



CANADIAN COUNTY

Calumet Public Schools

2012 Multi-Hazard Mitigation Plan Update



Flanagan & Associates, LLC
Planning Consultants

Acknowledgements

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The Plan was prepared by Canadian County and Calumet Public Schools under the direction of the Canadian County Commissioner's Office, with the participation and assistance of numerous agencies, organizations, and individuals, including:

Calumet School Board

President Gary Tech
Vice President Michael Snyder
Clerk James Mansfield
Member Maxine Calvert
Member Grayson Garlett

Calumet School Administration

School Superintendent Keith Weldon
High School Principal Mike Higgins
Elementary School Principal Tyler Snowden

Calumet School Staff

Technical Advisory Committee (STAC)

K-12 Counselor Carrie Compton/Laura O'Hara
Calumet Public Schools Tammy Huffstutlar
School Superintendent Keith Weldon

G.3 Calumet Public Schools

The Calumet School District serves northwestern Canadian County, as shown in Locator Map Figure G.3-1. The District's three public schools are in the Town of Calumet on a single campus at 110 N. Freehome Ave. They are constructed of brick, except for the library and bus barn, both of which are metal buildings. The school buildings were constructed between 1920 and 1983. The Schools have NOAA Weather Radios, but do not have backup generators.

Section 1 Introduction

1.1 Services Summary

Calumet Public Schools provide education for children in Pre-K through Grade 12.

1.2 Boundaries

Calumet School District serves an area of about 96 square miles, from the Canadian County line south to Jones Rd., and from Maberry Rd. in the west to N. Ft. Reno Rd. and N. Heaston Rd. in the east. Figure G.3-2 presents the School District Base Map.

1.3 Population Summary

The District serves a population of 999 people. Table G.3-1 summarizes the enrollment, staff and location for Calumet Schools for the school year 2011-2012.

Figure G.3-1 Calumet School District Locator Map

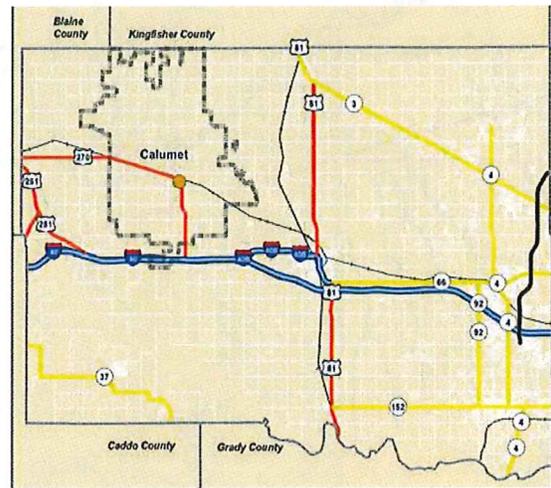


Table G.3-1 Calumet School Enrollment 2011-2012

School	Address	Grades	Students	Staff
Calumet High School	101 N Freehome, Calumet	9th-12th	99	6
Calumet Junior High School	101 N Freehome, Calumet	7th-8th	44	2
Calumet Elementary School	101 N Freehome, Calumet	Pre-K-6th	156	13
Totals			299	21

School Demographics

Ethnicity

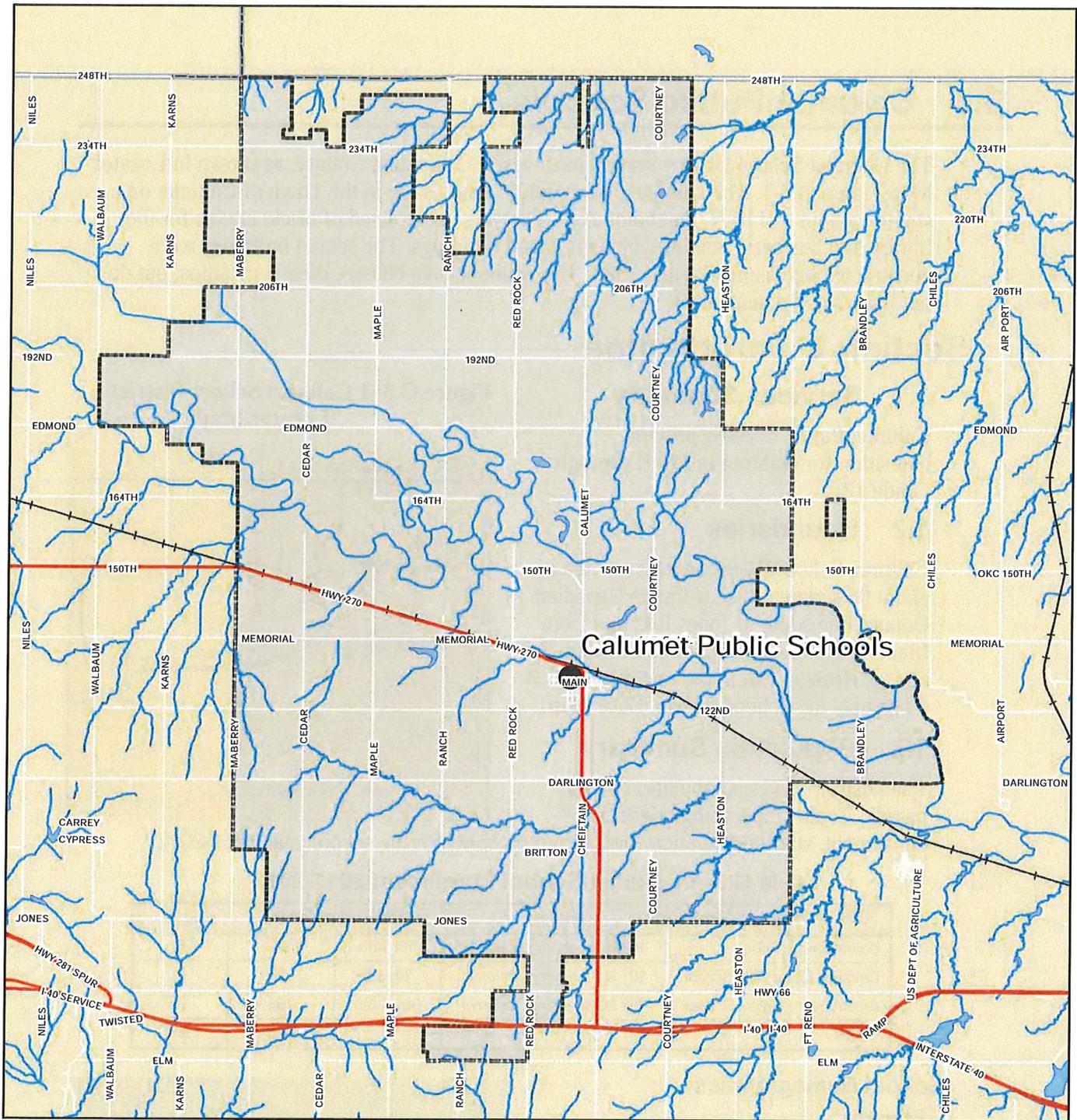
- Caucasian – 77%
- Native American – 16%
- Hispanic – 5%
- African American – 2%

Other Census Data

- Poverty Rate – 18%
- Unemployment Rate – 2%
- Single Parent Families – 44%



Calumet Public Schools



LEGEND

- School Facility
- Highways
- Hydrology
- Water
- ▭ School District



Figure G.3-2
Calumet Public Schools
Basemap



0 1 2 Miles

1.4 Economic Summary

Chapter 2.2.1 expresses the general governing, financing and policy-making authority of public boards of education in Oklahoma.

Calumet School District is befitting greatly from energy development projects in the district. Oil and gas wells are being drilled as many as ten at a time. A new gas processing plant is being built. In addition a 78-turbine wind farm for wind-powered electricity is in place. The assessed valuation of the district has tripled in recent years and is expected to double or triple again as result of the energy industry and associated development. This will eliminate the District's need for State aid.

The District has strong patron support for bond issues. No bond issue has ever failed. A bond issue is being prepared at the writing of this plan to build a new elementary school. In addition, the District has already purchased land and is developing plans for a physical education building for K through 3 students that will be built to safe room standards and will hold 1,000 people.

Section 2 Existing Mitigation Strategies

National Flood Insurance Program/Community Rating System. Calumet Public Schools are covered by the Town of Calumet's participation in the NFIP program but they are not participants in the CRS Program.

Floodplain Management. Calumet Public Schools participates in and benefits from Calumet's regulations for the floodplains.

StormReady Program. Calumet Public Schools is not a StormReady community.

FireWise Program. Calumet Public Schools does not participate in the FireWise Program.

Building Codes. Calumet Public Schools abides by the codes governing the Town of Calumet and the states required codes for the schools.

Emergency Services

Security. Calumet Public Schools has authorized the Superintendent or Principal of the school to enforce security.

Fire Protection. The Calumet volunteer fire department would be responsible for responding to a fire at Calumet Public Schools.

Hospitals. The closest hospital is Parkview Hospital in El Reno.

Ambulance Service. Parkview Hospital provides ambulance service for Calumet Public Schools.

Section 3 Hazards

The following subsections discuss hazard information for the School District and the Schools site. The maps show site-specific hazard data in relationship to the School District as a whole and site specific hazard information for the Schools.

General natural hazards, such as Tornadoes, High Winds, Lightning, Hail, Winter Storms, Extreme Heat, Drought, and Earthquakes, affect the County more or less randomly and equally, with little difference between a particular school district and the County as a whole. These general hazards, including the impact on public schools, are addressed more fully in Chapter 4.

Table G.3–2 Calumet Public Schools Hazards Summary

Name	Floods	Tornadoes	High Winds	Lightning	Hail	Winter Storms	Extreme Heat	Drought	Expansive Soils	Urban Fires	Wildfires	Earthquakes	Hazardous Material Sites	Dam Failures	Transportation Hazards
Calumet High School	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Calumet Middle School	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Calumet Elementary School	X	X	X	X	X	X	X	X	X	X	X	X		X	X

3.1 Flood

The Calumet Public Schools Campus is affected by the North Canadian River and Sixmile Creek, as well as tributaries of Kingfisher Creek and its tributary streams in the northern part of the District. The flood of record occurred in 1923, 25 years *before* completion of the Canton Lake Dam on the North Canadian River. Calumet Schools' vulnerability to flooding is affected by tributaries of Sixmile Creek on the north and east sides of the Town of Calumet. Of some significance is the branch of Sixmile Creek on the north side of the Town that reaches south to 2nd St. between Roosevelt Ave. and Freehome Ave. This branch, although normally dry, is flood-prone during heavy rains to elevation 1,380. The SFHA of this tributary includes the gymnasium, the westernmost building on the Calumet Campus. According to school officials, the gymnasium has never had floodwater inside the building, although during a 2007 flood event water did reach the fence, about 50 feet west of the building. Flood events in the district can result in inundated classrooms/facilities and cause school to be closed for repairs. Inundation can potentially damage electronic equipment and sensitive school documents. Damages from past flood events were not reported. Calumet Public Schools consider a rainfall of one inch in an hour that result in less than three feet of flooding on a one story building to be of minor severity. A rainfall greater than one inch per hour that results in greater than three feet of flooding on a one story building is considered to be of major severity creating the potential for riverine and flash flooding. In the past, the basement of Calumet High School has flooded due to excessive rainfall. With these historical accounts the School Campus has a Low to Moderate vulnerability to and Moderate probability of the Flood hazard.

3.2 Tornado

Tornadoes are a random hazard that can strike anywhere in Canadian County, including Calumet Public Schools. Canadian County experienced 34 tornadoes between 1995 and 2010, including a devastating EF5 tornado in May 2011. Given these frequencies, the County can expect 2.3 tornadoes each year, any one of which could impact Calumet Schools. Calumet Schools did not suffer any major structural damage from the May 2011 tornado. Several students did have to be relocated as a result of the event. NOAA radios are located in each school facility to provide adequate warning of inclement weather. The school has a basement classroom/shelter that can hold all students and staff – or about 350 people. A tornado like the EF5 that passed through the Calumet area, El Reno and Piedmont in May 2011 would completely destroy the Calumet Schools, cause interruption of school functions and loss of critical school records. Calumet is exposed to tornadoes that do little damage (EF0 and EF1) to massive events that leave enormous destruction in their paths (EF4 and EF5). Calumet Public Schools consider a minor severity tornado to be a tornado up to EF1 on the Fujita Scale and a major severity tornado to be a tornado greater than an EF1 on the Scale. Figure F.1-6 presents a potential tornado scenario. Calumet Schools have a High vulnerability to and High probability of the Tornado hazard.

3.3 High Wind

Like Tornadoes, High Wind is a general hazard that occurs commonly and randomly throughout Canadian County. The County reported 73 high wind events from 1995 through 2010. Winds as high as 95 mph have been reported in the County. Calumet Schools can expect about five potentially damaging high wind events each year. In the past, all sites have received some type of roof damage, roof vent cap damage, HVAC roof equipment damage, and outside scoreboard or fence damage. The windows of the Schools have been covered with a tinted plastic film to reduce heat gain and protect students and staff from shattered glass during wind and hail storms. As indicated in Chapter 4, high wind events can cause substantial damage to structural components of schools. Calumet Public Schools consider a minor severity wind force on the Beaufort Scale of 9 or less (55 mph), and a major severity wind force to be a wind force greater than 9 to be a major severity high wind storm. Calumet Schools have a High vulnerability to and High probability of the High Wind hazard.

3.4 Lightning

Lightning is another general hazard that accompanies severe thunderstorms, particularly in the spring and autumn months. Canadian County reported nine damaging lightning events between 1995 and 2010 generated by the approximately 76 severe thunderstorms that passed through the area. Given this frequency, Calumet Schools can expect about five lightning events per year. All school sites have been affected by lightning strikes in the past. Lightning damages have caused power failures and/or burned electrical equipment, including several computers. The Schools have installed lightning protection which lessens, but does not eliminate, the vulnerability of Calumet Public Schools to the lightning events. Based on the information provided by the National Weather Service, Chapter 4, Calumet Public Schools considers a negative cloud-to-ground flash with multiple return strokes, that causes no loss of life or injury and less than \$1,000 in

property damage, to be a minor severity lightning event; and a positive cloud-to-ground flash with a continuous or high peak current, that causes loss of life and/or injury and more than \$1,000 property damage, to be a major severity lightning event. The Schools have a Moderate vulnerability to and High probability of the Lightning hazard.

3.5 Hail

Hail is a general hazard that strikes randomly and more or less equally throughout the County, along with lightning, high winds and tornadoes. From 1995 through 2010, Canadian County reported 105 separate hail events. Given this frequency, Calumet Schools can expect about seven hail events each year. All school sites have incurred roof damage, either to the roof vent cap or HVAC roof top unit, caused by hail. Calumet Schools have covered its windows with a tinted plastic film that prevents shattering during severe hail and wind events. The school buses are kept in the bus barn, across Todd St. The school facilities remain vulnerable to substantial or complete roof damage as a result of a hail event. Calumet Public Schools consider a minor severity hail storm to be a hail storm up to H2 on the Combined NOAA/TORRO Hailstorm Intensity Scale, and a major severity hail storm to be a hail storm greater than H2 on the NOAA/TORRO Hailstorm Intensity Scale. Calumet Schools are considered to have a High vulnerability to and High probability of the Hail hazard.

3.6 Winter Storm

From 1995 through 2010 Canadian County experienced 35 ice and snow events, or an average of 2.3 winter storms each year. Because of the general and widespread nature of winter storms, it is assumed that Calumet Schools have also experienced 35 ice and snow events in this period. As indicated in Chapter 4 of this plan, public schools are in any case not in session during severe winter storms due to an allotted number of snow days so the populations are not immediately at risk. Calumet schools have been shut down in the past due to inaccessibility to the site from high drifting snow, multiple layers of ice or ice under snow pack, power outages from the ice and wind, and frozen pipes causing water damage. Calumet Schools are not equipped with back-up generators. Loss of power could result to extended closure of school facilities. Calumet Public Schools consider a minor severity winter storm to be a winter storm that results in no loss of life, no loss of electricity or water service and/or no transportation interruptions, and a major severity winter storm to be a winter storm that involves personal injury or death, water or power outages, travel disruptions, and/or damage to private property and public infrastructure. Calumet Public Schools have a High vulnerability to and High probability of the Winter Storm hazard.

3.7 Extreme Heat

During the period 1996 through 2011, Canadian County experienced four extreme heat events or an average of one every 3.7 years. Because of the general and widespread nature of heat waves, it is assumed that Calumet Schools experienced the same number of extreme heat events as the rest of the County. Extreme heat events in the past have caused power loss at all sites, A/C equipment failure from the heat, water rationing by the local municipality. Extreme temperatures also caused power outages that burned up several computers. School populations most vulnerable to extreme heat are student

athletes participating in summer practices, addressed more fully in Chapter 4. Calumet Public Schools has not reported any incidents of student heat illness as a result of extreme heat. Calumet Public Schools consider minor severity extreme heat to generate a heat index of 95° F or less, and major severity extreme heat to generate a heat index greater than 95° F. (See Chapter 4.7.1 for an explanation and discussion of the Heat Index.) Calumet Schools have a Low vulnerability to and High probability of the Extreme Heat hazard.

3.8 Drought

Canadian County experienced four droughts from 1996 to 2011. Given the widespread nature of the hazard, it can be assumed that Calumet Schools have experienced the same number of droughts. Drought has not been reported to have caused any negative impacts to Calumet Public Schools in the past. The Schools receives water from the Calumet Public Works Authority. The drought of 2010-2011, which caused water shortages in Oklahoma City and Yukon, did not directly impact Calumet Schools. Generally, public schools are not in session during the peak of the drought season. Calumet Public Schools considers a minor severity drought to be a drought greater than a -2 on the Palmer Drought Index and a major severity drought to be a drought at -2 or lower on the Index. The Index goes from -4 to +4 with lower numbers indicating greater drought. (See Chapter 4.8.1 for an explanation of the Palmer Index). The Schools are considered to have a Low vulnerability to and Moderate probability of the Drought hazard.

3.9 Expansive Soils

Calumet Public Schools are situated on Moderate expansive soils. There have been no reported impacts to the Schools because of expansive soils. Damages from expansive soils include cracking of the school foundation, sidewalks, parking lots, and water pipes. It is not likely that expansive soils will have a major impact on Calumet School facilities in the future. Calumet Public Schools consider a shrink-swell level of Moderate and below based upon Natural Resources Conservation Service (NRCS) soil survey database to be of minor severity and a shrink-swell level of High or Very High based upon NRCS soil data base to be of major severity. Calumet Schools are considered to have a Low vulnerability to and Low probability of the Expansive Soils hazard.

3.10 Urban Fire

All but two Calumet school buildings are constructed of brick. The exceptions are the library and bus barn, which are metal structures. The Schools have been built in four phases from 1920 to 1983. All but the oldest building are equipped with sprinkler systems. The Schools are protected by the Town of Calumet's Fire Department, which has 15 volunteers, four of who are trained First Responders. The station is equipped with a pump truck, a 1,500 gallon tanker and three brush pumpers. The Department has an ISO rating of 7. A fire hydrant is located within 200 feet of the Schools. As indicated in Chapter 4, urban fire events in schools can result in total loss. There have been no reports of urban fires impacting Calumet Public Schools in the past. Calumet Public Schools consider a minor severity urban fire to be an urban fire that causes no loss of life or injury and/or \$5,000 or less in damages and, and a major severity urban fire to be an urban fire that results in loss of life or injury and/or more than \$5,000 in damages. Due to the

adequate level of fire safety features and fire suppression capabilities in the district, Calumet Public Schools are considered to have a Low vulnerability to and High probability of the Urban Fire hazard.

3.11 Wildfire

The Calumet School Campus is located on N. Freehome Ave., between Todd St. and Main St. in Calumet. The School and bus barn are buffered east, north and south by streets and parking lots. To the west and southwest is an open area containing a drainage way and playground. This area to the southwest, which is landscaped and kept free of high grass, is the School's only exposure to wildfire. Calumet Public Schools consider a minor severity conditions for the Wildfire hazard to be a reading of Moderate and below on the US Department of Agriculture Fire Danger Rating System, and major severity conditions for the Wildfire hazard to be above Moderate on USDA's Rating System. Due to the adequate level of fire safety features and fire suppression capabilities in the district, The District has not been directly impacted by wildfire events in the past aside from busses having to take alternate routes due to fires west of the school. Calumet Public Schools is considered to have a Low vulnerability to and Low probability of the Wildfire hazard.

3.12 Earthquake

Earthquake is considered a general hazard that is relatively unpredictable and not site-specific, since it usually impacts a wide area. Canadian County recorded 28 earthquakes between 1995 and 2009, followed by cluster of 11 quakes on March 11-12, 2010. Nine of these tremors were within five miles of Calumet, but none was a "felt" event. The greatest recorded quake in Oklahoma, a 5.6 event, occurred recently (November 2011) in Lincoln County. Prior to this quake, the highest magnitude tremor (5.5) was at El Reno in 1952. As indicated in the HAZUS analysis in Chapter 4, an earthquake would cause no to minimal damages to any Canadian County school facilities. Of the earthquake events that have occurred in Canadian County, there are no reports of any damages to Calumet Schools. In 2011, the school site felt shaking during one earthquake event. Calumet Public Schools consider a minor severity earthquake to be an earthquake registering 4.8 magnitude or below on the Richter Scale and a major severity earthquake to be an earthquake registering above 4.8 magnitude on the Scale. Calumet Schools are considered to have a Low vulnerability to and Low probability of the Earthquake hazard.

3.13 Hazardous Materials

There are two Tier II facilities within the Town of Calumet: Daugherty Brothers Propane and Thermo Fluids, Inc. Neither site is considered extremely hazardous, nor are they within a quarter-mile of Calumet Public Schools. There have been no reports of hazardous material events impacting Calumet Schools in the past. Calumet Public Schools are considered to have no vulnerability to and no probability of the Fixed-Site Hazardous Materials hazard.

3.14 Dam Failure

Calumet Public Schools are about one mile south of the North Canadian River, situated at elevation 1,380. Of the four upriver dams that impound the North Canadian or its

tributaries, only a failure of Canton Lake Dam would pose a significant hazard to Calumet Public Schools. The greatest threat would be from a failure of, or emergency release of 87,000 cfs from, Canton Dam during a flood of record, with the North Canadian already flowing at 22,000 cfs (the level of the 2007 event). Such an event would likely result in some flooding on the north side of the Town of Calumet both from the flood surge as well as backup along Sixmile Creek and its tributaries. An emergency release of this magnitude is not unprecedented. Calumet Public Schools have not been impacted by the Dam Failure hazard in the past.

In May 1951 the US Army Corps of Engineers was forced to release 80,000 cfs into the North Canadian from Canton Lake. A release of this size would take at least 11-12 hours to reach Calumet Public Schools, allowing time for evacuation of students and other mitigation measures. Calumet Public Schools considers a minor severity dam event to be an extraordinary release that results in less than three feet of flooding on a one story building, and a major severity dam event to be a breach or failure that exceeds the capacity of the Dam's downstream riverbed immediately downstream from the dam and/or equates to (or exceeds) a 100- or 500-year flood and results in a depth of three feet of flooding or more on a one story building. Calumet Public Schools have a Moderate vulnerability to and Low probability of the Dam Failure hazard.

3.15 Transportation

Calumet Schools are located within the transportation corridors of US Highway 270 and the AT&L railroad. Traffic flow along US 270 in Calumet is 1,000 vehicles per day. The AT&L railroad carries mainly grain and aggregates, although tanker cars with unknown contents have also passed through Town. A worst-case transportation event for Calumet Schools would be a volatile liquids tanker truck accident, resulting in a spill or fire, or the derailment of a train carrying hazardous chemicals at a time of northerly winds. Calumet Public Schools have not been impacted by this hazard in the past. The impact of this hazard is discussed more fully in Chapter 4. Calumet Public Schools consider minor transportation incidents to be those where detours are less than half a mile, traffic disruption lasts less than half an hour, and hazardous materials spills are contained within a quarter mile and cause no loss of life or injury. A severe incident would include detours exceeding half a mile, traffic disruption of more than half an hour, hazardous material spills that exceed a quarter mile, and result in loss of life or injury. Calumet Schools have a Moderate vulnerability to and Moderate probability of the Transportation hazard.

3.16 Hazards Summary

To provide a visual perspective of all potential hazards within the boundaries of the entire Calumet School District, a District-wide Hazards Composite Map is presented in Figure G.3-3.

Figure G.3-4 focuses on the Schools site itself and illustrates the specific hazards and their individual level of potential impact on the buildings and their immediately surrounding area. Please note the legend accompanying Figure G.3-4 to identify individual hazards and be aware that the colors in the map may appear different due to the number of other colors that have been overlaid representing other potential hazards, thus creating a Schools-site composite.

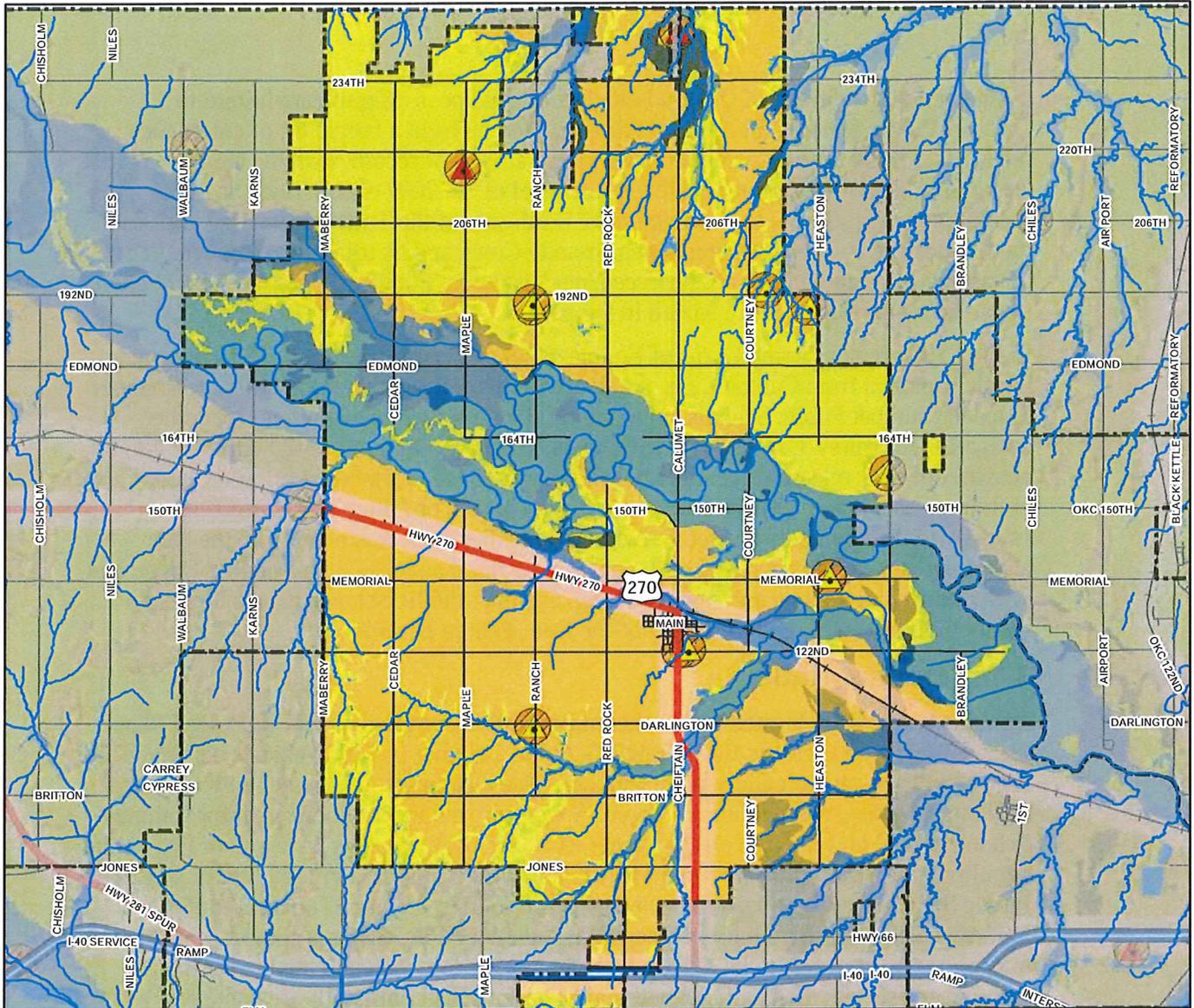
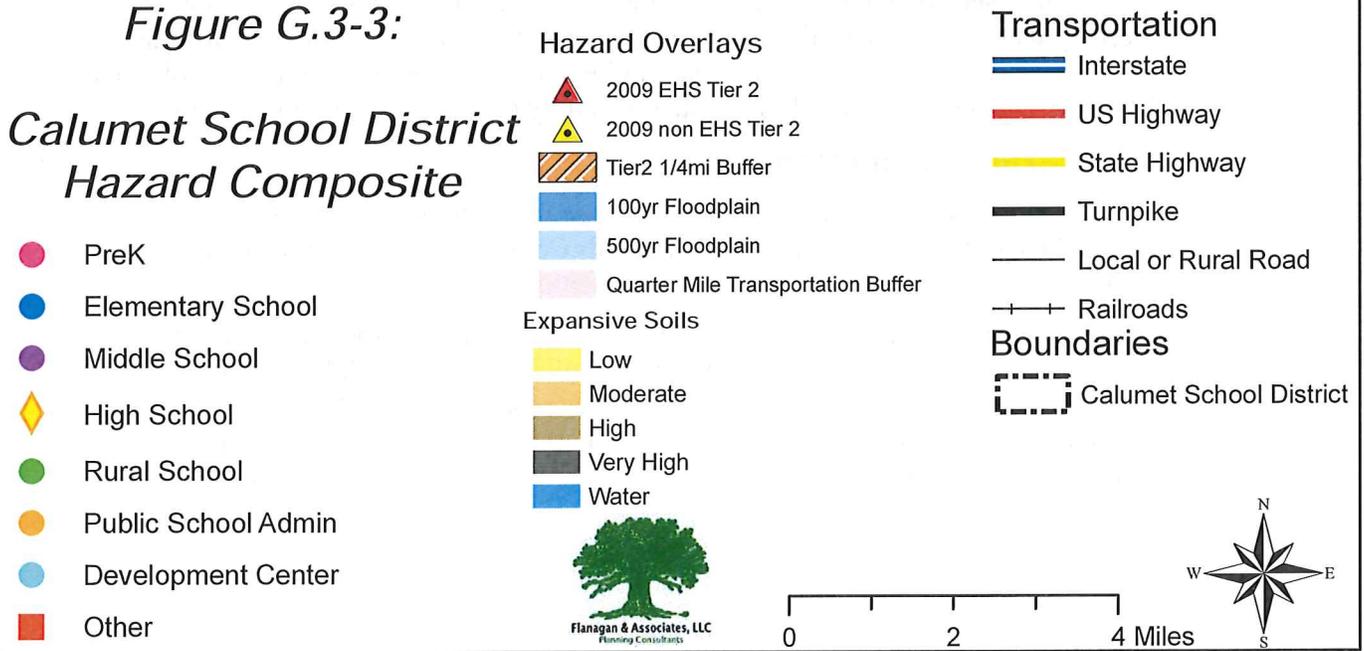
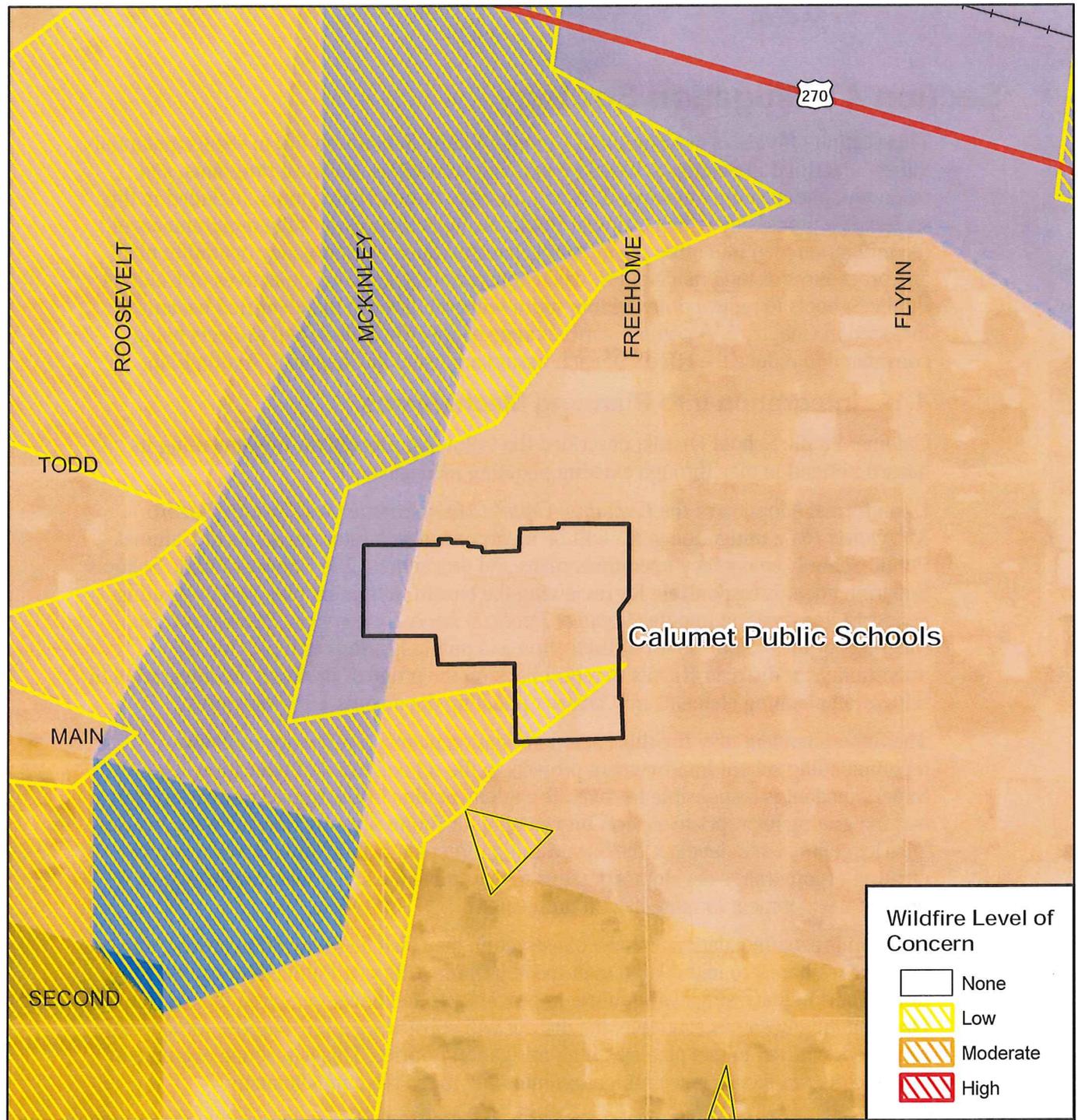


Figure G.3-3:

**Calumet School District
Hazard Composite**





LEGEND

Interstate	Expansive Soils Low
US Highway	Moderate
State Highway	High
Turnpike	Very High
Railroads	Water
Roads	100yr Floodplain
1/4mi Transport Buffer	

0 100 200 Feet



Figure G.3-4
Calumet Public Schools
Composite

Section 4 Mitigation Strategy

This section provides a description of Calumet Public Schools ability to reduce potential losses, identified in Section 3, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools. Included in this section is a process by which Calumet Public Schools incorporates the requirements of the mitigation plan into other planning mechanisms such as emergency operation plans and procedures or long range plans, when appropriate. Goals and objectives of Calumet Public Schools to reduce or avoid long-term vulnerabilities to the identified hazards are included in Chapter 5. A comprehensive range of specific actions and projects being considered to reduce the effects of each hazard are listed in Chapter 6, Action Plan.

4.1 Integration into Planning Mechanisms

Calumet Public School District described the following process for implementing its hazard mitigation plan through existing planning mechanisms:

Upon formal adoption of the *Canadian County Multi-Jurisdictional Multi-Hazard Mitigation Plan*, mitigation goals will be incorporated into future versions of Calumet Public Schools emergency operations plans and procedures. The Calumet Public Schools Superintendent is responsible for reviewing the hazard mitigation plan and integrating necessary information into the *Calumet Public Schools Emergency Operations Plan*. Meetings of the School Board of Education and public hearings will provide an opportunity for district officials to report back on the progress made on the integration of mitigation planning elements into District planning documents and procedures.

The Superintendent may use this hazard mitigation plan as a reference tool when recommending school improvement projects to the school board of education. The Superintendent is responsible for overall implementation of the hazard mitigation plan and integrating appropriate aspects into existing or future planning mechanisms. As the District continues to develop, the hazard mitigation plan may be reviewed during the creating of long range development plans to determine the site of new facilities and prevent development in more hazard prone areas.

Structural recommendations in new construction may also be followed in order to create a higher resiliency to natural and man-made hazards. Calumet Public Schools has long range plans in place suggesting future improvements and development in the district. Once funding becomes available, the district will construct a multi-purpose tornado safe room as identified in this plan as a high mitigation priority. This is just one example of how the district incorporates mitigation into long range planning elements.

4.2 Prioritization Process of Mitigation Measures

Calumet Public Schools identified 20 mitigation measures, specific to their jurisdiction, during the *Canadian County Multi-Hazard Mitigation Plan Update* process. The mitigation measures will be prioritized using the STAPLEE process as recommended by FEMA, included in Chapter 5, Table 5-1. Complete detailed information for each mitigation measure is included in Chapter 6.