



### 3 Berlin

#### Community Overview

The Town of Berlin encompasses 26.3 square miles of land area and had 20,175 residents as of the 2020 census (a population density of 766 persons per square mile). Elevation ranges from approximately 15 to 767 feet. Nearly all the land area in Berlin drains to Mattabesset River, a tributary to the Connecticut River. Other major streams in Berlin include Belcher Brook, Willow Brook, and Webster Brook. A small portion of land in southern Berlin drains to Sodom Brook, a tributary to the Quinnipiac River.

Berlin is primarily a suburban community, with some rural areas. The town features mainly decentralized development, with a large retail strip located along the State Route 5/15 corridor and three distinct village centers (Berlin, East Berlin, and Kensington). In addition to State Route 5/15, other major transportation routes through Berlin include State Routes 9, 71, 71A, 72, 160, 364, and 372. An Amtrak commuter rail line and the Hartford Line commuter rail pass through Berlin and make a stop in the Kensington area on the west side of town. Berlin’s major businesses and industries include construction, manufacturing, retail trade, and health care and social assistance.

Since the last plan update, several mixed use and apartment complexes have been constructed along the Berlin Turnpike and by the Berlin Train Station. While some redevelopment might occur in areas of flood risk, strict adherence to state and local flood regulations and the state building code will reduce overall risk.

#### Critical Facilities

In Berlin critical facilities include the Town Hall (which serves as the Emergency Operations Center), the Police Department (back-up EOC), four volunteer fire stations, the Senior Center, three Elementary Schools, one Middle School (secondary shelter), one High School (primary shelter), the Public Works Facility, an Ambulance Facility, and Marjorie Moore Housing Complex. The Town Hall has full backup power from a generator. The municipal sewer system includes twelve sewer pumping stations; the Water Control Department moves a portable generator from station to station during outages. The Town’s Physical Services (Public Works) Complex at 19 Town Farm Lane is in the Special Flood Hazard Area (SFHA).

**Table 3-1: Critical Facilities, Berlin**

Facility	Shelter	Cooling Center	Generator
Town Hall			X
Berlin Fire Department (EOC)			X
East Berlin Fire Department			X
Kensington Fire Department			X
South Kensington Fire Department			X
Police Department (Backup EOC)			X
Senior Center		X	
Berlin High School	Primary		800 kW
Berlin Middle School	Secondary		Portable
3 Elementary Schools			
Marjorie Moore Section 8 Housing			X

Facility	Shelter	Cooling Center	Generator
12 sewer pumping stations			1 portable
Library		X	
1 Eversource Substation			
3 Eversource Area Work Centers			

During extreme heat events, Berlin Library and Senior Center can be opened as public cooling centers. Both of these facilities do not have generators. The Town is in discussions with the Housing Authority to pursue acquisition of a generator for the Senior Center; if a generator is obtained, this building could be used as a backup shelter.

The library would be used as a back up facility to the town hall if the town hall was ever rendered unusable.

### Capabilities

The Town of Berlin’s hazard mitigation capabilities include its sheltering capacity, Plan of Conservation and Development (POCD) and Emergency Operations Plan (EOP), training program, building codes and land use regulations, emergency supplies, and mutual aid agreements.

Berlin is committed preservation of open space and rehabilitation of flood hazard areas. The POCD emphasizes strategic and smart growth principles and redevelopment. The Town recognizes that the 1% and the 0.2% annual chance floodplains and floodways should be protected. The POCD incorporates elements of the initial hazard mitigation plan, including a discussion of climate change impacts on flooding, and the potential impacts of dam failure.

Berlin’s municipal codes and ordinances limit any activities on floodplains that would increase flood risk, and stipulate multiple floodproofing requirements. The Town seeks conservation easements for all new developments and acquires properties (when funding allows) that provide ecosystem services. Subdivision regulations require burial of utilities in new developments.

Berlin maintains an Emergency Operations Plan, has identified a variety of resources to assist with response to hazard events, and runs a training program for its emergency personnel. The CivicReady emergency notification system provides alert coverage above the CT Alerts system.

Drainage and flooding complaints are submitted through the town website, to Public Works, or to the Police Department, and are then routed to either the Fire Department or Public Works. The Town regularly sandbags certain properties at risk of flooding and owns a sandbag loader to lower the response time. The Town also evacuates flooding areas when necessary.

Berlin has an annual inspection and maintenance schedule for its 37 bridges and its culverts. Bridge replacements are prioritized based on whether or not a bridge is undersized based on the most recent NRCC rainfall return periods. New construction is designed using the most recent NRCC rainfall return periods.

Removal of the ice and snow for town-owned roads is handled by town workers and contractors; the town handles debris removal. The Town has an informal program to review snow accumulation on town-owned roofs each winter, with clearing occurring when depths are sufficiently deep or wet.

Town departments have sufficient supplies to be prepared for the next major storm event. The Town has several chainsaws and a wood chipper, and a chipping and trimming contractor on call. Much of the tree trimming near power lines is conducted by Eversource Energy. The Town has a limited budget for tree maintenance (~\$15,000) which is considered sufficient at this time.

Berlin maintains mutual aid agreements with surrounding communities for fire protection. The Town has two dry hydrants, four 10,000-gallon underground storage tanks, and hydrants connected to municipal water systems. The Fire Department can require dry hydrants or cisterns in new developments. The Town has three Open Burning Officials.

The Town hired a consultant to perform dam inspections on a two-year and 5-year basis for its two dams based on the inspection requirements of Connecticut DEEP. The Town has prepared Emergency Action Plans (EAPs) for both dams and has copies of EAPs prepared for other dams whose failure could affect Berlin.

Bridges and culverts replaced since adoption of the 2016-2021 Hazard Mitigation Plan for the Former Central Connecticut Region (“2016 HMP”) include the Farmington Avenue bridge and a culvert on High Road. Additional bridges are being reviewed for future replacement.

Berlin has posted information encouraging residents to sign up for the CivicReady emergency notification system on its website and emergency management Facebook page. Additionally, the police department has reverse 9-1-1 capabilities.

The Town’s “Dam Breakage Plan” is scheduled for completion in July 2018. The plan evaluates the dam-failure inundation areas for the two Town-owned dams. The Town will encourage residents in the at-risk areas to sign up for the CivicReady emergency notification system.

Since the 2019 HMP, the following actions have been incorporated as capabilities:

- Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.
- Coordinate with NEMO and CRCOG to share resources and gain technical support for hazard mitigation actions involving stormwater management and public outreach, which have parallel benefits related to MS4 stormwater permit compliance.

Capabilities to address natural hazards and the losses that they have caused, have increased since the last plan has been adopted.

## Challenges

### Challenges Overview

Berlin has experienced recurrent flooding throughout Town, with regular, localized flooding at known locations. Town staff report the Berlin is called “The Great Swamp” and that the town is always wet but the town knows the problem areas.

The town said they have seen an increase in people living in hotels and motels. There are some hotels and motels that will be converted into permanent housing. None of those facilities have generators.

Berlin is served by three public water systems that are interconnected with one another. The greatest areas of wildfire concern are the areas of Town that do not have public water service. These areas are located on the Metacomet side and the Southington side of Berlin. At the time of development of the 2016 HMP, the Town anticipated that a major burn would occur in the Ragged Mountain Preserve in the coming years because a significant amount of deadfall had accumulated. A number of fires have indeed occurred in that area, including small ones on May 5 and August 9, 2015, a large one on July 25, 2016, and another minor fire on April 17, 2017. Hikers are common in this area which increases potential risk for an accidental fire. A major burn in 1984 continued for a week and a half in this area.

A total of twenty-three dams could affect the Town of Berlin with their failure, and six Class C (high hazard) dams lie within the Town boundaries. The rupture of the Kenmere Dam in 1987 forced 80 million gallons of water into town; most of this water inundated a golf course, but had the downstream area been developed differently the outcome could have been far worse.

### Hazard Losses

The economic losses faced by the community from natural hazards can be estimated by reviewing historic loss figures. Loss estimates are summarized below.

#### *Average Annualized Losses*

Average Annualized Loss (AAL) estimates are summarized below. Average Annualized Loss (AAL) figures are useful tools for comparison of the risks faced from different hazards with different likelihoods of occurring in a given time period. AAL estimates were prepared for each natural hazard which may impact Berlin. National Centers for Environmental Information (NCEI) data, from the last 20 years, was categorized by hazard and averaged based on the proportion of population within each town in the CROCG Region. National Flood Insurance Program (NFIP) losses were calculated based on the 50 year span of the program. FEMA Public Assistance (PA) data from the past 11 years was categorized based on hazard and used to compute AAL. United States Department of Agriculture (USDA) from the past 10 years was calculated to get AAL. Expected Annual Loss data from the National Risk Index (NRI) was downloaded and categorized to get AAL for the below hazards. Dam failure data was taken from the 2019-2024 CROCG Hazard Mitigation Plan (HMP) plan since no new dam failures have occurred in the past five years. The 2019 HMP Dam failures were sourced from the 2014 Connecticut Natural Hazard Mitigation Plan Update, with dam failure data supplemented by the National Performance of Dams Program and the Connecticut Department of Energy & Environmental Protection.

**Table 3-2: Average Annualized Losses, Berlin**

Hazard	Source	Average Annualized Losses (AAL)
Hurricanes/Tropical storms	NCEI	\$51,846.29
	NRI	\$938,769.89
	FEMA PA	\$26,001.55
Tornados/High Winds	NCEI	\$19,410.30
	NRI	\$215,527.68
Winter Storms	NCEI	\$15,376.43
	NRI	\$11,789.86
	FEMA PA	\$17,096.89
Flood	NCEI	\$15,715.35

Hazard	Source	Average Annualized Losses (AAL)
	NRI	\$73,434.10
	NFIP	\$7,725.98
Drought	NRI	\$15,552.07
	USDA	\$0.00
Extreme Heat	NRI	\$23,037.85
Wildfire	NRI	\$1,004.67
Earthquakes	NRI	\$54,866.18
Dam Failure	HMP	\$36.00

#### Other Hazard Costs

The impact of Severe Winter Storms on the Town of Berlin based on Winter Storm Alfred in late October 2011. Debris removal was the biggest impact, costing \$615,000.

**Table 3-3: Estimated Impacts from a Severe Winter Storm Comparable to Winter Storm Alfred, Berlin**

Impact of Severe Winter Storm	Estimated Losses
Number of Electrical Customers Served (2013)	9,622
Maximum Outages During Severe Winter Storm (2011)	6,868
Maximum Outages Percentage of Customers (2011)	71.38%
Number of Businesses Experiencing Outages	9
Total Lost Wages (Daily)	\$1,872.08
Average Lost Wages (Weekly)	\$55,514.00
Miles of Local Roads Plowed by Town of Berlin	103.72
Municipal Cost (Plowing, Road Treatment)	\$806,438.88

Sources: Eversource, CCRPA Internal Analysis

The total property damage related to the 1987 Kenmere Reservoir dam failure was \$187,000.

#### Losses Summary

A review of the above loss estimates demonstrates that the Town of Berlin has experienced significant expenses as a result of natural hazards and is at risk for additional losses if some of the less-frequent events were to occur. These actual and potential losses justify hazard mitigation actions to reduce losses in the future.

#### Mitigation Strategies and Actions

This HMCAP includes new goal statements that are aligned with *Resilient Connecticut* and the efforts of the GC3. The five new goals developed for this HMCAP were developed with cooperation from CIRCA in the *Resilient Connecticut* planning process, and are:

- Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.
- Address risks associated with extreme heat events, especially as they interact with other hazards.

- Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.
- Reduce losses from other hazards.
- Invest in resilient corridors to ensure that people and services are accessible during floods and that development along corridors is resilient over the long term.

The previous goals of the 2019 HMP have been replaced and incorporated into these five new goals in accordance with the explanation in the Multijurisdictional document.

#### Noted Hazard Mitigation Needs

Over the course of Plan development, multiple hazard mitigation needs were noted:

- Acquire one a generator for the town library so it can be used as a backup facility to the town hall if needed.
- Acquire additional portable generators for all the sewer pumping stations.
- Purchase or elevate a home on Becker Avenue that frequently floods.
- Move forward with determining if the Physical Services Complex can be wet floodproofed and apply for funding.

## Status of Previous Mitigation Strategies and Actions

The Town of Berlin reviewed the mitigation actions proposed in the 2019 HMP and determined the status of each. That information is included in the table below.

**Table 3-4: Status of Previous Mitigation Strategies and Actions, Berlin**

No.	Action	Notes	Status
4	Complete the Dam Breakage Emergency Plan.	Town staff said the plan has been updated through engineering and has been sent to the insurance carrier and DEEP.	Complete/ Remove
12	Explore rerouting of culverts upstream of Becker Avenue to protect Becker Avenue property.	Town staff report that rerouting of these culverts has not been completed. The Becker Avenue property in question is a single dwelling. The town has cleaned out the culvert which has lowered the potential for flooding for the one dwelling. Because of this increased maintenance, rerouting these culverts is not a priority for the town but town staff would still like to carry this action forward.	Carry Forward
14	Relocate gasoline lines feeding the Physical Services Complex to protect from flooding.	Town staff reported that relocation has not been completed. The tanks are all above ground and are not themselves very vulnerable to flooding, but there is an access concern about getting to the site during flood events. If access is blocked by floodwaters, the town can't refill the tanks. The town would need to purchase property to relocate the Physical Services Complex and the town staff report that this is unlikely to happen (See Action 9 for further discussion of this). The town has been working on a back-up plan for augmenting the gas supplies with the gas tanks located at the golf course. Town staff will check on the status of the golf course fuel back-up plan and will follow up with CIRCA about whether to revise or retire this action.	Retire
6	Update the local floodplain management ordinance to meet current State guidelines.	Town staff report that this is complete.	Complete/ Remove.
10	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	Town staff said this has not been completed. This action will be retained since Berlin has multiple RL properties.	Carry Forward

No.	Action	Notes	Status
11	Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.	Town staff said this has not been completed. This action will be retained since Berlin has multiple RL properties.	Carry Forward
2	Revise the subdivision/zoning code to offer incentives for low-impact development.	Town staff said the town has substantial requirements for drainage in the regulations related to development. The town also recently completed a new POCD, which will be incorporated into the zoning. The intent of this action is complete.	Intent is complete / Retire
9	Construct duplicate facilities for the Physical Services Complex at the golf course and Sage Park.	(See Action 14 for additional discussion related to the gas tanks at this facility). Town staff reported that the public works facility is located in a floodway and previous flooding occurrences have led to damages and cost the town money. There are four buildings that have been repeatedly flooded. The town has previously discussed relocating this complex, but town staff report that relocation is unlikely because there is no feasible property for relocation. Town staff report that the town has shifted its goal to be floodproofing this facility rather than relocating it. Town staff pointed to the Hartford Boathouse as an example of a floodproof facility. The town has already completed some studies related to this goal, and would be interested in seeking grant funding for this floodproofing project. Revise this action to incorporate this town input.	Carry Forward with Revisions  Instead of relocating the facilities, floodproof the facilities.
3	Acquire generators for shelters and other critical facilities. The need for three generators has been identified to ensure that backup power is available for critical town functions. These include the purchase of an additional portable for the Town for general use, an additional portable generator for the Water Control Department to ensure that sewer pumping stations can be maintained during outages, and a new generator for the senior center.	Town staff reported that a generator has been installed for the Water Control Department well site. The town is in the process of transferring an extra generator from the high school to the senior center, which involves working with the housing authority. There is still interest in additional generator power for pump stations, as well as a generator for the library.  CIRCA will follow up with town staff about the status of the generator for the senior center, and will update this action accordingly. Carry forward this action with revisions.	Carry forward with revisions based on the facilities that still need generators



No.	Action	Notes	Status
7	Coordinate with NEMO and CRCOG to share resources and gain technical support for hazard mitigation actions involving stormwater management and public outreach, which have parallel benefits related to MS4 stormwater permit compliance.	Town staff said they are compliant with MS4. This is a capability.	Capability/ Remove
8	Participate in EMI courses or the seminars and annual conference held by the Connecticut Association of Flood Managers.	Town staff reported that this has not been completed but they would like to carry this action forward.	Carry Forward
5	Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	Town staff said they ensure that all potentially hazardous chemicals are stored out of floodplains. This is a capability.	Capability/ Remove
13	Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (such as flood or wildfire hazard zones and areas near steep slopes), to support identification of vulnerable historic properties and preparation of resiliency plans across the state. This action leverages existing resources and best practices for protection of historic and cultural resources through an ongoing statewide initiative by CT SHPO.	Town staff would like to revise the action to "Acquire and review the new SHPO inventory layer", as recommended by CIRCA to other towns.	Carry forward with Revisions
1	Enter the Sustainable CT program through Registration and review actions that can be undertaken to pursue Certification. Make progress with the actions related to hazard mitigation.	Town staff said they have not joined SCT. The town does not currently have the capacity to enter the program but would like to keep this action for the future.	Carry Forward

## Active Mitigation Strategies and Actions

The Town proposed to initiate several new mitigation actions for the upcoming five years. Additionally, a number of actions from the previous planning period are being carried forward or replaced with revised actions. These are listed below.

Each of the following actions has been prioritized based on FEMA guidelines, listed from highest to lowest priority, and numbered.

**Table 3-5: Active Mitigation Strategies and Actions, Berlin**

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	Hazard(s)	EJ?	PERISTS	STAPLEE Score	PERSIST x STAPLEE =
BE1	Seek funding opportunities to floodproof the Physical Services Complex.	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Property Protection	Public Works	\$50,000 - \$100,000	FEMA HMA; Municipal CIP Budget; STEAP	07/2024 - 06/2029	Medium	Riverine and Pluvial Floods	Serves an EJ tract	19	6	114
BE2	Ensure that transportation and transit options are available to bring people to cooling centers.	Address risks associated with extreme heat events, especially as they interact with other hazards.	Preparedness & Emergency Response	Emergency Management	\$10,000 - \$50,000	Transit; IJJA BBFP	07/2024 - 06/2026	High	Extreme Heat	Benefits an EJ tract	19	3	57
BE3	Acquire generators for shelters and other critical facilities. The need for three generators has been identified to ensure that backup power is available for critical town functions. These include the purchase of an additional portable for the Town for general use, an additional portable generator for the Water Control Department to ensure that sewer pumping stations can be maintained during outages, and a new generator for the senior center.	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Preparedness & Emergency Response	Emergency Management	\$100,000 - \$500,000	FEMA HMA; STEAP	07/2024 - 06/2025	High	All Hazards	Serves an EJ tract	19	5	95

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	Hazard(s)	EJ?	PERISTS	STAPLEE Score	PERSISTS x STAPLEE =
BE4	Conduct a town wide assessment of stream crossings to identify vulnerabilities and develop a priority list for maintenance and upsizing.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Structural Project	Public Works	\$10,000 - \$50,000	DCRF; Municipal CIP Budget	07/2025 - 06/2027	Low	Riverine and Pluvial Floods	Benefits an EJ tract	19	6	114
BE5	Explore rerouting of culverts upstream of Becker Avenue to protect Becker Avenue property.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Structural Project	Public Works	\$500,000 - \$1M	IIJA AOP; FEMA HMA; Municipal CIP Budget	07/2026 - 06/2028	Medium	Riverine and Pluvial Floods	No	18	4	72
BE6	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Planning	\$0- \$10,000	Municipal Operating Budget	01/2026 - 12/2026	High	Riverine and Pluvial Floods	No	19	7	133
BE7	Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Planning	\$0- \$10,000	Municipal Operating Budget	07/2024 - 06/2025	High	Riverine and Pluvial Floods	No	19	5	95
BE8	Expand public water systems to areas served by private wells when needed to address drought impacts and provide fire protection	Reduce losses from other hazards.	Water & Wastewater Utility Projects	Fire Department	>\$1M	DWSRF; FEMA HMA; STEAP	07/2024 - 06/2027	High	Drought/ Wildfire	Serves an EJ tract	20	8	160

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	Hazard(s)	EJ?	PERSIST	STAPLEE Score	PERSIST x STAPLEE =
BE9	Work with the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) to develop an appropriate scope of work to address flooding and extreme heat concerns in Resilient Opportunity Areas (ROARs).	More than one goal.	More than one type	Public Works	\$0-\$10,000	CIRCA	07/2024 - 06/2027	Medium	Riverine and Pluvial Floods/Extreme Heat	Benefits an EJ tract	19	5	95
BE10	Review the Connecticut Cultural Resource Information System (ConnCRIS) to identify and understand historic and archaeological resources in areas of hazard risks found here: <a href="https://conncris.ct.gov">https://conncris.ct.gov</a> .	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Planning	\$0-\$10,000	SHPO, Municipal Operating Budget	01/2026 - 12/2026	Medium	Wildfires/Tornadoes and High Winds/Riverine and Pluvial Floods	Benefits an EJ tract	19	9	171
BE11	Participate in EMI and DEMHS courses or the seminars and annual conference held by CIRCA and the Connecticut Association of Flood Managers.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Education and Awareness	Floodplain Manager	\$0-\$10,000	Municipal Operating Budget	01/2025 and annually during this month	High	All Hazards	Benefits an EJ tract	19	6	114
BE12	Enter the Sustainable CT program through Registration and review actions that can be undertaken to pursue Certification. Make progress with the actions related to hazard mitigation.	Reduce losses from other hazards.	Natural Resources Protection	Planning	\$0-\$10,000	Municipal Operating Budget	07/2024 - 06/2026	Low	All Hazards	Benefits an EJ tract	19	7	133
BE13	Update town website to include hazard mitigation and emergency preparedness tips for town residents, including	Reduce losses from other hazards.	Education and Awareness	Planning	\$0-\$10,000	Municipal Operating Budget	01/2025 - 12/2025	Medium	All Hazards	Benefits an EJ tract	18	7	126

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	Hazard(s)	EJ?	PERISTS	STAPLEE Score	PERISTS x STAPLEE =
	sections corresponding to each hazard considered in this Plan Update.												

Figure 3-1: CIRCA Environmental Justice Rank and Critical Facilities, Berlin

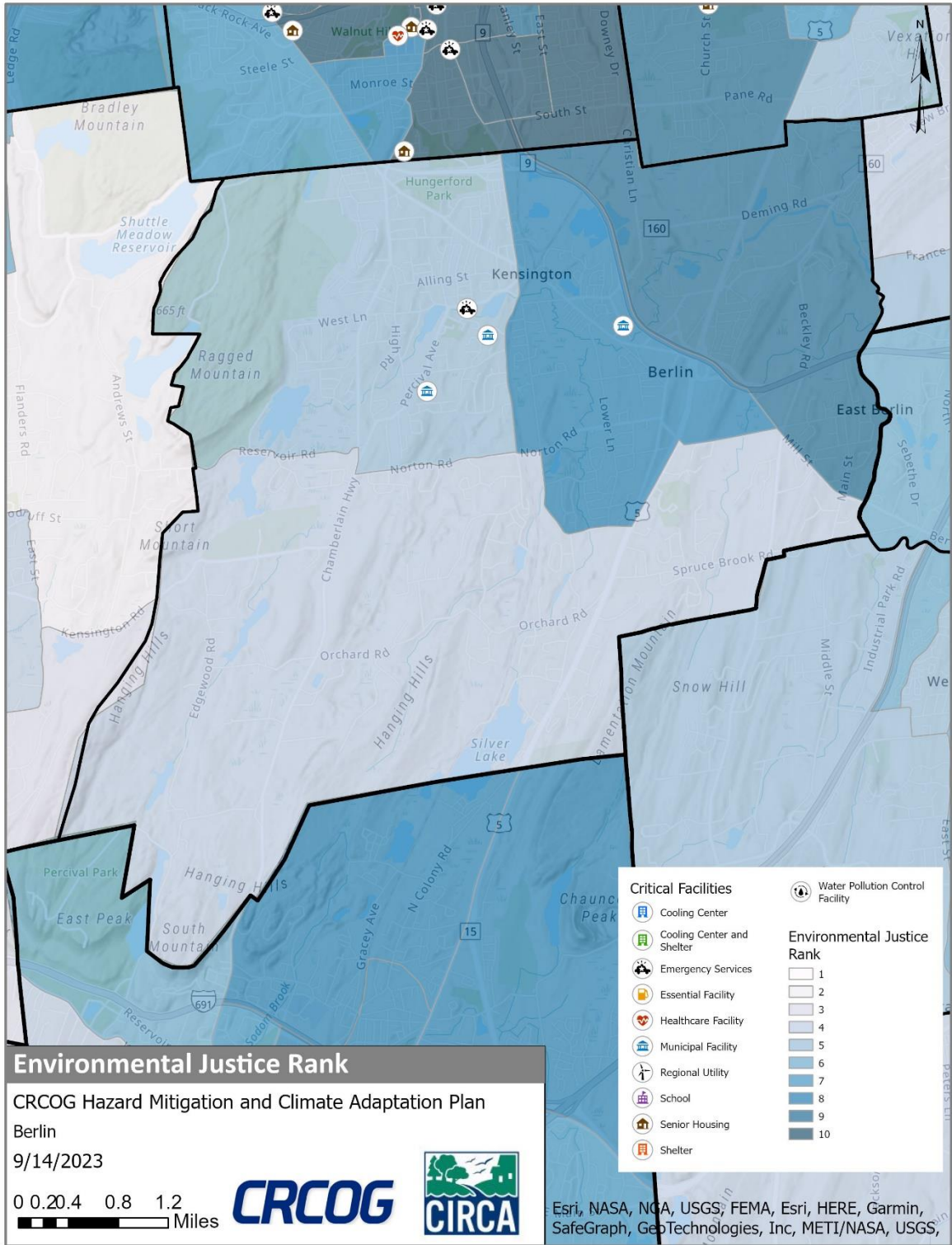


Figure 3-2: FEMA Flood Zones and Critical Facilities, Berlin

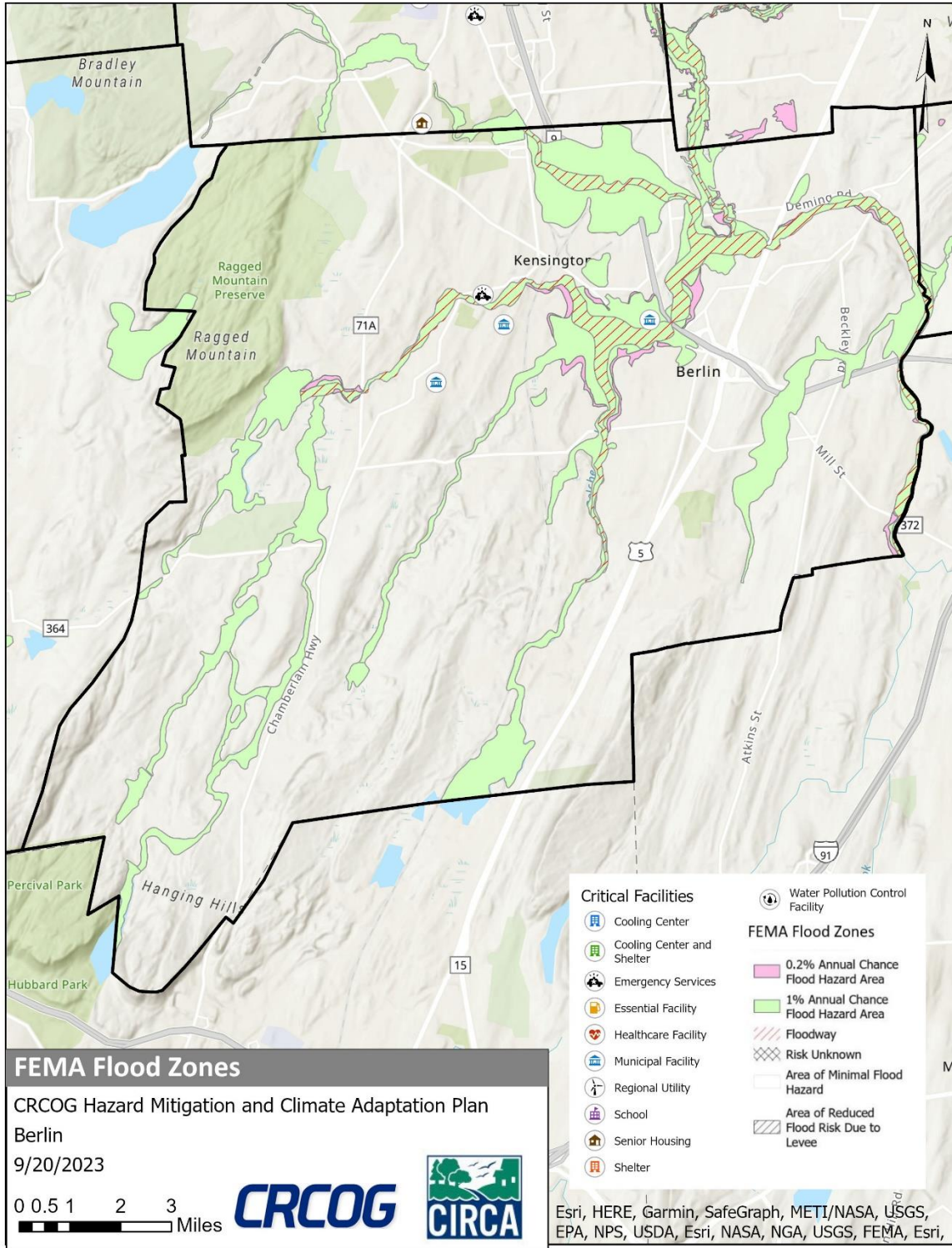


Figure 3-3: CIRCA Flood CCVI and Critical Facilities, Berlin

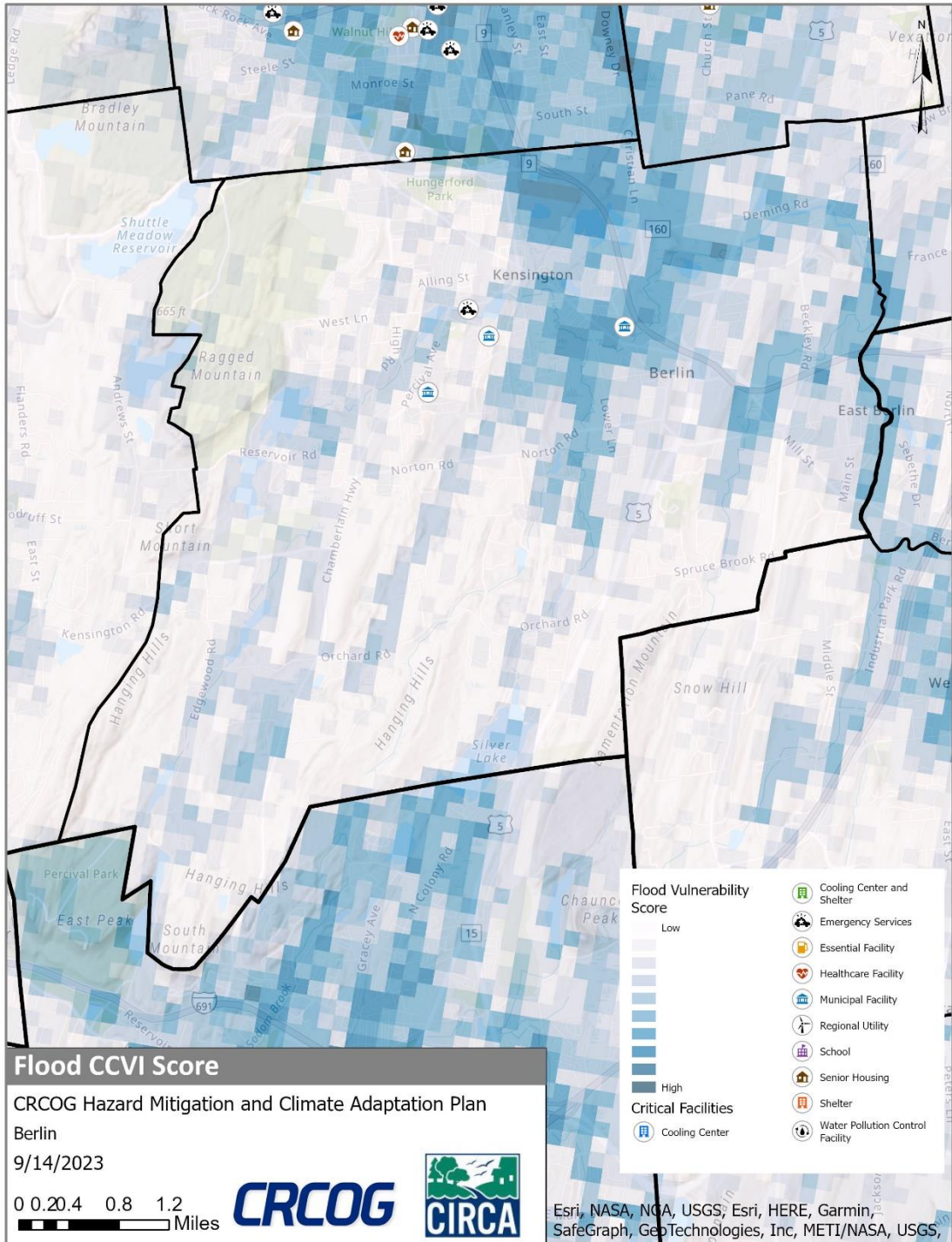




Figure 3-4: Dam Inundation Area and Critical Facilities, Berlin

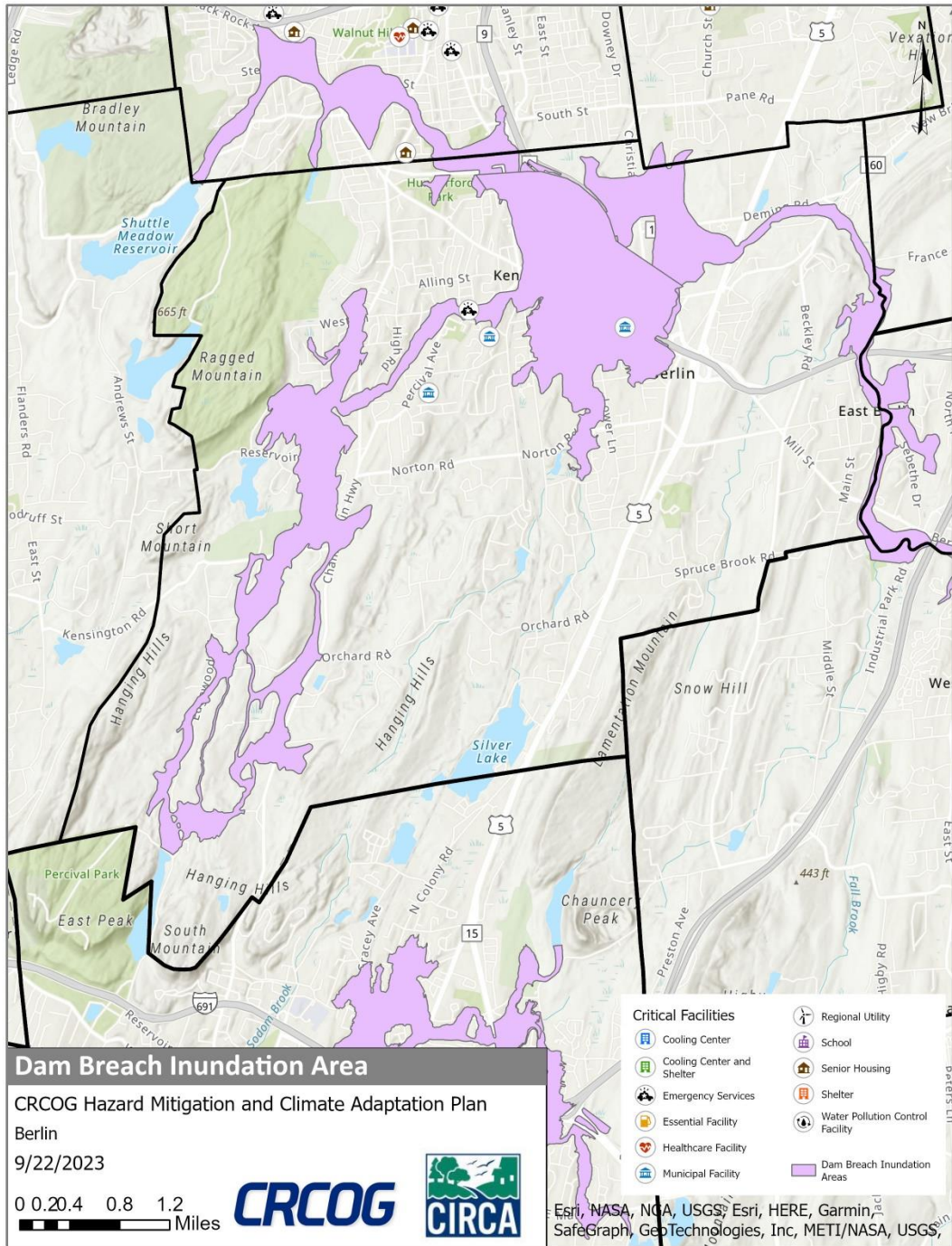


Figure 3-5: CIRCA Heat CCVI and Critical Facilities, Berlin

