



CANADIAN COUNTY

Maple Public School

2012 Multi-Hazard Mitigation Plan Update



Flanagan & Associates, LLC
Planning Consultants

Acknowledgements

Maple Public School Multi-Hazards Mitigation Plan 2012 Update was made possible by a Hazard Mitigation Grant from the Oklahoma Department of Emergency Management and the Federal Emergency Management Agency, with local share funding from Maple Public School.

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

Maple School Board

Board President..... Scott Beard
Vice-President..... David Bilderback
Board Clerk..... John Newby
Encumbrance Clerk..... Barbara Johnson

Maple School Administration

School Superintendent Arthur Eccard

Maple School Staff Technical Advisory Committee (STAC)

School Superintendent/Principal Arthur Eccard

G.6 Maple Public School

Maple Public School District, shown in Locator Map Figure G.6-1, is in west-central Canadian County. The Maple Public School is constructed of brick and steel with metal roofs. The School has a shelter that can hold about 200 people. The District Administrative Office and the School are four miles west and three miles east of any direct access to I-40. County roads are the primary means of access to the School.

Section 1 Introduction

1.1 Services Summary

The Maple Public School provides education for students from Pre-K-to Grade 8.

1.2 Boundaries

The School District serves west-central Canadian County, south of the Calumet School District and west of El Reno Schools. The School District reaches Reformatory Rd. and Chiles Rd. in the east to about Walbaum Rd. in the west, and from the Canadian River and 29th St. SW in the south to Jones Rd. and 122nd St. NW in the north – a highly rural area of about 91 square miles.

1.3 Population Summary

The District serves a population of 622 people. Table G.6-1 summarizes the enrollment, staff and location for Maple Public School for the school year 2010-2011.

Table G.6-1 Maple School Enrollment 2010-2011

School	Address	Grades	Students	Staff
Maple Public School	904 S. Maple Rd. Calumet	PK-8th	157	12

School District Demographics

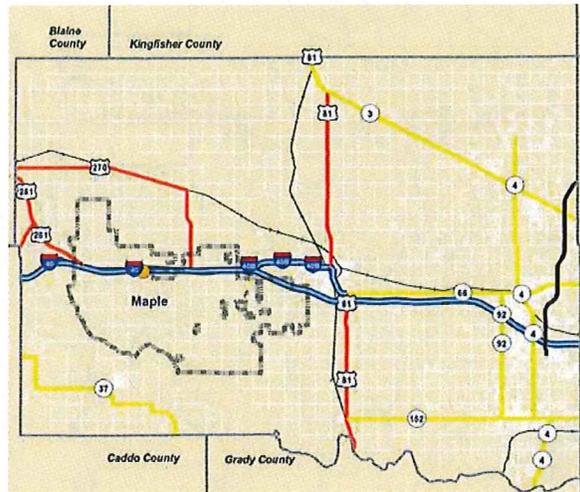
Ethnicity

- Caucasian – 91%
- Native American – 7%
- Hispanic – 2%
- African American – 1%

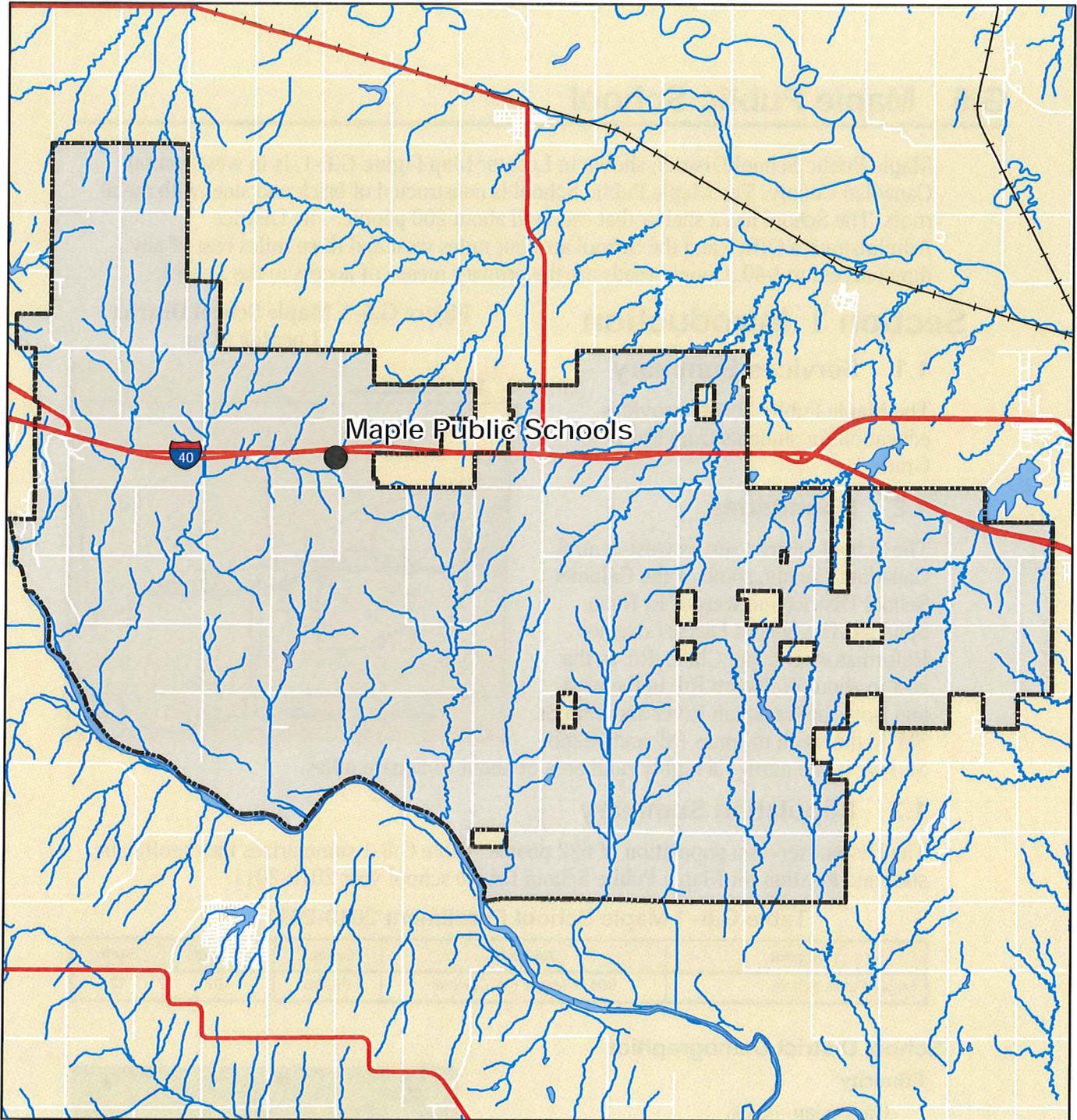
Other Census Data

- Poverty Rate – 13%
- Unemployment Rate – 2%
- Single Parent Families – 26%

Figure G.6-1 Maple School District Locator Map



Maple School



LEGEND

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

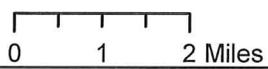


Figure G.6-2
 Maple Public Schools
 Basemap

1.4 Economic Summary

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

According to the Maple School Superintendent, oil and gas exploration and development in the district has tripled the net assessed value of the District in less than five years, which has created excellent economic health for the District. A bond issue has recently passed to build a new gymnasium. The bond issued passed with more than 80% of the votes cast. Patrons of the District have a history of strongly supporting school bond issues.

The District is looking ahead to funding a larger safe room for the School in the near future.

Section 2 Existing Mitigation Strategies

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

Floodplain Management. Maple Public Schools participates in and benefits from unincorporated Canadian County regulations for the floodplains.

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

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

Building Codes. Maple Public Schools abides by the codes governing the county and the states required codes for the schools.

Emergency Services

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

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

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

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

Section 3 Hazards

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

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 are addressed more fully in Chapter 4.

Table G.6–2 Maple Public School 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
Maple Public School		X	X	X	X	X	X	X	X	X	X	X			X

3.1 Flood

Maple Public School is situated across Maple Rd. from an unnamed stream that rises just north of I-40 and flows west, on the south side of I-40, for 2 miles to join Powder Face Creek, just west of Mayberry Rd. This stream is dammed about a quarter mile southwest of Maple School. There is no 100-year floodplain defined in this reach of the Creek. Maple School sits at elevation 1,520, about 20 feet above the streambed, and well out of the reach of any possible flood. The School has not been impacted by riverine flooding in the past. Flooding due to excessive rainfall in past summer rains resulting in leaky roofs and minor damage to classrooms has been reported by the district. Maple School is considered to have no vulnerability to and no probability of the Flood hazard.

3.2 Tornado

Tornadoes are a random hazard that can strike anywhere in Canadian County, including Maple Public School – as evidenced by the May 2011 EF5 tornado that passed very close to Maple School and, although not a direct hit, caused the following damages resulting in more than \$400,000.00 in losses:

- Portable 3rd grade classroom was completely destroyed.
- Bus barn received severe damaged and had to be torn down.
- Maintenance building damaged and had to be torn down
- Gym had to be re-roofed and new siding put on the entire exterior.
- Main building received damage to the south side. A new roof was installed along with the west and Southside siding replaced.
- Some of the perimeter fencing was damaged and replaced
- Several exterior signs had to be replaced.

- Miscellaneous benches, picnic tables, awnings and playground equipment were damaged or missing.

Canadian County experienced 34 tornadoes between 1995 and 2010. Given these frequencies, the County can expect 2.3 tornadoes each year, any one of which could impact Maple School. The school has a multi-purpose tornado safe room on site that can protect the capacity of the school during tornado and high wind events. The safe room, which doubles as a library, can withstand wind-speeds of 250 mph. The safe room provides near-absolute protection to its occupants. Maple Public Schools consider a minor severity tornado to be less than an EF2 on the Enhanced Fujita Scale and a major severity to be an EF2 or higher. A tornado like the EF5 of May 2011 would likely destroy the School structure itself aside from the library/safe room. Structural damages to schools are described in Chapter 4. Future tornado events could impact the school site in the same manner as the May 24, 2011 event. Maple School has 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. Maple School can expect about five potentially damaging high wind events each year. Past high wind events have caused roof damage, roof vent cap or fence damage, along with electricity loss due to downed power lines. Similar damages can be expected in future events. Possible structural damages to schools are described in Chapter 4. As previously mentioned, the school has a safe room on site which protects the students, faculty, and staff from high wind events. Maple Public Schools considers a minor severity wind event to be a 9 or lower on the Beaufort Scale (Strong Gale, below 54 mph), and a major severity storm to be above 9 on the Beaufort Scale (Whole Gale/Storm) with winds 55-mph and higher. Maple School has 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. The School does not have lightning protection equipment or warning systems, leaving those persons participating in outdoor activities such as physical education class or school sporting events, vulnerable to loss of life or injury. Lack of surge protection leaves the district at risk of losing critical data as a result of a lightning strike. Past lightning events have causing power failure to the school and burned out equipment from strike(s). Specific dates of events or losses from damages were not available during this plan update period. Based on the information provided by the National Weather Service, Chapter 4, Maple 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. Maple School has a High 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. As indicated in Chapter 4, hail can cause significant structural damages to school facilities. Also vulnerable are school busses that cannot be covered during a hail event, potentially rendering them non-operational. Maple has been impacted by hail in the past, causing roof damage and vent cap damage. Maple Public School considers a minor severity to be an H2 or lower on the Combined NOAA/TORRO Hailstorm Intensity Scales, and a major severity to be an H3 or higher. Maple School is considered to have a High vulnerability to and High probability of the Hail hazard.

3.6 Severe 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 Maple School has 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. In the past, Maple School has been impacted by winter storms. School has been shut down 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. Maple School is not equipped with a back-up generator and is only accessible via county roads. Loss of power and limited access could result to extended closure of school facilities. A winter storm could cause Maple School to remain closed for an extended period of time if county roads were not cleared for access to the school. A severe winter storm event could also cause significant structural damage to the school, more detail is provided in Chapter 4. Maple Public School considers a minor severity winter storm to be a Level 2 event or below (ice accumulation of less than ¼ inch—see Table 4-21), and a major severity event to be Level 3 and above (ice accumulation above ¼ inch) resulting in power outages and hazardous travel conditions. Maple School is considered to have a High vulnerability to and High probability of the Severe 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 Maple School will experience the same number of extreme heat events as the rest of the County. Extreme heat events in the past have caused damages to Maple Schools. Maple has experienced power outages and A/C equipment failure, and water rationing. Similar damages could occur in the future. Students and elderly faculty are particularly vulnerable to heat illness as a result of extreme temperatures. The most vulnerable populations of Maple School would be students participating in summer sports practice, as discussed in Chapter 4. Maple Public

Schools considers a minor severity heat event to be a heat index of 95 or less and a major severity to be a heat index greater than 95 for a period of two or more weeks. Maple School has a Moderate 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 Maple School has experienced the same number of droughts. The School receives its water from Canadian County Rural Water District #1. The drought of 2010-2011, which caused water shortages in eastern Canadian County, did not directly impact Maple School. The School has in the past experienced loss of trees, shrubs, and other vegetation. Loss of vegetation can be costly to the school. Maple Public School considers a minor severity drought to be mild or moderate on the Palmer Index, and a major severity event to be a Severe or Extreme drought on the Index, which results in crop loss or restrictions on water use. The School is considered to have a Moderate vulnerability to and Moderate probability of the Drought hazard.

3.9 Expansive Soils

Maple Public School is situated on Low expansive soils. There have been no reported impacts to the School due to this hazard. Maple Public School considers a shrink-swell level of moderate and below to be a minor severity and a shrink-swell level of high and above to be a major severity. Because the School is located on Low expansive soils and the soils plasticity was likely considered during the design process, it is unlikely the School will experience damages in the future. Damages likely from expansive soils are discussed fully in Chapter 4. Maple School is considered to have a Low vulnerability to and Low probability of the Expansive Soils hazard.

3.10 Urban Fire

Maple School has not been impacted by urban fires in the past. The School is located in the Calumet Fire District and served by the Town of Calumet's Fire Department, which has 15 volunteers, four of whom 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. Water is supplied by Canadian Rural Water District #1. The School has experienced no shortage of water or low pressure. A fire hydrant is located in front of the School. The Fire Station is more than eight road miles away, however, all County roads. An urban fire event could result in property loss and interruption of the schools infrastructure if it has to be closed for an extended period of time. The District has plans in place to evacuate students and staff quickly, drills are practiced on a regular basis. Maple Public School considers an event of minor severity to be \$5,000 or less in damages and no loss of life or injury and a major severity event to be more than \$5,000 in damages and/or loss of life or injury. Maple School is considered to have a Moderate vulnerability to and High probability of the Urban Fire hazard.

3.11 Wildfire

Maple School is buffered to the east by Maple Rd., to the north by I-40, and to the west and south by driveways, parking lots and playing fields. I-40 is frequented by heavy traffic. Due to auto malfunctions and careless drivers, Maple has been threatened by

numerous wildfires during past summer droughts. The fires have caused lock down of students/staff due to surrounding wildfires and high vegetation. Bus routes have been suspended to smoke and fires blocking bus routes. Beyond these buffers, the School is surrounded by agricultural land uses. Future wildfire events could result in loss of school property, none or which has been reported; and/or interruption of school infrastructure, as seen in previous wildfire events. Maple Public Schools considers a reading of moderate and below on the Fire Danger Rating system (Table 4-36) to be a minor severity level and a rating of high and above to be of major severity. Given the nature of the Wildfire hazard and that the Fire Station is eight road miles away, Maple School should be considered to have a High vulnerability to and High 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. Two of these events (both “unfelt”) were within 3 miles of Maple School. Prior to the 5.6 earthquake in Lincoln County on November 5, 2011, the highest magnitude tremor (5.5) was near El Reno about 10 miles east of Maple School. Only a few of Canadian County’s earthquakes have been “felt” events, and only the El Reno quake did any damage. As mentioned in Chapter 4, according to HAZUS an earthquake would have minimal impact on any public school facilities in Canadian County. Maple Public School considers a reading of 4.8 and below on the Richter Scale a minor severity quake and a reading above 4.8 to be one of major severity. Maple School is considered to have a Low vulnerability to and Low probability of the Earthquake hazard.

3.13 Hazardous Materials

There are two Tier II sites within the Maple School District. Neither is within a quarter mile of Maple School. Maple School has not been impacted by Hazardous Material events in the past. Because the school is not within a quarter mile of a Tier II site, it is unlikely the students or faculty would be impacted by an event. Maple School is considered to have no vulnerability to and no probability of the Fixed-Site Hazardous Materials hazard.

3.14 Dam Failure

There are no dams whose failure would impact Maple School. Maple Schools is considered to have no vulnerability to and no probability of the Dam Failure hazard.



Maple Public School on Maple Road near Interstate 40.

3.15 Transportation

Maple Public School is essentially adjacent to I-40 as is shown in the image at right provided by Google Earth. There are no traffic counts for Maple Rd., but traffic on I-40 at Mayberry Rd., two miles west is 22,500 vehicles a day and 26,100 vehicles a day on I-

40 at Calumet Rd. three miles east. This is a heavily travelled corridor over which hazardous materials are transported continuously day and night.

A major north-south natural gas pipeline runs along Maple Rd. northward to Enogex Six Mile Compressor Station at Ranch Rd. and Darlington Rd., and on to the Calumet Gas Processing Plant at Ranch Rd. and 192nd St. NW. As of this writing, the precise location of this pipeline is *not known*, but it is apparently near enough to warrant a better understanding of its path and the hazard it represents to the School.

Conventional wisdom may suggest that the prevailing southerly winds somewhat reduce the impact of a transport hazardous materials incident on the Interstate impacting the school. Nevertheless, with I-40 about 150 yards away and an unmapped pipeline possibly adjacent to Maple Rd. at the School site. It is not likely a transportation incident would cause significant damages to the school structures themselves. Depending on the severity of the event, implementation of evacuation or shelter-in-place procedures may be necessary. No transportation incidents involving hazardous materials have impacted the School in the past, however, due to its close proximity to these transportation corridors, the school population is at a heightened exposure to this hazard.

Maple Public School considers a minor severity Transportation incident to be one that results in inconvenience (such as traffic delays), minor injury, and some financial loss (less than \$50,000), and a major severity event to be one that requires immediate intervention to save lives and property, and/or results in serious injury or death, or significant financial loss (greater than \$50,000). Maple School has a Moderate vulnerability to and High probability of the Transportation hazard.

3.16 Hazards Summary

Figure G.6-3 focuses on the School site itself and illustrates the specific hazards and their individual level of potential impact on the building and its immediately surrounding area. Please note the legend accompanying Figure G.6-3 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 School-site composite.

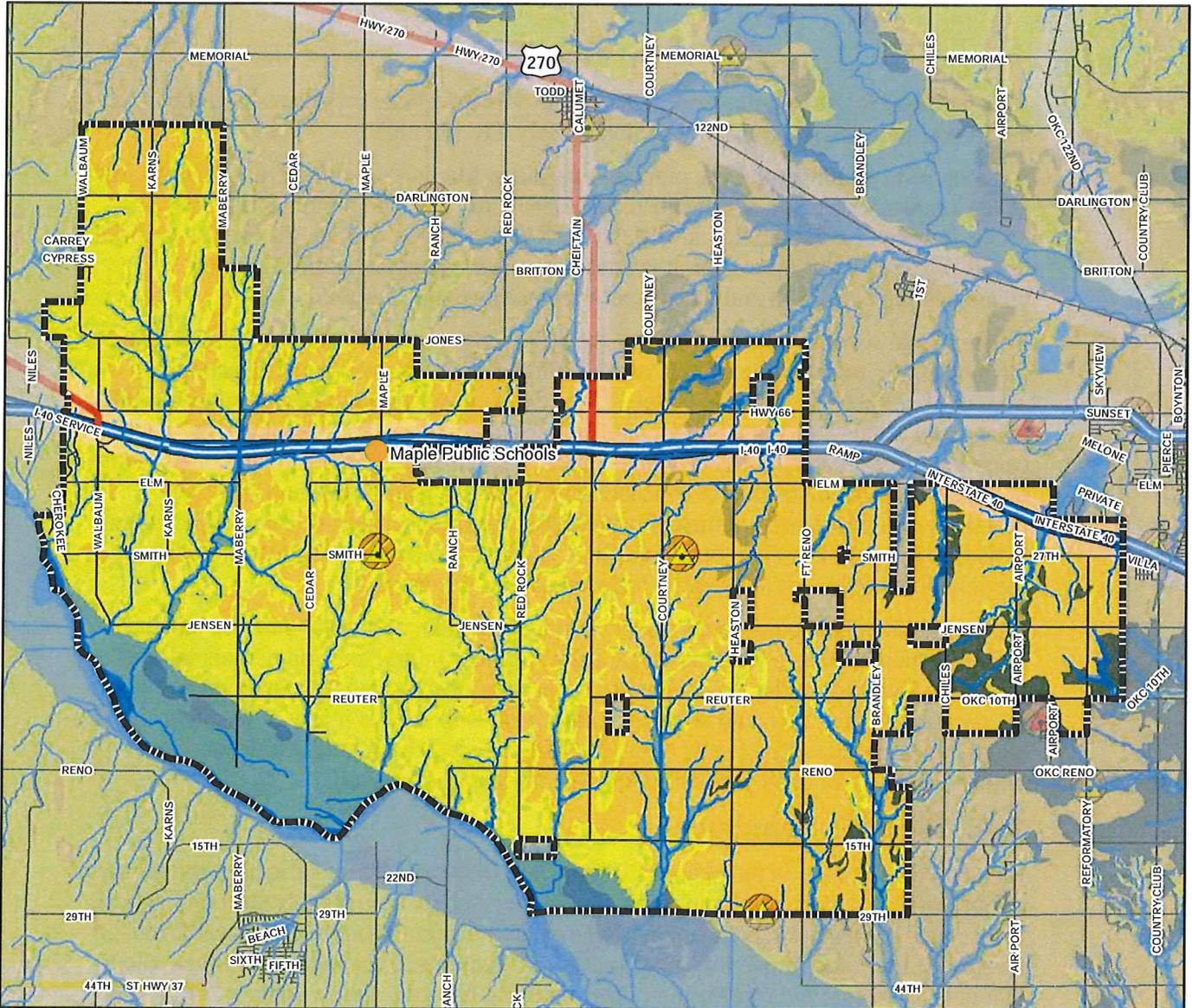


Figure G.6-3:

**Maple School District
Hazard Composite**

- PreK
- Elementary School
- Middle School
- ◆ High School
- Rural School
- Public School Admin
- Development Center
- Other

Hazard Overlays

- ▲ 2009 EHS Tier 2
- ▲ 2009 non EHS Tier 2
- Tier2 1/4mi Buffer
- 100yr Floodplain
- 500yr Floodplain
- Quarter Mile Transportation Buffer

Expansive Soils

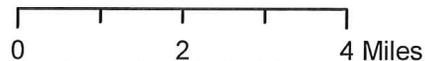
- Low
- Moderate
- High
- Very High
- Water

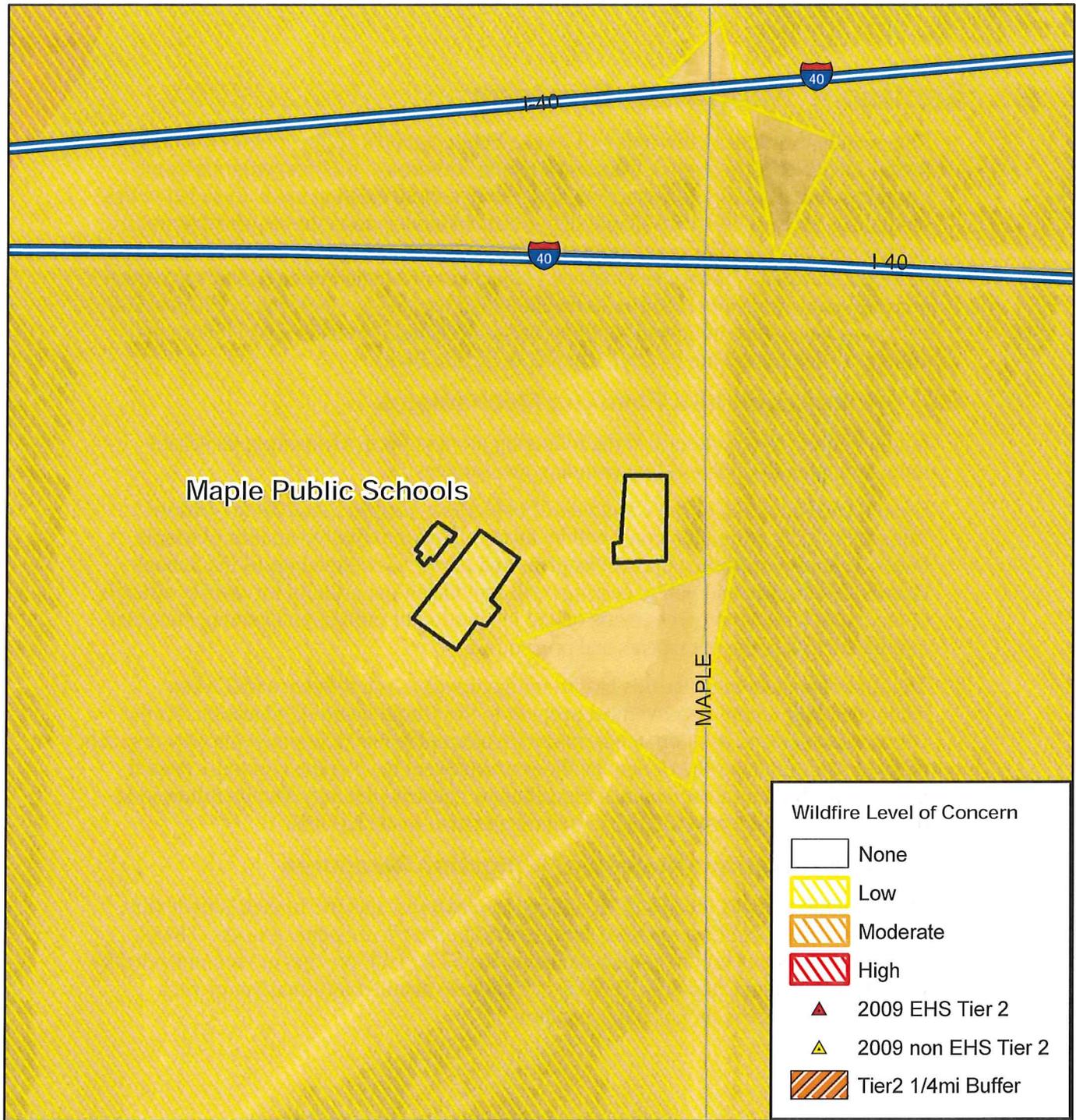
Transportation

- Interstate
- US Highway
- State Highway
- Turnpike
- Local or Rural Road
- ++ Railroads

Boundaries

- Maple SD





Wildfire Level of Concern

- None
- Low
- Moderate
- High
- 2009 EHS Tier 2
- 2009 non EHS Tier 2
- Tier2 1/4mi Buffer

LEGEND

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

0 100 200 Feet



Figure G.6-4
Maple Public Schools
Hazard Composite

Section 4 Mitigation Strategy

This section provides a description of Maple 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 Maple Public School incorporates the requirements of the mitigation plan into other planning mechanisms such as emergency action plans or long range plans, when appropriate. Goals and objectives of Maple 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

Maple Public Schools 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 Maple Public Schools emergency operations plans and procedures. 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. As the District continues to develop, the hazard mitigation plan may be integrated into 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.

4.2 Prioritization Process of Mitigation Measures

Maple Public Schools identified 18 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.