material Facility	Health/Medical Center	Police Station	Potable Pump Station	Primary Education	Secondary Education	Senior Center	Shelter	Wastewater Pump	Wastewater Treatment	Well
Andover (B)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Andover (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Branchville (B)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Byram (Twp)	2	0	0	0	1	1	0	1	2	0	1	0	2	0	0	2	4	0	0
Frankford (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Franklin (B)	1	0	0	1	0	1	0	1	2	0	1	0	2	0	0	1	0	0	0
Fredon (Twp)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green (Twp)	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Hamburg (B)	2	1	1	1	0	1	0	1	4	0	1	1	1	0	0	1	2	0	1
Hampton (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardyston (Twp)	0	1	0	1	0	0	0	2	1	1	1	0	2	0	0	0	0	0	0
Hopatcong (B)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lafayette (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Montague (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Newton (T)	0	0	1	1	0	1	0	2	1	1	1	1	3	0	0	1	4	0	0
Ogdensburg (B)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandyston (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sparta (Twp)	1	2	1	1	1	0	1	1	5	0	1	0	1	1	1	0	2	1	0
Stanhope (B)	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Stillwater (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sussex (B)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vernon (Twp)	1	1	0	1	0	1	0	1	2	0	1	0	0	0	0	1	0	0	0
Walpack (Twp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wantage (Twp)	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Sussex County (Total)	**9**	**6**	**3**	**6**	**2**	**5**	**1**	**9**	**21**	**2**	**7**	**2**	**13**	**1**	**1**	**6**	**12**	**1**	**1**

Source: Sussex County GIS 2020; EPA 2018 *Note: B – Borough; T – Town; Twp – Township*

Table 4.3.7-8. Distribution of Critical Facilities by Type Within 50 Miles of the Indian Point Energy Center

Jurisdiction	Facility Types																								
	Airport	Communication Facility	Correctional Facility	Dam	DPW	Electrical Substation	EMS	EOC	Fire Station	Food Pantry	Fuel	Government Building	Hazardous Material	Health/Medical Center	Police Station	Post Office	Potable Pump Station	Potable Water Treatment	Primary Education	Religious Center	Secondary Education	Senior Center	Shelter	Wastewater Pump	Wastewater Treatment	Well
Andover (B)	0	1	0	1	0	1	0	0	2	0	3	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0
Andover (Twp)	1	4	0	17	2	1	1	1	3	0	0	1	0	0	1	0	0	0	2	0	0	2	1	0	0	0
Branchville (B)	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Byram (Twp)	0	2	0	14	0	0	2	2	2	0	0	1	2	0	1	0	0	0	2	0	0	0	3	6	0	0
Frankford (Twp)	0	0	0	10	2	0	1	1	3	1	0	2	0	0	1	0	0	0	1	0	0	0	1	0	0	0
Franklin (B)	0	0	0	1	0	0	1	0	1	0	0	1	2	0	1	0	0	0	2	0	0	0	1	0	0	0
Fredon (Twp)	0	0	0	9	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Green (Twp)	0	0	0	3	1	0	1	1	1	0	0	1	2	0	0	2	0	0	4	2	1	0	1	0	0	0
Hamburg (B)	0	0	0	2	1	1	1	0	1	0	0	2	4	0	1	0	1	0	1	0	0	0	1	2	0	1
Hampton (Twp)	0	0	0	13	0	0	0	0	3	0	0	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0
Hardyston (Twp)	0	0	0	14	1	0	2	0	2	0	0	2	1	1	1	0	0	0	2	0	0	0	1	0	0	0
Hopatcong (B)	0	0	0	6	1	1	1	1	3	0	0	1	0	0	1	0	0	0	4	0	0	1	2	0	0	0
Lafayette (Twp)	0	0	0	3	1	0	1	0	1	0	0	3	0	0	0	0	0	0	1	0	0	0	4	0	0	0
Montague (Twp)	0	0	0	12	1	1	1	0	2	1	0	1	0	0	0	0	1	0	1	0	0	0	2	0	0	9
Newton (T)	0	1	1	2	1	1	1	0	2	2	0	9	1	4	1	0	2	0	4	0	1	1	1	4	0	0
Ogdensburg (B)	0	0	0	2	0	0	1	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
Sandyston (Twp)	0	0	0	20	2	0	0	0	2	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
Sparta (Twp)	0	0	0	31	3	2	1	1	3	1	0	1	5	0	1	0	6	0	9	0	1	1	1	3	1	3
Stanhope (B)	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	2	0	0	0	1	0	0	0
Stillwater (Twp)	0	0	0	8	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Sussex (B)	0	0	0	1	1	1	0	1	1	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0
Vernon (Twp)	0	0	0	52	1	0	3	0	4	0	0	1	2	0	1	0	0	0	6	0	0	0	4	0	0	0
Walpack (Twp)	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wantage (Twp)	1	1	0	14	1	0	1	1	2	0	0	1	2	0	0	0	0	1	3	0	0	0	1	0	0	0
Sussex County (Total)	**2**	**10**	**1**	**237**	**21**	**9**	**20**	**9**	**43**	**7**	**2**	**37**	**21**	**6**	**12**	**3**	**10**	**2**	**50**	**2**	**3**	**7**	28	15	1	13

Source: Sussex County GIS 2020

Note: B – Borough; T – Town; Twp – Township

Table 4.3.7-9. Number of Identified Lifelines by Category Within Hazardous Material Hazard Areas

FEMA Lifeline Category	Total Number of Lifelines in Sussex County	Number of Lifelines Within One Mile of a Railway	Number of Lifelines Within One Mile of a Hazardous Site	Number of Lifelines Within 50 Miles of Indian Point Energy Center
Communications	9	1	0	9
Energy	12	5	3	12
Food, Water, Shelter	75	28	23	74
Hazardous Materials	20	16	20	20
Health and Medical	15	5	3	15
Safety and Security	463	109	59	439
Transportation	2	0	0	2
Sussex County (Total)	**596**	**164**	**108**	**571**

Source: Sussex County GIS 2020; EPA 2018; NJ Transit – 2018; FEMA 2020

In addition to critical facilities and lifelines, the miles of roads exposed to hazardous material hazard areas are summarized in Table 4.3.6-10. Out of the 1,771 miles of transportation routes in the County, 369 miles, 203 miles, and 1,709 miles are built within 1 mile of a railway, 1 mile of hazardous material site, and 50 miles of the Indian Point Energy Center, respectively.

Table 4.3.7-10. Major Transportation Routes Located Within 1-mile of Rail Lines, Hazardous Material Facilities and 50-Miles of Indian Point Energy Center

Road Type	Total Miles for County	Roadway Miles Within One Mile of a Railway		Roadway Miles Within One Mile of a Hazardous Site		Roadway Miles Within 50 Miles of Indian Point Energy Center	
		Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total
Local and Private Roads	1,337	275	20.6%	139	10.4%	1286	96.2%
County Roads	313	51	16.4%	38	12.2%	303	97.0%
State Routes	86	38	44.5%	25	28.5%	85	98.4%
US Highways	34	3	9.2%	2	4.6%	34	98.7%
Interstate	1	1	100.0%	0	0.0%	1	100.0%
Sussex County Total	**1,771**	**369**	**20.8%**	**203**	**11.5%**	**1,709**	**96.5%**

Source: Sussex County GIS 2020; NJDOT 2019

Impact on Economy

If a significant hazardous substances incident occurred, not only would life, safety, and building stock be at risk, but the economy of Sussex County may be impacted as well. A significant incident in an urban area may force businesses to close for an extended period of time because of contamination or direct damage caused by an

explosion, if one occurred. The exact impact on the economy is difficult to determine, given the uncertain nature of the size and scope of incidents.

Hazardous substance incidents have the potential to lead to major transportation route closures in Sussex County. The closure of waterways, railroads, airports, and highways as a result of these incidents has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may be local, regional, or statewide, depending on the magnitude of the event and the level of services disruptions.

Impact on Environment

Hazardous wastes that are released into the environment can be harmful to species and their habitat (EPA 2020). Wastes that get into waterways will be disruptive and sometimes deadly to aquatic species. Consequentially, wastes that get into waterways can also contaminate drinking water supplies. Hazardous wastes can also leach into soils and travel with wind, which not only impacts the localized habitat, but can create issues for surrounding communities. Strict disposal regulations have been defined by organizations like the EPA to ensure that the environment and community is protected from these types of events.

Future Changes That May Impact Vulnerability

Understanding future changes that impact vulnerability in the County can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The county considered the following factors to examine potential conditions that may affect hazard vulnerability:

- Potential or projected development.
- Projected changes in population.
- Other identified conditions as relevant and appropriate, including the impacts of climate change.

Projected Development

Any areas of growth could be potentially impacted by the hazardous materials hazard areas. Development near the transit routes for hazardous materials and facilities will increase the County's overall risk. Therefore, the County should take precautions with the location of new development and the development's proximity to hazardous material facilities and transit routes. The County may also want to consider implementing designs into the new development that enables improved evacuation or protection from residual impacts from the hazardous materials. Refer to Section 3 (County Profile) for more information about the County's anticipated and recent new development plans.

Projected Changes in Population

According to the 2018 5-year population estimates from the American Community Survey, the population of Sussex County (i.e., 142,298 persons) has decreased by approximately 4.7-percent since 2010. Even though the population has decreased, any changes in the density of population can impact the number of persons living near hazardous materials facilities and transit routes.

Climate Change

As temperatures change, excessive heat on containers that contain hazardous materials may alter the material properties. In addition, hazardous substances stored at fixed locations in the floodplain may experience an increase in flood events due to the project changes in increased precipitation events; magnitude and frequency

Vulnerability Changes Since the 2016 HMP

The 2021 HMP has been updated to reflect 2014-2018 American Community Survey 5-year estimates for population changes. The building stock inventory was updated using data from Sussex County. Further, the building stock inventory replacement cost values were updated using RS Means 2020 values providing an overall update to the assets assessed in this risk assessment. This HMP implemented distance buffers over three hazardous material areas, 1 mile from railways, 1 mile from hazardous material sites, and 50 miles of the Indian Point Energy Center. Overall, the County's vulnerability has not changed, and the entire County will continue to be exposed and vulnerable to hazardous substance incidents.