

ACRONYMS

ARC	American Red Cross
ASCE	American Society of Civil Engineers
BIT	Building Information Tool
CCE	Cornell Cooperative Extension
CRS	Community Rating System
DEM	U.S. Geological Survey Digital Elevation Model
DHS	Department of Homeland Security
DMA 2000	Disaster Mitigation Act of 2000
EOC	Emergency Operation Center
EPA	U.S. Environmental Protection Agency
EPF	Environmental Protection Fund
ERC	Emergency Response Council
ERNS	Emergency Response Notification System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIT	Flood Information Tool
FMA	Flood Mitigation Assistance Program
FOIA	Freedom of Information Act
GIS	Geographic Information System
HAZUS	Hazards U.S.
HAZUS-MH	Hazards U.S. Multi-Hazard
HazMat	Hazardous Material
HAZNY	Hazards New York
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
LEPC	Local Emergency Planning Coordinator
LHD	Local Highway Departments
M	Million
MRP	Mean Return Period
MPH	Miles Per Hour
MTBE	Methyl Tertiary-Butyl Ether
N/A	Not Applicable

ACRONYMS (Continued)

NA	Not Available
NCDC	National Climate Data Center
NFIRS	National Fire Incident Reporting System
NIMO	Niagara-Mohawk (electric)
NOAA	National Oceanic and Atmospheric Agency
NRCS	Natural Resource Conservation Service
NWS	National Weather Service
NYSDEC	New York State Department of Environmental Conservation
NYSEMO	New York State Emergency Management Organization
PDEQ	Planning, Development, And Environmental Quality Committee
PDM	Pre-Disaster Mitigation Program
SBA	Small Business Administration
SEMO	State Emergency Management Office
SOCPA	Syracuse-Onondaga County Planning Agency
TRI	Toxic Release Inventory
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WWTP	Wastewater Treatment Plant

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[Note: References will be confirmed and updated for final version of this report].

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[Note: To Insert Adoption Resolutions When They Are Passed.]

Glossary

This resource defines terms that are used in or support the risk assessment document. These definitions were based on terms defined in documents included in the reference section, with modifications as appropriate to address Town of Clay-specific definitions and requirements.

100-year flood – A flood that has a 1-percent chance of being equaled or exceeded in any given year. This flood event is also referred to as the base flood. The term "100-year flood" can be misleading; it is not the flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1- percent chance of being equaled or exceeded each year. Therefore, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management to determine the need for flood insurance.

500-year flood – A flood that has a 0.2-percent chance of being equaled or exceeded in any one year.

Aggregate Data – Data gathered together across an area or region (for example, census tract or census block data).

Annualized Loss – The estimated long-term value of losses from potential future hazard occurrences of a particular type in any given single year in a specified geographic area. In other words, the average annual loss that is likely to be incurred each year based on frequency of occurrence and loss estimates. Note that the loss in any given year can be substantially higher or lower than the estimated annualized loss.

Annualized Loss Ratio – Represents the annualized loss estimate as a fraction of the replacement value of the local building inventory. This ratio is calculated using the following formula: $\text{Annualized Loss Ratio} = \text{Annualized Losses} / \text{Exposure at Risk}$. The annualized loss ratio gauges the relationship between average annualized loss and building value at risk. This ratio can be used as a measure of relative risk between hazards as well as across different geographic units

Areal Locations of Hazardous Atmospheres (ALOHA) – A computer program that uses information provide by the user, along with physical property data from its chemical library, to predict how a hazardous gas cloud might disperse in the atmosphere after an accidental chemical release. ALOHA can predict rates of chemical release from broken gas pipes, leaking tanks, and evaporating puddles. ALOHA can model the dispersion of both neutrally buoyant and heavier-than-air gases.

Asset – Any man-made or natural feature that has value, including but not limited to people, buildings, infrastructure (such as bridges, roads, and sewer and water systems), and lifelines (such as electricity and communication resources or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks).

At-Risk – Exposure values that include the entire building inventory value in census blocks that lie within or border the inundation areas or any area potentially exposed to a hazard based on location.

Base Flood – Flood that has a 1-percent probability of being equaled or exceeded in any given year. It is also known as the 100-year flood.

Base Flood Elevation (BFE) – Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The BFE is used as the standard for the National Flood Insurance Program.

Benefit – Net project outcomes, usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of conducting a benefit-cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including a reduction in expected property losses (building, content, and function) and protection of human life.

Benefit-cost analysis (BCA) – Benefit-cost analysis is a systematic, quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.

Building – A structure that is walled and roofed, principally aboveground and permanently fixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

Building Codes – Regulations that set forth standards and requirements for construction, maintenance, operation, occupancy, use, or appearance of buildings, premises, and dwelling units. Building codes can include standards for structures to withstand natural disasters.

Capability Assessment – An assessment that provides a description and analysis of a community or state’s current capacity to address the threats associated with hazards. The capability assessment attempts to identify and evaluate existing policies, regulations, programs, and practices that positively or negatively affect the community or state’s vulnerability to hazards or specific threats.

Community Rating System (CRS) – CRS is a program that provides incentives for National Flood Insurance Program communities to complete activities that reduce flood hazard risk. When the community completes specific activities, the insurance premiums of these policyholders in communities are reduced.

Comprehensive Plan – A document, also known as a “general plan”, covering the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all of the physical elements that will determine the community’s future development. This plan can discuss the community’s desired physical development, desired rate and quantity of growth, community character, transportation services, location of growth, and siting of public facilities and transportation. In most states, the comprehensive plan has no authority in and of itself, but serves as a guide for community decision-making.

Critical Facility – Facilities that are critical to the health and welfare of the population and that are especially important following a hazard. Critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities.

Dam Failure – A partial or complete breach in a dam, which impacts its integrity. Dam failures occur for a number of reasons such as flash flooding, inadequate size of spillways, mechanical failure of valves and other equipment, rodent activities in earthen dams, freezing and thawing cycles, earthquakes, and intentional destruction.

Debris – The scattered remains of assets broken or destroyed during the occurrence of a hazard. Debris caused by a wind or water hazard event can cause additional damage to other assets.

Digital Elevation Model (DEM) – U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data files that are digital representations of cartographic information in a raster form. DEMs include a sampled array of elevations for a number of ground positions at regularly spaced intervals. These digital cartographic/geographic data files are produced by USGS as part of the National Mapping Program.

Displacement Time – After a hazard occurs, the average time (in days) that a building’s occupants must operate from a temporary location while repairs are made to the original building due to damages resulting from the hazard.

Disaster Mitigation Act of 2000 (DMA 2000) – Law that requires and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate state and local planning with the aim of strengthening state-wide mitigation planning.

Drought – A period of time without substantial rainfall that persists from one year to the next. Droughts can affect large areas and can impact areas that range from a few counties to several states. Along with decreasing water supplies for human consumption and use, droughts can kill crops, livestock, grazing land, edible plants, and even in severe cases, trees.

Duration – The length of time a hazard occurs.

Earthquake – A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth’s tectonic plates.

Emergency Facility – An essential facility that is critically important to the health and welfare of the population during and immediately following a hazard event. For the Town of Clay risk assessment, this sub-category includes police, fire and EMS facilities.

Erosion – Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.

Erosion Hazard Area – Area anticipated to be lost to shoreline retreat over a given period of time. The projected inland extent of the area is measured by multiplying the average annual long-term recession rate by the number of years desired.

Essential Facility – A facility that is important to ensure a full recovery of a community or state following the occurrence of a hazard. For the Town of Clay risk assessment, this category includes emergency facilities (police, fire and EMS), hospitals and medical facilities, shelters, adult care facilities, schools and day care facilities.

Exposure – The number and dollar value of assets that are considered to be at risk during the occurrence of a specific hazard.

Extent – The size of an area affected by a hazard or the occurrence of a hazard.

Federal Emergency Management Agency (FEMA) – Independent agency (now part of the Department of Homeland Security) created in 1978 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.

Fire Potential Index (FPI) – Developed by USGS and the U.S. Forest Service (USFS) to assess and map the potential for a fire hazard over broad, defined areas. Based on such geographic information, national

policy makers and “on-the-ground” fire managers established priorities for prevention activities in the defined areas to reduce the risk of managed and wildfire ignition and spread. This index helps to shorten the time between fire ignition and initial attack by enabling fire managers to pre-allocate, target, and stage suppression forces to high-fire risk areas.

Flash Flood – A flood occurring with little or no warning where water levels rise at an extremely fast rate.

Flood – A general and temporary condition of partial or complete inundation of normally dry land areas resulting from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

Flood Depth – Height of the flood water surface above the ground surface.

Flood Elevation – Height of the water surface above an established datum (for example, the National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or mean sea level).

Flood Hazard Area – Area shown to be inundated by a flood of a given magnitude on a map.

Flood Information Tool (FIT) – Hazard U.S. Multi-Hazard (HAZUS-MH)- related tool designed to process and convert locally available flood information to data that can be used by the HAZUS-MH Flood Module. The FIT is a system of instructions, tutorials and geographic information system (GIS) analysis scripts. When provided with user-supplied inputs (such as ground elevations, flood elevations, and floodplain boundary information), the FIT calculates flood depth and elevation for river and coastal flood hazards.

Flood Insurance Rate Map (FIRM) – Map of a community, prepared by the FEMA that shows both the special flood hazard areas and the risk premium zones applicable to the community.

Flood Insurance Study (FIS) – A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.

Flood Mitigation Assistance (FMA) Program – A program created as a part of the National Flood Insurance Report Act of 1994. FMA provides funding to assist communities and states in implementing actions that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other NFIP insurance structures, with a focus on repetitive loss properties.

Floodplain – Any land area, including a watercourse, susceptible to partial or complete inundation by water from any source.

Flood Polygon – A geographic information system vector file outlining the area exposed to the flood hazard. HAZUS-MH generates this polygon at the end of the flood computations in order to analyze the inventory at risk.

Frequency – A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1-percent chance of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

Fujita Scale of Tornado Intensity – Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 (wind speed less than 73 mph) indicates minimal damage such as broken tree limbs or signs, while an F5 (wind speeds of 261 to 318 mpg) indicated severe damage sustained.

Goals – General guidelines that explain what you want to achieve. They are usually broad policy-type statements, long term in nature, and represent global visions.

Geographic Information Systems (GIS) – A computer software application that relates data regarding physical and other features on the earth to a database to be used for mapping and analysis.

GIS Shape Files – A type of GIS vector file developed by ESRI for their ArcView software. This type of file contains a table and a graphic. The records in the table are linked to corresponding objects in the graphic.

Hailstorm – Storm associated with spherical balls of ice. Hail is a product of thunderstorms or intense showers. It is generally white and translucent, consisting of liquid or snow particles encased with layers of ice. Hail is formed within the higher reaches of a well-developed thunderstorm. When hailstones become too heavy to be caught in an updraft back into the clouds of the thunderstorm (hailstones can be caught in numerous updrafts adding a coating of ice to the original frozen droplet of rain each time), they fall as hail and a hailstorm ensues.

Hazard – A source of potential danger or an adverse condition that can cause harm to people or cause property damage. For this risk assessment, priority hazards were identified and selected for the pilot project effort. A natural hazard is a hazard that occurs naturally (such as flood, wind, and earthquake). A man-made hazard is one that is caused by humans (for example, a terrorist act or a hazardous material spill). Hazards are of concern if they have the potential to harm people or property.

Hazards of Interest – A comprehensive listing of hazards that may affect an area.

Hazards of Concern – Those hazards that have been analytically determined to pose significant risk in an area, and thus the focus of the particular mitigation plan for that area (a subset of the Hazards of Interest).

Hazard Identification – The process of identifying hazards that threaten an area.

Hazardous Material Facilities – Facilities housing industrial and hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

Hazard Mitigation – Sustained actions taken to reduce or eliminate the long-term risk and effects that can result from the occurrence of a specific hazard. For example, building a retaining wall can protect an area from flooding.

Hazard Mitigation Grant Program (HMGP) – Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.

Hazard Mitigation Plan – A collaborative document in which hazards affecting the community are identified, vulnerability to hazards assessed, and consensus reached on how to minimize or eliminate the effects of these hazards.

Hazard Profile – A description of the physical characteristics of a hazard, including a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

Hazard Risk Gauge – The graphic icon used during the initial planning process to convey the relative risk of a given hazard in the study area. The scale ranges from green indicating relatively low or no risk to red indicating severe risk.

Hazard Analysis New York (HAZNY) - Developed by the American Red Cross and the New York State Emergency Management Office (SEMO) on October 2, 2003. It is an automated interactive spreadsheet that asks specific questions on potential hazards in a community and records and evaluates the responses to these questions.

Hazards U.S. (HAZUS) – A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA. HAZUS was replaced by HAZUS-MH (see below) in 2003.

Hazards U.S. – Multi-Hazard (HAZUS-MH) – A GIS-based nationally standardized earthquake, flood, and wind loss estimation tool developed by FEMA. The purpose of this pilot project is to demonstrate and implement the use of HAZUS-MH to support risk assessments

HAZUS-MH Risk Assessment Methodology – This analysis uses the HAZUS-MH modules (earthquake, wind--hurricane and flood) to analyze potential damages and losses. For this pilot project risk assessment, the flood and hurricane hazards were evaluated using this methodology.

HAZUS-MH-Driven Risk Assessment Methodology – This analysis involves using inventory data in HAZUS-MH combined with knowledge such as (1) information about potentially exposed areas, (2) expected impacts, and (3) data regarding likelihood of occurrence for hazards. For this risk assessment, a HAZUS-Driven Risk Assessment Methodology could not be used to estimate losses associated with any hazards because of a lack of adequate data. However, the methodology was used, based on more limited data to estimate exposure for the dam failure, urban fire, fuel pipeline breach, and HazMat release hazards.

High Potential Loss Facilities – Facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.

Hurricane – An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74 miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the North Atlantic Ocean, northeast Pacific Ocean, or the South Pacific Ocean (east of 160°E longitude). Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

Hydraulics – That branch of science, or of engineering, which addresses fluids (especially, water) in motion, its action in rivers and canals, the works and machinery for conducting or raising it, its use as a prime mover, and other fluid-related areas.

Hydrology – The science of dealing with the waters of the earth (for example, a flood discharge estimate is developed through conduct of a hydrologic study).

Infrastructure – The public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, transportation system (such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, dry docks, piers and regional dams).

Intensity – A measure of the effects of a hazard occurring at a particular place.

Inventory – The assets identified in a study region. It includes assets that can be lost when a disaster occurs and community resources are at risk. Assets include people, buildings, transportation, and other valued community resources.

Landslide – Downward movement of a slope and materials under the force of gravity.

Level 1 Analysis – A HAZUS-MH analysis that yields a rough estimate or preliminary analysis based on the nationwide default database included in HAZUS-MH. A Level 1 analysis is a great way to begin the risk assessment process and prioritize high-risk communities without collecting or using local data.

Level 2 Analysis – A HAZUS-MH analysis that requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.

Level 3 Analysis – A HAZUS-MH analysis that yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on the specific conditions of a community. This level analysis will allow users to supply their own techniques to study special conditions such as dam breaks and tsunamis. Engineering and other expertise is needed at this level.

Lifelines – Critical facilities that include utility systems (potable water, wastewater, oil, natural gas, electric power facilities and communication systems) and transportation systems (airways, bridges, roads, tunnels and waterways).

Loss Estimation – The process of assigning hazard-related damage and loss estimates to inventory, infrastructure, lifelines, and population data. HAZUS-MH can estimate the economic and social loss for specific hazard occurrences. Loss estimation is essential to decision making at all levels of government and provides a basis for developing mitigation plans and policies. It also supports planning for emergency preparedness, response, and recovery.

Lowest Floor – Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure. For the HAZUS-MH flood model, this information can be used to assist in assessing the damage to buildings.

Magnitude – A measure of the strength of a hazard occurrence. The magnitude (also referred to as severity) of a given hazard occurrence is usually determined using technical measures specific to the hazard. For example, ranges of wind speeds are used to categorize tornados.

Major Disaster Declarations – Post-disaster status requested by a state's governor when local and state resources are not sufficient to meet disaster needs. It is based on the damage assessment, and an agreement to commit state funds and resources to the long-term recovery. The event must be clearly more than the state or local government can handle alone.

Mean Return Period (MRP) – The average period of time, in years, between occurrences of a particular hazard (equal to the inverse of the annual frequency of exceedance).

Mitigation Actions – Specific actions that help you achieve your goals and objectives.

Mitigation Goals – General guidelines that explain what you want to achieve. They are usually broad policy-type statements, long term, and represent global visions.

Mitigation Objectives – Strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific and measurable.

Mitigation Plan – A plan that documents the process used for a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in a state or community. The plan includes a description of actions to minimize future vulnerability to hazards. This plan should be developed with local experts and significant community involvement.

National Flood Insurance Program (NFIP) – Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in 44 Code of Federal Regulations (CFR) §60.3.

National Weather Service (NWS) – Organization that prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.

Objectives – Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific and measurable.

Occupancy Classes – Categories of buildings used by HAZUS-MH (for example, commercial, residential, industrial, government, and “other”).

Ordinance – A term for a law or regulation adopted by local government.

Outflow – Associated with coastal hazards and follows water inundation creating strong currents that rip at structures and pound them with debris, and erode beaches and coastal structures.

Parametric Model – A model relating to or including the evaluation of parameters. For example, HAZUS-MH uses parametric models that address different parameters for hazards such as earthquake, flood and wind (hurricane). For example, parameters considered for the earthquake hazard include soil type, peak ground acceleration, building construction type and other parameters.

Pilot Project – In this case, a project sponsored by FEMA to support the implementation of studies conducted in coordination with communities. The project focuses on demonstrating the value and benefits of using HAZUS-MH for the risk assessment portion of all-hazard mitigation plans required by the Disaster Mitigation Act of 2000. The projects demonstrate the value of using HAZUS-MH to evaluate, and analyze natural hazards that a number of state and local communities might address in their planning process. The pilot projects demonstrate that HAZUS-MH can provide defensible cost and loss estimates using the engineering and scientific risk calculations included in the software.

Planimetric – Maps that indicate only man-made features like buildings.

Planning – The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.

Post-disaster mitigation – Mitigation actions taken after a disaster has occurred, usually during recovery and reconstruction.

Presidential Disaster Declaration – A post-disaster status that puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses, and public entities in the areas of human services, public assistance (infrastructure support), and hazard mitigation. If declared, funding comes from the President’s Disaster Relief Fund and disaster aid programs of other participating federal agencies.

Preparedness – Actions that strengthen the capability of government, citizens, and communities to respond to disasters.

Priority Hazards – Hazards considered most likely to impact a community based on frequency, severity, or other factors such as public perception. These are identified using available data and local knowledge.

Provided Data – The databases included in the HAZUS-MH software that allow users to run a preliminary analysis without collecting or using local data.

Probability – A statistical measure of the likelihood that a hazard event will occur.

Public education and outreach programs – Any campaign to make the public more aware of hazard mitigation and mitigation programs, including hazard information centers, mailings, public meetings, etc.

Q3 Flood Zone Data – FEMA flood data that delineate the 100- and 500-year flood boundaries. The Q3 Flood Data are digital representations of certain features of FEMA’s Flood Insurance Rate Map (FIRM) product, intended for use with desktop mapping and GIS technology.

Recovery – The actions taken by an individual or community after a catastrophic event to restore order and lifelines in the community.

Regulation – Most states have granted local jurisdictions broad regulatory powers to enable the enactment and enforcement of ordinances that deal with public health, safety, and welfare. These include building codes, building inspections, zoning, floodplain and subdivision ordinances, and growth management initiatives.

Recurrence Interval – The average time between the occurrences of hazardous events of similar size in a given location. This interval is based on the probability that the given event will be equaled or exceeded in any given year.

Repetitive Loss Property – A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least \$1,000 each have been paid within any 10-year period since 1978.

Replacement Value – The cost of rebuilding a structure. This cost is usually expressed in terms of cost per square foot and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

Resolutions – Expressions of a governing body’s opinion, will, or intention that can be executive or administrative in nature. Most planning documents must undergo a council resolution, which must be supported in an official vote by a majority of representatives to be adopted. Other methods of making a statement or announcement about a particular issue or topic include proclamations or declarations.

Resources – Resources include the people, materials, technologies, money, etc., required to implement strategies or processes. The costs of these resources are often included in a budget.

Risk – The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment – A methodology used to assess potential exposure and estimated losses associated with priority hazards. The risk assessment process includes four steps: (1) identifying hazards, (2) profiling hazards, (3) conducting an inventory of assets, and (4) estimating losses. This pilot project report documents this process for selected hazards addressed as part of the pilot project.

Risk Factors – Characteristics of a hazard that contribute to the severity of potential losses in the study area.

Riverine – Of or produced by a river (for example, a riverine flood is one that is caused by a river overflowing its banks).

Scale – A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth’s surface.

Scour – Removal of soil or fill material by the flow of floodwaters. This term is frequently used to describe storm-induced, localized, conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

Special Facility – A facility of special importance to a particular community. For the Town of Clay risk assessment, this category includes [TBD].

Special Flood Hazard Area (SFHA) – An area within a floodplain having a 1-percent or greater chance of flood occurrence in any given year (that is, the 100-year or base flood zone); represented on FIRMS as darkly shaded areas with zone designations that include the letter “A” or “V.”

Stafford Act – The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law (PL) 100-107 was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.

Stakeholder – Stakeholders are individuals or groups, including businesses, private organizations, and citizens, that will be affected in any way by an action or policy.

State Hazard Mitigation Officer (SHMO) – The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

Structure – Something constructed (for example, a residential or commercial building).

Study Area – The geographic unit for which data are collected and analyzed. A study area can be any combination of states, counties, cities, census tracts, or census blocks. The study area definition depends on the purpose of the loss study and in many cases will follow political boundaries or jurisdictions such as city limits.

Substantial Damage – Damage of any origin sustained by a structure in a SFHA, for which the cost of restoring the structure to its pre-hazard event condition would equal or exceed 50 percent of its pre-hazard event market value.

Topographic – Map that shows natural features and indicate the physical shape of the land using contour lines based on land elevation. These maps also can include man-made features (such as buildings and roads).

Tornado – A violently rotating column of air extending from a thunderstorm to the ground.

Transportation Systems – One of the lifeline system categories. This category includes: airways (airports, heliports, highways), bridges, tunnels, roadbeds, overpasses, transfer centers; railways (tracks, tunnels, bridges, rail yards, depots), and waterways (canals, locks, seaports, ferries, harbors, dry docks, piers).

Utility Systems – One of the lifeline systems categories. This category includes potable water, wastewater, oil, natural gas, electric power facilities and communication systems.

Vulnerability – Description of how exposed or susceptible an asset is to damage. This value depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. If an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect affects can be much more widespread and damaging than direct affects.

Vulnerability Assessment – Evaluation of the extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard occurrences on the existing and future built environment.

Watershed – Area of land that drains down gradient (from areas of higher land to areas of lower land) to the lowest point; a common drainage basin. The water moves through a network of drainage pathways, both underground and on the surface. Generally, these pathways converge into streams and rivers, which become progressively larger as the water moves downstream, eventually reaching an estuary, lake, or ocean.

Wildfire – An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

Windstorm – A storm characterized by high wind velocities.

Zone – A geographical area shown on a National FIRM that reflects the severity or type of flooding in the area.

Zoning Ordinance – Designation of allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

Data Summary Matrix

Town of Clay - Hazard Mitigation Plan
Critical Data Matrix - July, 2005

	Critical	Desirable	Non-HAZUS Desirable	Available	Hazard Priority	C = Complete P = Partial M = Missing	Source/Date	Comments
(1) Political Boundary								
County Boundary			✓			C	CUGIR/ESRI	
City Jurisdiction			✓			C	CUGIR/ESRI	
Subdivision Boundaries			✓			C	CUGIR/ESRI	
Villages			✓			C	CUGIR/ESRI	
NY Counties			✓			C	CUGIR/ESRI	
(2) Base Map (Planimetric Data)								
Building Footprints/Points			✓			P	SOCPA/OnGov	Places dataset
Parcel and Lot lines			✓					Not needed for this analysis
Right-of-Way and Edge of Pavement			✓					Not needed for this analysis
Easements			✓					Not needed for this analysis
Landmarks			✓			P	SOCPA/OnGov	Places dataset
(3) Hydrographic								
Rivers, Creeks, Stream Centerlines	✓					C	CUGIR/Census/ESRI	
Lakes, Ponds, and Bodies of Water	✓					C	CUGIR/Census/ESRI	
Drainage Basins	✓					C	CUGIR	
(4) Hypsographic								
Contour Lines	✓					C	USGS	Topographic mapping (24K, 100K)
Digital Elevation Model	✓					C	USGS	
Geodetic Control			✓					Not needed for this analysis
(5) Demographic Data								
Census Blocks	✓					C	FEMA (Census)	
Population Data	✓					C	FEMA (Census)	Also SOCPA Vision report
Census Tracts	✓					C	FEMA (Census)	
(6) Land Use								
Land Use			✓			P	USGS	National Land Cover Dataset, low resolution and dated
Zoning			✓			C	Town of Clay	Planning and Development
Urban Core Planning Areas			✓					
Neighborhood Planning Areas			✓					
Parks and Recreation Areas			✓			P	SOCPA/OnGov	Places dataset
Soils			✓					Not needed for this analysis
(7) Imagery and Scanned Maps								
BW Orthophotos			✓					
Color Orthophotos			✓					
Scanned Flood Images			✓			M		Not available
(8) Administrative								
Fire Districts			✓			C	Town of Clay	Mapping by C&S Engineers
Schools Districts			✓			M		
New York Zip Codes			✓			C	CUGIR/ESRI	
Electric Service Area			✓					
Gas Service Area			✓					
Sewerage Areas			✓					
Municipal Service Area			✓					

Town of Clay - Hazard Mitigation Plan
Critical Data Matrix - July, 2005

	Critical	Desirable	Non-HAZUS Desirable	Available	Hazard Priority	C = Complete P = Partial M = Missing	Source/Date	Comments
Flood (Riverine)								
100 Yr. Flood Boundary Map	✓				Moderately High	C	CUGIR/FEMA	Q3 Data
500 Yr. Flood Boundaries Map	✓					C	CUGIR/FEMA	Q3 Data
Floodway Map		✓						
Historical Flood Events of the Area		✓				P	Various	NOAA NCDC, NWS, FEMA Studies
Base Flood Elevation	✓							
Inundation Mapping	✓					M		
Flood Models								
Earthquake								
Baseline USGS PGA, SA (T = 0.3 & 1.0 sec) Maps (MRP = 100, 500, 1000 and 2500 yrs)	✓				Low (Not identified in HAZNY analysis)			Not needed for this analysis
Catalog of Historical Earthquakes	✓							Not needed for this analysis
Map of Historical Epicenters	✓							Not needed for this analysis
Map and Information on Earthquake Faults in the Area	✓							Not needed for this analysis
Observed Damage from Historical Events								Not needed for this analysis
Surficial Geology and Top 30 Meters Soil Map Classified and Water Table Map	✓							Not needed for this analysis
Hurricane Winds								
Baseline Wind speed Data (3 second gust) Maps (MRP = 100, 500, 1000 yrs)	✓				Medium			
Historical Hurricane Events and Tracks for the Area	✓					C	ESRI	
Probability Frequency of CAT 1- CAT 5 Storms	✓							
Tornado Winds								
ASCE Design Wind speed.	✓				Low (Not identified in HAZNY analysis)	C	NYBOC	
Historical Tornado Events and Track Map	✓							
Probability Frequency of F1-F5 Storms	✓							
Surface Roughness	✓							Not needed for this analysis
Windstorm								
Wind speed Data (3 second gust) Maps (MRP = 100, 500, 1000 yrs)	✓				Moderately High			
Historical Windstorm Events for the Area	✓					P	Various	NOAA NCDC, NWS
Hailstorm								
Historical Hail Events and Strike Map	✓				Moderately High	M		
Probability Frequency and Intensity of Different Storms: Hail Size, Duration, and Number of Hails per square foot	✓					P	Various	NOAA NCDC, NWS
Urban and Woodland Wildfire								
Historical Urban Woodland Wildfire Occurrence in the Area (data, location, area burned, \$ loss, casualties)	✓				Medium (Urban) Woodland Fires not Identified in HAZNY	P	Town of Clay	Clay and Moyers Corners Fire Department NFIRS records
Historical Rainfall for the Area	✓					C	NWS	
Vegetative Cover (fuel maps)	✓					P		National Land Cover Dataset, low resolution and dated

Town of Clay - Hazard Mitigation Plan
 Critical Data Matrix - July, 2005

	Critical	Desirable	Non-HAZUS Desirable	Available	Hazard Priority	C = Complete P = Partial M = Missing	Source/Date	Comments
Severe Winter Storm (Ice)								
Historical Winter Storms for the Area			✓		Medium	P	Various	NOAA NCDC, NWS
Probability for Ice Accumulation			✓			P	Various	NOAA NCDC, NWS
Drought								
History of Regional Drought Conditions (date, \$ loss, severity, duration)			✓		Low (Not identified in HAZNY analysis)	P	Various	NOAA NCDC, NWS
Historical Rainfall for the Area			✓			C	NWS	
Crop Typology			✓			M		
Extreme Summer Heat								
Historical Temperature for the Area			✓		Low (Not identified in HAZNY analysis)	P	NWS	
History of Past Extreme Heat Events (date, \$loss, deaths, duration, severity)			✓			P	Various	
Major Utility Outage								
Historical Power Outage (date, duration, utility type, area affected, and cause)	✓				Low			
Peel Load (by season and time of day)	✓							
Dam Failure								
Historical Dam Overtopping with Elevation			✓		Low (Not identified in HAZNY analysis)			
Dam Failure Inundation Map	✓							
Historical Water Elevations for Dam			✓					
Historical Rainfall for the Area			✓					
Historical Discharge for the Dam			✓					
Hazardous Material Release (Fixed Site)								
Catalog of historical releases of the area (date, duration, utility type, area affected, cause)	✓				Low (Not identified in HAZNY analysis)	P		
Historical Frequency of the HAZMAT Releases in the Area	✓					M		
Location (Lat/Long) of CBRN Facilities	✓					P	HAZUS-MH	

Town of Clay - Hazard Mitigation Plan
Critical Data Matrix - July, 2005

	Critical	Desirable	Non-HAZUS Desirable	Available	Hazard Priority	C = Complete P = Partial M = Missing	Source/Date	Comments
(1) Transportation Systems								
Highway Systems (roads)	✓					C	SOCPA/ESRI	
Highway Systems (bridges)	✓					C	SOCPA/ESRI	
Highway Systems (tunnels)	✓					C	SOCPA/ESRI	
Railway Systems (tunnels)	✓					N/A		
Ports and Harbor Facilities	✓					N/A		
Airport Facilities and Runways	✓					N/A		
Public Transportation System Facilities	✓					N/A		
Light Rail Systems (facilities, tracks, bridges, tunnels)	✓					N/A		
(2) Utility/Infrastructure								
Wastewater Facilities and Pipelines	✓					C	HAZUS-MH/SOCPA	
Potable Water Facilities and Pipelines	✓					C	HAZUS-MH/SOCPA	
Natural Gas Facilities and Pipelines	✓					C	The Pipeline Group	
Crude and Refined Oil Facilities and Pipelines	✓					C	The Pipeline Group	
Electric Power Facilities and Transmission Lines	✓					P	HAZUS-MH/SOCPA	
Communication Facilities and Lines	✓					P	HAZUS-MH/SOCPA	
Steam Facilities and Lines	✓					N/A		
Critical and Essential Facilities								
Medical Care Facilities (hospitals, clinics, and laboratories)	✓					C	HAZUS-MH/SOCPA	
Nursing Homes and Assisted Living	✓					P	HAZUS-MH/SOCPA	
Schools (elementary, secondary, and university)	✓					C	HAZUS-MH/SOCPA	
Shelters (including schools used as shelters)						C	HAZUS-MH/SOCPA	
Police Stations	✓					C	HAZUS-MH/SOCPA	
Fire Stations						C	HAZUS-MH/SOCPA	
Emergency Operation Centers	✓							
Military Facilities						N/A		
Nuclear Facilities						N/A		
Dams	✓					C	HAZUS-MH/USACE	
Levee Systems	✓					N/A		
Facilities Containing Hazardous Materials	✓					P	HAZUS-MH/SOCPA	
Building Inventory								
Residential	✓					C	HAZUS-MH/Town of Clay	
Commerical	✓					C	HAZUS-MH/Town of Clay	
Industrial	✓					C	HAZUS-MH/Town of Clay	
Agricultural	✓					P	HAZUS-MH/Town of Clay	
Government	✓					P	HAZUS-MH/Town of Clay	
Assessor Data	✓					P	Town of Clay	

APPENDIX D

Federal Mitigation Programs, Activities, and Initiatives

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
Basic & Applied Research/Development		
Center for Integration of Natural Disaster Information	Technical Assistance: Develops and evaluates technology for information integration and dissemination	Department of Interior (DOI) – US Geological Survey (USGS), The Center for Integration of Natural Hazards Research: (703) 648-6059 hazinfo@usgs.gov
Hazard Reduction Program	Funding for research and related educational activities on hazards.	National Science Foundation (NSF), Directorate for Engineering, Division of Civil and Mechanical Systems, Hazard Reduction Program: (703) 306-1360
Decision, Risk, and Management Science Program	Funding for research and related educational activities on risk, perception, communication, and management (primarily technological hazards)	NSF – Directorate for Social, Behavioral and Economic Science, Division of Social Behavioral and Economic Research, Decision, Risk, and Management Science Program (DRMS): (703) 306-1757 www.nsf.gov/sbe/drms/start.htm
Societal Dimensions of Engineering, Science, and Technology Program	Funding for research and related educational activities on topics such as ethics, values, and the assessment, communication, management and perception of risk	NSF – Directorate for Social, Behavioral and Economic Science, Division of Social, Behavioral and Economic Research, Societal Dimensions of Engineering, Science and Technology Program: (703) 306-1743
National Earthquake Hazard Reduction Program (NEHRP) in Earth Sciences	Research into basic and applied earth and building sciences.	NSF – Directorate for Geosciences, Division of Earth Sciences: (703) 306-1550
Technical and Planning Assistance		
Planning Assistance to States	Technical and planning assistance for the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources.	Department of Defense (DOD) US Army Corps of Engineers (USACE) Contact the Floodplain Management Staff in the Appropriate USACE Regional Office North Atlantic: (212) 264-7813 South Atlantic: (404) 331-4441 Great Lakes and Ohio River: (513) 684-6050 Mississippi Valley: (601) 634-5827 Northwestern: (503) 808-3853 Southwestern: (214-767-2613 South Pacific: (415) 977-8164 Pacific Ocean: (808) 438-8863

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
Disaster Mitigation Planning and Technical Assistance	Technical and planning assistance grants for capacity building and mitigation project activities focusing on creating disaster resistant jobs and workplaces.	Department of Commerce (DOC), Economic Development Administration (EDA): (800) 345-1222 EDA's Disaster Recovery Coordinator: (202) 482-6225 www.doc.gov/eda
Watershed Surveys and Planning	Surveys and planning studies for appraising water and related resources, and formulating alternative plans for conservation use and development. Grants and advisory/counseling services to assist w/ planning and implementation improvement.	US Department of Agriculture (USDA) – National Resources Conservation Service (NRCS) Watersheds and Wetlands Division: (202) 720-4527 Deputy Chief for Programs: (202) 690-0848 www.nrcs.usda.gov
National Flood Insurance Program	Formula grants to States to assist communities to comply with NFIP floodplain management requirements (Community Assistance Program).	FEMA
Emergency Management / Mitigation Training	Training in disaster mitigation, preparedness, planning.	FEMA
National Dam Safety Program	Technical assistance , training, and grants to help improve State dam safety programs.	FEMA
National Earthquake Hazards Reduction Program	Training, planning and technical assistance under grants to States or local jurisdictions.	FEMA; DOI-USGS USGS Earthquake Program Coordinator: (703) 648-6785
Volcano Hazards Program	Technical assistance: Volcano hazard warnings and operation of four volcano observatories to monitor and assess volcano hazard risk.	DOI-USGS Volcanic Hazards Program Coordinator: (703) 648-6708 (650) 329-5228
Floodplain Management Services	Technical and planning assistance at the local, regional, or national level needed to support effective floodplain management.	DOD-USACE North Atlantic: (212) 264-7813 South Atlantic: (404) 331-4441 Great Lakes and Ohio River: (513) 684-6050 Mississippi Valley: (601) 634-5827 Northwestern: (503) 808-3853 Southwestern: (214-767-2613 South Pacific: (415) 977-8164 Pacific Ocean: (808) 438-8863
Watershed Protection and Flood Prevention Program	Technical and financial assistance for installing works of improvement to protect, develop, and utilize land or water resources in small watersheds under 250,000 acres.	USDA-NRCS Director, Watersheds and Wetlands Division: (202) 720-3042 (202) 690-4614 www.nrcs.usda.gov

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
Environmental Quality Incentives Program (EQIP)	Technical , educational, and limited financial assistance to encourage environmental enhancement.	USDA-NRCS NRCS County Offices Or NRCS EQUIP Program Manager: (202) 720-1834 www.nrcs.usda.gov
National Earthquake Hazard Reduction Program	Technical and planning assistance for activities associated with earthquake hazards mitigation.	FEMA, DOI-USGS Earthquake Program Coordinator: (703) 648-6785
Hazard ID & Mapping		
National Flood Insurance Program: Flood Mapping;	Flood insurance rate maps and flood plain management maps for all NFIP communities;	FEMA
National Flood Insurance Program: Technical Mapping Advisory Council	Technical guidance and advice to coordinate FEMA's map modernization efforts for the National Flood Insurance Program.	DOI-USGS USGS – National Mapping Division: (573) 308-3802
National Digital Orthophoto Program	Develops topographic quadrangles for use in mapping of flood and other hazards.	DOI-USGS USGS – National Mapping Division: (573) 308-3802
Stream gauging and Flood Monitoring Network	Operation of a network of over 7,000 stream gauging stations that provide data on the flood characteristics of rivers.	DOE-USGS Chief, Office of Surface Water, USGS: (703) 648-5303
Mapping Standards Support	Expertise in mapping and digital data standards to support the National Flood Insurance Program.	DOI-USGS USGS – National Mapping Division: (573) 308-3802
Soil Survey	Maintains soil surveys of counties or other areas to assist with farming, conservation, mitigation or related purposes.	USDA-NRCS NRCS – Deputy Chief for Soil Science and Resource Assessment: (202) 720-4630
National Earthquake Hazards Reduction Program	Seismic mapping for U.S.	DOI-USGS USGS Earthquake Program Coordinator: (703) 648-6785
Project Support		
Aquatic Ecosystem Restoration	Direct support for carrying out aquatic ecosystem restoration projects that will improve the quality of the environment.	DOD-USACE Chief of Planning @ appropriate USACE Regional Office North Atlantic: (212) 264-7111 South Atlantic: (404) 331-4580

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
		Great Lakes and Ohio River Chicago: (312) 886-5468 Cincinnati: (513) 684-3008 Mississippi Valley Division: (601) 634-7880 Northwestern Division Portland: (503) 808-3850 Omaha: (402) 697-2470 Southwestern Division: (214) 767-2314 South Pacific Division: (415) 977-8171 Pacific Ocean Division: (808) 438-3850
Beneficial Uses of Dredged Materials	Direct assistance for projects that protect, restore, and create aquatic and ecologically related habitats, including wetlands, in connection with dredging an authorized Federal navigation project.	DOD-USACE Same as above
Wetlands Protection – Development Grants	Grants to support the development and enhancement of State and tribal wetlands protection programs.	US Environmental Protection Agency (EPA) EPA Wetlands Hotline: (800) 832-7828 Or EPA Headquarters, Office of Water Chief, Wetlands Strategies and State Programs: (202) 260-6045
Clean Water Act Section 319 Grants	Grants to States to implement non-point source programs, including support for non-structural watershed resource restoration activities.	EPA Office of Water Chief, Non-Point Source Control Branch: (202) 260-7088, 7100
Coastal Zone Management Program	Grants for planning and implementation of non-structural coastal flood and hurricane hazard mitigation projects and coastal wetlands restoration.	Department of Commerce DOC National Oceanic and Atmospheric Administration (NOAA) National Ocean Service Office of Ocean and Coastal Resource Management Chief, Coastal Programs Division: (301) 713-3102
Community Development Block Grant (CDBG) State Administered Program	Grants to States to develop viable communities (e.g., housing, a suitable living environment, expanded	US Department of Housing and Urban Development (HUD) State CDBG Program Manager

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
	economic opportunities) in non-entitled areas, for low- and moderate-income persons.	Or State and Small Cities Division, Office of Block Grant Assistance, HUD Headquarters: (202) 708-3587
Community Development Block Grant Entitlement Communities Program	Grants to entitled cities and urban counties to develop viable communities (e.g., decent housing, a suitable living environment, expanded economic opportunities), principally for low- and moderate-income persons.	HUD City and county applicants should call the Community Planning and Development staff of their appropriate HUD field office. As an alternative, they may call the Entitlement Communities Division, Office of Block Grant Assistance, HUD Headquarters: (202) 708-1577, 3587
Emergency Watershed Protection Program	Provides technical and financial assistance for relief from imminent hazards in small watersheds, and to reduce vulnerability of life and property in small watershed areas damaged by severe natural hazard events.	USDA – NRCS National Office – (202) 690-0848 Watersheds and Wetlands Division: (202) 720-3042
Rural Development Assistance -- Utilities	Direct and guaranteed rural economic loans and business enterprise grants to address utility issues and development needs.	USDA-Rural Utilities Service (RUS) Program Support: (202) 720-1382 Northern Regional Division: (202) 720-1402 Electric Staff Division: (202) 720-1900 Power Supply Division: (202) 720-6436
Rural Development Assistance – Housing	Grants, loans, and technical assistance in addressing rehabilitation, health and safety needs in primarily low-income rural areas. Declaration of major disaster necessary.	USDA-Rural Housing Service (RHS) Community Programs: (202) 720-1502 Single Family Housing: (202) 720-3773 Multi Family Housing: (202) 720-5177
Project Impact: Building Disaster Resistant Communities	Funding and technical assistance to communities and States to implement a sustained pre-disaster mitigation program.	FEMA
Flood Mitigation Assistance	Grants to States and communities for pre-disaster mitigation to help reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program.	FEMA

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
Hazard Mitigation Grant Program	Grants to States and communities for implementing long-term hazard mitigation measures following a major disaster declaration.	FEMA
Public Assistance Program (Infrastructure)	Grants to States and communities to repair damaged infrastructure and public facilities, and help restore government or government-related services. Mitigation funding is available for work related to damaged components of the eligible building or structure.	FEMA
National Flood Insurance Program	Makes available flood insurance to residents of communities that adopt and enforce minimum floodplain management requirements.	FEMA
HOME Investments Partnerships Program	Grants to States, local government and consortia for permanent and transitional housing (including support for property acquisition and rehabilitation) for low-income persons.	HUD Community Planning and Development, Grant Programs, Office of Affordable Housing, HOME Investment Partnership Programs: (202) 708-2685 (202) 708 0614 extension 4594 1-800-998-9999
Disaster Recovery Initiative	Grants to fund gaps in available recovery assistance after disasters (including mitigation).	HUD Community Planning and Development Divisions in their respective HUD field offices or HUD Community Planning and Development: (202) 708-2605
Non-Structural Alternatives to Structural Rehabilitation of Damaged Flood Control Works	Direct planning and construction grants for non-structural alternatives to the structural rehabilitation of flood control works damaged in floods or coastal storms. \$9 million FY99	DOD-USACE Emergency Management contact in respective USACE field office: North Atlantic: (718) 491-8735 South Atlantic: (404) 331-6795 Great Lakes and Ohio River: (513) 684-3086 Mississippi Valley: (601) 634-7304 Northwestern: (503) 808-3903 Southwestern: (214) 767-2425 South Pacific: (415) 977-8054 Pacific Ocean: (808) 438-1673

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
Partners for Fish and Wildlife	Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats.	Department of Interior (DOI) – Fish and Wildlife Service (FWS) National Coordinator, Ecological Services: (703) 358-2201 A list of State and Regional contacts is available from the National Coordinator upon request.
Project Modifications for Improvement of the Environment	Provides for ecosystem restoration by modifying structures and/or operations or water resources projects constructed by the USACE, or restoring areas where a USACE project contributed to the degradation of an area.	DOD-USACE Chief of Planning @ appropriate USACE Regional Office North Atlantic: (212) 264-7111 South Atlantic: (404) 331-6270 Great Lakes and Ohio River Chicago: (312) 886-5468 Cincinnati: (513) 684-3008 Mississippi Valley Division: (601) 634-5762 Northwestern Division Portland: (503) 808-3850 Omaha: (402) 697-2470 Southwestern Division: (214) 767-2310 South Pacific Division: (415) 977-8171 Pacific Ocean Division: (808) 438-8880
Post-Disaster Economic Recovery Grants and Assistance	Grant funding to assist with the long-term economic recovery of communities, industries, and firms adversely impacted by disasters.	Department of Commerce (DOC) – Economic Development Administration (EDA) EDA Headquarters Disaster Recovery Coordinator: (202) 482-6225
Public Housing Modernization Reserve for Disasters and Emergencies	Funding to public housing agencies for modernization needs resulting from natural disasters (including elevation, flood proofing, and retrofit).	HUD Director, Office of Capital Improvements: (202) 708-1640
Indian Housing Assistance (Housing Improvement Program)	Project grants and technical assistance to substantially eliminate sub-standard Indian housing.	Department of Interior (DOI)-Bureau of Indian Affairs (BIA) Division of Housing Assistance, Office of Tribal Services: (202) 208-5427
Land Protection	Technical assistance for run-off retardation and soil erosion prevention to reduce hazards to life and property.	USDA-NRCS Applicants should contact the National NRCS office: (202) 720-4527
North American Wetland Conservation	Cost-share grants to stimulate	DOI-FWS

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
Fund	public/private partnerships for the protection, restoration and management of wetland habitats.	North American Waterfowl and Wetlands Office: (703) 358-1784
Land Acquisition	Acquires or purchases easements on high-quality lands and waters for inclusion into the National Wildlife Refuge System.	DOI-FWS Division of Realty, National Coordinator: (703) 358-1713
Federal Land Transfer / Federal Land to Parks Program	Identifies, assesses, and transfers available Federal real property for acquisition for State and local parks and recreation, such as open space.	DOI-NPS General Services Administration Offices Fort Worth, TX: (817) 334-2331 Boston, MA: (617) 835-5700 Or Federal Lands to Parks Leader NPS National Office: (202) 565-1184
Wetlands Reserve Program	Financial and technical assistance to protect and restore wetlands through easements and restoration agreements.	USDA-NRCS National Policy Coordinator NRCS Watersheds and Wetlands Division: (202) 720-3042
Transfers of Inventory Farm Properties to Federal and State Agencies for Conservation Purposes	Transfers title of certain inventory farm properties owned by FSA to Federal and State agencies for conservation purposes (including the restoration of wetlands and floodplain areas to reduce future flood potential)	US Department of Agriculture (USDA) – Farm Service Agency (FSA) Farm Loan Programs National Office: (202) 720-3467, 1632
Financing and Loan Guarantees		
Physical Disaster Loans and Economic Injury Disaster Loans	Disaster loans to non-farm, private sector owners of disaster damaged property for uninsured losses. Loans can be increased by up to 20 percent for mitigation purposes.	Small Business Administration (SBA) National Headquarters Associate Administrator for Disaster Assistance: (202) 205-6734
Conservation Contracts	Debt reduction for delinquent and non-delinquent borrowers in exchange for conservation contracts placed on environmentally sensitive real property that secures FSA loans.	USDA-FSA Farm Loan Programs FSA National Office: (202) 720-3467, 1632 or local FSA office
Clean Water State Revolving Funds	Loans at actual or below-market interest rates to help build, repair, relocate, or replace wastewater treatment plants.	EPA EPA Office of Water State Revolving Fund Branch Branch Chief: (202) 260-7359 A list of Regional Offices is available upon request
Section 108 Loan Guarantee Program	Loan guarantees to public entities for community and economic development (including mitigation measures).	HUD Community Planning and Development staff at appropriate

Federal Mitigation Programs, Activities, & Initiatives

Program / Activity	Type of Assistance	Agency & Contact
		HUD field office, or the Section 108 Office in HUD Headquarters: (202) 708-1871
Section 504 Loans for Housing	Repair loans, grants and technical assistance to very low-income senior homeowners living in rural areas to repair their homes and remove health and safety hazards.	US Department of Agriculture (USDA) – Rural Housing Service (RHS) Contact local RHS Field Office, or RHS Headquarters, Director, Single Family Housing Direct Loan Division: (202) 720-1474
Section 502 Loan and Guaranteed Loan Program	Provides loans, loan guarantees, and technical assistance to very low and low-income applicants to purchase, build, or rehabilitate a home in a rural area.	USDA-RHS Contact the Local RHS Field Office, or the Director, Single Family Housing Guaranteed Loan Division, RHS: (202) 720-1452
Rural Development Assistance -- Utilities	Direct and guaranteed rural economic loans and business enterprise grants to address utility issues and development needs.	USDA-Rural Utility Service (RUS) Contact Rural Development Field Offices, or RHS, Deputy Administrator, Community Programs Division: (202) 720-1490
Farm Ownership Loans	Direct loans, guaranteed / insured loans, and technical assistance to farmers so that they may develop, construct, improve, or repair farm homes, farms, and service buildings, and to make other necessary improvements.	USDA-FSA Director, Farm Programs Loan Making Division, FSA: (202) 720-1632

HAZUS-MH Risk Assessment Tool Hurricane Result

HAZUS-MH: Hurricane Event Report

Region Name: Clay Hurricane

Hurricane Scenario: Probabilistic 500-year Return Period

Print Date: Saturday, December 11, 2004

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

HAZUS is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- New York

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 48.70 square miles and contains 15 census tracts. There are over 22 thousand households in the region and has a total population of 58,805 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 17 thousand buildings in the region with a total building replacement value (excluding contents) of 3,493 million dollars (2002 dollars). Approximately 99% of the buildings (and 84% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

HAZUS estimates that there are 17,380 buildings in the region which have an aggregate total replacement value of 3,493 million (2002 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Total
Residential	2,924,417	83.7%
Commercial	445,284	12.7%
Industrial	80,287	2.3%
Agricultural	4,269	0.1%
Religious	22,403	0.6%
Government	1,722	0.0%
Education	14,768	0.4%
Total	3,493,150	100.0%

Essential Facility Inventory

For essential facilities, there are 7 hospitals in the region with a total bed capacity of no beds. There are 13 schools, 8 fire stations, 1 police stations and no emergency operation facilities.

Hurricane Scenario

HAZUS used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

HAZUS estimates that about 1 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the HAZUS Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 500 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	214	99.48	1	0.52	0	0.01	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	1	99.21	0	0.78	0	0.01	0	0.00	0	0.00
Industrial	27	99.12	0	0.86	0	0.02	0	0.01	0	0.00
Religion	6	99.56	0	0.44	0	0.00	0	0.00	0	0.00
Residential	17,084	99.73	46	0.27	1	0.01	0	0.00	0	0.00
Total	17,332		47		1		0		0	

Table 3: Expected Building Damage by Building Type : 500 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	110	99.30	1	0.69	0	0.00	0	0.00	0	0.00
Masonry	2,377	99.44	13	0.53	1	0.03	0	0.00	0	0.00
MH	819	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	118	99.37	1	0.62	0	0.01	0	0.00	0	0.00
Wood	13,859	99.79	29	0.21	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (0%) are available for use. After one week, none of the beds will be in service. By 30 days, none will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
Fire Stations	8	0	0	8
Hospitals	7	0	0	7
Police Stations	1	0	0	1
Schools	13	0	0	13

Induced Hurricane Damage

Debris Generation

HAZUS estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into three general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, and c) Trees. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 134,260 tons of debris will be generated. Of the total amount, Brick/Wood comprises 0% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 8 truckloads (@25 tons/truck) to remove the debris generated by the hurricane.

Social Impact

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 58,805) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 2.4 million dollars, which represents 0.07 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 2 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 97% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	2,334.46	53.25	12.59	5.46	2,405.76
	Content	7.04	0.00	0.00	0.00	7.04
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	2,341.51	53.25	12.59	5.46	2,412.81
<u>Business Interruption Loss</u>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	5.30	0.26	0.00	0.01	5.57
	Rental	4.83	0.00	0.00	0.00	4.83
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	10.13	0.26	0.00	0.01	10.40
Total	Total	2,351.64	53.50	12.59	5.47	2,423.20

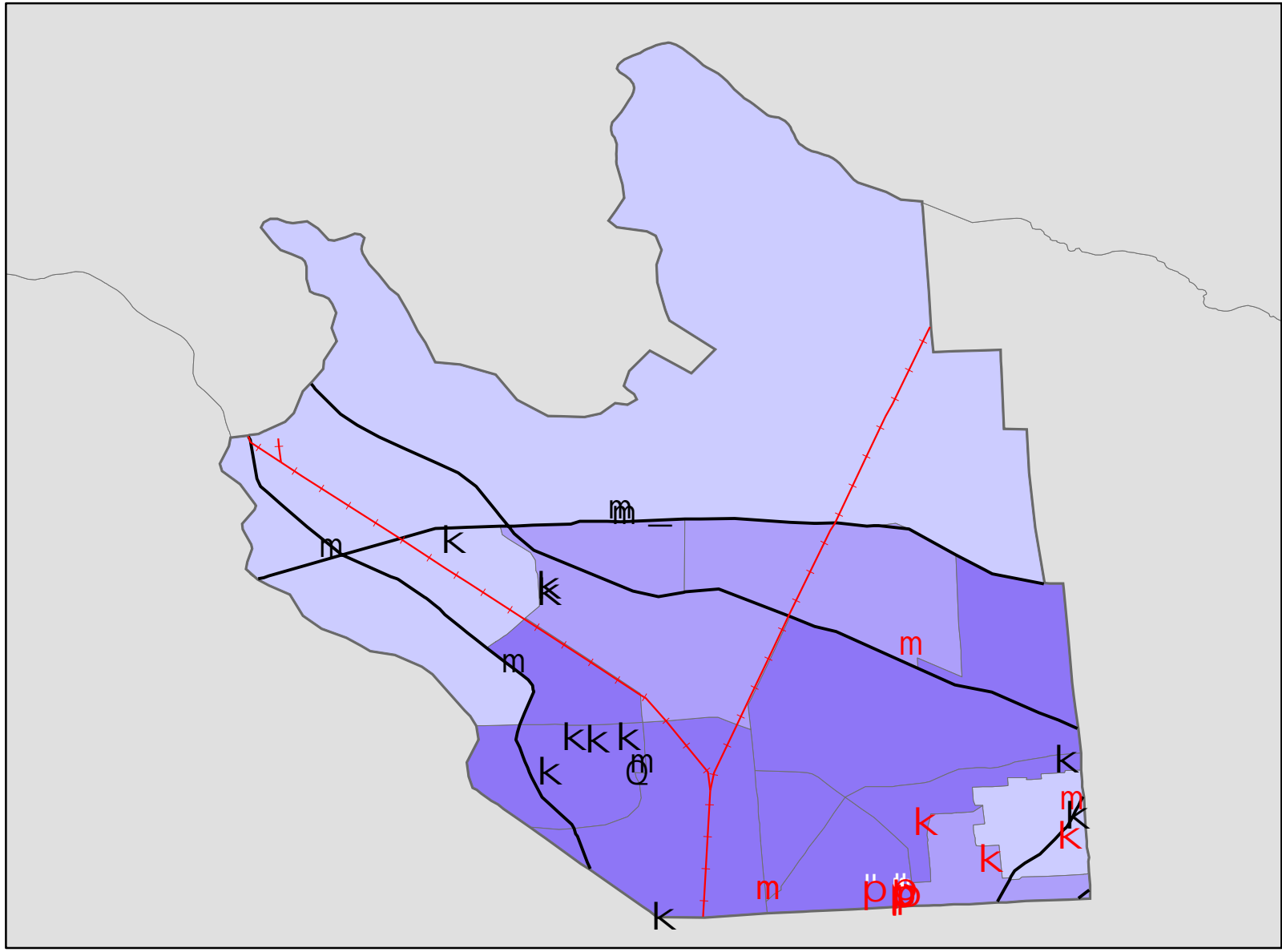
Appendix A: County Listing for the Region

New York
- Onondaga

Appendix B: Regional Population and Building Value Data

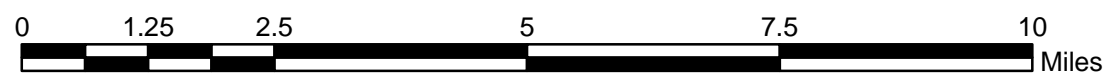
	Building Value (thousands of dollars)			
	Population	Residential	Non-Residential	Total
New York				
Onondaga	58,805	2,924,417	568,733	3,493,150
Total State	58,805	2,924,417	568,733	3,493,150
Total Study Region	58,805	2,924,417	568,733	3,493,150

Town of Clay
 500-Year Hurricane Event Wind Speeds and Damage to Critical Facilities



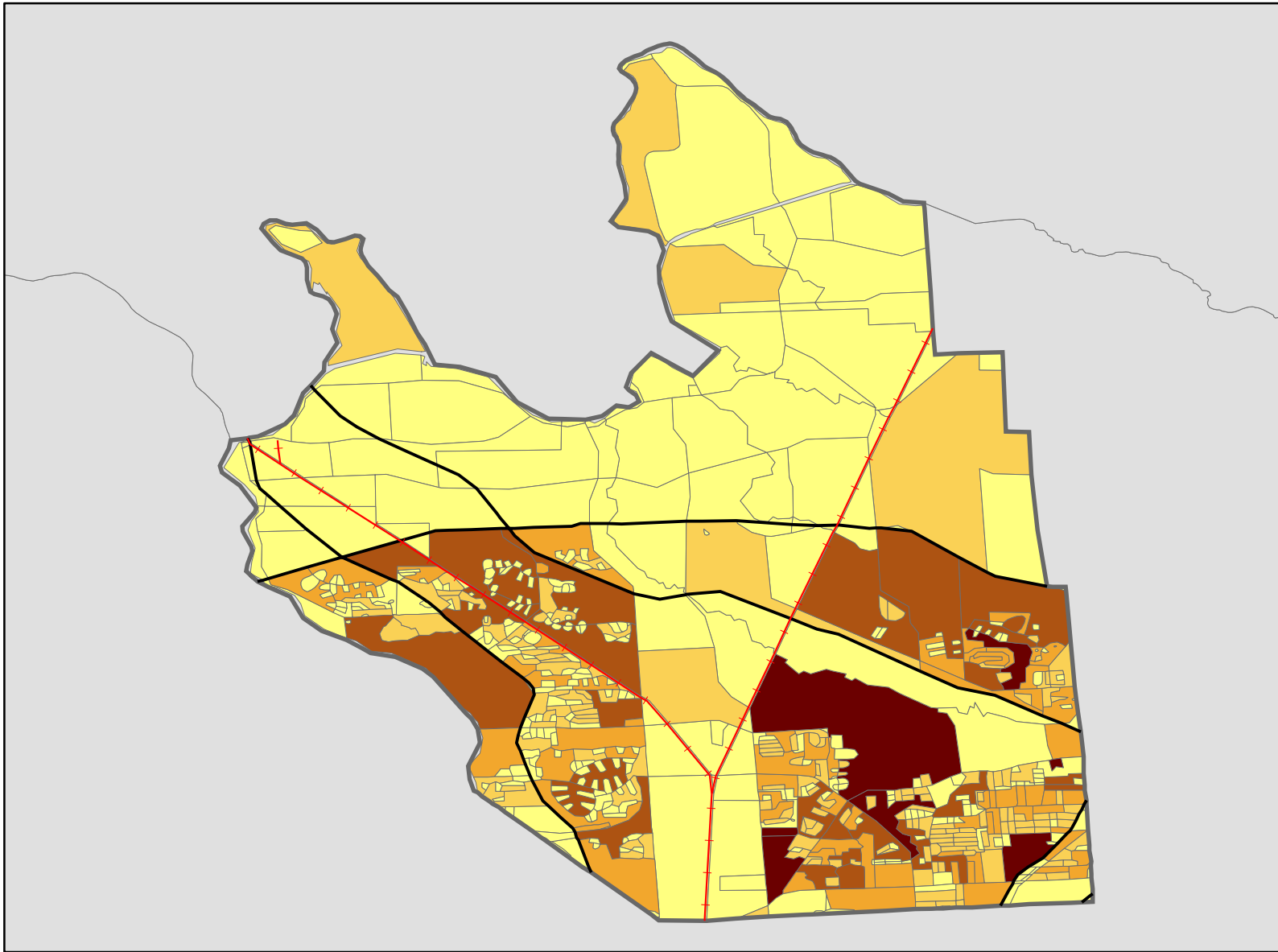
Legend

- Railroad
 - Highway
 - Study Region
 - County
- Wind Speed (mph)**
- 68.00 - 68.10
 - 68.11 - 68.40
 - 68.41 - 68.80
- Police (No Damage)**
- None
 - Slight Chance <5%
- EMS (No Damage)**
- None
 - Slight Chance <5%
- Fire (minor dam.)**
- None
 - Slight Chance <5%
- Hospitals (minor dam.)**
- None
 - Slight Chance <5%
- Schools (minor dam.)**
- None
 - Slight Chance <5%



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Town of Clay
Total Residential Loss for a 500-Year Hurricane Event

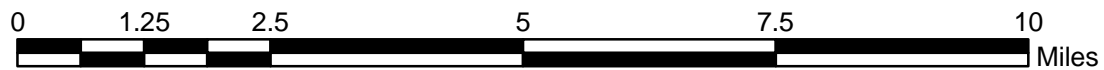


Legend

- Railroad
- Highway
- Study Region
- County

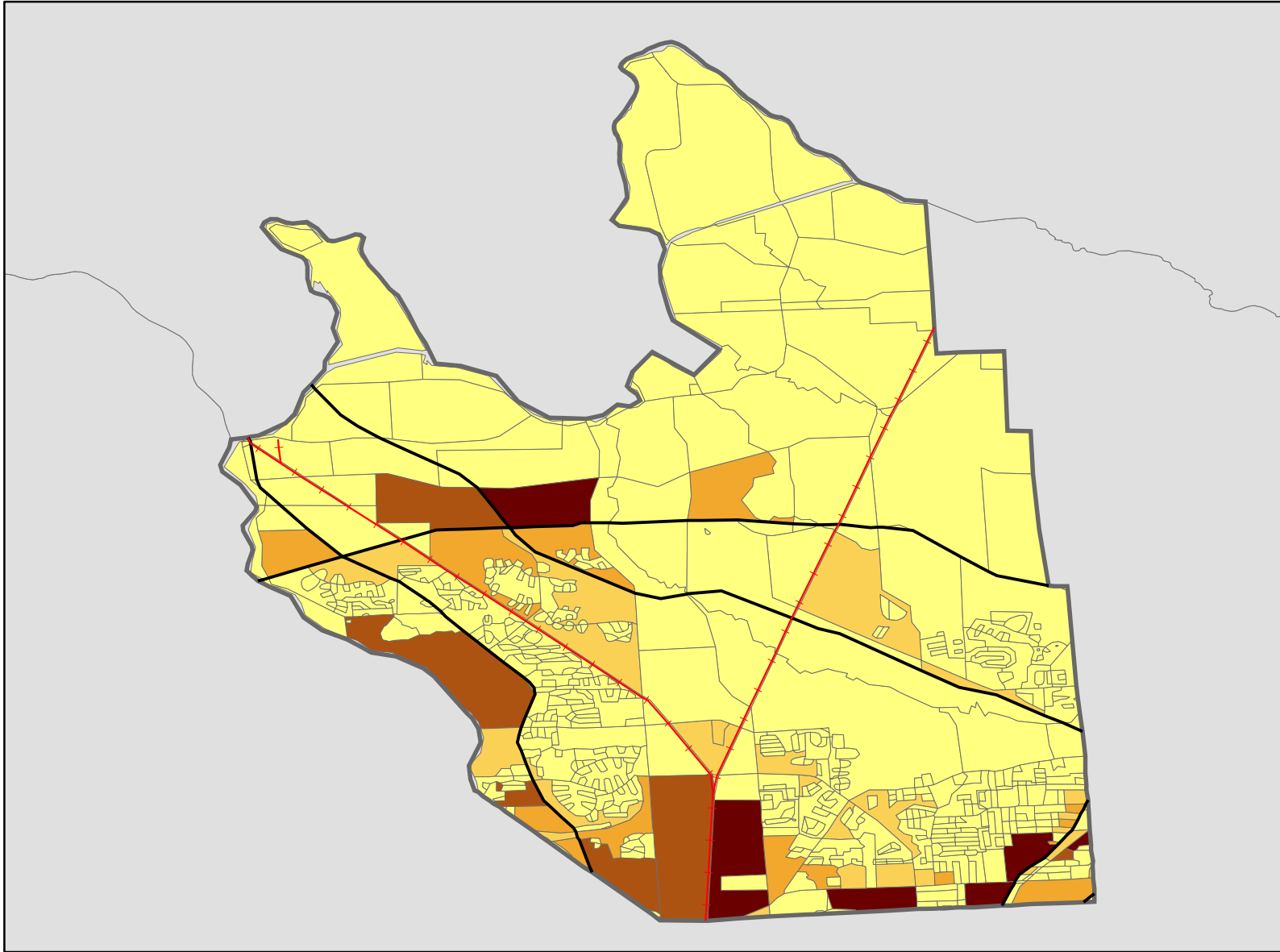
Residential Loss (x\$1000)

- 0.00 - 2.46
- 2.47 - 5.90
- 5.91 - 11.67
- 11.68 - 23.71
- 23.72 - 48.45



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Town of Clay
Total Commercial Loss for a 500-Year Hurricane Event

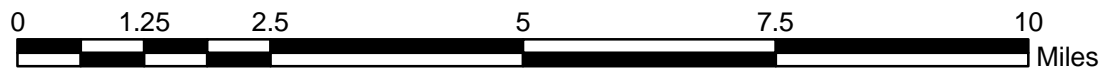


Legend

- Railroad
- Highway
- Study Region
- County

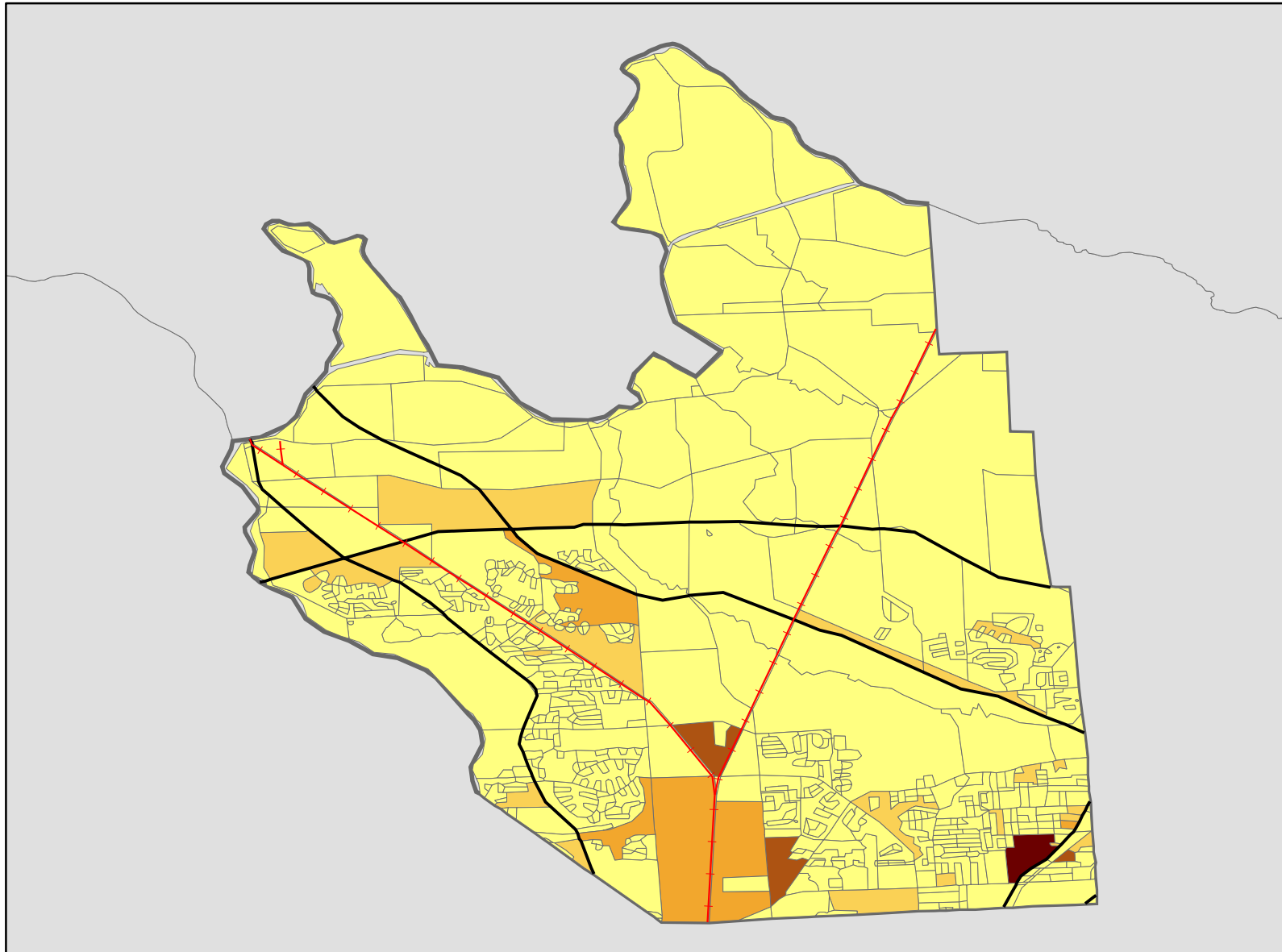
Commercial Loss (x\$1000)

- 0.00 - 0.12
- 0.13 - 0.45
- 0.46 - 1.21
- 1.22 - 2.43
- 2.44 - 3.54



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Town of Clay
Total Industrial Loss for a 500-Year Hurricane Event

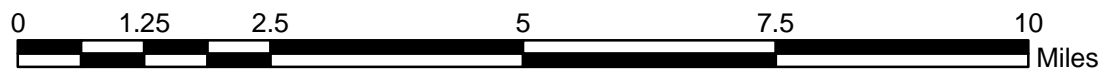


Legend

- Railroad
- Highway
- Study Region
- County

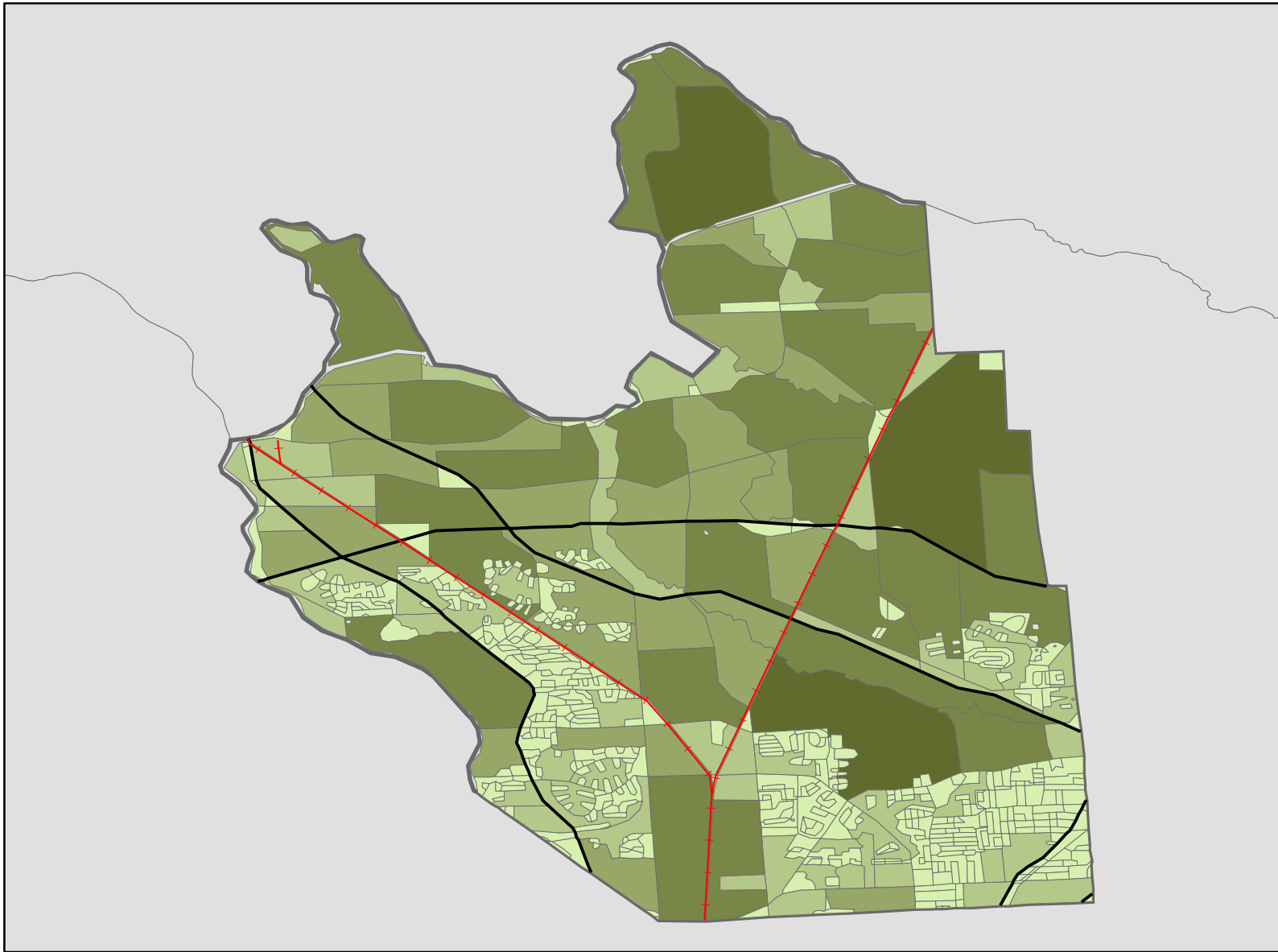
Industrial Loss (x\$1000)

- 0.00 - 0.02
- 0.03 - 0.11
- 0.12 - 0.37
- 0.38 - 0.78
- 0.79 - 7.90



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Town of Clay
Tree Debris from a 500-Year Hurricane Event

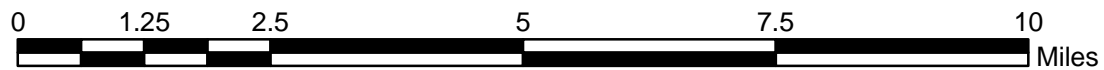


Legend

- Railroad
- Highway
- Study Region
- County

Tree Debris (tons)

- 0 - 196
- 197 - 615
- 616 - 1289
- 1290 - 2802
- 2803 - 6223



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