ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES (ABCA)

Former Fashion Tannery
108 Van Road
Johnstown, New York

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HRP PROJECT# FUC0001RA

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1.0 INTRODUCTION

This Analysis of Brownfield Cleanup Alternatives (ABCA) was conducted to evaluate cleanup alternatives to remove abandoned containerized wastes at the former Fashion Tannery Site at 108 Van Road in Johnstown, New York (Site). The property, currently owned by Fulton County, NY, intends to remove these wastes from the Site buildings to eliminate this public safety and environmental hazard. A topographic map with the general Site location is attached as Figure 1.

This ABCA is intended to briefly summarize the Site and contamination issues including cleanup standards, applicable laws, cleanup alternatives considered, and the proposed cleanup. Each of the cleanup alternatives was reviewed for effectiveness, ability to implement the alternative, cost, how commonly accepted climate change conditions might impact the alternatives, reasonableness of the cleanup alternatives and a recommendation of an appropriate cleanup alternative.

Cleanup alternatives were evaluated in accordance with USEPA Region 2, NYS Department of Environmental Conservation (NYSDEC) and (NYSDOL) regulations and guidance.

1.1 Background

The 13.3-acre Site lies within two adjoining parcels of land identified by the Fulton County Tax Assessor as Parcels 149.-1-36.11 and 149.-1-36.2. The Site is developed with four Site buildings, originally constructed circa 1967 as a machine and supply company. Occupants have included the Fulton County Machine and Supply Company and later, the Fashion Tanning Company. Specific operations of the Fulton County Machine and Supply Company are unknown. In 1973, the Site became occupied by Fashion Tanning Company, a tanner and a finisher of sheepskin and cowhide for use as garments, gloves, shoes, and handbags. Fashion Tanning occupied the Site until 2003 when the Site was vacated. The Site has remained vacant to the present day.

The Site is improved with a 19,050 square foot warehouse building (Building A), a 38,679 sq. ft. combined office and warehouse building (Building B), a 330 square foot pump house (Building C), and a 1,100 square foot water treatment building (Building D). The Site buildings are in poor condition, with openings in the roofs allowing water infiltration into the interior of the buildings. The remainder of the Site includes wooded wetlands north of the buildings, a 288,000-gallon capacity open-top steel treatment tank, several metal-construction storage containers, two hoppers with unknown contents, a former wastewater lagoon, and a surface impoundment.

Multiple drum storage areas are present throughout the Site buildings, with unlabeled 30 and 55-gallon fiberglass and metal drums and 5-gallon pails. Some drums are crushed, overturned, or damaged. Full drums labeled as containing biocide, glycol ether, and resins are staged on pallets within Building B.

The drums containing industrial wastes on the Site are in unheated unsecured buildings with failing roofs and continue to deteriorate in these conditions.

1.2 Site Assessment History

A Phase II Environmental Site Assessment was conducted at the Fashion Tannery facility in August/September of 2023 during which site containers were inventoried.

Multiple drum storage areas were identified throughout the Site containing unlabeled 30 and 55-gallon fiberglass and metal drums, and 5-gallon pails. Some drums were identified as crushed, overturned, or damaged. Full drums labeled as containing biocide, glycol ether, and resins were staged on pallets within Building B.

1.3 Summary of Hazardous Substances for Remedy

Containerized Industrial Wastes

Exposure to the site wastes may be harmful to site trespassers, area residents and emergency service personnel, should a fire or other emergency situation require entry into site buildings where drums are stored. The chemical wastes in the site containers have not been sufficiently characterized to fully assess and understand exposure risks and so present an undetermined exposure risk to human health and the site area environment. Assessment of these industrial wastes left behind from the former tanning operation will require characterization by professionally trained response contractors and laboratory analysis. The wastes cannot be properly handled or disposed without characterization to understand the risks of exposure and suitability determining proper disposal options.

2.0 PROJECT GOAL AND RE-USE PLAN

The reuse of the site will likely be for commercial or industrial business redevelopment. The cleanup of the Site will revive the area, invigorate the local economy by providing additional employment opportunities, remove blight from the community, utilize sustainability in its cleanup and redevelopment, and remove human health and environmental impacts due to contamination from this abandoned industrial Site.

3.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

Fulton County is the grant recipient responsible for hiring contractors. The County will use a qualified Environmental Professional to assist with contracting documents, cleanup contractor oversight and final documentation. The cleanup will be conducted by licensed waste management and disposal contractor licensed in the State of New York.

Clean up Standards

Applicable materials handling and disposal requirements will be determined by the waste management contractor following comprehensive characterization of the contents of containerized waste on the project site. Materials should be considered "Hazardous" until otherwise determined through inventory and analysis.

4.0 EVALUATION OF CLEANUP ALTERNATIVES

Cleanup Oversight Responsibility

Fulton County will undertake the responsibility of hiring trained and licensed contractors to properly manage and dispose of site containerized wastes. NYS licensed/permitted personnel will conduct characterization of site wastes and perform health and safety monitoring of hazardous site conditions, as applicable based on the Alternative.

4.1 Cleanup Alternatives Considered

EPA requires that ABCAs include the evaluation of at least two cleanup alternatives in addition to a no action alternative. Due to the observed physical and anticipated chemical properties of the site containerized wastes, there are only two options available, management of the wastes on-site in a secure and contained enclosure or removal and disposal.

Alternatives were also evaluated with regards to the sustainability of the cleanup alternatives regarding current and future climate change concerns. Climate conditions are discussed below.

4.2 Forecasted Climate Conditions

Johnstown, NY is located within the Mohawk River Valley and near the Adirondack Park, is a city covering approximately 4.88 square miles, with 99% land area. As the county seat, it is situated 45 miles northwest of Albany. The city is bordered to the north, east, and west by the Town of Johnstown, to the northeast by the city of Gloversville, and to the south by the town of Mohawk in Montgomery County

The Cayadutta Creek lies approximately 0.6 miles west of the site and runs through the city and provided water power needed to generate the electricity required by the various historic tanneries and other industries that grew up in Johnstown. The creek flows south to join the Mohawk River at Fonda.

The Site is located in an area that is topographically flat, at approximately 800 feet above mean sea level and adjacent to a large poorly drained NYS designated wetland area with an unnamed stream that flows southward and westward and discharges to the Cayadutta Creek.

The northeastern United States, including Johnstown, includes warm and often humid summers and cold winters. Rainfall can be severe with summer thunderstorms common and severe weather resulting from regional nor'easter anticyclone storms. Winter conditions can also be severe with ice storms and heavy snow common. Snowfalls of 2-3 feet in one event are common. Portions of Johnstown are prone to flooding during storm surge events; however, due to its location and elevation, the Site is located outside of the Federal Emergency Management Agency (FEMA) identified regulatory floodways.

According to the US Global Change Research Program, because of climate change, the northeast region can expect increased temperatures and temperature variability and extreme precipitation events. The website states: "Heat waves, coastal flooding, and river flooding will pose a growing challenge to the region's environmental, social, and economic systems. This will increase the vulnerability of the region's residents, especially its most disadvantaged populations. Infrastructure will be increasingly compromised by climate-related hazards, including sea level rise, coastal flooding, and intense precipitation events." According to the National Oceanic and Atmospheric Administration (NOAA) State Climate Summaries New York State Climate Summary from 2022 (Attachment A), winter and spring precipitation is projected to increase in New York at a rate of greater than 15% by the middle of the 21st century. In addition, the frequency and intensity of extreme precipitation events are projected to increase, potentially increasing the frequency and intensity of floods.

According to FEMA Flood Insurance Rate Map # 3661131B (Attachment B), the Site is not located in any flood hazard zones; therefore, currently the greatest threat to this Site is from localized stormwater impacts from extreme precipitation events. Other forecasted climate change factors such as sea level rise and storm surge effects have the potential to affect the Site in the future given its geographic location, which is adjacent to very shallow surface waters of a poorly drained marsh. Earthquakes, hurricanes, tornados, and wildfires are not anticipated to affect the Site.

4.3 Clean Up Alternatives Considered

To satisfy EPA requirements, the effectiveness, ability to be implemented, and cost of each alternative must be considered prior to selecting a recommended cleanup alternative. The following alternatives were reviewed.

- Alternative #1: No Action
- Alternative #2: Permanent Containment and Stabilization of Containerized Chemical Wastes
- Alternative #3: Characterize and Dispose of Containerized Chemical Wastes

4.4 Alternative #1: No Action

The "no action" scenario is required by the EPA ABCA process. This scenario assumes that chemicals are not currently leaking from drums and pails and this condition will not worsen as the building continues to degrade.

Effectiveness

This alternative is deemed ineffective and unacceptable for continued Brownfield redevelopment for this Site because:

- It is likely to be considered unacceptable to the community because residents, nearby workers and trespassers to this unsecured facility could unknowingly be placed at risk in the future and further erosion of the containers could cause leaks of the chemicals to site soil, groundwater and the nearby wetlands and surface water. No action provides neither remedy nor elimination of the exposure for projection of public health.
- This approach does not provide any mitigation of chemical exposure to potential human receptors (adult and child).

- The continued presence of degrading containers of industrial chemical wastes in the building would continue to pose a long-term health risk to the public and to workers, trespassers or emergency responders entering or working around the building.

- This alternative would not meet the project goal and re-use plan.

Implementability

The alternative is implementable as it requires no action. However, the industrial chemicals present in degrading containers would still pose a hazard to those entering the building and the environment including sensitive adjacent wetlands. Site structures would be expected to degrade further providing on going physical and chemical exposure concerns to nearby residents, workers, and the environment.

Cost

There is no direct cost for this alternative, however, it is likely that Site security will be needed to keep unauthorized personnel from accessing the Site and Site buildings. Additionally, it is possible storms due to climate change could further degrade the buildings and increase the likeliness of contamination from container spills to nearby properties, reduce property values, increase cleanup costs and increase exposure of the public to potential adverse health effects.

4.5 Alternative #2: Permanent Containment and Stabilization of Containerized Chemical Waste

This alternative would include characterizing and labelling site drums and other containerized wastes, transferring wastes from damaged or degraded containers into competent containers or overpacking as well as the following:

- Construct Hazardous Materials Liquid Waste Storage Area
- Constructing an epoxy lined concrete bermed holding area, heated and covered to prevent building collapse from damaging drums, including heating the storage area to prevent freezing conditions,
- Providing a fire suppression system and other building safety conditions to meet all local/state and energy code requirements for heated structures storing hazardous materials, and
- Securing and posting the area with security fencing and secure locked access entry.
  To maintain a secure and safe condition, ongoing monitoring and maintenance would be necessary to include:
  - Providing routine inspections to ensure materials are secure and undamaged
  - Providing annual engineering inspection and certification of facility competency, and
  - Creating institutional controls to limit site uses.

Effectiveness

The containerized wastes are characterized, consolidated and stored on-site in a stabilized storage area. This approach is technically effective as a definitive and direct physical secure condition that eliminates exposure to contaminants that provide a public and environmental exposure risk. Follow-up inspections and maintenance will be required until the wastes are permanently removed from the site and disposed. This alternative requires ongoing post-remedy institutional or land use controls as well as maintaining the facility and providing long term security for the property. Securing the containers reduces the potential for environmental contamination due to climate change conditions (damaged from storms).

Implementability

This alternative is technically achievable in sound structures. However, site structures have been severely compromised as the buildings have been degraded by storms and severe weather conditions without many years of heat, maintenance or repair. As such, repair and maintenance of some portion of a site building will be necessary, including providing heat, adequate spill containment, monitoring and assessment of container integrity, monitoring and routine maintenance.

Engineering controls including remote monitoring could be implemented to secure the building and make it safe for waste storage. However, the design and engineering costs for a stabilization building rehabilitation approach suitable for storage of hazardous materials may exceed $300,000 to construct a suitable site structure or to rehabilitate an existing site structure to provide a long term functional, safe and secure waste storage facility on the site. If implemented, the intended reuse of the site property which would be returned to the town for new commercial or industrial use would not be met and would be impaired by this condition.

Cost

Due to the engineering and construction costs, building stabilization/rehabilitation and extended security for long term on-site storage of containerized wastes is not a feasible alternative.

4.6 Alternative #3: Characterize and Dispose of Containerized Chemical Wastes

Alternative #3 contemplates the characterization and disposal of abandoned containerized wastes from the site to a licensed disposal facility. Wastes would be characterized, consolidated and disposed of in a regulated treatment, storage or disposal facility (TSDF).

This alternative assumes the structures where the wastes are present will be safe to the extent that the contractors can safely work in the areas where waste containers are present.

This approach requires that a qualified waste handling and disposal contractor provide labor, equipment, and materials for the removal and disposal of waste from the former Fashion Tannery located at 108 Van Road in Gloversville, New York. The waste consists of drums (empty, partial and full), pails, gallon containers, bags of sand, carbon, rags with pigment, and small containers. The waste will be profiled, labeled, loaded, and shipped to a NYSDEC licensed disposal facility. Manifests, bills of lading, labels, and profiling are to be implemented to document the waste disposal.

This option creates a well documented waste disposal process and assures that wastes are safely handled and disposed of at a licensed disposal facility.

Effectiveness
The site wastes and containers are permanently removed and safely disposed of at a licensed disposal facility. This approach is effective as a definitive and direct physical elimination of the contaminants from the site, preventing any future public exposures. Follow-up inspections and maintenance will not be required.

The site-specific climate change conditions identified include increased weather activity which could affect building integrity (damage from storms) and result in the building collapse. Removal of all containerized wastes reduces the potential for environmental contamination.

Implementability
This alternative is technically achievable. The approach requires specialized trained personnel and transporting equipment readily available in the local waste disposal markets. The approach is utilized readily by contractors and owners; the labor and equipment to institute the handling, package the waste and transport to a permitted disposal facility is available.

Cost

Based on preliminary waste disposal contractor estimates within the last two years, current disposal facility costs and estimated quantities of containerized wastes, the cost to complete Alternative #3 is:

- Professional Fees and Services $30,000
  - Community outreach notification, cleanup alternatives analysis, document and bid preparation, bidding, air monitoring, oversight and reporting.
- Contracted Waste Handling and Disposal $125,000
  - Waste Characterization and Container Preparation, Transport, Waste Disposal and Transport/Disposal Documentation.

4.7 Cost Comparison of Alternatives

The table below summarizes the costs for the alternatives considered in this ABCA.

Alternative	Capital Cost	Annual Cost
#1 No Action	$0	Delayed Cleanup Costs
#2 Permanently Store Containerized Chemical Wastes On-Site	Greater Than $500,000	$10,000 - $25,000
#3 Characterize and Dispose of Containerized Chemical Wastes	$155,000	$0

5.0 RECOMMENDED CLEANUP ALTERNATIVE

Alternative #3 is recommended due to following considerations:

- It eliminates toxic exposure to workers, visitors, residents and the environment
- It supports and is consistent with the project goals and reuse plans, preparing site for future commercial or industrial reuse
- It eliminates long term obligations (inspection, repair, safety concerns, security)
- It promotes sustainability strategies

6.0 GREEN REMEDIATION TECHNIQUES

Fulton County will implement green remediation strategies to complete this project in accordance with EPA's strategic plan for improving environmental performance of business sectors. Green remediation builds on environmentally conscious practices already used across business and public sectors, as fostered by the EPA's Sectors Program, and promotes incorporation of state-of-the-art methods. The following represent BMPs and how they will be applied for the project:

- Managing and removing toxic wastes from the property.
- Reducing emission of criteria air pollutants and greenhouse gases (GHGs) (U.S. EPA National Center for Environmental Innovation, 2006) through required contractor participation.

7.0 PUBLIC MEETING

Public comments regarding this ABCA were obtained through the public comment period. A public meeting was advertised by Fulton County and held at the Johnstown town hall at 6:00 PM on May 19, 2026. Details of the public meeting including public comments and responses, are included in Attachment D.

FIGURES

0 1,000 2,000 4,000 6,000 8,000 Feet

1:24,000

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USGS Quadrangle Information
Quad ID: 43074-A3
Name: Gloversville, New York

Figure 1
Site Location
Former Fashion Tannery
108 Van Road
Johnstown, New York
HRP # FUL8002.P2
Scale 1" = 2,000'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

Path: S:\Data\F\FULCC - FULTON COUNTY CENTER FOR REGIONAL GROWTH\34 WEST FULTON STREET, GLOVERSVILLE, NY\FUL8002P2\GIS\GIS.aprx

ATTACHMENT A
NOAA State Climate Summaries – New York State Climate Summary (2022)

NEW YORK

Key Messages

Temperatures in New York have risen almost 2.5°F since the beginning of the 20th century. Under a higher emissions pathway, historically unprecedented warming is projected during this century. Extreme heat is a particular concern for densely populated urban areas such as New York City, where high temperatures and high humidity can cause dangerous conditions.

Since 1880, sea level has risen by about 13 inches along the coast of New York, more than the global average rise of 7–8 inches. Global average sea level is projected to rise another 1–4 feet by 2100, but levels along the coast of New York will likely be higher due to local and regional factors. Sea level rise will increase the frequency, extent, and severity of coastal flooding, which is a grave risk to dense, high-value development along New York's coastline.

New York has experienced a large increase in the frequency and intensity of extreme precipitation events, and further increases are projected. Increases in winter and spring precipitation are projected, raising the risk of springtime flooding, which could cause delayed planting and reduced yields.

New York is regionally diverse, encompassing the Nation's most populous metropolitan area, as well as large expanses of sparsely populated but ecologically and agriculturally important areas. The state's climate is heavily influenced by several geographic features. The Atlantic Ocean has a moderating effect on coastal areas, while the Great Lakes and Lake Champlain moderate the northwestern and northeastern parts of the state, respectively. During much of the year, the prevailing westerly flow brings air masses from the North American interior across the entire region, with occasional episodes of bitter cold during winter. The jet stream, which is often located near or over the region during winter, brings frequent storm systems that cause cloudy skies, windy conditions, and precipitation. New York is often affected by extreme events, such as floods, droughts, heat waves, hurricanes, nor'easters, and snow and ice storms.

Observed and Projected Temperature Change

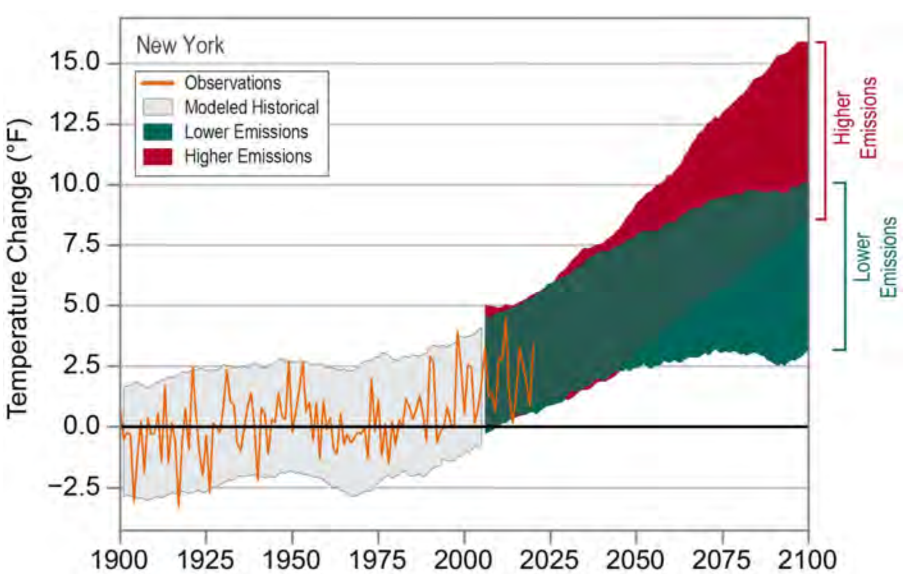
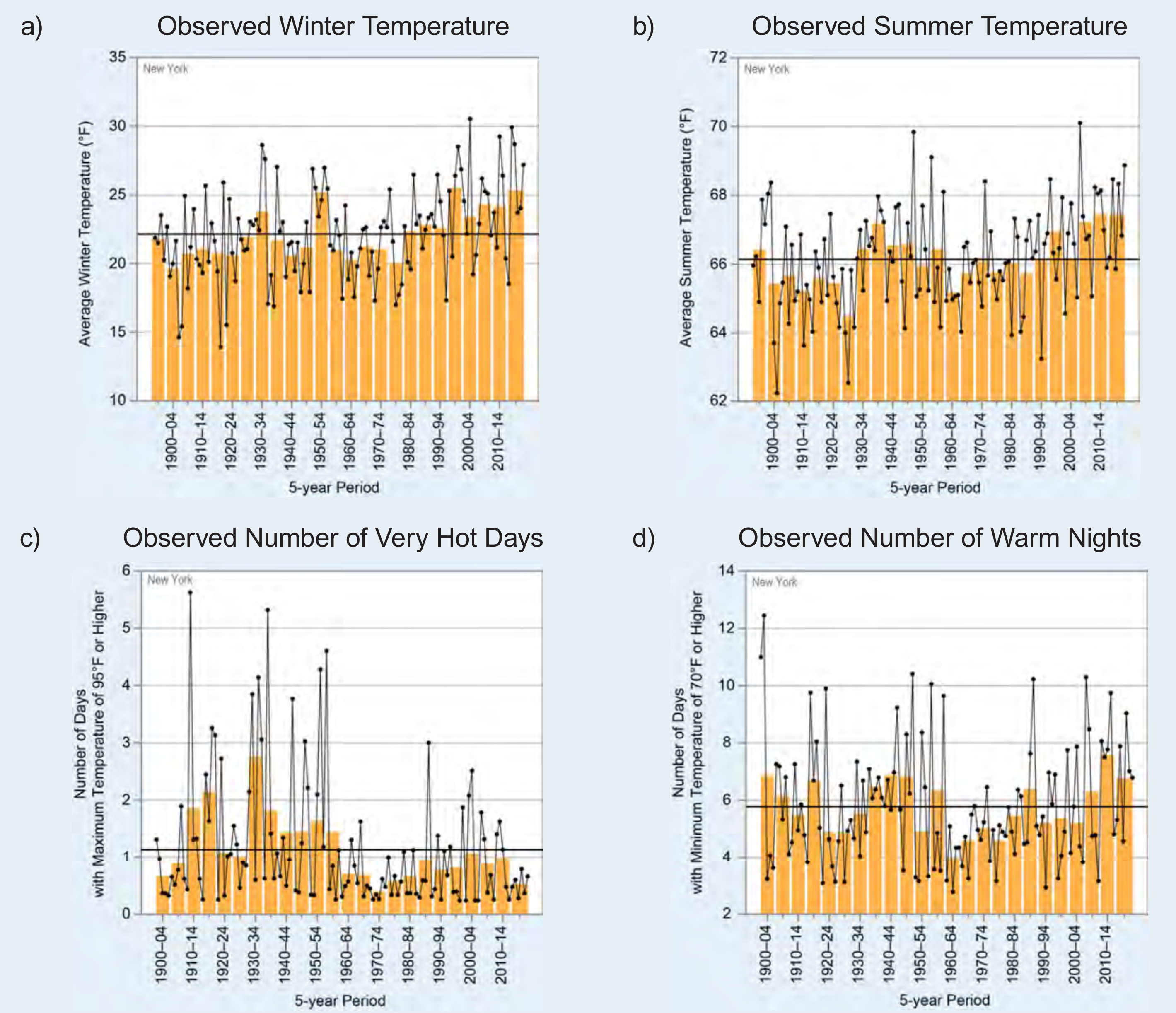


Figure 1: Observed and projected changes (compared to the 1901–1960 average) in near-surface air temperature for New York. Observed data are for 1900–2020. Projected changes for 2006–2100 are from global climate models for two possible futures: one in which greenhouse gas emissions continue to increase (higher emissions) and another in which greenhouse gas emissions increase at a slower rate (lower emissions). Temperatures in New York (orange line) have risen almost 2.5°F since the beginning of the 20th century. Shading indicates the range of annual temperatures from the set of models. Observed temperatures are generally within the envelope of model simulations of the historical period (gray shading). Historically unprecedented warming is projected during this century. Less warming is expected under a lower emissions future (the coldest end-of-century projections being about 3°F warmer than the historical average; green shading) and more warming under a higher emissions future (the hottest end-of-century projections being about 11°F warmer than the hottest year in the historical record; red shading). Sources: CISESS and NOAA NCEI.



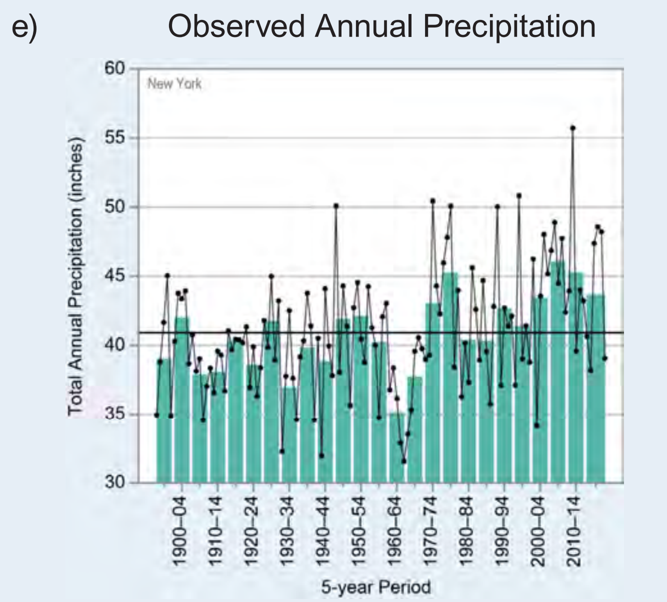


Figure 2: Observed (a) winter (December–February) average temperature, (b) summer (June–August) average temperature, (c) annual number of very hot days (maximum temperature of 95°F or higher), (d) annual number of warm nights (minimum temperature of 70°F or higher), and (e) total annual precipitation for New York from (a, b, e) 1895 to 2020 and (c, d) 1900 to 2020. Dots show annual values. Bars show averages over 5-year periods (last bar is a 6-year average). The horizontal black lines show the long-term (entire period) averages: (a) 22.2°F, (b) 66.1°F, (c) 1.1 days, (d) 5.8 nights, (e) 40.9 inches. Recent years have seen some of the warmest winter and summer temperatures in the historical record. The number of very hot days peaked during the 1930–1934 period, while the number of warm nights was highest during the 2010–2014 period. Total annual precipitation has been significantly above average since 2000. Sources: CISESS and NOAA NCEI. Data: (a, b, e) nClimDiv, (c, d) GHCN-Daily from 12 long-term stations.

Since the beginning of the 20th century, temperatures in New York have risen almost 2.5°F, and temperatures in the 2000s have been higher than in any other historical period (Figure 1). As of 2020, the hottest year on record for New York was 2012, with a statewide average temperature of 48.8°F, more than 4°F above the long-term average (44.5°F). This warming has been concentrated in the winter and spring, while summers have not warmed as much (Figures 2a and 2b). Summer warming is more influenced by the number of warm nights than by the occurrence of very hot days (Figures 2c and 2d). The state has experienced an increase in the number of warm nights and a decrease in the number of very cold nights (Figure 3). The increase in winter temperatures has had an identifiable effect on Great Lakes ice cover. Since 1998, there have been several years when Lakes Erie and Ontario were mostly ice-free (Figure 4).

Annual average precipitation is slightly more than 40 inches statewide but varies regionally, with mountainous areas receiving near 50 inches per year. Statewide annual precipitation has ranged from a low of 31.6 inches in 1964 to a high of 55.7 inches in 2011. The driest multiyear periods were in the early 1930s and early 1960s and the wettest in the late 1970s and since 2000 (Figure 2e). The driest consecutive 5-year interval was 1962–1966, with an annual average of 33.9 inches, and the wettest was 2007–2011, with an annual average of 46.8 inches. **New York has recently experienced a large increase in the number of 2-inch extreme precipitation events** (Figure 5), which peaked during the 2010–2014 period. The annual precipitation record, set in 2011, was partially due to extreme precipitation events caused by Hurricane Irene and Tropical Storm Lee in late August and early September, respectively. Many areas of eastern New York received more than 7 inches of rain from Hurricane Irene, with more than 18 inches in some locations in the Catskill Mountains. Less than two weeks later, Tropical Storm Lee brought additional heavy rainfall, with more than 12 inches falling in the Susquehanna River basin. The extreme rainfall from these two events caused devastating flooding and damage. Nontropical systems can also bring extreme rainfall, such as during August 12–13, 2014, when the state 24-hour precipitation record was broken (13.57 inches) at Islip. New York experienced extreme drought during 2016 and severe drought during 2020, which had major impacts on agriculture in some parts of the state.

In addition to causing heavy flooding inland, hurricanes and tropical storms can cause coastal damage from storm surge and flooding. In late October 2012, Superstorm Sandy (a post-tropical storm) caused massive storm surge in New York City. The extensive

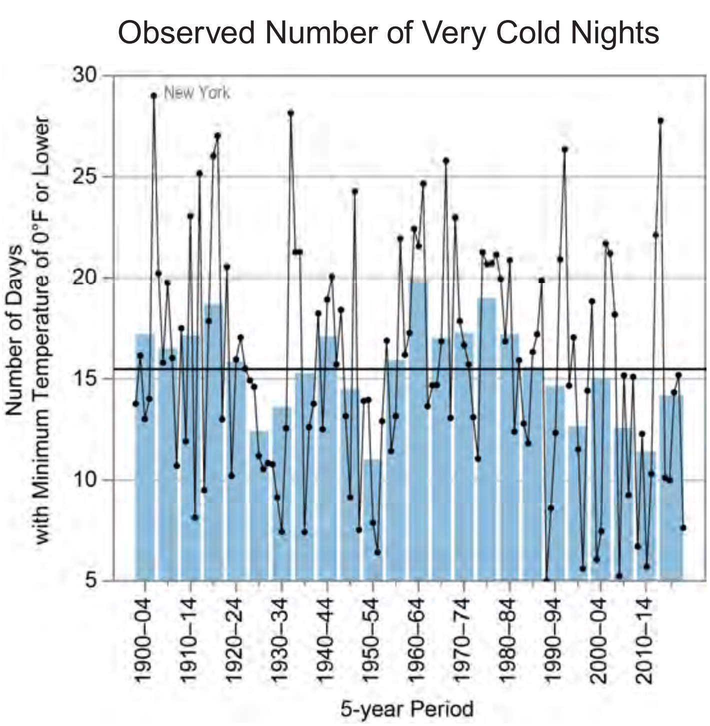


Figure 3: Observed annual number of very cold nights (minimum temperature of 0°F or lower) for New York from 1900 to 2020. Dots show annual values. Bars show averages over 5-year periods (last bar is a 6-year average). The horizontal black line shows the long-term (entire period) average of 16 nights. The number of very cold nights has been below average since 1990, reflecting a long-term winter warming trend. Sources: CISESS and NOAA NCEI. Data: GHCN-Daily from 12 long-term stations.

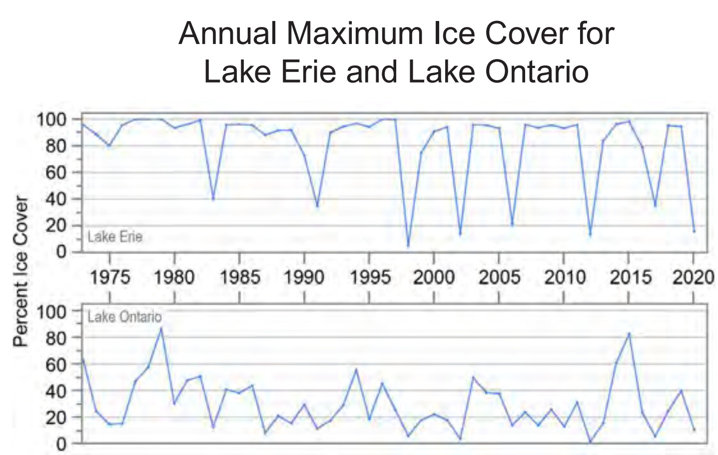


Figure 4: Annual maximum ice cover extent (%) for Lake Erie (top) and Lake Ontario (bottom) from 1973 to 2020. During most years, Lake Erie was nearly frozen over, while Lake Ontario was mostly ice-free. There were 6 years when Lake Erie was mostly ice-free, and all of those occurred since 1998. Since 2006, Lake Ontario's ice cover extent has remained below 40%, except for higher values during the cold 2013–14 and 2014–15 winters. Source: NOAA GLERL.

flooding from the storm surge inundated subway tunnels, damaged the electrical grid, overwhelmed sewage treatment plants, and destroyed thousands of homes. Superstorm Sandy caused tens of billions of dollars in damages in the state, with an estimated $19 billion in damages to New York City.

Winter storms occur frequently across the state due to the large temperature contrast between the cold interior of the North American continent and the warm moist air of the western Atlantic. **These storms, popularly known as nor'easters, can produce crippling snowfall, flood-producing rainfall, hurricane-force winds, and dangerous cold**. The Blizzard of 1996, January 6–8, was a classic nor'easter, dropping more than 20 inches of snow in New York City and causing an estimated $70 million in damages across the state. During the Blizzard of 2016, January 22–24, more than 30 inches of snow fell in some areas, such as Kennedy Airport, where near-blizzard conditions persisted for 9 hours; travel bans were also enacted in New York City. The northern part of the state frequently experiences heavy lake-effect snows due to the warming and moistening of arctic air masses as they pass over the Great Lakes. This results in intense bands of heavy snowfall over areas downwind of Lakes Ontario and Erie. During November 17–19, 2014, a lake-effect snowstorm delivered more than 5 feet of snow just east of Buffalo. A second lake-effect event immediately followed during November 19–20, dropping as much as an additional 4 feet of snow; snowfall rates as high as 6 inches per hour were reported, with some areas receiving more than 3 feet of snow in less than 12 hours. These two storms were considered unprecedented events but were characteristic of lake-effect snows that affect the state. The Great Lakes can also experience flooding and erosion due to high water levels. Wet spring conditions contributed to record-high water levels and flooding in 2017 and 2019. Cleanup costs, infrastructure damages, and agricultural losses were in the millions of dollars.

Under a higher emissions pathway, historically unprecedented warming is projected during this century (Figure 1). Even under a lower emissions pathway, annual average temperatures are projected to most likely exceed historical record levels by the middle of this century. However, a large range of temperature increases is projected under both pathways, and under the lower pathway, a few projections are only slightly warmer than

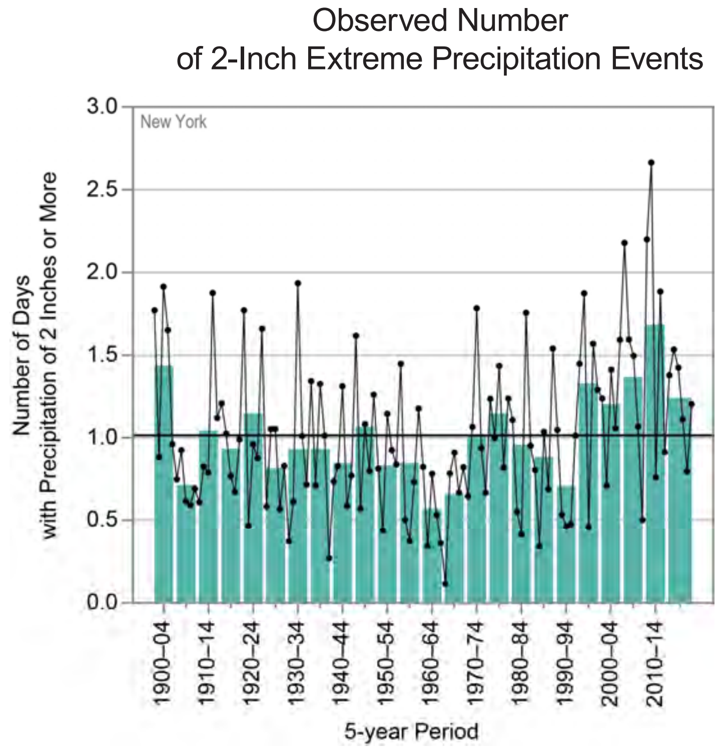


Figure 5: Observed annual number of 2-inch extreme precipitation events (days with precipitation of 2 inches or more) for New York from 1900 to 2020. Dots show annual values. Bars show averages over 5-year periods (last bar is a 6-year average). The horizontal black line shows the long-term (entire period) average of 1.0 days. A typical station experiences 1 event each year. Since 1995, New York has experienced an above average number of 2-inch extreme precipitation events, with the highest frequency occurring during the 2010–2014 period. Sources: CISESS and NOAA NCEI. Data: GHCN-Daily from 16 long-term stations.

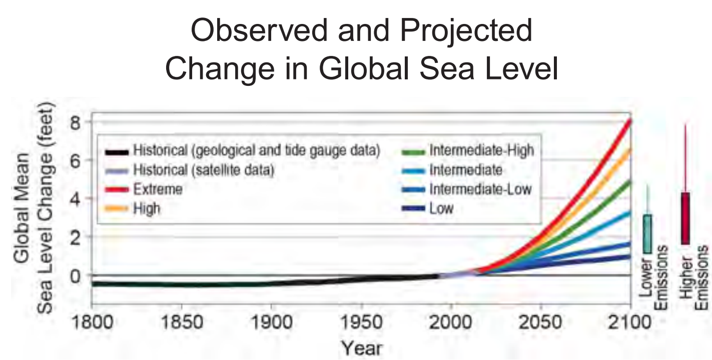


Figure 6: Global mean sea level (GMSL) change from 1800 to 2100. Projections include the six U.S. Interagency Sea Level Rise Task Force GMSL scenarios (Low, navy blue; Intermediate-Low, royal blue; Intermediate, cyan; Intermediate-High, green; High, orange; and Extreme, red curves) relative to historical geological, tide gauge, and satellite altimeter GMSL reconstructions from 1800–2015 (black and magenta lines) and the very likely ranges in 2100 under both lower and higher emissions futures (teal and dark red boxes). Global sea level rise projections range from 1 to 8 feet by 2100, with a likely range of 1 to 4 feet. Source: adapted from Sweet et al. 2017.

historical records. Heat waves are projected to be more intense. Extreme heat is a particular concern for New York City and other urban areas, where the urban heat island effect raises summer temperatures. High temperatures combined with high humidity can create dangerous heat index values. By contrast, cold waves are projected to become less intense.

Increasing temperatures raise concerns for sea level rise in coastal areas. Since 1880, sea level has risen by about 13 inches along the coast of New York, more than the global average rise of about 7–8 inches since 1900. Global sea level is projected to rise another 1–4 feet by 2100 as a result of both past and future emissions from human activities (Figure 6), but local and regional factors are expected to cause New York's sea level to rise more than the global projection. Even if storm patterns remain the same, sea level rise will increase the frequency, extent, and severity of coastal flooding. Sea level rise has caused an increase in tidal floods associated with nuisance-level impacts. Nuisance floods are events in which water levels exceed the local threshold (set by NOAA's National Weather Service) for minor impacts. These events can damage infrastructure, cause road closures, and overwhelm storm drains. As sea level has risen along the New York coastline, the number of tidal flood days (all days exceeding the nuisance-level threshold) has also increased, with the greatest number occurring in 2009 and 2017 (Figure 7). This is a particular concern for New York because of dense, high-value development along the coastline.

Winter and spring precipitation is projected to increase in New York (Figure 8). This could result in enhanced snowpack at higher elevations, but with warmer temperatures, more of the precipitation will fall as rain, particularly at lower elevations. In addition, the frequency and intensity of extreme precipitation events are projected to increase, potentially increasing the frequency and intensity of floods. Heavier precipitation increases the risk of springtime flooding, which could pose a particular threat to New York's agricultural industry by delaying planting and resulting in yield losses.

Observed and Projected Annual Number of Tidal Floods for The Battery, NY

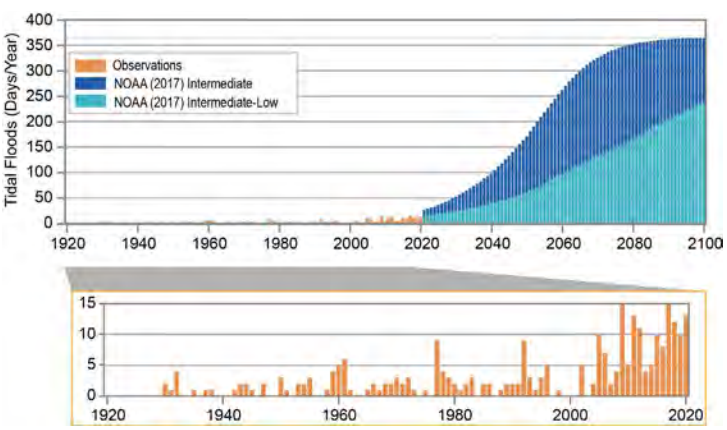


Figure 7: Number of tidal flood days per year at The Battery, NY, for the observed record (1920–2020; orange bars) and projections for two NOAA (2017) sea level rise scenarios (2021–2100): Intermediate (dark blue bars) and Intermediate-Low (light blue bars). The NOAA (2017) scenarios are based on local projections of the GMSL scenarios shown in Figure 6. Sea level rise has caused a gradual increase in tidal floods associated with nuisance-level impacts. The greatest number of tidal flood days (all days exceeding the nuisance-level threshold) occurred in 2009 and 2017 at The Battery. Projected increases are large even under the Intermediate-Low scenario. Under the Intermediate scenario, tidal flooding is projected to occur nearly every day of the year by the end of the century. Additional information on tidal flooding observations and scenarios is available at https://statesummaries.ncics.org/technicaldetails. Sources: CISESS and NOAA NOS.

Projected Change in Winter Precipitation

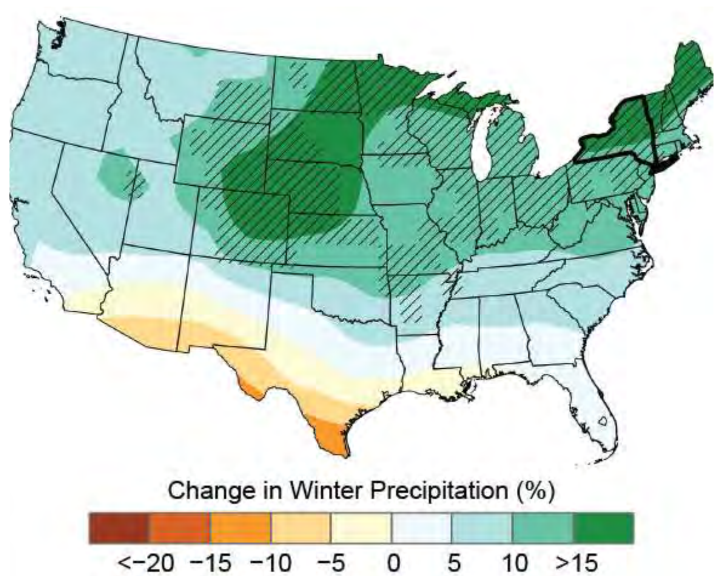


Figure 8: Projected change in winter (December–February) precipitation (%) for the middle of the 21st century compared to the late 20th century under a higher emissions pathway. Hatching represents areas where the majority of climate models indicate a statistically significant change. By the middle of this century, if greenhouse gas emissions continue to rise rapidly, winter precipitation is projected to increase by 10%–15% in southern New York and 15%–20% in northern New York. Sources: CISESS and NEMAC. Data: CMIP5.

Technical details on observations and projections are available online at https://statesummaries.ncics.org/technicaldetails.

ATTACHMENT B
FEMA Flood Zone Map

HRP

ATTMT B	FEMA Flood Map Rate Map 3661131B 108 Van Road Johnstown NY	Issue Date: 428/2026	Designed By:	Revisions	North	1 FAIRCHILD SQUARE SUITE 110 CLIFTON PARK, NY 12065 (518) 877-7101 hrpassociates.com
		Project No:	Drawn By: KB			
		Sheet Size: 8.5 X 11	Reviewed:			

ATTACHMENT C
ABCA Public Meeting Details and Comments