Annex C City of Lincoln

C.1 Introduction

This Annex details the hazard mitigation planning elements specific to the City of Lincoln, a participating jurisdiction to the Placer County LHMP Update. This annex is not intended to be a standalone document, but appends to and supplements the information contained in the base plan document. As such, all sections of the base plan, including the planning process and other procedural requirements apply to and were met by the City. This annex provides additional information specific to the City of Lincoln, with a focus on providing additional details on the risk assessment and mitigation strategy for this community.

C.2 Planning Process

As described above, the City of Lincoln followed the planning process detailed in Section 3 of the base plan. In addition to providing representation on the Placer County Hazard Mitigation Planning Committee (HMPC), the City formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table C-1. Additional details on plan participation and City representatives are included in Appendix A.

Table C-1 City of Lincoln Planning Team

Name	Position/Title	How Participated
Mike Davis	Fire Department	Attended meetings. Provided edits and updates to past annex. Provided updated hazard identification, vulnerability and capability information. Provided updated mitigation projects.
Rex Marks	Police Department	Attended meetings. Provided edits and updates to past annex. Provided updated hazard identification, vulnerability and capability information. Provided updated mitigation projects.
Steve Ambrose	Finance	Attended meetings. Provided edits and updates to past annex. Provided updated hazard identification, vulnerability and capability information. Provided updated mitigation projects.
Ray Leftwich	Engineering	Attended meetings. Provided edits and updates to past annex. Provided updated hazard identification, vulnerability and capability information. Provided updated mitigation projects.
Matt Wheeler	Community Development	Attended meetings. Provided edits and updates to past annex. Provided updated hazard identification, vulnerability and capability information. Provided updated mitigation projects.

Coordination with other community planning efforts is paramount to the successful implementation of this plan. This Section provides information on how the City integrated the previously-approved 2010 Plan into

existing planning mechanisms and programs. Specifically, the City incorporated into or implemented the 2010 LHMP through other plans and programs shown in Table C-2.

Table C-2 2010 LHMP Incorporation

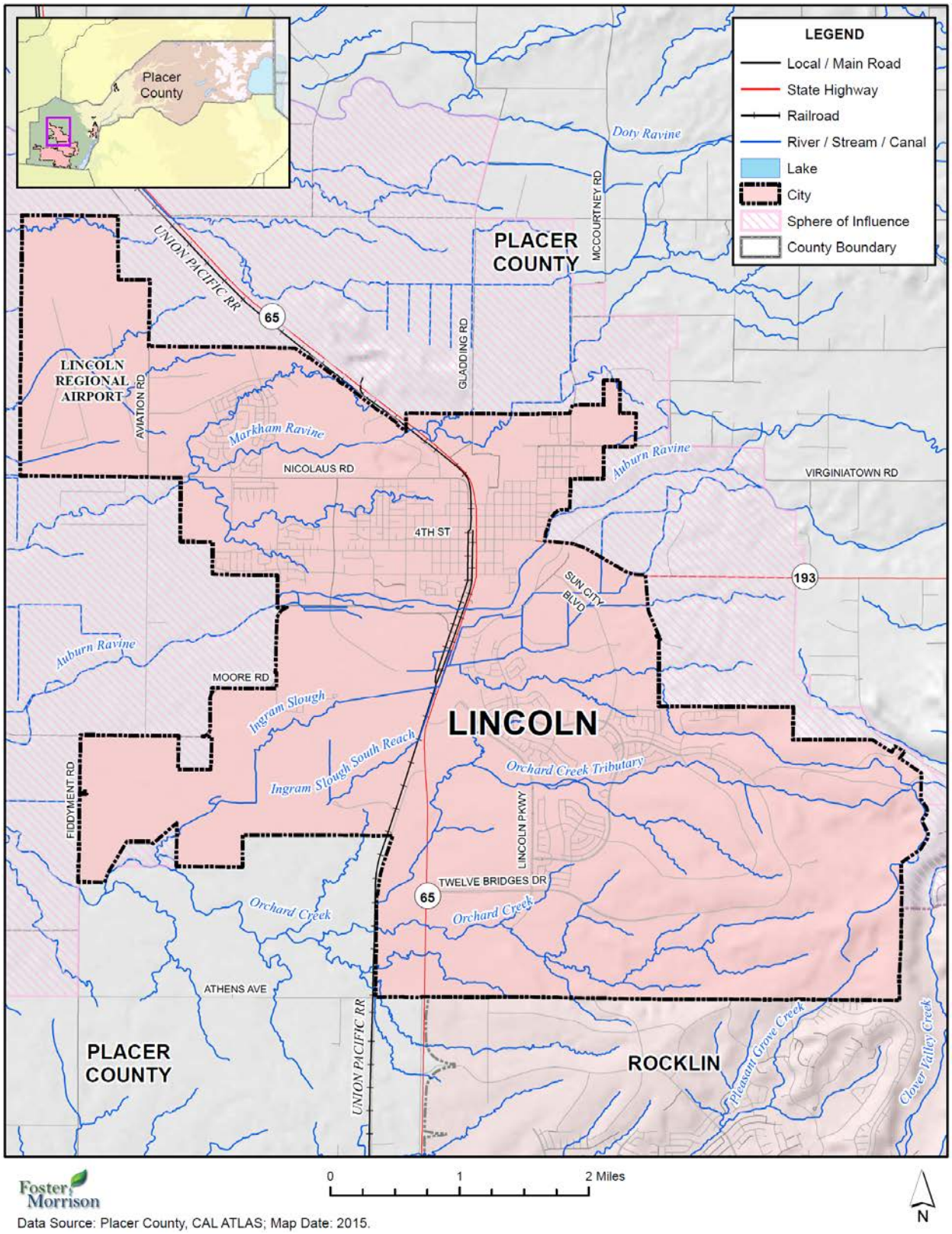
Jurisdiction	Planning Mechanism 2010 LHMP Was Incorporated/Implemented In. Details?
City of Lincoln	The previous LHMP was adopted by City Council, but the City did not incorporate the plan into other documents. There were several reasons why this did not occur and included, financial constraints of the City resulting in very limited planning activities over the last five years and lack of consistent and available staff responsible for plan implementation.
City of Lincoln	Although not specifically part of City activities, implementation of regional planning efforts and associated projects, such as through the County CWPP and flood planning efforts and projects since 2010 provide a direct benefit to the City of Lincoln.
City of Lincoln	The LHMP is considered a supporting document to the General Plan that will be incorporated into the Safety Element during the next General Plan update.

The City did not incorporate the 2010 LHMP through other plans and programs as no major planning efforts have occurred in the City in that timeframe.

C.3 Community Profile

Figure C-1 displays a map and the location of the City of Lincoln within Placer County.

Figure C-1 City of Lincoln Basemap



C.3.1. Geography and Climate

The City of Lincoln is located in the Sacramento Valley, 25 miles northeast of the City of Sacramento. Lincoln is one of six cities in Placer County and is located on the eastern edge of the Sacramento Valley floor at the base of the Sierra Nevada foothills. The City is traversed by a number of waterways, including Markham Ravine, Auburn Ravine, Ingram Slough, Orchard and Rock Creek, Coon Creek and Doty Ravine are to the north within the proposed Sphere of Influence. The City of Lincoln is located just east of State Route 65 (SR 65), which connects to Interstate 80 (I-80) approximately ten miles east of the City and south of SR 193. Lincoln encompasses 19.3 square miles and is at a general elevation of 164 feet above sea level.

Average temperatures range from the high 80°F to high 90°F during the summer to the mid 30°F to high 50°F during the winter. Lincoln receives an average of 22.3 inches of rain and 0.2 inches of snow annually.

C.3.2. History

The City of Lincoln was named after Charles Lincoln Wilson, a real estate magnate who is largely credited with bringing the railroad to the area in 1861. The City was incorporated in 1890. Lincoln is the home of one of the County's oldest businesses, the Gladding McBean terra cotta clay manufacturing plant, which was established in 1875 when rich clay deposits of the Ione Formation were discovered nearby.

C.3.3. Economy

US Census estimates show economic characteristics for the City of Lincoln. These are shown in Table C-3.

Table C-3 City of Lincoln Civilian Employed Population 16 years and Over

Industry	Estimated Employment	Percent
Agriculture, forestry, fishing and hunting, and mining	56	0.3%
Construction	1,144	7.1%
Manufacturing	1,023	6.3%
Wholesale trade	550	3.4%
Retail trade	2,373	14.7%
Transportation and warehousing, and utilities	723	4.5%
Information	466	2.9%
Finance and insurance, and real estate and rental and leasing	1,325	8.2%
Professional, scientific, and management, and administrative and waste management services	1,868	11.6%
Educational services, and health care and social assistance	3,219	20.0%
Arts, entertainment, and recreation, and accommodation and food services	1,274	7.9%
Other services, except public administration	662	4.1%
Public administration	1,429	8.9%

Source: US Census Bureau American Community Survey 2009-2013 Estimates

C.3.4. Population

The California Department of Finance estimated the January 1, 2014 total population for the City of Lincoln was 45,206.

C.4 Hazard Identification and Summary

Lincoln's planning team identified the hazards that affect the City and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to Lincoln (see Table C-4). In the context of the plan's planning area, there are no hazards that are unique to Lincoln.

Table C-4 City of Lincoln Hazard Identification Lincoln

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/ Severity	Significance
Agricultural Hazards	Limited	Unlikely	Negligible	Low
Avalanche	Limited	Unlikely	Negligible	Low
Dam Failure	Limited	Unlikely	Negligible	Low
Drought and Water Shortage	Extensive	Likely	Limited	High
Earthquake	Extensive	Occasional	Limited	Medium
Flood: 100/500 year	Limited	Occasional	Negligible	Medium
Flood: Localized Stormwater Flooding	Limited	Highly Likely	Limited	Medium
Landslides and Debris Flows	Limited	Unlikely	Negligible	Low
Levee Failure	Limited	Unlikely	Limited	Low
Seiche (Lake Tsunami)	Limited	Unlikely	Negligible	Low
Severe Weather: Extreme Heat	Extensive	Likely	Critical	Medium
Severe Weather: Freeze and Snow	Extensive	Likely	Limited	Medium
Severe Weather: Fog and Freezing Fog	Extensive	Likely	Negligible	Low
Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)	Extensive	Highly Likely	Negligible	Low
Soil Bank Erosion	Limited	Occasional	Negligible	Low
Subsidence	Limited	Unlikely	Negligible	Low
Volcano	Extensive	Unlikely	Catastrophic	Low
Wildfire	Significant	Highly Likely	Limited	Medium
Hazardous Materials Transport	Significant	Likely	Critical	High

Geographic Extent
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Probability of Future Occurrences
Highly Likely: Near 100% chance of occurrence in next year, or happens every year.
Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity
Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability
Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability
Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

C.5 Vulnerability Assessment

The intent of this section is to assess Lincoln's vulnerability separate from that of the planning area as a whole, which has already been assessed in Section 4.3 Vulnerability Assessment in the main plan. This vulnerability assessment analyzes the population, property, and other assets at risk to hazards ranked of medium or high significance that may vary from other parts of the planning area. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the main plan.

C.5.1. Assets at Risk

This section identifies Lincoln's assets at risk, including values at risk, critical facilities and infrastructure, historic assets, and growth and development trends.

Values at Risk

The following data from the Placer County Assessor's Office is based on the 2015 Assessor's data. The methodology used to derive property values is the same as in Section 4.3.1 of the base plan. This data should only be used as a guideline to overall values in the County, as the information has some limitations. The most significant limitation is created by Proposition 13. Instead of adjusting property values annually, the values are not adjusted or assessed at fair market value until a property transfer occurs. As a result, overall value information is most likely low and does not reflect current market value of properties within the County. It is also important to note, in the event of a disaster, it is generally the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss. Table C-5 shows the 2015 Assessor's values (e.g., the values at risk) broken down by property type for the City of Lincoln.

Table C-5 City of Lincoln – Total Assets at Risk by Property Use

Property Use	Parcels	Total Land Value	Improved Parcel Count	Improved Structure Value	Total Value
Agricultural	4	$1,946,450	0	$0	$1,946,450
Commercial	1513	$395,275,204	457	$523,142,972	$918,418,176
Industrial	240	$58,893,048	153	$125,689,906	$184,582,954
Institutional	67	$17,218,965	22	$72,982,008	$90,200,973
Natural/Open	102	$2,993,739	6	$3,123,464	$6,117,203
Residential	18024	$1,621,943,518	17373	$4,323,097,708	$5,945,041,226
Total	**19,950**	**$2,098,270,924**	**18011**	**$5,048,036,058**	**$7,146,306,982**

Source: Placer County 2015 Parcel/Assessor's Data

Critical Facilities and Infrastructure

For purposes of this plan, a critical facility is defined as:

> *Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.*

This definition was refined by separating out three classes of critical facilities as further described in Section 4.3.1 of the base plan.

An inventory of critical facilities in the City of Lincoln from Placer County GIS is shown on Figure C-2 and detailed in Table C-6. Details of critical facility definition, type, name, address, and jurisdiction by hazard zone are listed in Appendix F.

Figure C-2 City of Lincoln – Critical Facilities

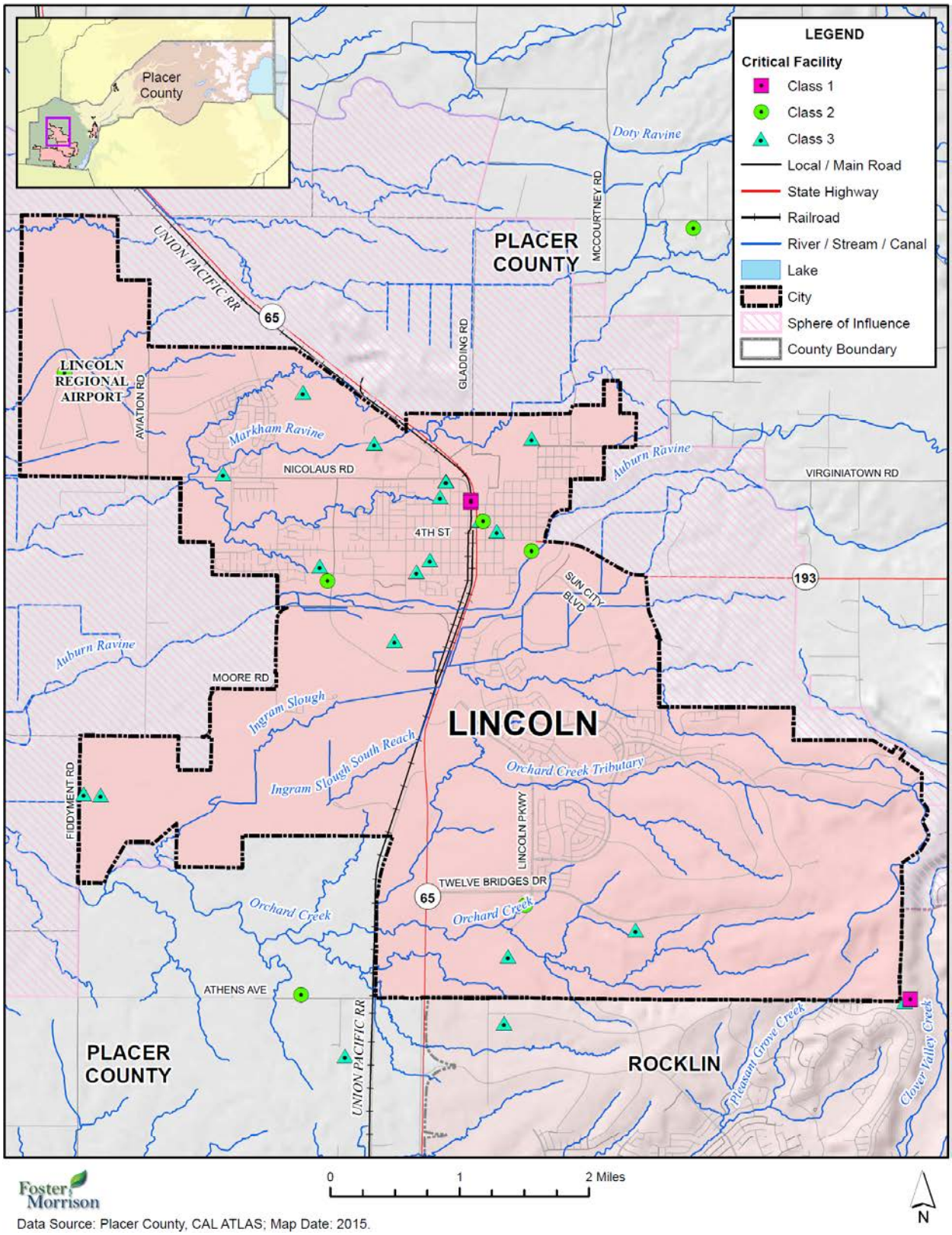


Table C-6 City of Lincoln – Critical Facilities Inventory

Critical Facility Category	Facility Type	Facility Count
Class 1	Dispatch Center	1
	Emergency Operation Center	1
Class 2	Airport	1
	Fire Station	3
	Police Station	1
Class 3	Hall	2
	Hazardous Materials Facility	1
	School	12
	Water Treatment Plant	1
Total City of Lincoln		**23**

Source: Placer County GIS

Natural Resources

The City of Lincoln has a variety of natural resources of value to the community as identified in the Background Report to the General Plan, 2006:

- Two sensitive biological resources: Northern Hardpan Vernal Pools occurring in the western portion of the City and Foothill Riparian Woodland found along several of the larger watercourses (e.g., Auburn Ravine and Markham Ravine);
- Five special status plant species known to occur: the California Linderiella, Dwarf Downingia, Ahart's Dwarf Rush, Big-Scale Balsamroot, and Bogg's Lake Hedge-hyssop;
- One special status animal species known to occur: the Vernal Pool Fairy Shrimp;
- Twenty-four special status plant species with the potential to occur; and
- Fifty-five special status animal species with the potential to occur.

Historic and Cultural Resources

The City of Lincoln has two registered federal historic sites:

- Lincoln Public Library – 590 Fifth Street
- Women's Club of Lincoln – 499 E Street

Growth and Development Trends

Lincoln's population grew 282 percent from 11,205 in 2000 to 42,819 in 2010, making it the fastest growing place in the United States for that time period. While growth slowed from 2010 to 2014, the City is expected to see significant growth in the future.

Development since Last Plan

Significant development has occurred within the City since the last LHMP (2010). While the number of occupancies and dwelling units has increased, the vulnerability of the jurisdiction has largely decreased

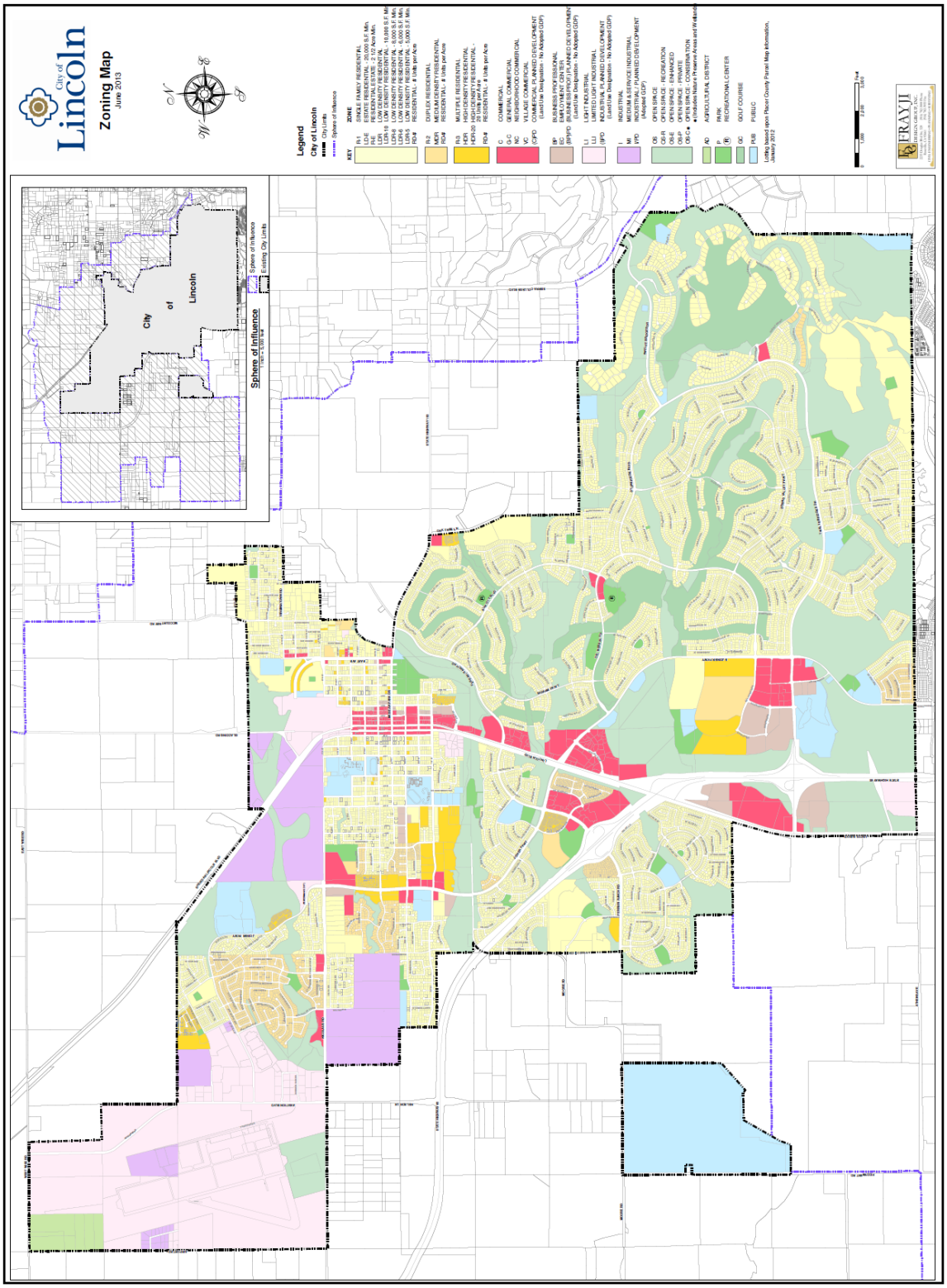
with mitigating measures implemented in association with development. No development is allowed in identified flood prone areas without proper mitigation; and no development is allowed in fire Hazard Zones without proper fire mitigation. With continued population growth anticipated, the City will need to continue to effectively manage future development in hazard-prone areas.

Future Development

The Sacramento Council on Governments (SACOG) modeled population projections for the City of Lincoln and other areas of the region in 2012 for a Metropolitan Transportation Plan/Sustainable Communities Strategy report. This forecast uses a 2008 base year estimate with projections to 2020 and 2035 for population, housing units, households and employment. SACOG estimated the City population in 2020 and 2035 to be 50,915 and 55,832 respectively.

Development in the City is expected to continue. The City provided the zoning map, shown in Figure C-3, and made not that development is occurring in Village 1, 5, and 7.

Figure C-3 City of Lincoln – Zoning and Future Development Map



Source: City of Lincoln

C.5.2. Priority Hazards: Vulnerability Assessment

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table C-4 as high or medium significance hazards. Impacts of past events and vulnerability of the City to specific hazards are further discussed below (see Section 4.1 Hazard Identification in the base plan for more detailed information about these hazards and their impacts on the Placer County planning area). Methodologies for calculating loss estimates are the same as those described in Section 4.3 of the base plan. In general, the most vulnerable structures are those located within the floodplain or within dam inundation areas, unreinforced masonry buildings, and buildings built prior to the introduction of modern building codes.

An estimate of the vulnerability of the City to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

Drought and Water Shortage

Likelihood of Future Occurrence—Likely
Vulnerability—High

The impact of a drought on the City of Lincoln is primarily one of water supply; however, the impact to natural resources in the area is also a concern. A multiple year drought can severely compromise the water supply within the City and adversely impact natural resources. Most recently, after 2 years of below-average rainfall and very low snow-melt run off, Governor Schwarzenegger, in June of 2008, declared a state of emergency for drought conditions statewide. The final California Department of Water Resources showed snowpack water content at only 67 percent of normal. With the unknowns of drought and globally changing climate conditions, the City continues to promote water conservation throughout the community.

Future Development

As the population in the area continues to grow, so will the demand for water. Water shortages in the future may be worsened by drought, as the City relies on surface water for its water source. Increased planning will be needed to account for population growth and increased water demands. The City does also have access to wells as a backup water supply.

Earthquake

Likelihood of Future Occurrence—Unlikely
Vulnerability—Medium

Placer County is traversed by a series of northwest trending-faults that are related to the Sierra Nevada uplift. As previously discussed in Section 4.2.10 of the main plan, several active faults are located within the vicinity of Placer County and the City of Lincoln. The Cleveland Hills Fault is the closest active fault to the City, located over 40 miles north. The nearest mapped fault trace to the City is the Willow Fault. The northwest-southeast trending pre-Quaternary Willows fault zone, is located approximately 15 miles southwest of Lincoln; however, it is considered inactive for planning purposes.

According to the Safety Element, throughout recorded history, no major earthquakes have been recorded within the City. It further states that earthquakes on various active and potentially active San Francisco Bay Area fault systems could produce a wide range of groundshaking intensities within the vicinity of the City. However, the impacts to the City resulting from such an event would likely be less severe than those experienced closer to the source.

The greatest ground shaking in the immediate area occurred on April 21, 1892. The epicenter was between Winters and Vacaville in Yolo County. No fatalities occurred in the City and only minor structural damages resulted from the earthquake.

Future Development

The City enforces the state building code, which mandates construction techniques that minimize seismic hazards. Future development in the City is subject to these building codes.

Flood: 100/500 year

Likelihood of Future Occurrence—Occasional
Vulnerability—Medium

Lincoln is traversed by several stream systems that collect and convey storm runoff to the west towards the Cross Canal collection system, ultimately discharging into the Sacramento River near its confluence with the Feather River in Sutter County. The primary stream systems in the City include: Auburn Ravine (including Orchard Creek and Ingram Slough tributaries); Markham Ravine (including Clay Creek and Markham Ravine South, and Markham Ravine Central tributaries); and Coon Creek.

The City of Lincoln is at risk to both the 100-year flood as well as to localized stormwater flooding.

According to the Safety Element of Lincoln's General Plan, rainy season floods most commonly occur from November through April. Periods of prolonged, heavy rainfall create large runoff volumes and high peak stream flows. Flooding is more severe when previous rainfall has saturated the ground surface and subsurface. This is due to clay nature of the soils as well as the prevalence of an impermeable subsurface throughout most of the Lincoln area, which can result in some areas of standing water and localized flooding. Other localized flooding hazards are caused by obstacles to natural drainage flows, such as the

railroad and highway bridges along SR 65 at the Auburn Ravine. During periods of high runoff, these structures tend to act as barriers, causing water to back up east of the highway into natural depressions and south between the railroad tracks and SR 65.

Cloudburst storms, sometimes lasting as long as three hours, can occur any time from the late fall to early spring, and may occur as an extremely severe sequence within a general winter rainstorm. These are high intensity storms that can produce peak flows equal or somewhat greater that those of general rainstorms in parts of the City. Flooding from cloudburst is characterized by high peak flow, short duration of flood flow, and a small volume of runoff.

A general lack of curbs and gutters in parts of the City and locally inadequate or incomplete storm drains results in standing water that is both a nuisance and a potential hazard. Areas with the most significant flood hazards are the natural drainage channels of Auburn and Markham Ravines and their tributaries and localized areas due to inadequate surface flow. Recent flood history taken from the City of Lincoln General Plan Background Report includes:

Auburn Ravine: The City has recorded several flooding events in the recent past involving structures along the Auburn Ravine corridor and its tributaries in the City of Lincoln. In 1986, 1995, and 1997, the Auburn Ravine bridge structures at State Route 65 and State Route 193 were overtopped. The existing bridge at the Joiner Parkway crossing of Auburn Ravine did not flood in these events and would not be expected to flood in an event less than the 500-year. Downstream from the City of Lincoln, flooding was also noted at the Moore Road and Nelson Lane crossings. Several smaller private crossings overtop frequently. Along the south bank of Auburn Ravine, west of State Route 65, Moore Road parallels the creek and is known to flood often. This road was abandoned with the South Lincoln Master Drainage Plan (SLMP) improvements east of Joiner Parkway, and culvert improvements were made west of Joiner Parkway to improve conveyance capacity. Flooding of the roadway is still expected west of Joiner Parkway as a result of flood stages in Auburn Ravine greater than the 10-year event.

More recently, the New Year's Eve event of 2005/2006 did not result in overtopping of any of the main bridge structures along the ravine (SR 193, SR 65, and Joiner Parkway). Moore Road along the south bank was flooded both east and west of Joiner Parkway. The Moore Road and Nelson Lane crossings were reported as overtopped. The storm was estimated to be a 10-year event for Auburn Ravine and a lesser event in the tributaries.

In Orchard Creek, flooding of Fiddyment Road is expected in greater than the 5-year event. Flooding of private drives and agricultural fields is also noted in the SLMP floodplain analysis. Flooding at the Fiddyment Road crossing was not reported in the New Year's Eve 2005/2006 event.

At Ingram Slough, significant flooding of the field areas on each side of the slough was noted prior to the construction of the SLMP improvements. Also, reports from local residents indicated that in 1986 and 1995, flows from Auburn Ravine overtopped the southern bank and flowed via overland release into Ingram Slough. The SLMP designed for this issue included constructing a control weir at the south bank of Auburn Ravine, upstream of State Route 65, and an interconnection channel to convey the spillway flows safely to Ingram Slough. Downstream improvements in the SLMP increase conveyance capacity to accommodate

the combined flows from Ingram Slough and the Auburn Ravine spills. Flooding has not been experienced in the Slough since the construction of the SLMP improvements began in 1988.

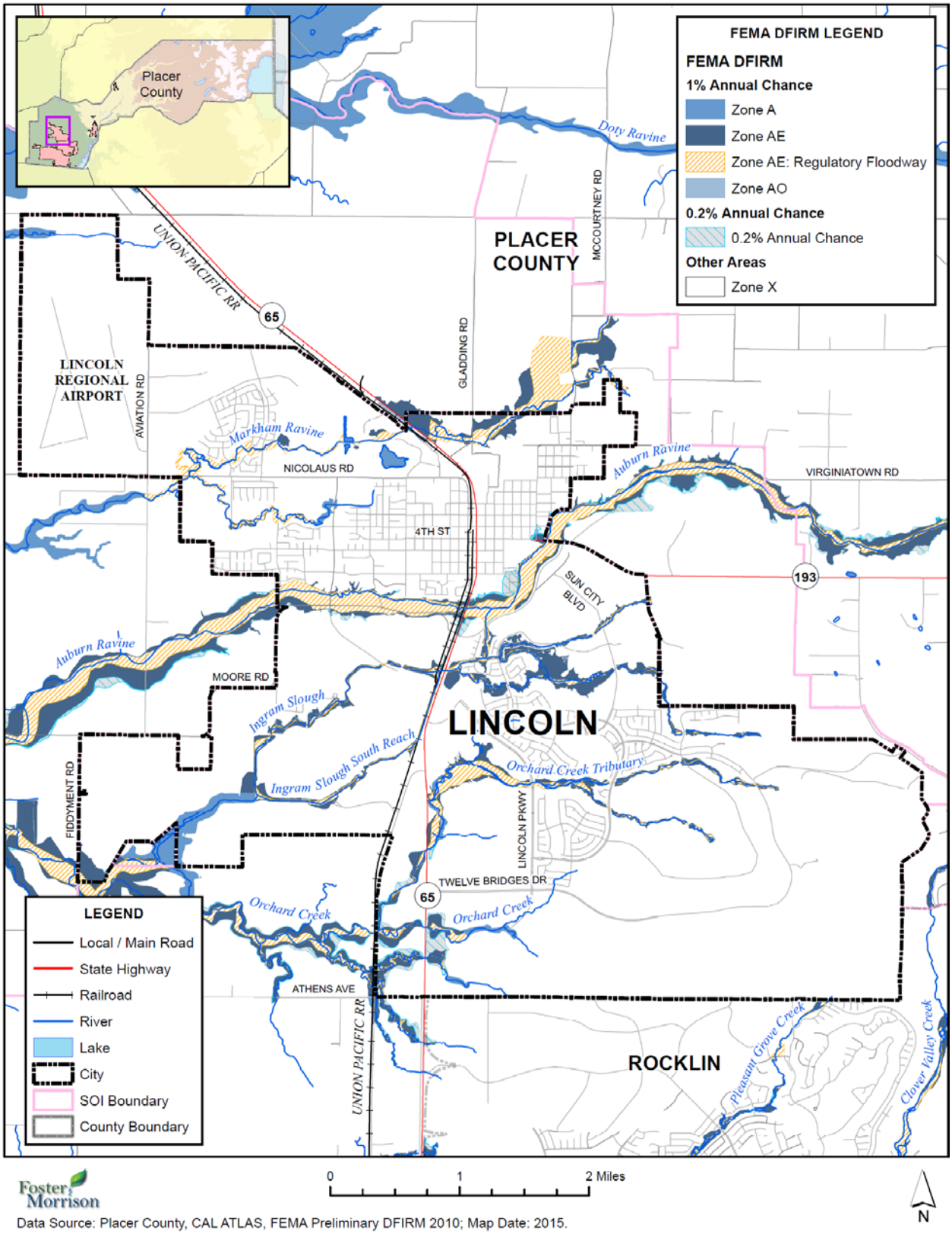
Markham Ravine: Flooding within Markham Ravine is known to occur mostly in the rural areas of the City, where culvert and bridge crossings do not provide adequate capacity. East of State Route 65, flooding occurs at Gladding Road and McCourtney Roads annually. West of State Route 65, flooding has occurred at the low areas of Nicolaus Road (not at the bridge location). At Nelson Lane flooding is expected annually. The SR 65 Bridge is expected to overtop in storm events greater than the 10-year, and the Union Pacific Railroad Bridge is only expected to be overtopped in a 50-year or greater event. These estimates were supported by the New Year's Eve 2005/2006 event. Other private crossings of the Ravine are expected to overtop annually.

At the north tributary, Clay Creek, shallow flooding in the remaining natural areas of the creek is still expected. The developed areas of the Creek are protected from flooding in the 100-year event. At the southern tributary, 100-year protection is provided from Joiner Park, downstream to the City Limits. Shallow flooding beyond the stream banks is expected in flood events, in the natural stream areas downstream of Joiner Parkway. Upstream of Joiner Park, the existing channel and storm drain systems may not provide 100-year protection to the existing residential areas in the 5th-8th Street Corridor between H Street and Q Street.

Coon Creek: Very little is known about the flooding conditions of Coon Creek at this time. No detailed study of the watershed hydrology has been performed since the "Cross Canal Watershed Study" was performed by CH2MHILL in 1988. As part of an effort on the North Lincoln Master Drainage Plan (NLMDP), shed boundaries for the Coon Creek watershed were verified. Many issues with the watershed assumptions of the Cross Canal Study of 1988 were found. It was recommended that the City try to obtain County participation in producing a rectified hydrology study for the watershed, as part of the NLMDP efforts.

A portion of the City is located inside of the 100 year flood zone as defined by the Federal Emergency Management Agency (FEMA). This is seen in Figure C-4.

Figure C-4 City of Lincoln – FEMA DFIRM Flood Zones



Foster Morrison

Data Source: Placer County, CAL ATLAS, FEMA Preliminary DFIRM 2010; Map Date: 2015.

Values at Risk

GIS was used to determine the possible impacts of flooding within the City of Lincoln. The methodology described in Section 4.3.7 of the base plan was followed in determining structures and values at risk to the 1% (100-year) and 0.2% (500-year) annual chance flood event. Table C-7 shows the property use, improved parcel count, improved values, estimated contents, total values and estimated loss of parcels that fall in a floodplain in the City.

Table C-7 City of Lincoln – Count and Improved Value by Property Use by Detailed Flood Zone

Flood Zone	Property Use	Total Parcel Count	Total Land Value	Improved Parcel Count	Total Improved Value	Total Value*
A	Agricultural	0	$0	0	$0	$0
	Commercial	2	$0	0	$0	$0
	Industrial	1	$0	0	$0	$0
	Institutional	0	$0	0	$0	$0
	Natural/Open	1	$0	0	$0	$0
	Residential	1	$0	0	$0	$0
	Total	**5**	**$0**	**0**	**$0**	**$0**
AE	Agricultural	2	$136,886	0	$0	$136,886
	Commercial	61	$3,102,119	4	$3,654,477	$6,756,596
	Industrial	6	$3,641,842	2	$8,805,937	$12,447,779
	Institutional	0	$0	0	$0	$0
	Natural/Open	25	$332,968	1	$15,960	$348,928
	Residential	15	$885,920	12	$2,289,819	$3,175,739
	Total	**109**	**$8,099,735**	**19**	**$14,766,193**	**$22,865,928**
AO	Agricultural	0	$0	0	$0	$0
	Commercial	0	$0	0	$0	$0
	Industrial	0	$0	0	$0	$0
	Institutional	0	$0	0	$0	$0
	Natural/Open	0	$0	0	$0	$0
	Residential	0	$0	0	$0	$0
	Total	**0**	**$0**	**0**	**$0**	**$0**
Shaded X	Agricultural	0	$0	0	$0	$0
	Commercial	5	$88,101	0	$0	$88,101
	Industrial	0	$0	0	$0	$0

Flood Zone	Property Use	Total Parcel Count	Total Land Value	Improved Parcel Count	Total Improved Value	Total Value*
	Institutional	0	$0	0	$0	$0
	Natural/Open	0	$0	0	$0	$0
	Residential	49	$2,514,872	49	$6,595,122	$9,109,994
	Total	**54**	**$2,602,973**	**49**	**$6,595,122**	**$9,198,095**
X	Agricultural	7	$741,465	0	$0	$741,465
	Commercial	1,037	$131,302,140	198	$173,856,915	$305,159,055
	Industrial	155	$34,347,131	49	$52,188,545	$86,535,676
	Institutional	70	$5,135,273	23	$36,996,674	$42,131,947
	Natural/Open	134	$7,227,161	8	$1,473,098	$8,700,259
	Residential	18,154	$1,529,806,392	17,043	$4,198,506,664	$5,728,313,056
	Total	**19,557**	**$1,708,559,562**	**17,321**	**$4,463,021,896**	**$6,171,581,458**
Totals		**19,725**	**1,719,262,270**	**17,389**	**4,484,383,211**	**6,203,645,481**

Source: FEMA DFIRM, Placer County 2015 Parcel/Assessor's Data

Table C-8 summarizes Table C-7 above and shows City of Lincoln loss estimates and shows improved values at risk by FEMA 1% and 0.2% annual chance flood zones.

Table C-8 City of Lincoln – Flood Loss Summary

Jurisdiction	Flood Zone	Improved Parcel Count	Total Improved Value	Estimated Contents Value	Total Improved/ Contents Value	Loss Estimate	Loss Ratio
Lincoln	1%	19	$14,766,193	$18,024,252	$32,790,445	$6,558,089	0.11%
	0.2%	49	$6,595,122	$3,297,562	$9,892,684	$1,978,537	0.03%

Source: FEMA DFIRM, Placer County 2015 Parcel/Assessor's Data

According to Table C-7 and Table C-8, the City of Lincoln has 19 improved parcels and $32,790,445 of structure and contents value in the 1% annual chance floodplain. These values can be refined a step further. Applying the 20 percent damage factor as previously described in Section 4.3.7 of the base plan, there is a 1% chance in any given year of a flood event causing roughly $6,558,089 in damage in the City of Lincoln. A loss ratio of 0.11% indicates that losses in Lincoln to flood would be relatively minor, as less than an eighth of a percent of the total values in the City would be damaged. In addition to the 1% chance floodplain, there are 49 parcels in the 0.2% annual chance floodplain, with $9,892,684 in total structure and contents values.

Flooded Acres

Also of interest is the land area affected by the various flood zones. The following is an analysis of flooded acres in the City in comparison to total area within the City limits. The same methodology, as discussed in Section 4.3.7 of the base plan, was used for the City of Lincoln as well as for the County as a whole. Table C-9 represents a detailed and summary analysis of total acres for each FEMA DFIRM flood zone in the City.

Table C-9 City of Lincoln – Flooded Acres

Flood Zone	Property Use	Total Flooded Acres	Improved Flooded Acres	% of Improved Flooded Acres
A	Agricultural	0	0	0.0%
	Commercial	4.97	0	0.0%
	Industrial	15.26	0	0.0%
	Institutional	0	0	0.0%
	Natural/Open	2.54	0	0.0%
	Residential	24.75	0	0.0%
AE	Agricultural	26.11	0	0.0%
	Commercial	569.01	5.23	0.9%
	Industrial	221.87	172.19	77.6%
	Institutional	0	0	0.0%
	Natural/Open	317.41	6.33	2.0%
	Residential	10.71	4.57	42.7%
AO	Agricultural	0	0	0.0%
	Commercial	0	0	0.0%
	Industrial	0	0	0.0%
	Institutional	0	0	0.0%
	Natural/Open	0	0	0.0%
	Residential	0	0	0.0%
Total 1%		**1,192.63**	**188.32**	**15.8%**
Shaded X	Agricultural	0	0	0.0%
	Commercial	3.32	0	0.0%
	Industrial	0	0	0.0%
	Institutional	0	0	0.0%
	Natural/Open	0	0	0.0%
	Residential	11.37	11.37	100.0%
Total 0.2%		**14.70**	**11.37**	**77.4%**

Source: FEMA DFIRM, Placer County 2015 Parcel/Assessor's Data

Population at Risk

The DFIRM flood zones were overlayed on the parcel layer. Those residential parcel centroids that intersect the severity zones were counted and multiplied by the 2010 Census Bureau average household factors for Lincoln. According to this analysis, there is a total population of 169 residents of the City at risk to flooding. This is shown in Table C-10.

Table C-10 City of Lincoln – Improved Residential Parcels and Population by Flood Zone

Flood Zone	Improved Residential Parcels	Population*
A	1	3
AE	15	39
AO	0	0
Total 1% Annual Chance	**16**	**42**
Shaded X (0.2% Annual Chance)	49	127
D	0	0

Source: FEMA DFIRM, Placer County 2015 Parcel/Assessor's Data, US Census Bureau

* Average household populations from the 2010 US Census were used: Lincoln– 2.59.

Critical Facilities at Risk

There are no critical facilities at risk in the City of Lincoln in the flood zones.

Insurance Coverage, Claims Paid, and Repetitive Losses

The City of Lincoln joined the National Flood Insurance Program (NFIP) on February 3, 1983. The City does not participate in the Community Rating System (CRS). NFIP Insurance data indicates that as of September 30, 2015, there were 90 flood insurance policies in force in the City with $27,547,400 of coverage. Of the 90 policies, 88 were residential and 2 were nonresidential; 1 of the policies was in A zones (the remaining 89 were in B, C, and X zones). The GIS parcel analysis detailed above identified 19 improved parcels in the 100-year flood zone. One policy for 19 improved parcels in the 100 year floodplain equates to insurance coverage of 5.3 percent.

There have been 5 historical claims for flood losses totaling $65,571; two were in A zones and three were standard policies located in B, C or X zones. Two of these were for pre-FIRM structures; three were for post-FIRM structures. NFIP data further indicates that there are two repetitive loss (RL) buildings in the community. There have been a total of 5 RL losses. One of the RL buildings is located in the A zone. It is zoned Business Professional and has an office use. The site has development restrictions in place; the building cannot be enlarged and any outdoor uses have to comply with the City's floodplain requirements. The other RL building is located outside of the 100- and 500-year floodplain in the B, C, or X zones, with most of its damage occurring as a result of heavy rains. This building is zoned commercial and is in commercial use.

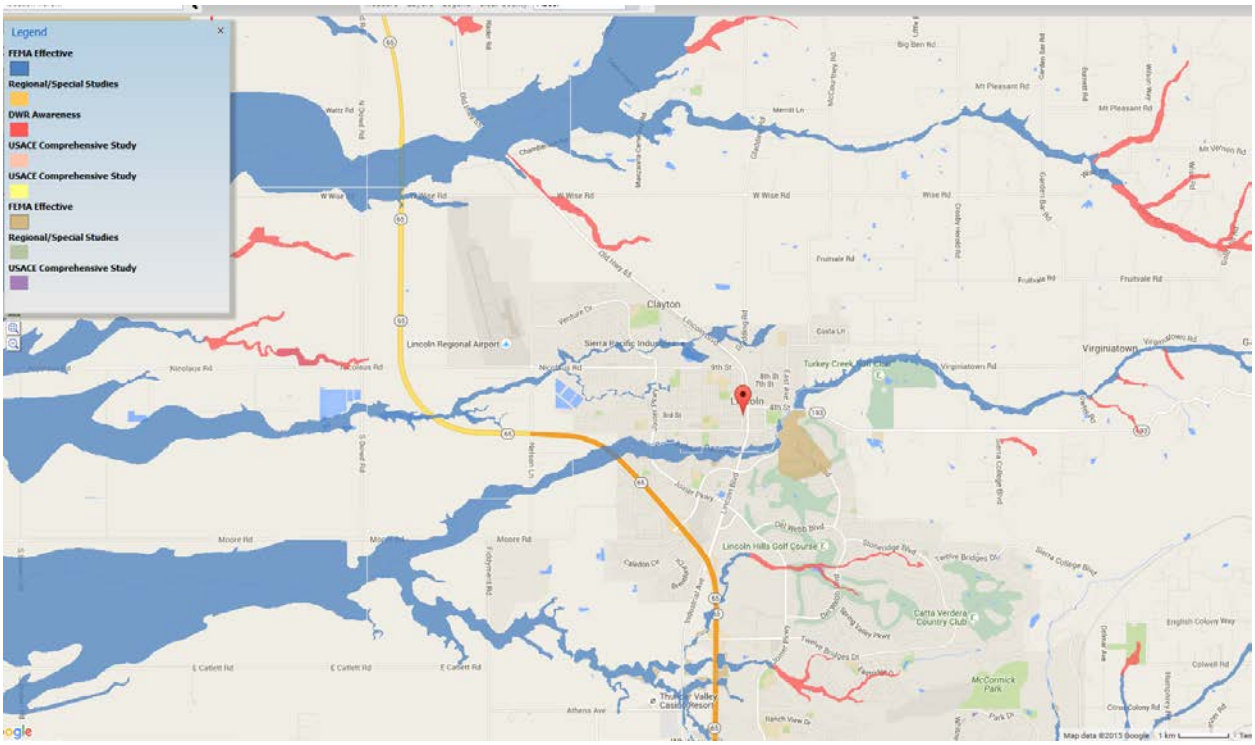
California Department of Water Resources Best Available Maps (BAM)

The FEMA regulatory maps provide just one perspective on flood risks in Placer County. Senate Bill 5 (SB 5), enacted in 2007, authorized the California DWR to develop the Best Available Maps (BAM) displaying 100- and 200-year floodplains for areas located within the Sacramento-San Joaquin (SAC-SJ) Valley watershed. SB 5 requires that these maps contain the best available information on flood hazards and be provided to cities and counties in the SAC-SJ Valley watershed. This effort was completed by DWR in 2008. DWR has expanded the BAM to cover all counties in the State and to include 500-year floodplains.

Different than the FEMA DFIRMs which have been prepared to support the NFIP and reflect only the 100-year event risk, the BAMs are provided for informational purposes and are intended to reflect current 100-, 200-, and 500-year event risks using the best available data. The 100-year floodplain limits on the BAM are a composite of multiple 100-year floodplain mapping sources. It is intended to show all currently identified areas at risk for a 100-year flood event, including FEMA's 100-year floodplains. The BAM are comprised of different engineering studies performed by FEMA, Corps, and DWR for assessment of potential 100-, 200-, and 500-year floodplain areas. These studies are used for different planning and/or regulatory applications. They are for the same flood frequency, however, they may use varied analytical and quality control criteria depending on the study type requirements.

The value in the BAMs is that they provide a bigger picture view of potential flood risk to the City than that provided in the FEMA DFIRMs. This provides the community and residents with an additional tool for understanding potential flood hazards not currently mapped as a regulated floodplain. Improved awareness of flood risk can reduce exposure to flooding for new structures and promote increased protection for existing development. Informed land use planning will also assist in identifying levee maintenance needs and levels of protection. By including the FEMA 100-year floodplain, it also supports identification of the need and requirement for flood insurance. The BAM map for Lincoln is shown in Figure C-5.

Figure C-5 City of Lincoln Best Available Map



Source: California DWR

Future Development

Development may occur in the floodzone, so long as it is built to the standards of both the building code and the floodplain ordinance.

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence—Highly Likely
Vulnerability—Medium

Flooding and other issues caused by severe weather events-primarily heavy rains and thunderstorms-can often pose a risk to the community. Primary concerns include impacts to infrastructure which provides a means of ingress and egress throughout the community. Table C-11 identifies known and past occurrences of such areas and the associated problems encountered. This list is an initial inventory of key problem areas and is not intended to be a complete inventory of all problems and locations associated with severe weather events and localized flooding in the City of Lincoln.

Table C-11 City of Lincoln Localized Flooding Problem Areas

Road Name	Flooding	Pavement Deterioration	Washout	High Water	Landslide/ Mudslide	Debris	Downed Trees
Gladding Road	X			X			
Moore Road	X			X			

Road Name	Flooding	Pavement Deterioration	Washout	High Water	Landslide/ Mudslide	Debris	Downed Trees
McCourtney Road	X			X			

Source: City of Lincoln

In December of 2014, heavy rain fell in Lincoln. Localized flooding of many streets resulted from the flooding. Some of these streets closed until they drained. Schools released students early due to the street closures.

Future Development

Future development in the City will add more impervious surfaces and need to drain those waters. The City will need to be proactive to ensure that increased development has proper siting and drainage for stormwaters. The risk of localized flooding to future development can also be minimized by accurate recordkeeping of repetitive localized storm activity. Mitigating the root causes of the localized stormwater flooding will reduce future risks of losses.

Severe Weather: Extreme Heat

Likelihood of Future Occurrence—Likely
Vulnerability—Medium

Extreme heat tends to occur on an annual basis in Lincoln. Health impacts are the primary concern with this hazard, though economic impacts are also an issue. The elderly and individuals below the poverty level are the most vulnerable to extreme heat. Nursing homes and elder care facilities are especially vulnerable to extreme heat events if power outages occur and air conditioning is not available. In addition, individuals below the poverty level may be at increased risk to extreme heat if use of air conditioning is not affordable.

Weather data specific to the City of Lincoln is limited, but generally corresponds with temperature patterns of other cities in its vicinity, including Roseville, Rocklin and Loomis. Typical patterns for area cities are 85-90 days per year with high temperatures higher than or equal to 90 degrees.

Future Development

Vulnerability to extreme heat will increase as the average age of the population in the City shifts. Greater numbers of future senior citizens will result from the large number of baby boomers in the planning area. The elderly are more at risk to the effects of extreme heat, especially those without proper air conditioning. However, many of the residents of the City are accustomed to living with extreme heat and take precautions to guard against the threat of extreme heat.

Severe Weather: Freeze and Snow

Likelihood of Future Occurrence—Likely
Vulnerability—Medium

Extreme cold and snow tend to occur on an annual basis in Lincoln. Health impacts are the primary concern with this hazard, though economic impacts are also an issue. The elderly and individuals below the poverty level are the most vulnerable to freeze and snow. Risk of exposure is a possibility for homeless persons during periods of extreme cold, though this is less common than extreme heat in western Placer County.

Weather data specific to the City of Lincoln is limited, but generally corresponds with temperature patterns of other cities in its vicinity, including Roseville, Rocklin and Loomis. Typical patterns for area cities are 40-45 days with low temperatures below 32 degrees.

Future Development

Like extreme heat, vulnerability to freeze will increase as the average age of the population in the City shifts. Greater numbers of future senior citizens will result from the large number of baby boomers in the City. The elderly are more at risk to the effects of freeze. However, many of the residents of the City are accustomed to living with freeze and take precautions to guard against the threat of freeze and severe cold.

Wildfire

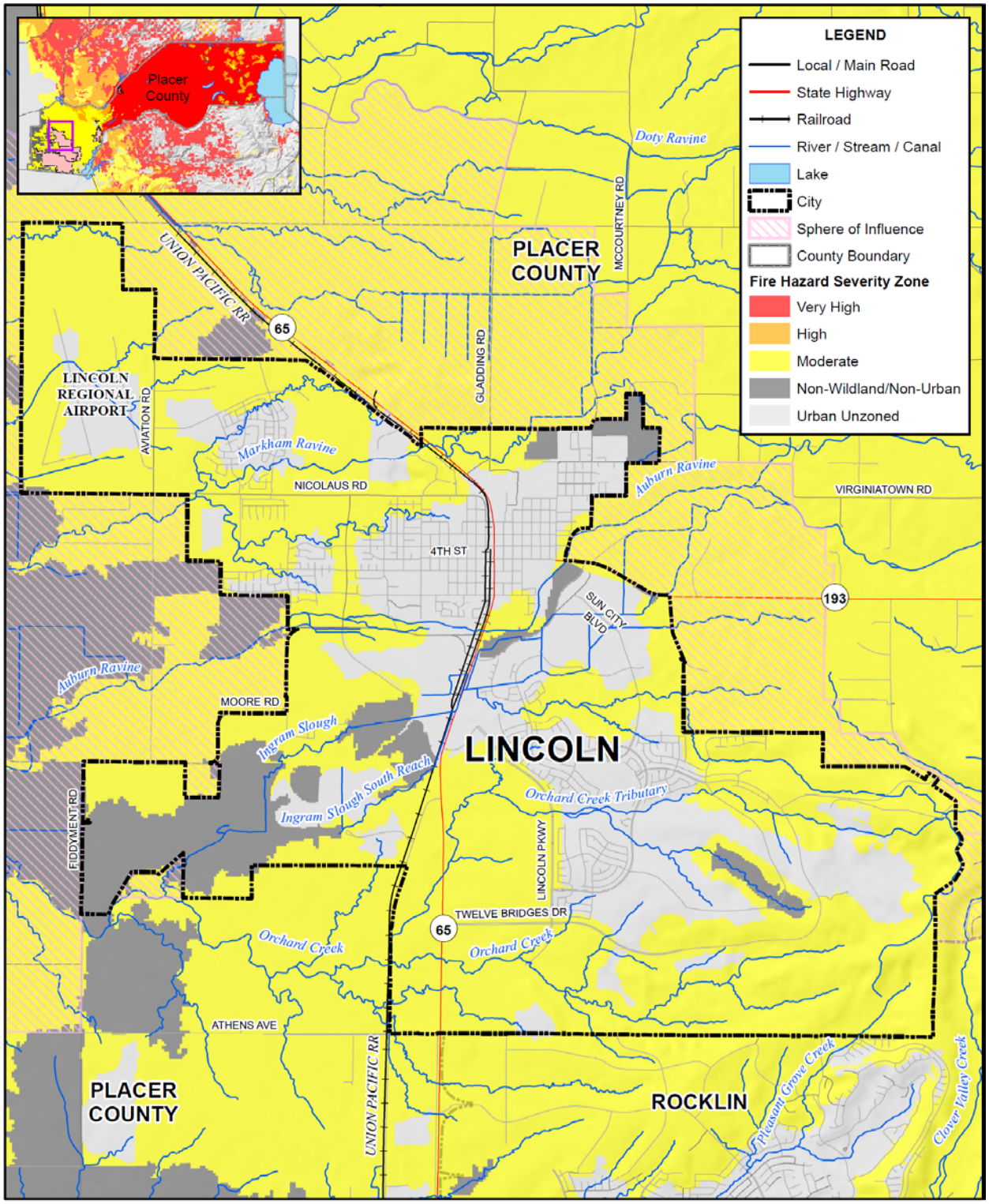
Vulnerability to Wildfire

Likelihood of Future Occurrence—Highly Likely
Vulnerability—Medium

The wildland fire season in the Sierra foothills typically lasts mid-June through early-October, although drought years or unusual weather may extend the period. Extreme weather conditions during periods of low humidity, low fuel moisture, and high winds also contribute to the severity of any potential wildfires. Fires occurring during these times typically burn hot and fast, and are difficult to control unless initial suppression occurs immediately. Lincoln has a significant amount of dry range grass that is susceptible to wildland fires that can move quickly if accompanied by a stiff breeze. In addition, there is a great potential for wildland fires in the more open hillside areas in the eastern part of the City.

Following the methodology described in Section 4.3.2 Vulnerability of Placer County to Specific Hazards, a wildfire map for the City of Lincoln was created (see Figure C-6). In general, the wildfire threat level is moderate in the outlying areas of the City.

Figure C-6 City of Lincoln – Fire Severity Zone



Foster Morrison

Data Source: Placer County, CAL FIRE SRA (14_2) 11/2007, LRA 12/2008, FRA/LRA 9/2007 DRAFT, CAL ATLAS; Map Date: 2015.

Values at Risk

Analysis results for Lincoln are shown in Table C-12, which summarizes total parcel counts, improved parcel counts and their structure values by occupancy type as well as the percentage of parcels affected by fire.

Table C-12 City of Lincoln – Count and Value of Parcels by Property Use and Fire Severity Zone

Fire Severity Zone	Property Use	Total Parcel Count	Total Land Value	Improved Parcel Count	Improved Value	Total Value*	% of Affected Parcels to Total
Very High	Agricultural	0	$0	0	$0	$0	0.0%
	Commercial	0	$0	0	$0	$0	0.0%
	Industrial	0	$0	0	$0	$0	0.0%
	Institutional	0	$0	0	$0	$0	0.0%
	Natural/Open Space	0	$0	0	$0	$0	0.0%
	Residential	0	$0	0	$0	$0	0.0%
	Total	**0**	$0	**0**	**$0**	**$0**	**0.0%**
High	Agricultural	0	$0	0	$0	$0	0.0%
	Commercial	0	$0	0	$0	$0	0.0%
	Industrial	0	$0	0	$0	$0	0.0%
	Institutional	0	$0	0	$0	$0	0.0%
	Natural/Open Space	0	$0	0	$0	$0	0.0%
	Residential	0	$0	0	$0	$0	0.0%
	Total	**0**	**$0**	**0**	**$0**	**$0**	0.0%
Moderate	Agricultural	5	$878,351	0	$0	$878,351	0.0%
	Commercial	457	$63,203,281	33	$46,943,691	$110,146,972	16.3%
	Industrial	119	$24,396,314	23	$27,373,114	$51,769,428	45.1%
	Institutional	24	$2,772,440	5	$16,147,616	$18,920,056	21.7%
	Natural/Open Space	80	$924,129	1	$23,058	$947,187	11.1%
	Residential	7,736	$677,758,748	6,735	$1,789,589,751	$2,467,348,499	39.4%
	Total	**8,421**	**$769,933,263**	**6,797**	**$1,880,077,230**	**$2,650,010,493**	39.1%
Urban Unzoned	Agricultural	4	$0	0	$0	$0	0.0%
	Commercial	522	$47,969,548	161	$100,407,565	$148,377,113	79.7%

Fire Severity Zone	Property Use	Total Parcel Count	Total Land Value	Improved Parcel Count	Improved Value	Total Value*	% of Affected Parcels to Total
	Industrial	40	$13,592,659	28	$33,621,368	$47,214,027	54.9%
	Institutional	45	$2,362,833	18	$20,849,058	$23,211,891	78.3%
	Natural/Open Space	70	$6,426,000	8	$1,466,000	$7,892,000	88.9%
	Residential	9,850	$807,207,251	9,790	$2,309,349,842	$3,116,557,093	57.2%
	Total	**10,531**	**$877,558,291**	**10,005**	**$2,465,693,833**	**$3,343,252,124**	57.5%
Non-Wildland/Non-Urban	Agricultural	0	$0	0	$0	$0	0.0%
	Commercial	126	$23,319,531	8	$30,160,136	$53,479,667	4.0%
	Industrial	3	$0	0	$0	$0	0.0%
	Institutional	1	$0	0	$0	$0	0.0%
	Natural/Open Space	10	$210,000	0	$0	$210,000	0.0%
	Residential	633	$48,241,185	579	$108,452,012	$156,693,197	3.4%
	Total	**773**	**$71,770,716**	**587**	**$138,612,148**	**$210,382,864**	3.4%
	Grand Total	**19,725**	**1,719,262,270**	**17,389**	**4,484,383,211**	**6,203,645,481**	**100.0%**

Source: Placer County 2015 Parcel/Assessor's Data, CAL FIRE
*Land and structure values

Population at Risk

The Fire Severity Zone dataset was overlayed on the parcel layer. Those residential parcel centroids that intersect the severity zones were counted and multiplied by the 2010 Census Bureau average household factors for each jurisdiction and unincorporated area. Results were tabulated by jurisdiction. According to this analysis, there is a total population of 17,444 residents of Lincoln at risk to moderate or higher wildfire risk. This is shown in Table C-13.

Table C-13 City of Lincoln – Count of Improved Residential Parcels and Population by Fire Severity Zone

Fire Severity Zone	Improved Residential Parcels	Population*
Very High	0	0
High	0	0
Moderate	6,735	17,444
Urban Unzoned	9,790	25,356
Non-Wildland/Urban	579	1,500
None	0	0
Total	**17,104**	**44,299**

Source: Placer County 2015 Parcel/Assessor's Data, CAL FIRE

* Average household populations for Lincoln (2.59) from the 2010 US Census were used

Critical Facilities at Risk

Wildfire analysis was performed on the critical facility inventory in Placer County and all jurisdictions. GIS was used to determine whether the facility locations intersect a fire severity zone provided by CAL FIRE, and if so, which zone it intersects. There are nine facilities in the moderate or higher fire severity zone in the City. These are shown in Figure C-7 and detailed in Table C-14. Details of critical facility definition, type, name and address and jurisdiction by fire zone are listed in Appendix F.

Figure C-7 City of Lincoln – Critical Facilities in the Fire Severity Zones

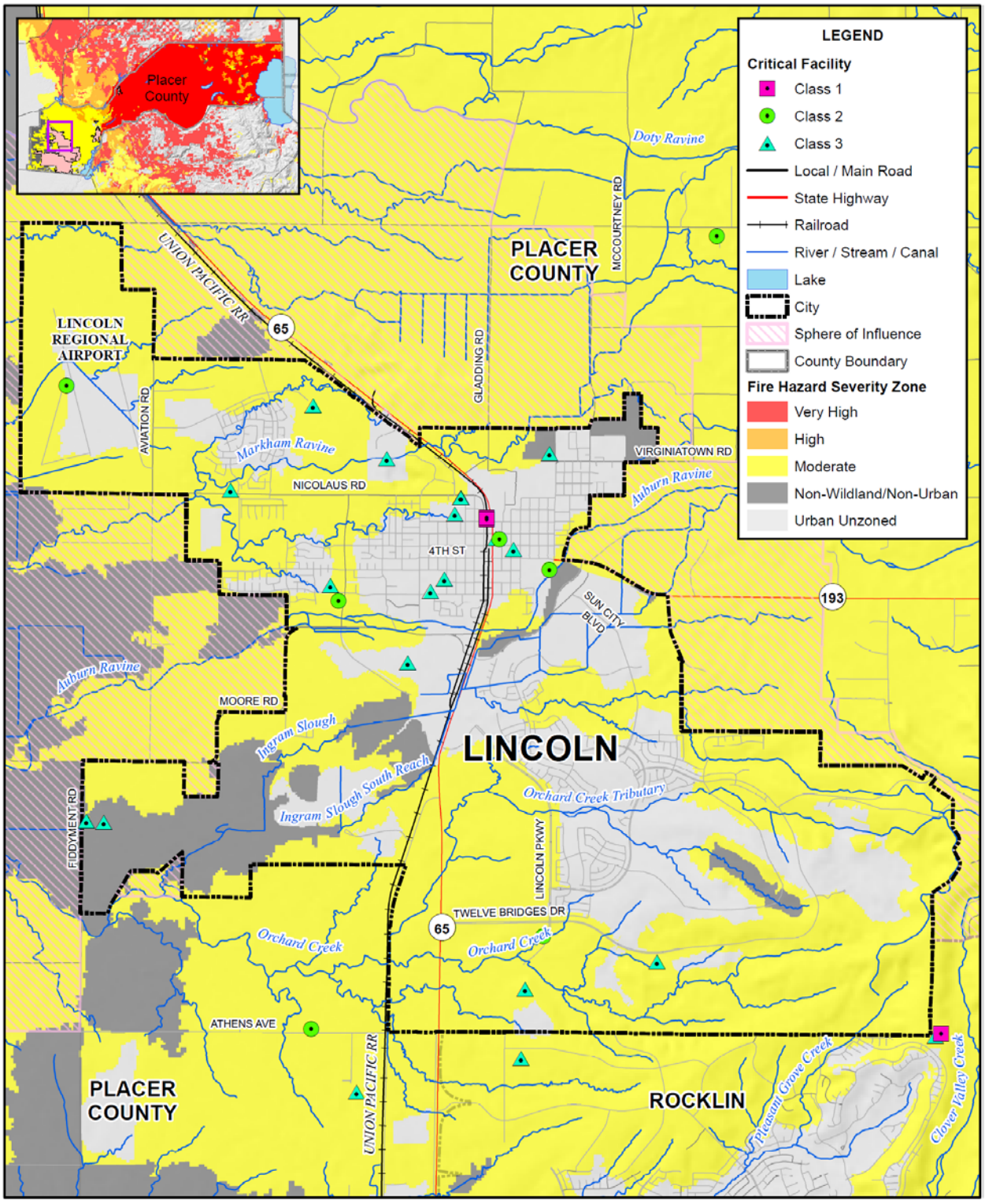


Table C-14 City of Lincoln – Critical Facilities in the Fire Severity Zones

Fire Hazard Severity Zone	Critical Facility Class	Facility Type	Facility Count
Very High	Class 1	-	-
	Class 2	-	-
	Class 3	-	-
		Total Very High	**0**
High	Class 1	-	-
	Class 2	-	-
	Class 3	-	-
		Total High	**0**
Moderate	Class 1	-	-
	Class 2	Airport	1
		Fire Station	2
	Class 3	School	6
		Total Moderate	**9**
Non-Wildland/Non-Urban	Class 1		-
	Class 2		-
	Class 3	School	1
		Water Treatment Plan	1
		Total Non-Wildland/Non-Urban	**2**
Urban Unzoned	Class 1	Dispatch Center	1
		Emergency Operation Center	1
	Class 2	Fire Station	1
		Police Station	1
	Class 3	Hall	2
		Hazardous Materials Facility	1
		School	5
		Total Urban Unzoned	**12**
Total			**23**

Source: CAL FIRE, Placer County GIS

Future Development

Given that much of the City is primarily located in the moderate fire severity zone, future development will occur in wildfire zones. The City requires homes built in these areas to be built to code, and requires wildfire mitigation before new development is permitted.

Hazardous Materials Transport

Likelihood of Future Occurrence–Likely
Vulnerability–High

Highways 65 and 193 both pass through the City of Lincoln. These are designated Cal Trans haz-mat routes. The UPRR rail line passes through the City as well. Hazardous materials are regularly shipped via these highways and, while unlikely, an incident involving an accident within the City could have devastating effects.

On August 23, 2011 such an incident occurred (see Figure C-8). At 9th street and H Street, a rail tank car filled with 30,000 gallons of liquefied propane gas caught fire. All homes and businesses within a one-mile radius were closed/evacuated for over two days. Streets, roads, and schools in were also closed. A commercial kitchen caught fire during the blaze. As a result, the City of Lincoln did not renew the conditional use permit of the facility, and the facility closed.

Figure C-8 August 2011 Rail Car Fire

Source: City of Lincoln

The City has little control over the types of materials that are shipped through the City. With regard to government activities, the content of shipments may be confidential for reasons of security and/or is generally unknown to the City. While the City has little influence over the types of material transported via the highways, the potential for incidents can be reduced by ensuring that at-grade rail crossings and truck routes within the City are well marked, safe, and effective.

Populations at Risk

To determine the populations at risk from a transportation-related hazardous materials release within identified transportation corridors, an analysis was performed using GIS. A one mile buffer was applied to both sides of Highways 20, 49, 65, 80, 89, 174, 193, and 267, as well as the BNSF and Union Pacific Railroads. The result is a two-mile buffer zone around each transportation corridor that is used for risk-analysis.

Analysis was done for jurisdictions found in Table C-15. This table shows total population that are within the proximity of this two-mile buffer of all the highway and railroad corridors. Using GIS, the buffered corridor was overlaid on the improved residential parcel data. Those parcel centroids that intersect the buffered corridor were counted and multiplied by the 2010 Census Bureau average household factors for the City. According to this analysis, there is a total population of 45,398 in the buffered corridors.

Table C-15 City of Lincoln – Jurisdictional Populations at Risk in Haz-Mat Corridors

Jurisdiction	Residential Parcels	Population
Lincoln	17,528	45,398

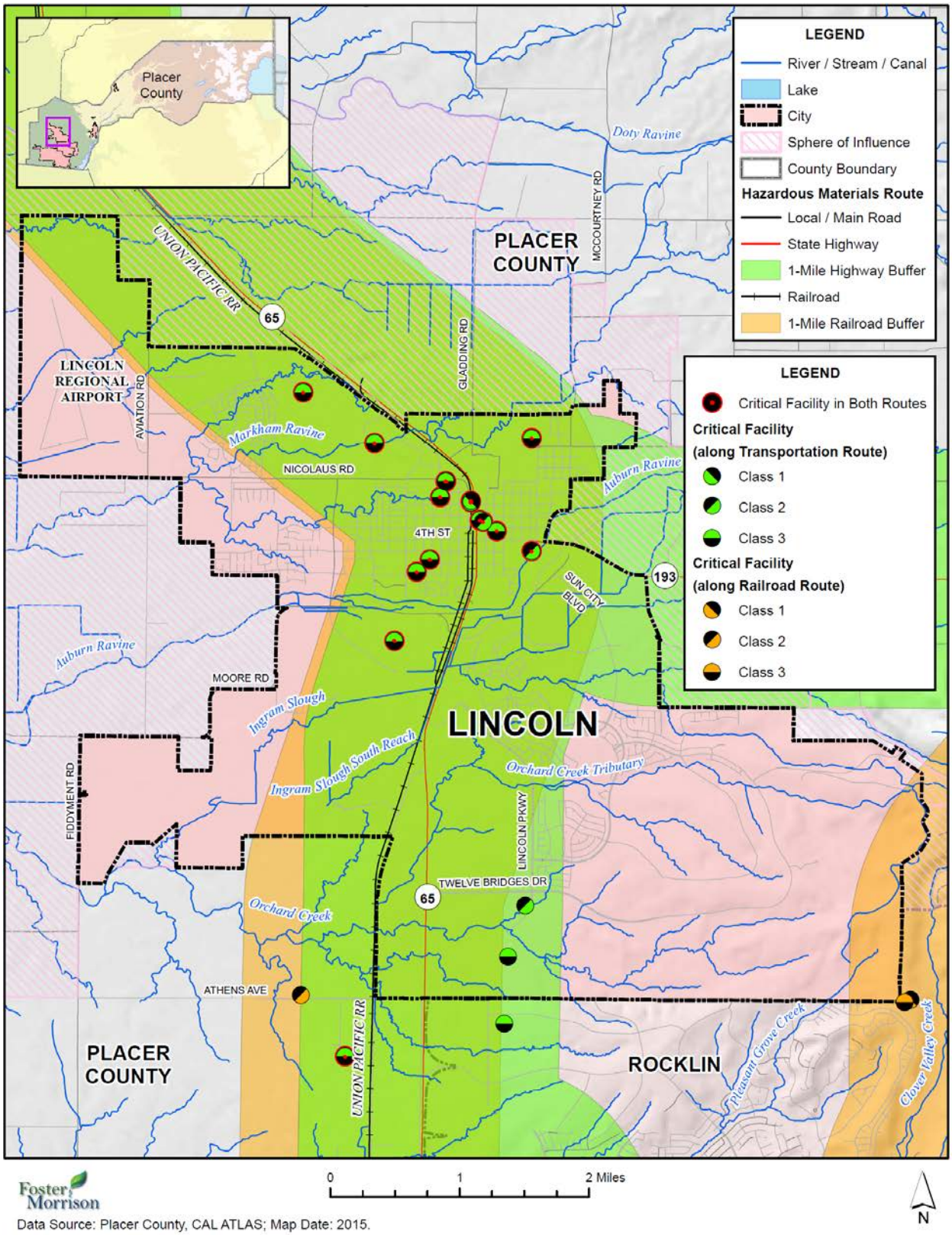
Source: Cal Trans, Placer County GIS

Critical Facilities at Risk

To determine the critical facilities at risk from a transportation-related hazardous materials release within identified transportation corridors, an analysis was performed using GIS. A one mile buffer was applied to both sides of Highways 20, 49, 65, 80, 89, 174, 193, and 267, as well as the BNSF and Union Pacific Railroads. The result is a two-mile buffer zone around each transportation corridor that is used for risk-analysis.

Analysis was done for the City and is shown on Figure C-9 and detailed in Table C-15. This table shows critical facilities located within the proximity of this two-mile buffer of all the highway and railroad corridors. Some facilities fall in the highway routes, some in the rail routes, and some fall in both the highway and rail routes. According to this analysis, there are 17 critical facilities in the buffered corridors.

Figure C-9 City of Lincoln – Critical Facilities at Risk in Haz-Mat Corridors



Foster Morrison

Data Source: Placer County, CAL ATLAS; Map Date: 2015.

Table C-16 City of Lincoln – Critical Facilities at Risk in Haz-Mat Corridors

Hazardous Materials Route	Critical Facility Class	Facility Type	Facility Count
Hazardous Materials Highway Route	Class 1	-	-
	Class 2	Fire Station	1
	Class 3	School	1
		Total Hazardous Materials Highway Route	**2**
Hazardous Materials Railroad Route	Class 1	-	-
	Class 2	-	-
	Class 3	-	-
		Total Hazardous Materials Railroad Route	**0**
Combined Hazardous Materials Highway and Railroad Route	Class 1	Dispatch Center	1
		Emergency Operation Center	1
	Class 2	Fire Station	1
		Police Station	1
	Class 3	Hall	2
		Hazardous Materials Facility	1
		School	8
		Total Combined Routes	**15**
Total			**17**

Source: Cal Trans, Placer County GIS

Future Development

Development will continue to occur in hazmat affected areas. It is important that the City make residents who choose to live or develop in hazmat zones about the possibility of being affected by a hazmat spill.

C.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capability assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

C.6.1. Regulatory Mitigation Capabilities

Table C-17 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the City of Lincoln.

Table C-17 City of Lincoln Regulatory Mitigation Capabilities

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Y	
Capital Improvements Plan	Y	
Economic Development Plan	Y	
Local Emergency Operations Plan	Y	
Continuity of Operations Plan	N	
Transportation Plan	N	
Stormwater Management Plan/Program	Y	
Engineering Studies for Streams	N	
Community Wildfire Protection Plan	N	
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	N	
Building Code, Permitting, and Inspections	**Y/N**	**Are codes adequately enforced?**
Building Code	Y	Version/Year: 2013 CBC
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	Score:
Fire department ISO rating:	Y	Rating: 4
Site plan review requirements		
Land Use Planning and Ordinances	**Y/N**	**Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?**
Zoning ordinance	Y	
Subdivision ordinance	Y	
Floodplain ordinance	Y	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N	
Flood insurance rate maps	Y	
Elevation Certificates	Y	

Acquisition of land for open space and public recreation uses
Erosion or sediment control program
Other
How can these capabilities be expanded and improved to reduce risk?

As indicated above, the City has several programs, plans, policies, codes, and ordinances in place and/or that they follow. The General Plan for the City of Lincoln is the most comprehensive. The following section provides an overview of the General Plan and identifies specific policies related to hazard mitigation that are included in the plan.

The City of Lincoln General Plan, 2008

The City of Lincoln General Plan serves as the blueprint for future growth and development and provides comprehensive planning for the future. It encompasses what the City is now, and what it intends to be, and provides the overall framework of how to achieve this future condition (see the discussion in Section 4.3.1 Growth and Development Trends).

The general plan includes a Safety Element that focuses on safety issues to be considered in planning for the present and future development of the Lincoln Planning Area. Identified hazards include geologic/seismic, air quality, human-made, flooding, fires, public safety, and noise. Applicable mitigation-related goals, policies, and actions are presented below in Table C-18.

Table C-18 Lincoln General Plan Mitigation Related Goals and Policies

Goal/Policy Number	Explanation
General	
General - Goal HS-1:	To minimize the danger of natural and Human-Made hazards and to protect residents and visitors from the dangers of earthquake, fire, flood other natural disasters, and man-made dangers.
Policy HS-1.1:	Engineering Analysis of Potential Hazards: The City shall require engineering analysis of new development proposals in areas with possible soil instability, flooding, earthquake faults, or other hazards, and to prohibit development in high danger areas.
Geologic	
Geologic and Seismic Hazards Goal HS-2:	To minimize exposure of persons and property to damage resulting from geologic and seismic hazards.
Policy HS-2.1:	Seismic Safety of Structures: The City shall require that new structures intended for human occupancy are designed and constructed to minimize risk to the safety of occupants due to groundshaking.
Policy HS-2.2:	Limit Hillside Development: To limit development in areas with severe slopes.
Policy HS-2.3:	Development in Areas Subject to Geologic Hazards: The City shall discourage incompatible land uses from being located in areas subject to geologic or seismic hazards

Goal/Policy Number	Explanation
Policy HS-2.4:	California Building Standard Code: The City shall continue to require that alterations to existing buildings and all new buildings be built according to the seismic requirements of the California Building Standard Code.
Flood	
Flood Hazards Goal HS- 6:	To minimize the risk of life and property of the City's residents from flood hazards.
Policy HS-6.1:	Flood Protection: The City shall ensure that adequate flood protection is provided throughout the community.
Policy HS-6.2:	Drainage and Flood Control Facilities: The City will continue to cooperate and coordinate efforts with the Placer County Flood Control and Water Conservation District for the construction, operation, and maintenance of drainage and flood control facilities and where feasible provide for their joint use. This includes cooperation with Placer County, cities within Placer County, and Sutter County and special districts to provide regional flood control protection.
Policy HS-6.3:	Master Drainage Plans: The City shall require master drainage plans as a condition of approval for large development projects.
Policy HS-6.4:	New Residential Construction: The City shall require new residential construction to have its lowest habitable floor elevated above the base flood level elevation, determined by FEMA standards
Policy HS-6.5:	Stream Channels: The City shall prohibit development along stream channels that would reduce the stream capacity, increase erosion, or cause deterioration of the channel.
Policy HS-6.6:	Flood Insurance Program: The City shall continue to participate in the National Flood Insurance Program.
Urban and Wildland Fire Hazards	
Goal HS-7	To minimize the risk of life and property to from urban and wildland fires.
Policy HS-7.1:	Enforce Code/Ordinances: The City shall enforce the City building code, fire code, and ordinances in regard to fire safety and fire protection.
Policy HS-7.2:	Educate Residents of Fire Hazards: The City shall educate residents of urban and wildland fire hazards and safety measures.
Policy HS-7.3:	Wildland Fire Management Plans: The City shall require the development of wildland fire management plans for projects adjoining significant areas of open space that may have high fuel loads.
Policy HS-7.4:	Buffer Zones for Fire Protection: The City shall require new development to incorporate additional greenbelts, fuel breaks, fuel reduction and buffer zones around communities to minimize potential fire loses.
Policy HS-7.5:	Weed Abatement: The City shall maintain a weed abatement program to ensure clearing of dry brush areas. Weed abatement activities shall be conducted in a manner consistent with all applicable environmental regulations.
Emergency Response	
Goal HS-9	To ensure the maintenance of the Emergency Response Plan in order to maintain its effectiveness in preparing and responding to a natural or human-made disaster.
Policy HS-9.1	Emergency Response Plan: The City shall ensure that the Emergency Response Plan meets current federal, state, and local emergency requirements.

Goal/Policy Number	Explanation
Policy HS-9.2	Coordinate Emergency Response Services with Local Agencies: The City shall continue to coordinate emergency response services with Placer County, other cities within Placer County, special districts, service agencies, voluntary organizations, and state and federal agencies.
Policy HS-9.3	Educate Public on Emergency Response: The City shall conduct training programs for staff in disaster preparedness.
Policy HS-9.4	Coordinate with Placer County: The City will strive to work with other local agencies including Placer County and cities within the County to develop coordinated geographical information systems (GIS) planning for emergency response services.
Policy HS-9.5	Siting of Critical Emergency Responses: The City shall ensure that the siting of critical emergency response facilities such as hospitals, fire stations, police offices, substations, emergency operations centers, and other emergency service facilities and utilities have minimal exposure to flooding, seismic and geological effects, fire, and explosions.

General Plan, Appendix H: Drainage and Surface Water Impacts and Constraints

As part of the General Plan Update process, Lincoln performed a detailed review of the proposed land use scenario as well as an impact analysis of the development expansion areas to the local and regional drainage systems. Appendix H of the General Plan contains a list of drainage related constraint issues, identifies hydraulically sensitive areas, and provides proposed guidelines for developing within and around those areas.

South Lincoln Master Drainage Plan/North Lincoln Master Drainage Plan

Regional master plans identify the needs of a watershed or portion thereof and formulate plans, programs, and policies for effective stormwater management. The plans coordinate facilities and policies, and help assure that all effects of watershed changes are identified, including especially the cumulative effects of many small-scale changes. These plans play an important role in a developing region by providing critical information and criteria for the coordinated planning and design of development projects in the watershed. In addition, appropriate on-site flood control facilities may be required, and offsite facilities are identified for which developers may be charged shares.

C.6.2. Administrative/Technical Mitigation Capabilities

Table C-19 identifies the personnel responsible for activities related to mitigation and loss prevention in Lincoln.

Table C-19 City of Lincoln's Administrative and Technical Mitigation Capabilities

Administration	Y/N	Describe capability Is coordination effective?
Planning Commission	Y	
Mitigation Planning Committee	N	

Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	N	
Mutual aid agreements	Y	
Other		
Staff	**Y/N FT/PT**	**Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?**
Chief Building Official	Y	
Floodplain Administrator	Y	
Emergency Manager	Y	
Community Planner	Y	
Civil Engineer	Y	
GIS Coordinator	Y	
Other		
Technical	**Y/N**	**Describe capability Has capability been used to assess/mitigate risk in the past?**
Warning systems/services (Reverse 911, outdoor warning signals)	Y	
Hazard data and information	N	
Grant writing	Y	
Hazus analysis	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		

Source: City of Lincoln

C.6.3. Fiscal Mitigation Capabilities

Table C-20 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table C-20 City of Lincoln's Fiscal Mitigation Capabilities

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	
Authority to levy taxes for specific purposes	Y	
Fees for water, sewer, gas, or electric services	Y	
Impact fees for new development	Y	

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	Y	
Incur debt through private activities	Y	
Community Development Block Grant	Y	
Other federal funding programs	N	
State funding programs	Y	
Other		
How can these capabilities be expanded and improved to reduce risk?		

Source: City of Lincoln

C.6.4. Mitigation Education, Outreach, and Partnerships

Table C-21 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information. More information can be found below the table.

Table C-21 City of Lincoln's Mitigation Education, Outreach, and Partnerships

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	N	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Limited
Natural disaster or safety related school programs	N	
StormReady certification	N	
Firewise Communities certification	N	
Public-private partnership initiatives addressing disaster-related issues	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		

The City of Lincoln works cooperatively with the State Regional Board, the Central Valley Regional Water Quality Control Board, the Placer County Flood Control and Water Conservation District, and the neighboring jurisdictions of Rocklin, Roseville, Auburn, and Placer County.

C.6.5. Other Mitigation Efforts

The City of Lincoln has many other ongoing mitigation efforts that include the following:

- public awareness and information programs specific to emergency preparedness that include: e-mail bulletins, fire prevention events, police department events, police Community Services Officer conducts neighborhood meetings, writes newspaper articles, and sends mailings with reminders on weed abatement for fire safety;
- implementation of the City's stormwater management program with public outreach (e-mail bulletins, newspaper articles, posters, and elementary school activities), regular inspections, and enforcement activities;
- adoption of new building code requirements with stricter fire construction standards;
- new specific plans/planned developments are required to prepare wildfire management plans to identify responsibilities, funding, and ongoing methods to reduce potential damage and threat of wildfires;
- enforcement of existing wildfire management plans and assisting private Homeowner Associations (HOAs) with their fuel reduction programs; and,
- implementation of fuel reduction methods identified in open space management plans for existing open spaces.

C.7 Mitigation Strategy

This section describes the mitigation strategy process and mitigation action plan for the City of Lincoln's inclusion with the Placer County Local Hazard Mitigation Plan update.

C.7.1. Mitigation Goals and Objectives

The City of Lincoln adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

C.7.2. NFIP Mitigation Strategy

The City of Lincoln joined the NFIP on February 3, 1982. As a participant of the National Flood Insurance Program (NFIP), the City of Lincoln has administered floodplain management regulations that meet the minimum requirements of the NFIP. The management program objective is to protect people and property within the City. The City of Lincoln will continue to comply with the requirements of the NFIP in the future.

In addition, the City of Lincoln actively participates with the County of Placer to address local NFIP issues through a regional approach. Many of the program activities are the same for the City of Lincoln as for Placer County since participation at the County level includes all local jurisdictions. An elected official of the City of Lincoln is a designated representative on the Placer County Flood Control District Board.

The City's regulatory activities apply to existing and new development areas of the City; implementing flood protection measures for existing structures and new development and maintaining drainage systems. The goal of the program is to enhance public safety, and reduce impacts and losses while protecting the environment. The City has a Flood Damage Prevention Ordinance that regulates construction in the floodplain. The City intends to continue to implement the ordinance and participate at the regional level with Placer County implementing appropriate measures to mitigate exposure and damages within designated flood prone areas.

The City of Lincoln Planning and Engineering Department provides public outreach activities which include map information services, public awareness, public hazard disclosure, and flood protection information. This information is readily available to the public and consists of current and accurate flood mapping. In addition, the Planning and Engineering Department provides information about their stormwater management program and up-to-date information related to the maintenance of the City's drainage system.

The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS which are to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance. The City of Lincoln does not participate in the CRS.

C.7.3. Mitigation Actions

The planning team for the City of Lincoln identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. General processes and information on plan implementation and maintenance of this LHMP by all participating jurisdictions is included in Section 7, Plan Implementation and Maintenance, of the base plan.

Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: All hazards

Issue/Background: Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (AB 2140). Specifically, this section requires that each jurisdiction adopt a local hazard mitigation plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 as part of the Safety Element of its General Plan. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office: City of Lincoln Planning Department

Priority (H, M, L): High

Cost Estimate: Jurisdictional board/staff time

Potential Funding: Local budgets

Benefits (avoided Losses): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help jurisdictions maximize the cost recovery potential following a disaster.

Schedule: As soon as possible

Action 1. Lincoln Boulevard: Auburn Ravine Bridge – Reconstruct Bridge

Hazards Addressed: Flooding

Issue/Background Statement: The present bridge structure crossing SR 65 is antiquated and does not pass the 100-year storm event. In fact flooding of the roadway has occurred in storm events smaller than the 10-year. This is a major entryway to the City, and road closures at this location represent a serious risk to health, safety, and emergency services. Replacement of the bridge structure will involve adding capacity and raising roadway elevations to meet current design standards.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Engineering Department.

Priority (H, M, L): High

Cost Estimate: Although this is a State highway project, the City's participation is estimated at $5.5 million.

Benefits (Losses Avoided): The main benefit would be for the safety and welfare of the citizens of the City of Lincoln. State Route 65 south of Lincoln is one of three entry and exit points to the downtown area of the City. All three entry and exit points are projected to flood in the 100-year event, which results in isolation of the downtown areas. Auburn Ravine also bisects the historical areas of the City from the newly developing South Lincoln Master Plan area. Roadway closures at this location would prevent emergency services from being able to provide service across this waterway.

Potential Source of Funding:

Schedule: Ongoing – not likely before 2020.

Action 2. McBean Park Drive: Auburn Ravine Bridge – Additional 110' Span

Hazards Addressed: Flooding

Issue/Background Statement: The existing State Route 193 Bridge at Auburn Ravine does not meet City requirements for freeboard in the 100-year design storm event. A new bridge span of 110 feet located in the overbank areas would provide additional conveyance capacity, but roadway elevations at SR-193 would also need to be raised.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Engineering Department.

Priority (H, M, L): High

Cost Estimate: The estimated $5,500,000 for the project is anticipated to be budgeted in 2015-2017. Much of the roadway elevating at the existing structure was performed by a previous CAL Trans project.

Benefits (Losses Avoided): This project is necessary for health and safety issues relating to emergency service accessibility during a major flood event. This is also one of three major access points to the historical downtown Lincoln area and new areas of future growth.

Potential Source of Funding: Federal Highway Administration & CalTrans relinquishment funds

Schedule: 2015-2017

Action 3. Lakeview Farms Regional Volumetric Mitigation Facility

Hazards Addressed: Flood

Issue/Background Statement: Newly developing areas of the Markham Ravine and Coon Creek watersheds, which are a part of the current general plan, and which have not previously been studied for potential peak flow and volumetric impacts will require the development of mitigation facilities.

Other Alternatives: Require project by project mitigation or no action which would result in downstream impacts.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Engineering Department.

Priority (H, M, L): High

Cost Estimate: $4,000,000

Benefits (Losses Avoided): Reduces the potential for development impact at known flooding areas downstream of the City at Sutter County and the Cross Canal areas.

Potential Source of Funding: Combination of City and Development Fees.

Schedule: Construction of future phases will be determined by development.

Action 4. Gladding Parkway, Lincoln Boulevard, McCourtney Road – Stream Restoration And Culvert Improvement

Hazards Addressed: Flood

Issue/Background Statement: Project improvements include new culverts at Gladding Road at Markham Ravine, raising roadway elevations at the north/south stretch of Gladding Road and local storm drainage improvements for the streets.

Other Alternatives: Required by adapted master plan.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): High

Cost Estimate: $1,840,000

Benefits (Losses Avoided): This project is necessary for health and safety issues relating to emergency service accessibility during a major flood event.

Potential Source of Funding: Combination of City and development fees.

Schedule: Ongoing.

Action 5. "O" Street Drainage Improvements

Hazards Addressed: Flood

Issue/Background Statement: Modifications to the south tributary of Markham Ravine channel as it meanders through the City will be necessary to reduce flooding potential in the adjacent subdivisions. The recommendation is that the invert be lowered to provide additional capacity to reduce flood elevations by zero to three feet.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Medium

Cost Estimate: $485,000

Benefits (Losses Avoided): An analysis of the existing storm drainage systems in the area shows that there is a potential of structural flooding and roadway flooding in a 100-year event.

Potential Source of Funding: Combination of City and development fees.

Schedule: Ongoing improvements as new development permits.

Action 6. 7th Street Drainage Improvements

Hazards Addressed: Flood

Issue/Background Statement: Significant surface flooding is known to occur in the area. An additional Storm drainage trunk pipeline is planned for 7th Street to extend storm drain service along this corridor and to relieve other existing systems which ultimately pick up this drainage area. The proposed system would bring the storm drainage protection to City Standards.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Medium

Cost Estimate: $915,000:

Benefits (Losses Avoided): Many of the roadways along this corridor flood during normal rainfall events, and access to the high school and residences is restricted. Several residents have complained that they fear the flood waters and have witnessed encroachment of floodwater in their yards, which may encroach into their structures in larger storms.

Potential Source of Funding: Combination of City and development fees, grants.

Schedule: Construct as funds available.

Action 7. Auburn Ravine at State Route 193 Bridge

Hazards Addressed: Flood

Issue/Background Statement: Significant sediment and debris accumulate at the "chevron" style piers and abutments. Full bridge capacity needs to be restored for flood protection

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): High

Cost Estimate: $90,000

Benefits (Losses Avoided): Improvements would reduce flood frequency upstream of SR 193 and increase flood protection back to the intended installation of the bridge structure.

Potential Source of Funding: Reoccurring item is programmed $10,000 in permits and $35,000 in work every 4 years. Currently programmed through 2009. Ongoing operation and maintenance monitoring.

Schedule: Ongoing.

Action 8. Auburn Ravine at State Route 65 Bridge

Hazards Addressed: Flood

Issue/Background Statement: Significant sediment and debris accumulate at the invert and abutments of the bridge. Full bridge capacity needs to be restored for flood protection. The accumulation of sediment in this location also results in a significant sediment accumulation issue upstream.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Medium

Cost Estimate: $90,000

Benefits (Losses Avoided): Improvements would reduce flood frequency upstream of SR 65 and increase flood protection back to the intended installation of the bridge structure.

Potential Source of Funding: Re-occurring item is programmed $10,000 in permits and $35,000 in work every 4 years. Currently programmed through 2009. Ongoing operation and maintenance monitoring.

Schedule: Ongoing.

Action 9. Ingram Slough – Orchard Creek Return Channel

Hazards Addressed: Flood

Issue/Background Statement: This project is located east of the Lincoln Crossings Development at the Nader Property. The Construction of the channel provides a gravity release for the new channels constructed through the Lincoln Crossings development and reduces floodplain elevations and floodplain inundation areas.

Other Alternatives: No action would result in a large shallow overspill area with limited development potential.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Medium

Cost Estimate: $1,568,946

Benefits (Losses Avoided): The construction of the channel would bring 100-year flood elevations within Ingram Slough at the Lincoln Crossing development to City Standard Freeboard requirements, however, the interim operation would not be expected to cause any structural damages.

Potential Source of Funding: Combination of City and development fees.

Schedule: Dependent on Nader Ranch/Village 7 development.

Action 10. Markham Ravine – Updated FEMA Analysis And Mapping

Hazards Addressed: Flood

Issue/Background Statement: Detailed mapping and analysis will be performed for the Markham Ravine watershed. Evaluation and updating of existing FEMA mapping will be accomplished.

Other Alternatives: Required by master plan.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Medium

Cost Estimate: $180,000

Benefits (Losses Avoided): Precise definition of 100-year flood allows for construction to be set at required criteria. Verification of base flood data will help to determine if any flood protection deficiencies exist in this system.

Potential Source of Funding: Development fees.

Schedule: Ongoing

Action 11. Markham Ravine Drainage Improvements – Union Pacific Railroad & State Route 65 Crossings

Hazards Addressed: Flood

Issue/Background Statement: Modification of the existing UPRR and SR 65 crossings at Markham Ravine will be necessary to provide 100-year protection at these structures.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Engineering Department.

Priority (H, M, L): Medium

Cost Estimate: $402,000

Benefits (Losses Avoided): The main benefit would be the safety and welfare of the citizens of the City of Lincoln. State Route 65 north of Lincoln is one of three entry and exit points to the downtown area of the City. All three are projected to flood in the 100-year event, which results in isolation of the downtown areas.

Potential Source of Funding: Development funds.

Schedule: Ongoing

Action 12. Auburn Ravine Stream Restoration Projects (Analysis and Repairs)

Hazards Addressed: Flood

Issue/Background Statement: Auburn Ravine is one of the three major watercourses in the City. The previously defined streambed may have been altered by improper encroachment into the floodplain, which changed sediment loading conditions, or acts of nature, resulting in changes to the flow regimes. This task will analyze and recommend specific areas of improvement.

Other Alternatives: Leaving stream unrepaired results in erosion potential, and the potential of additional deposition downstream of the City, which reduces conveyance capacity.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Low

Cost Estimate: $400,000

Benefits (Losses Avoided): Creek restoration improvements to include restoring the channel's cross section for maximum flow, efficient transportation of sediment, and restoration of the ecosystem.

Potential Source of Funding: Combination of City and development fees, grants.

Schedule: As funding becomes available.

Action 13. Markham Ravine Streambed Restoration Projects (Analysis Only)

Hazards Addressed: Flood

Issue/Background Statement: The existing streambed of Markham Ravine must be evaluated to determine what is necessary to restore the creek section to optimum capacity for flow of water and sediment transport.

Other Alternatives: This stream is extremely sensitive to the large amounts of attenuation currently present. Changes in the sediment loading of this system could reduce the storage capacity of the system and result in significant increases to peak flow rates and flooding potential.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Low

Cost Estimate: $90,000

Benefits (Losses Avoided): Determination can be made of deficiencies

Potential Source of Funding: Combination of City and development fees, grants.

Schedule: As funding becomes available.

Action 14. Coon Creek Streambed Restoration Projects (Analysis Only)

Hazards Addressed: Flood

Issue/Background Statement: The existing streambed of Coon Creek must be evaluated to determine what is necessary to restore the creek section to optimum capacity for flow of water and sediment transport.

Other Alternatives: Identification of potential problems can lead to solutions.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: City of Lincoln Public Services Department.

Priority (H, M, L): Low

Cost Estimate: $90,000

Benefits (Losses Avoided): Determination of deficiencies can lead to solutions.

Potential Source of Funding: Combination of City and development fees, grants.

Schedule: As funding comes available.

Action 15. Fire Prevention and Fuels Management Plan

Hazards Addressed: Wildfire

Issue/Background: The City of Lincoln has adopted a General Plan that will carry the City's growth and planning into the year 2050. The new General Plan calls for a balance of development and open space with the recommendation of maintaining 40 percent open space. This presents some significant maintenance and fire suppression challenges. Additionally it increases the fire prevention workload to monitor and provide for abatement. Access, abatement, fuels management, and staffing to address the increased incidents are just some of the problems forecasted in order to implement the new General Plan policies.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented: Currently the City of Lincoln has several fuels management plans in place for specific areas within the existing boundaries. Bringing forth a comprehensive plan to ensure continuity within the City's jurisdiction would aid in planning (Community Wildfire Preparedness Plan). Additionally, a funding mechanism would have to be developed in order to provide for adequate abatement and fuels modification which the Public Services and Fire Departments have not been able to provide.

Responsible Office: City of Lincoln Community Development, Public Services and Fire Departments

Priority (L, M, H): High

Cost Estimate: Unknown, but would have to rely on new staff or consultant services due to limited fire department staffing.

Benefits (Losses Avoided): Responses to such areas would be quicker with proper access. Incidents could be reduced in magnitude under normal environmental conditions (not including high fire danger weather events) by reducing fuel load. A comprehensive citywide plan would provide greater public safety without loss of desirable open space features. A comprehensive plan would provide higher protection for housing, commercial, and recreational components that border such areas. Several different fuels management plans could be consolidated into a citywide plan.

Potential Funding: Grants, development, cooperation with other jurisdictions that have developed plans of this type.

Schedule: Continuous as the General Plan is implemented and the City of Lincoln realizes additional growth and development.