

COMMUNITY PROFILE

CITY OF OMAHA

Papio-Missouri River NRD Multi-Jurisdictional Hazard Mitigation Plan Update

2021

Local Planning Team

Table OMA.1: Omaha Local Planning Team

NAME	TITLE	DEPARTMENT
AARON ALWARD	Emergency Management Specialist	Douglas County Emergency Management
ADAM WILMES	Public Works, Design Division	Public Works
BOB STUBBE	Public Works Director	Public Works
CHRISTINE DRISCOLL	Civil Engineer	Public Works
DENNIS BRYERS	Parks and Recreation Director	Parks Department
DEREK MILLER	Long Range Planning Manager	Planning
GEORGE PARIZEK	Public Works, Maintenance Division	Public Works
JAKE HANSEN	Residential Operations Director	Public Works
JENNIFER MORALES	Civil Engineer	Public Works
JIM THEILER	Public Works Assistant Director	Public Works
KEVIN ANDERSEN	Deputy Chief of Staff	Mayor's Office
MICHAEL ARENDS	Missouri River WRRF Manager	Public Works
MIKE OESTMANN	Contract Administration Manager	Public Works
NOMA BORDE	Public Works, Design Division	Public Works
ROBERT LAROCA	Floodplain Administrator	Planning
RYNN KERKHOVE	City Planner	Planning
STEVE ANDERSEN	Public Works, Division Manager	Public Works

The following table describes meeting dates and times for the City of Omaha throughout the HMP update.

Table OMA.2: Meeting Dates and Times

MEETING TYPE	DATE AND TIME
HMP PROJECT KICK-OFF	January 31, 2020; 10:00am (in-person meeting)
HAZARD ASSESSMENT MEETING	May 20, 2020; 2:00pm (virtual meeting)
REGIONAL PLANNING TEAM MEETING	August 3, 2020; 9:30am (virtual meeting)
PLAN INTEGRATION AND CAPABILITIES DISCUSSION	August 10, 2020; 2:00pm (virtual meeting)
CRS/HMP MITIGATION STRATEGY MEETING	September 9, 2020; 1:00pm (virtual meeting)
PUBLIC OPEN HOUSE	January 21, 2021; 5:00pm-7:00pm (virtual meeting)

Location and Geography

The City of Omaha is located in the eastern portion of Douglas County and covers an area of 130.58 square miles. Major waterways in the area include the Missouri River, which forms the eastern boundary of the city, Papillion Creek, Carter Lake, and the Elkhorn River along the western edge.

Transportation

The City of Omaha is the largest metropolitan area in the State of Nebraska and sees a tremendous volume of commuting and road traffic. Omaha's major transportation corridors include Interstates 80, 480, and 680; U.S. Highways 275, 75, and 6; Nebraska Highways 31, 64, and 133; and the National Highway System roads including major local routes (72nd St, 90th St, Dodge St, etc.). Interstate 80 is the busiest highway in the city with over 170,000 vehicles on average per day with 11,200 of those as heavy commercial vehicles.

Union Pacific Railroad, Burlington Northern Santa Fe Railroad, and Amtrak all have rail lines that go through the City of Omaha. Eppley Airfield and Millard Airport are both located within the city. Numerous routes through the city are used to transport hazardous chemicals to chemical sites or through the city. Heavy fuel truck traffic can be found throughout the downtown area and specifically north of the Arena Convention Center. A Knobs Creek facility south of downtown stores and receives chemical shipments. South of the city, local concerns pertain to cattle transport and transportation incidents involving agricultural products. The local planning team indicated the intersection of L Street and 32nd Street near the Greater Omaha Packing Co is of high concern due to heavy transport volume. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

Figure OMA.1: City of Omaha

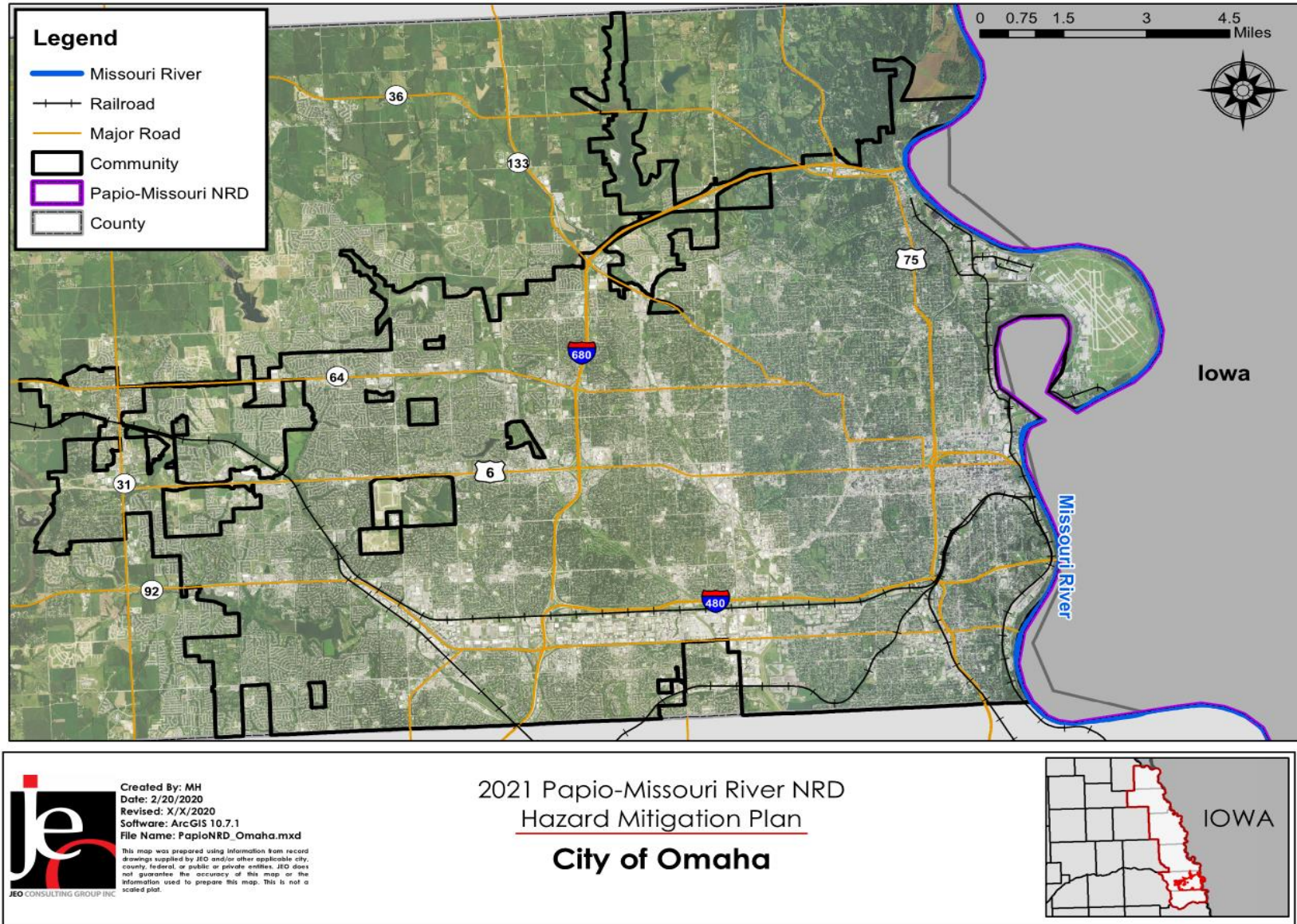
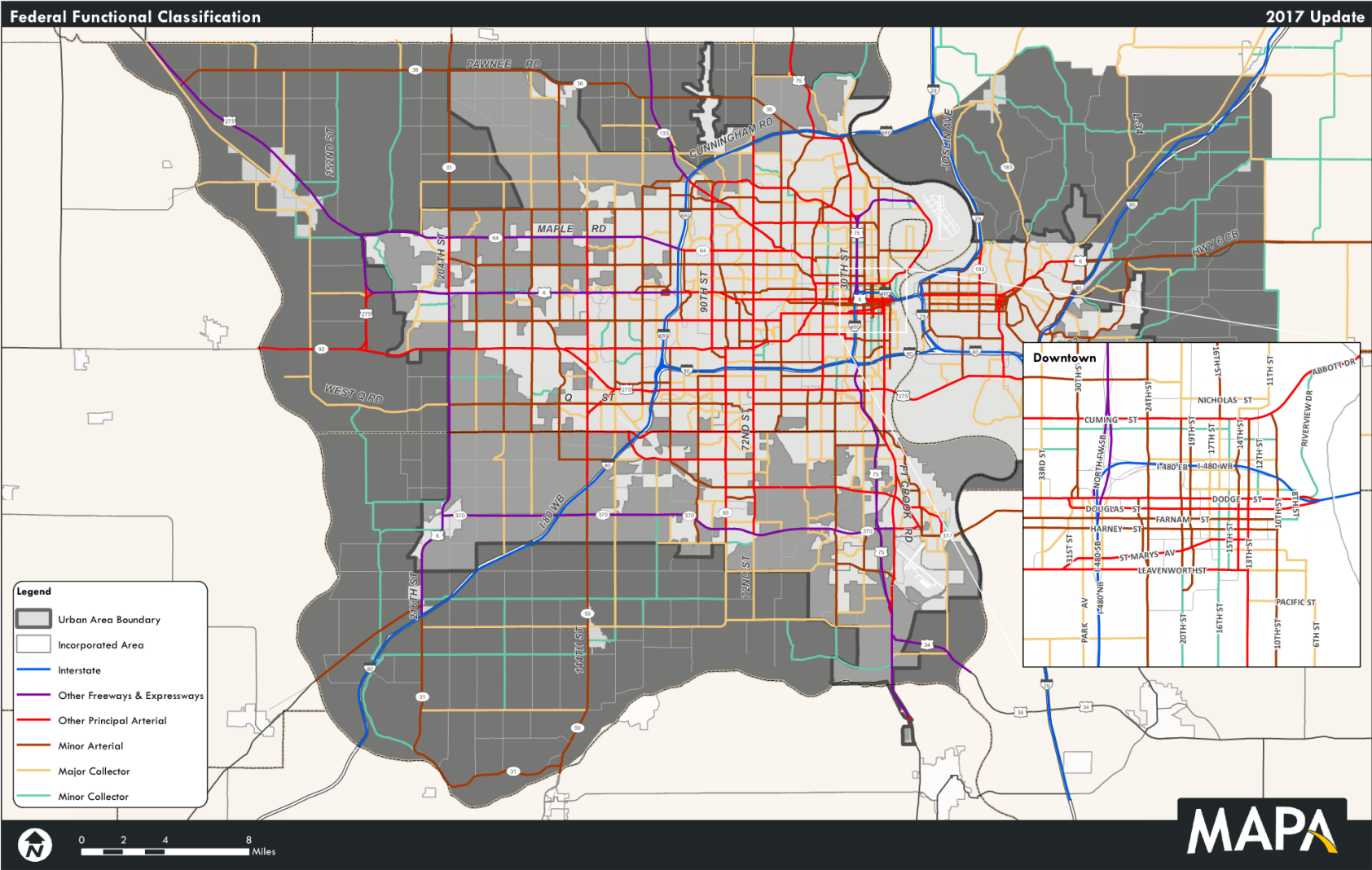


Figure OMA.2: Omaha Highway Classification Map

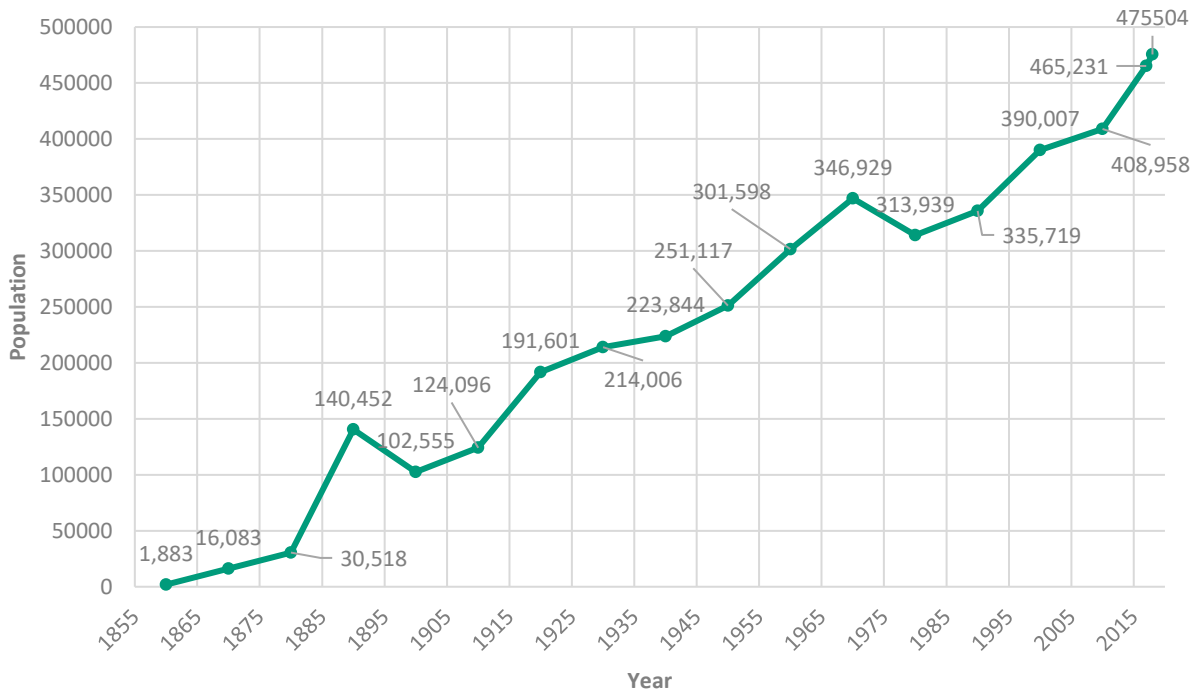


Source: MAPA, 2017

Demographics

Omaha's population has increased steadily since the early 1900s. The current estimated population in 2017 was 475,504. The City of Omaha is the largest city in the State of Nebraska. When population is increasing, areas of the city may experience housing developments or a lack of properties available for rent or to own. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Omaha's population accounted for 84% of Douglas County's population in 2017.²⁴

Figure OMA.3: Estimated Population 1890 – 2018



Source: U.S. Census Bureau²⁵, City of Omaha Planning Department

The young, elderly, minorities, and poor may be more vulnerable to certain hazards than other groups. In comparison to the County, Omaha's population was:

- Similarly aged.** The median age of Omaha was 34.3 years old in 2017, compared with the County average of 34.3 years. Omaha's population has grown older since 2010, when the median age was 33.7 years old. Omaha had a smaller proportion of people under 20 years old (27.9%) than the County (28.4%) in 2017.²⁶
- Greater ethnic diversity.** Since 2010, Omaha saw some changes in overall diversity. In 2010, 13.1% of Omaha's population was Black, 2.1% was Asian, 4.9% was other races, and 3.1% was two or more races. By 2017, 12.3% of Omaha's population was Black, 3.5% was Asian, 2.3% was two or more races, and 3.1% was two or more races. During that time, Douglas County had: 11% (Black or African American), grew 2% to 3% (Asian), declined 4% to 2% (other races), and 3% (two or more races) from 2010 to 2017 respectively.²⁷

²⁴ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

²⁵ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

²⁶ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

²⁷ United States Census Bureau. "2017 American Fact Finder: DP05: ACS Demographic and Housing Estimates." [database file]. <https://factfinder.census.gov/>.

- **More likely to be at the federal poverty line.** The poverty rate in Omaha (15.1% of all persons living below the federal poverty line) is higher than the County's poverty rate (13.5%) in 2017.²⁸

Employment and Economics

The City's economic base is a mixture of industries. In comparison to Douglas County, Omaha's economy had:

- **Similar mix of industries.** Employment sectors accounting for 10% or more of employment in Omaha included Retail Trade, Finance and Insurance, Professional and Scientific jobs, and Educational Services; while employment sectors in Douglas County included Professional and Scientific jobs; Educational Services; and Arts and Entertainment in 2017.²⁹
- **Lower household income.** Omaha's median household income in 2017 (\$53,789) was about \$4,800 lower than the County (\$58,640).³⁰
- **Fewer long-distance commuters.** About 29.6% percent of workers in Omaha commuted for fewer than 15 minutes, compared with about 31.7% of workers in Douglas County. About 17.7% of workers in Omaha commute 30 minutes or more to work, compared to about 18.0% of the County workers.³¹

Major Employers

There are a number of public and private businesses that employ the majority population in the City of Omaha. According to the Nebraska Department of Economic Development and Greater Omaha Chamber, among the largest employers in the private sector are Nebraska Medicine, Union Pacific Corp., CHI Health, Fiserv (formerly First Data Corp), Mutual of Omaha, Hy-Vee Food Stores, First National Bank of Nebraska, Nebraska Methodist Health System, Burlington Northern and ConAgra Inc. Among public companies are University of Nebraska Medical Center and Omaha Public Power District. Many residents in Omaha and the surrounding areas also work at Offutt Air Force Base.

Housing

In comparison to Douglas County, Omaha's housing stock was:

- **Less owner occupied.** About 57.8% of occupied housing units in Omaha are owner occupied compared with 61.1% of occupied housing in Douglas County in 2017.³²
- **Greater share of aged housing stock.** Omaha has a larger share of housing built prior to 1970 than the county (51.8% compared to 46.1%).³³
- **More multi-family homes.** The predominant housing type in the City is single family detached and Omaha contains more multifamily housing with five or more units per structure than the County (26.1% compared to 23.9%). About 64.7% of housing in Omaha was single-family detached, compared with 67.0% of the County's housing. Omaha has a smaller share of mobile and manufactured housing than the county (1.1% compared to 1.2%).³⁴

²⁸ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

²⁹ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

³⁰ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

³¹ United States Census Bureau. "2017 American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

³² United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

³³ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

³⁴ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

The local planning team indicated numerous mobile home parks in and around the City are located in at risk areas. A park south of the north Omaha OPPD station was in an at-risk location during the 2011 flood event. While no evacuations were required, the location has been deemed as a potentially hazardous area and evacuation zone. As a result of the March 2019 flood event, several mobile home parks in Omaha were damaged. A mobile home park near 228th Plaza and Blondo Street was damaged, and many homes remain uninhabitable into 2020.

This housing information is relevant to hazard mitigation insofar as the age of housing may indicate which housing units were built prior to state building codes being developed. Further, unoccupied housing may suggest that future development may be less likely to occur. Finally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms.

Future Development Trends

The City of Omaha has seen consistent growth in population and development since its establishment in 1854. As a growing metropolis, the City emphasizes the importance of local businesses and industry, residential home development, and improved recreational opportunities for residents. In the last five years the City has implemented numerous development projects to revitalize and improve local infrastructure. These include:

- Stormwater system improvements in north downtown areas;
- Recreational development at Flannagan Lake. The Papio-Missouri River NRD owns and maintains the dam while the City owns the surrounding recreational parks;
- Mixed residential and business development at 11th Street and Nicholas to reduce flood risk;
- Atlas apartment building with 732 additional housing units completed at 30th Street and California;
- The Breakers apartment building with approximately 300 additional housing units completed at 7th Street and Leavenworth St.
- Non-residential developments were completed including the Ashton Building in north downtown, Blackstone Hotel rehabilitation, and South Farm (which together with West Farm makes up the Heartwood Preserve development near Boys Town).

Overall since 2016, Omaha has issued nearly 17,000 building permits which include single-family (11,329) and multi-family (623) homes and non-residential (5,004) development. The Greater Omaha Region has identified ten census tracts that have been designated as “Opportunity Zones” for additional investments and future growth.

Additionally, through 2018 the city annexed several Sanitary Improvement Districts (SIDs). As stated in the 2018 Building and Development Summary, “Nearly all suburban development around Omaha is financed through the use of SIDs. This mechanism allows some of the initial site development costs to be borne directly by the new residents.” 12 SIDS were annexed in 2018.

Figure OMA.4: Future Land Use Map

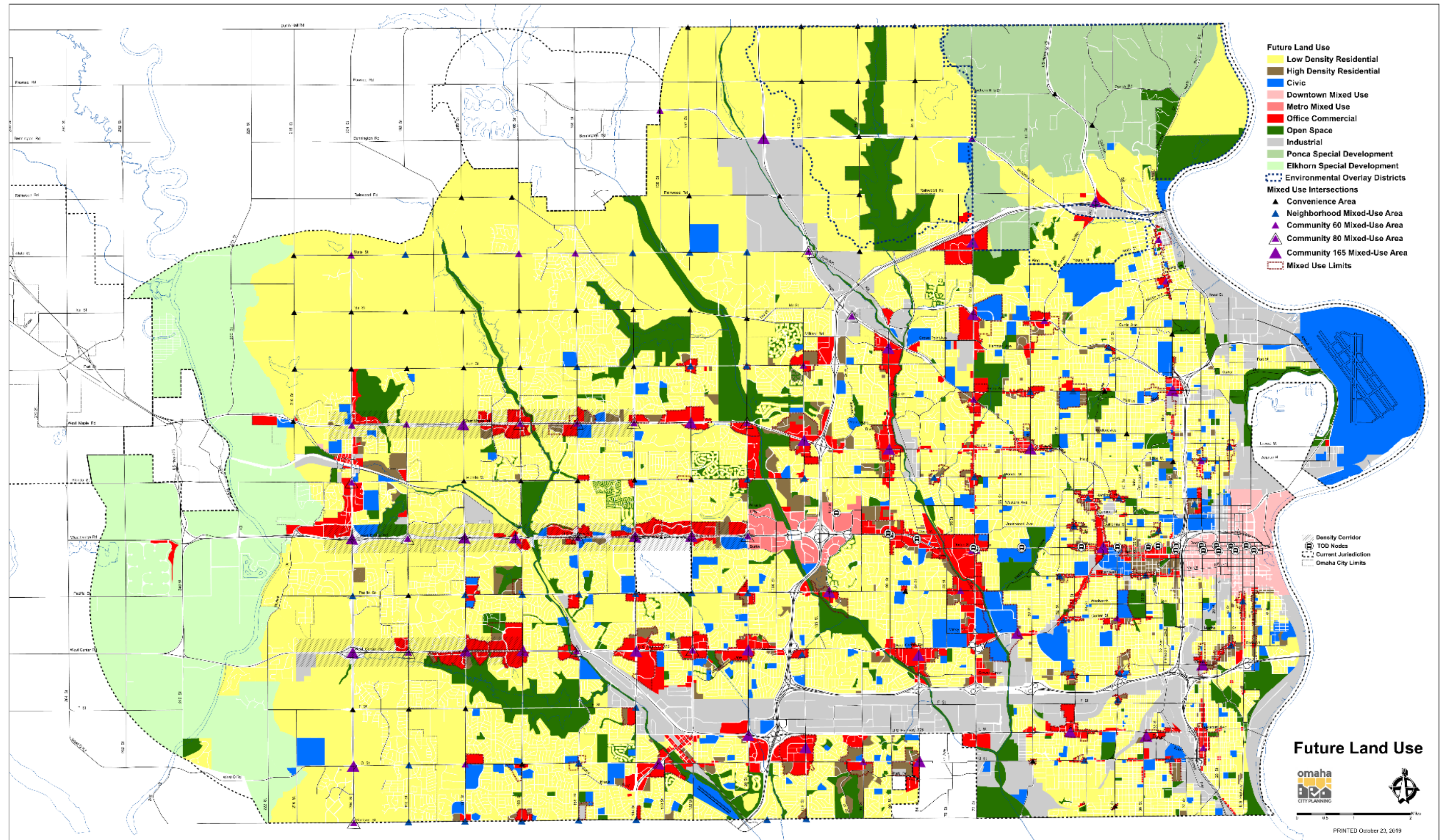
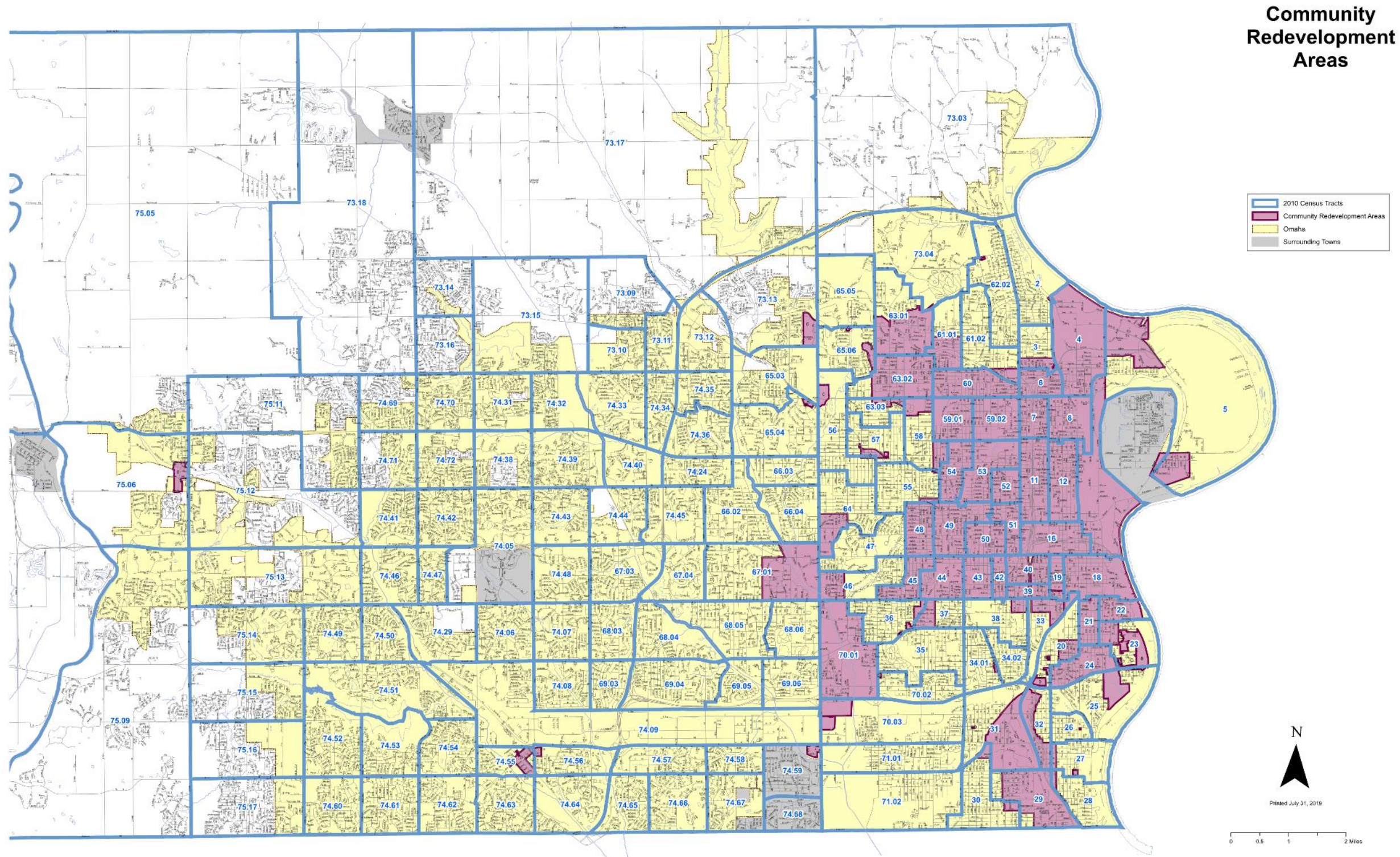


Figure OMA.5: Redevelopment Areas



Structural Inventory and Valuation

The planning team requested GIS parcel data from the County Assessor as of December 2019. This data allowed the planning team to analyze the location, number, and value of property improvements at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table. Numerous structures have been removed from the floodplain via LOMA. The City of Omaha has 326 filed LOMAs with FEMA. For brevity, a full list of LOMAs is not provided here. A comprehensive list of available reports for the city are available online through FEMA's Flood Map Service Center (<https://msc.fema.gov/portal/advanceSearch>).

Table OMA.2: Omaha Parcel Valuation

NUMBER OF PARCELS	NUMBER OF IMPROVEMENTS	TOTAL IMPROVEMENT VALUE	NUMBER OF IMPROVEMENTS IN FLOODPLAIN	VALUE OF IMPROVEMENTS IN FLOODPLAIN	PERCENT OF IMPROVEMENTS IN FLOODPLAIN
159,515	144,345	\$31,115,982,013	3,351	\$2,436,132,446	2%

Source: County Assessor

Critical Infrastructure/Key Resources

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are 307 chemical storage sites in Omaha that contain hazardous chemicals. The table below lists only those located within the floodplain.

Table OMA.3: Chemical Storage Fixed Sites

FACILITY NAME	ADDRESS	FACILITY NAME	ADDRESS
ABF FREIGHT SYSTEM INC	8105 J St	Monarch Oil Inc*	2200 Avenue H E
ACTION BATTERIES UNLIMITED INC	7911 J St	MUD Liquified Natural Gas	5801 N 120th St
AIRLITE PLASTICS CO*	6110 Abbott Dr	MUD Operation Building	3100 S 61st Ave
ALAMO-ENTERPRISE-NATIONAL*	2323 Fairchild Ct	Nebraska Iowa Supply Co Inc	3441 S 66th St
ALTER TRADING CORPORATION*	2828 N 11th St	Omaha Box Company*	2501 N 21st St E
AMERICAN AIRLINES*	4501 Abbott Dr	Omni Engineering	14012 Giles Rd
AT&T SUNSET HILLS	1125 S 103rd St	OPPD North Omaha Power Station	7475 John J Pershing Dr
AVIS RENT A CAR*	2335 Fairchild Ct	OPPD Omaha Service Center*	5520 Lindbergh Dr
BUNZL PROCESSOR DISTRIBUTION*	6720 N 16th St	OPPD Substation No 1220*	610 Seward St
CENTRAL PLAINS CEMENT*	1106 Ida Plz	OPPD Substation No 1299*	900 Ellison Ave
CENTURYLINK	11808 Grant St	OPPD Substation No 1345*	16810 Kansas Ave
CENTURYLINK	6805 Pine St	OPPD Substation No 919	6415 S 60th St

SECTION SEVEN: CITY OF OMAHA COMMUNITY PROFILE

FACILITY NAME	ADDRESS	FACILITY NAME	ADDRESS
CONSOLIDATED CONCRETE LLC	6205 N 87th Cir	Penske Truck Leasing Co LP*	1150 Ellison Ave
EL DORADO SHIPPING SACK MFG	4340 S 140th St	Pre-Wel Mfg Corp	10634 Bondesson Cir
EPPLEY AIRFIELD*	4501 Abbott Dr	Ready Mixed Concrete Co*	700 Seward St
EXOXEMIS INC*	6029 N 16th St	Ready Mixed Concrete Co	4765 S 135th St
FEDEX EXPRESS*	1810 Fort Ct	Ryder Truck Rental One Way Inc	6801 L St
FHR PINE BEND LLC*	7075 N 14th Ave	Signature Flight Support*	3636 Wilbur Plz
GENUINE PARTS COMPANY	6160 Grover St	Signature Flight Support*	1820 Fort Ct
HERITAGE-CRYSTAL CLEAN LLC*	2510 N 11th St	Signature Flight Support*	Carter Ct
HERTZ RENT A CAR*	5404 Abbott Dr	Sunbelt Rentals 099	4428 S 140th St
INTERNATIONAL NUTRITION INC	7706 I Plz	TAC Air*	3737 Orville Plz
JIFFY LUBE 1215 KIEWIT BUILDING GROUP INC	13720 P St 4004 S 60th St	TCC Materials Tyson Processing Services Inc	3208 Keystone Dr 13076 Renfro Cir
LINDSAY TRANSPORTATION SOLUTIONS INC*	505 Crown Point Ave	U-Haul Co	8920 Maple St
LINEAGE LOGISTICS LLC	13039 Renfro Cir	United Parcel Service*	5321 Boeing Ct
LOWE'S OF CENTRAL OMAHA 1159	7525 Dodge St	US Foodservice Inc*	6315 John J Pershing Dr
LOZIER CORPORATION NORTH PLANT*	6316 John J Pershing Dr	W N Morehouse Truck Line Inc	4010 Dahlman Ave
MAGELLAN PIPELINE COMPANY LP*	2205 N 11th St	Watco - Port of Omaha*	6801 N 9th St
MAGELLAN PIPELINE COMPANY LP	9405 Bennington Rd	Watkins Concrete Block Co	14306 Giles Rd
MILLARD AIRPORT	12924 Millard Airport Plz	Wynne Transport Service Inc*	2222 N 11th St

Source: Nebraska Department of Environment and Energy³⁵

*Indicates facilities with Reduced Flood Risk due to Levee

Concerns regarding chemical spills stem primarily from heavy traffic of semi-trucks and the rail lines through the city. Chemical fixed sites are heavily regulated throughout the city. One

³⁵ Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed November 2018. <https://deq-iis.ne.gov/tier2/search.faces>.

memorial location in a city park has approximately 1,000 gallons of various chemicals stored in the base. However, at this time there have been no leaks reported and the city plans to maintain the structural integrity of the structure. Remediation or removal of the chemicals will occur if deemed necessary.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per FEMA's Community Lifelines.³⁶ Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update.

Below is a summary of the critical facilities for Omaha. Due to the large number of critical facilities in Omaha, a list of all the facilities is not provided.

Table OMA.4: Critical Facilities

CRITICAL FACILITY TYPE	NUMBER (2016 PLAN)	2020 NUMBERS
FIRE DEPARTMENT ¹	26	37
LAW ENFORCEMENT/POLICE STATION ²	12	5 precincts, 73 patrol districts
HOSPITAL EMERGENCY CENTER	15	17
LIFT STATIONS/PUMP STATIONS	58	15 emergency stations on levees
COMMUNITY CENTER/AUDITORIUM	16	11 (LEOP)
SCHOOLS ¹	-	249

Source: 1 indicates data is from Omaha/Douglas County GIS; 2 indicates data is from OPD website, 3 indicates data is from DHHS³⁷

The local planning team indicated several changes have occurred to critical facilities located in the floodplain. The following facilities have been removed from the floodplain since the 2016 HMP: Fire Station #23 (located in Zone A, elevated) and Public Works Elkhorn Wastewater Treatment Plan (decommissioned).

Table OMA.5: Critical Facilities in 1 Percent Annual Chance Floodplain

TYPE	NAME	ADDRESS
PUBLIC WORKS	Public Works Sewer Maintenance Building	6880 Q St
PUBLIC WORKS	64th & Dupont Grit Facility	2502 S. 64TH ST.
LIFT STATION	East Omaha Lift Station	2305 N. 15TH ST.
INFRASTRUCTURE	North Omaha Div Structure	7th St & Grace St
PUMP HOUSE	Standing Bear Lake Pump House Omahawks Field 5	5902 N 144th St
PUBLIC WORKS	Public Works Wastewater Treatment Plant 1	5404 S. 10th St

The following table lists shelter locations in Omaha as identified in the Douglas County Local Emergency Operations Plan (LEOP).

³⁶ Federal Emergency Management Agency. 2020. "Community Lifelines." <https://www.fema.gov/lifelines>.

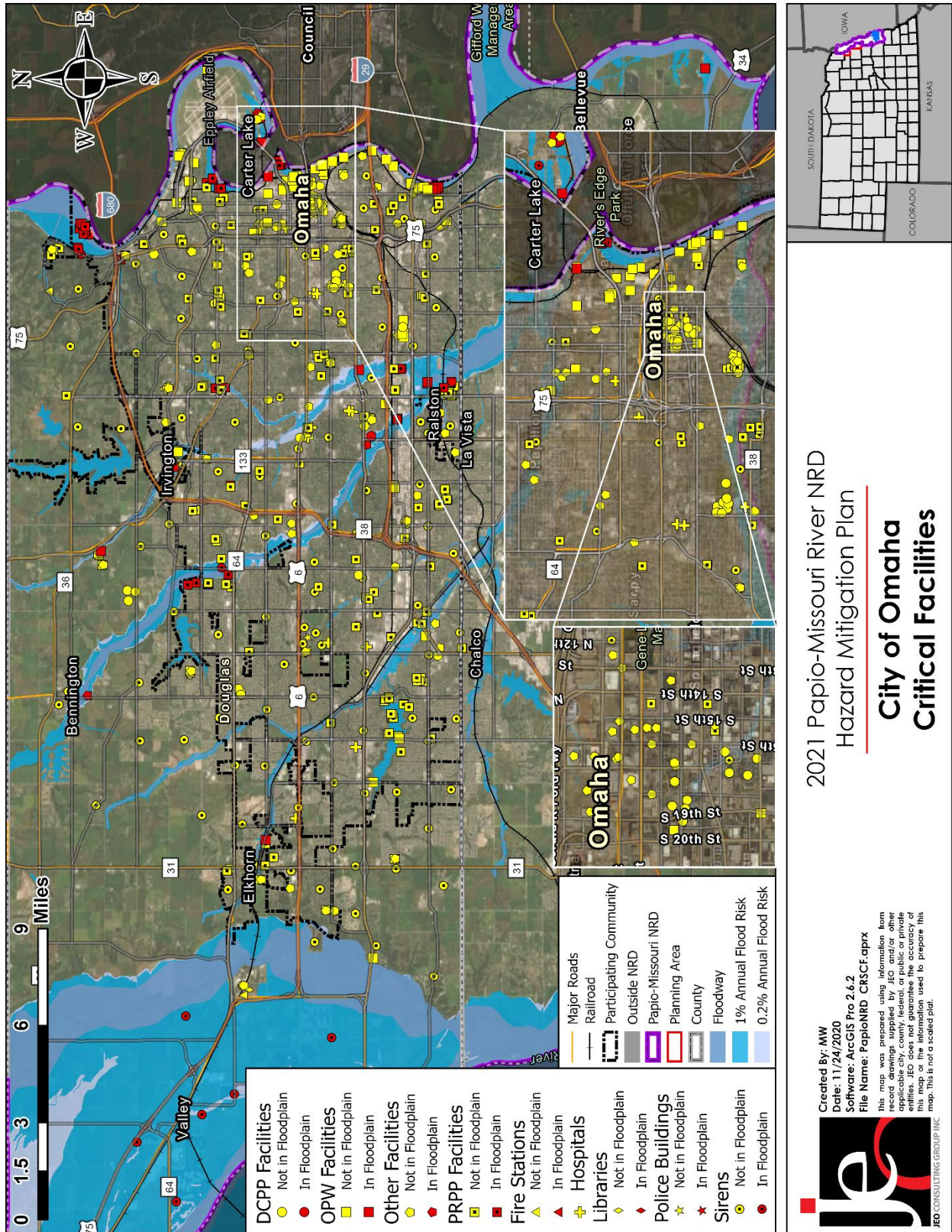
³⁷ Omaha/Douglas County. May 2020. "Omaha/Douglas County GIS: Open Data Portal." <https://data-dogis.opendata.arcgis.com/>.

Table OMA.6: Certified Mass Care Facilities in Omaha

FACILITY NAME	ADDRESS	CAPACITY
Mount Olive Lutheran Church	7301 N 298 th Ave	66
Pearl Memorial United Methodist Church	2319 Ogden St	86
Emmanuel Fellowship	8345 Crown Point Ave	100
Shepherd Of The Hills Lutheran Church	6201 North 60 th St	154
Victory Church	6330 N 56 th St	180
St Mark Lutheran Church	1821 N 90 th St	81
Omaha Christian Center	4215 N 92 nd Ave	142
Saint Luke United Methodist Church	11810 Burke St	391
Lord Of Love Lutheran Church	10405 Fort St	176
All Saints Episcopal Church	9302 Blondo St	111
Holy Cross Lutheran Church	4117 Terrace Drive	40
First Christian Church	6630 Dodge St	175
Zion Lutheran Church	14205 Ida St	62
Covenant Presbyterian Church	15002 Blondo St	50
Northwest Hills Church Ucc	9334 Fort St	119
St Andrew's United Methodist Church	15050 Maple St	175
Luther Memorial Lutheran Church	1031 Sunset Trail	115
Immanuel Lutheran Church	2725 N 60 th Ave	295
Vietnamese Alliance Church	3824 R St	51
Wheeler Presbyterian Church	4501 S 23 rd St	62
First Central Congregational Church	421 S 36 th St	100
Grace Evangelical Lutheran Church	1326 S 26 th St	152
Saints Peter And Paul Auditorium	3623 X St	200
Saint Patrick Parish	1404 Castelar St	241
Beautiful Savier Lutheran Church	9012 Q St	291
Ralston United Church Of Christ	7638 Maywood St	163
American Red Cross	2912 S 80 th St	75
Hanscom Park United Methodist Church	4444 Francis St	112
Mosher Pilgrim Church	4622 Monroe St	30
St. Andrew's Episcopal Church	925 S 84 th St	68
Pacific Hills Lutheran Church	1110 S 90 th St	52
St Gerald Catholic Church	7857-9 Lakeview St	171
Westwood Heights Baptist Church	3343 Pedersen Drive	72
Divine Sheppard Lutheran Church	15005 Q St	141
St. John Vianney Church	5801 Oak Hills Drive	150
St Wenceslaus Church And School	15353 Pacific St	101
Benson High School	5120 Maple St	520
Central High School	124 N 20 th St	175
Hale Middle School	6143 Whitmore St	247
Lewis And Clark Middle School	6901 Burt St	135
Mcmillan Middle School	3802 Redick Avenue	250
North High School	4410 N 36 th St	166

FACILITY NAME	ADDRESS	CAPACITY
Sacred Heart Grade School	2213 Binney St	62
King Science And Technology	3720 Florence Blvd	N/A
King Elementary School	3706 Maple St	N/A
Saint Bernard Catholic School	3604 N 65 th St	862
Morton Middle School	4606 Terrace Drive	229
Northwest High School	8204 Crown Point	N/A
Monroe Middle School	5105 Bedford Ave	141
Norris Middle School	2235 S 46 th St	348
R.M. Marris Magnet Center	5619 S 19 th St	169
Metroplitan Community College	2707 Ed Babe Gomez Ave	151
South High School	4919 S 24 th St	530
Indian Hill School	3121 V St	272
St. Gerald's Catholic School	7857 Lakeview St	160
Burke High School	12200 Burke Blvd	376
Beveridge Middle School	1616 S. 120 th St	57
Bryan Middle School	8210 S 42 nd St	N/A
Central Middle School	12801 L St	475
Bryan High School	4700 Giles Rd	N/A
Millard South High School	14905 Q St	390

Figure OMA.5: Critical Facilities



Note: DCPP – Douglas County Public Power; PRPP – Parks, Recreation, and Public Properties

Historical Occurrences

See the Douglas County community profile for historical hazard events.

Hazard Prioritization

For an in-depth discussion regarding area wide hazards, please see Section Four: Risk Assessment. The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were added by the local planning team based on the identification of hazards of greatest concern, hazard history, and the jurisdiction's capabilities.

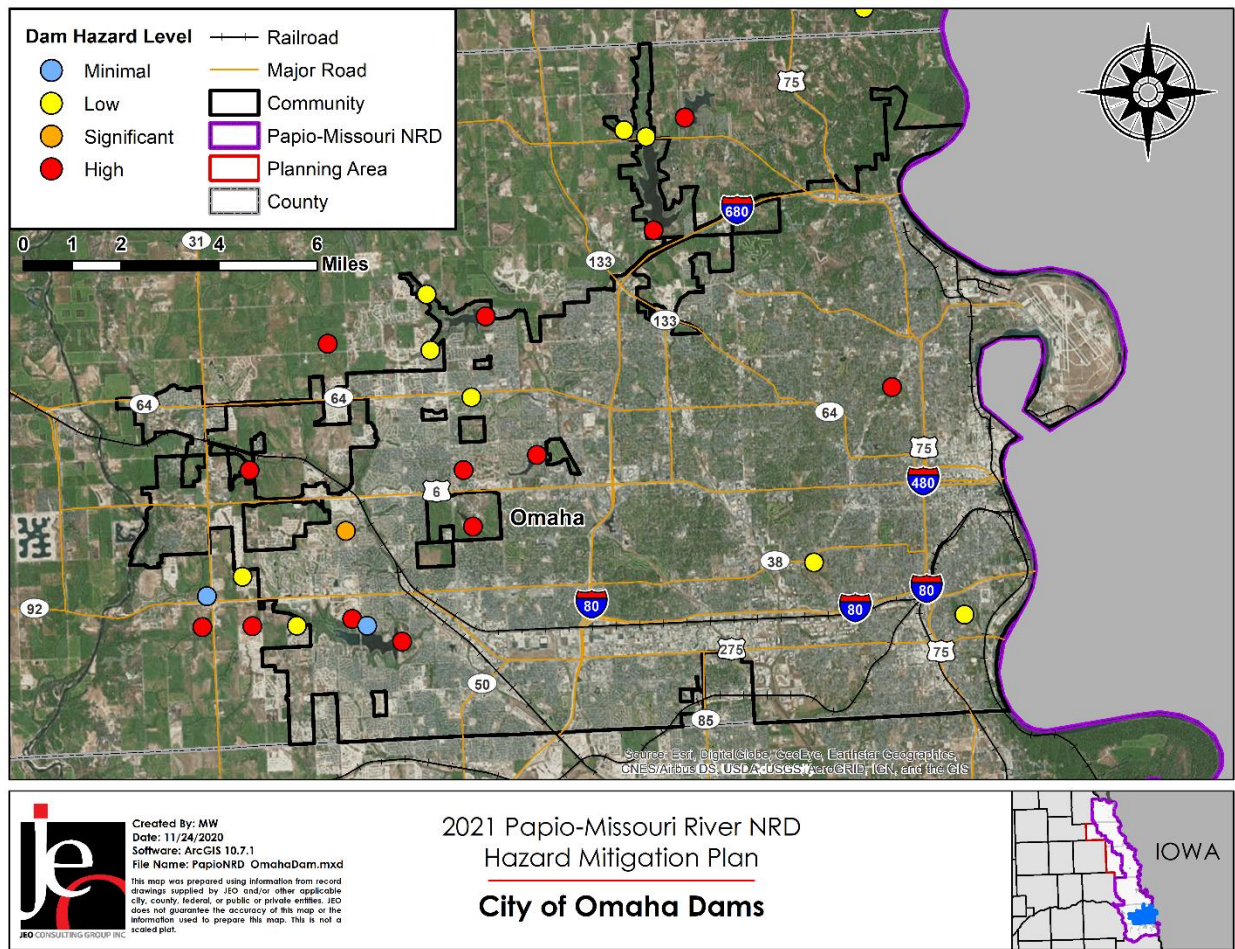
Dam Failure

Although not identified as one of the top concerns for the City of Omaha, the city could be significantly impacted by failure of high hazards dams located in the city. Local concerns are centered on potential impacts to downstream areas and damages associated post-dam failure. The City does not have high concerns regarding the integrity of the dams or performance, specifically those owned and maintained by the Papio-Missouri River NRD or the U.S. Army Corps of Engineers. Privately owned dams in the City are of higher concern and additional coordination with private dam owners is needed. Dams in and around Omaha, as well as their hazard level, can be viewed on the Nebraska Department of Natural Resource's Dam Inventory map (<https://dnr.nebraska.gov/dam-safety>). All dams performed as expected during the 2011 and 2019 flood events.

According to the Emergency Operations Plan, the failure of the Papillion Creek Site 11 Dam (NE01518) would "affect an area slightly greater than the 1 percent annual chance floodplain with the greatest effect on areas along the Papillion Creek through Omaha. It would approach 100 percent inundation." Due to the geographic location of this dam on the north central edge of town, potential inundation would impact a very large area. However, a full inundation analysis was not conducted during this planning process. While there are no records of dam failure reported for the City of Omaha, this type of event has a potential for significant losses due to flooding, economic impacts, and business and housing damages.

The Papio-Missouri River NRD conducts dam failure tabletop exercises every three to five years in which the City participates. These exercises are run in conjunction with the Dam Safety section of the Nebraska Department of Natural Resources.

Figure OMA.8: Omaha Dams



The following table provides a list of the high and significant hazard dams located in Omaha. The local planning team indicated that while significant hazard dams are not currently a top hazard, development in the downstream areas should be minimized or monitored to prevent reclassification.

Table OMA.16: High and Significant Hazard Dams in Omaha

NIDID	DAM NAME	STREAM NAME	OWNER	HAZARD LEVEL
NE00307	Boys Town Dam No 1	Hell Creek	Father Flanagan's Boys Home	HIGH
NE00031	Boys Town Dam No 2	Big Papio Creek	First National Business Park Owners Association	HIGH
NE00138	Candlewood Dam	Big Papio Creek	P-MRNRD	HIGH
NE00032	Legacy Dam	Box Elder Creek	Legacy Homeowners Association	HIGH
NE00030	Lonergan Dam	Little Papio Creek	JSP Lakeside LLC	HIGH
NE02784	Papio Dam Site 13-Youngman	W. Papio Creek	P-MRNRD	HIGH

NIDID	DAM NAME	STREAM NAME	OWNER	HAZARD LEVEL
NE01518	Papio Site 11- Cunningham Lake	Little Papio Creek	US Army Corps	HIGH
NE01065	Papio Site 15- Standing Bear Lake	Papio Creek	US Army Corps	HIGH
NE02185	Papio Site 18- Zorinsky Lake	Box Elder Creek	US Army Corps	HIGH
NE02735	Zorinsky Basin No 3- Whitehawk	Box Elder Creek	P-MRNRD	HIGH
NE03289	Papio Creek 15-A	North Branch W. Papillion Creek	P-MRNRD	HIGH
NE09714	Adams Park Dam	Tributary to Missouri River	City of Omaha	HIGH
NE00033	Papio Creek D-45	West Papio Creek	P-MRNRD	Significant

Source: NDNR

Drought and Extreme Heat

Drought and extreme heat were identified as a top concern for Omaha due to the potential impacts on public health. While the city is heavily urbanized, limiting the agricultural impacts of drought and extreme heat, specific concerns exist for public health and strain on local infrastructure. Vulnerable populations include the elderly, very young, disabled, and low-income residents. According to the NCEI, two extreme heat events in July and August 2010 sent approximately 50 residents to Omaha hospitals when heat index temperatures reached as high as 115°F. Most of these were reported to be under 40 years old and involved in outdoor activities. The frequency and intensity of extreme heat days continue to rise, and the heat island effect found in urban settings exacerbates extreme heat conditions. Omaha's aging housing stock frequently lack adequate cooling systems and insulation to regulate home temperatures. Extreme heat and humidity can also create dangerous outdoor work and recreational activity conditions and increase demand on electrical infrastructure. Douglas County has experienced, on average, three days over 100°F annually. However, the summer of 2021 produced numerous consecutive days over 100°F and highlighted the increasing toll on community resources.

Levee Failure

While the local planning team did not identify levee failure as one of the top hazards, levee failure may cause loss of life and injuries as well as damages to property, the environment, and the economy. The following table identifies levees located in the City of Omaha as identified in the USACE National Levee Database (NLD). The risk data was developed by USACE and taken from the NLD – for more information visit <https://levees.sec.usace.army.mil/#/>.

Table OMA.17: Omaha Levees

NAME	SPONSOR	WATERCOURSE	LENGTH (MILES)	PROTECTED POPULATION	PROTECTED PROPERTY VALUE	RISK CLASS
Big Papio Lb – West Center To L St	USACE	Big Papillion Creek	0.62	41	\$46.3M	Low
Big Papio Rb – West Center To L St	USACE	Big Papillion Creek	0.41	22	\$28.5M	Low
Big Papio Rb – L St To Thompson Cr	P- MRNRD	Big Papillion Creek	3.28	254	\$95.8M	Low
Little Papio Rb And Big Papio Lb	USACE	Big Papillion Creek/Little	1.25	179	\$65.3M	Low

NAME	SPONSOR	WATERCOURSE	LENGTH (MILES)	PROTECTED POPULATION	PROTECTED PROPERTY VALUE	RISK CLASS
Lb And Little Papio Lb – L St To Copper Cr	USACE	Papillion Creek Big Papillion Creek	3.03	126	\$41.8M	Low
Omaha – Missouri River Rb	USACE	Missouri River	12.17	8,375	\$1.6B	Moderate

Source: USACE National Levee Database, 2020

During the March 2019 flood event, levees across the state and near the City of Omaha breached due to unprecedented flood flows. The local planning team indicated that levees within the City of Omaha overall performed as expected during the 2011 and 2019 flood events. However, due to unprecedented and overwhelming high water flows during the March 2019 event, the Missouri River Right Bank Levee System which borders the eastern edge of the city experienced significant damage with an estimated repair cost of \$1,255,879 as determined by USACE Omaha District.³⁸ The local planning team indicated this estimated cost is likely too low and final damage assessments and repair designs are currently in the works.

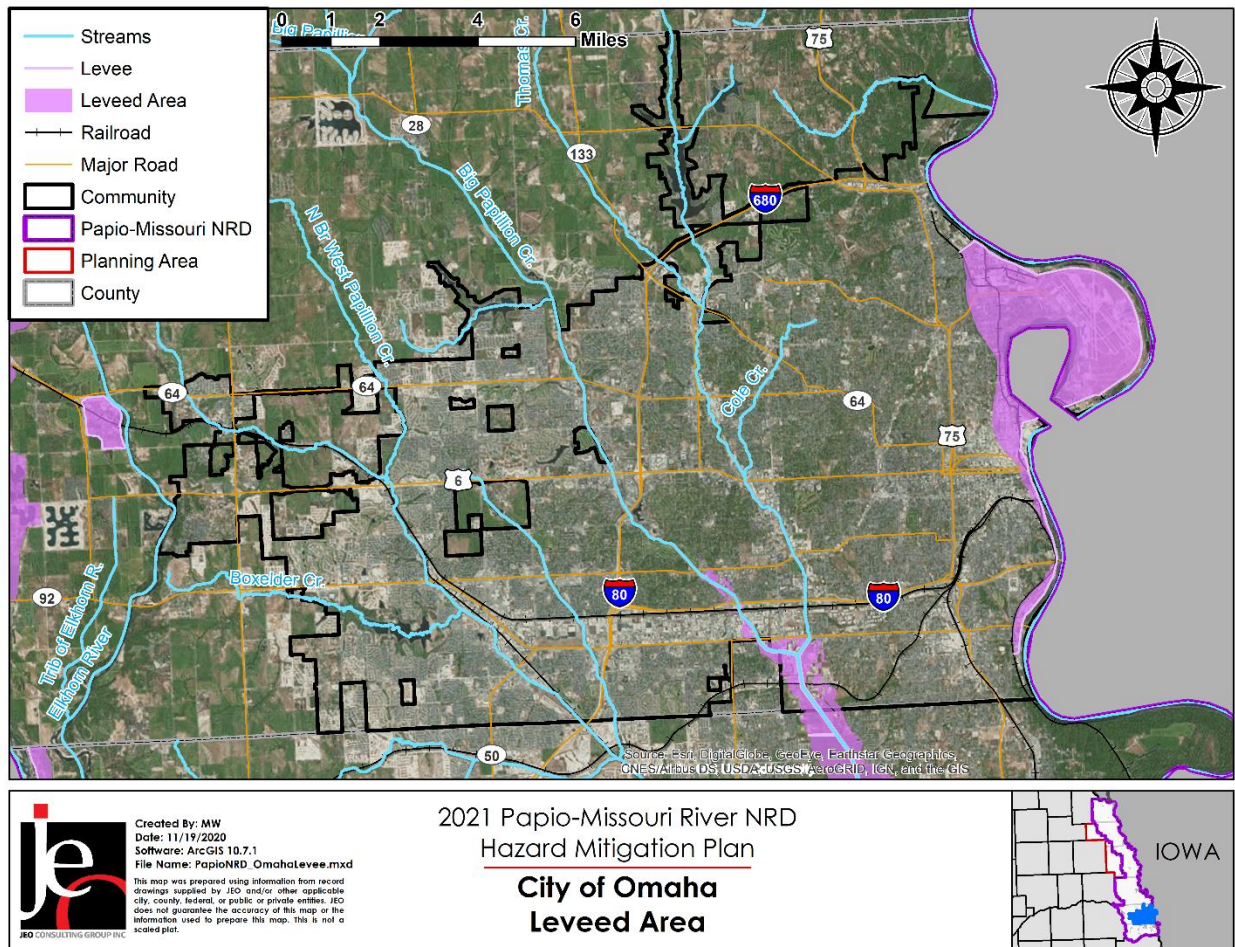
Also during this event, the Missouri River levees R-613 and R-616 overtopped near the Papillion Creek Wastewater Treatment Plant, which serves a large percentage of the city and neighboring communities. The facility was heavily damaged during the flood event. Improvements to these levees were already underway in 2019 prior to the flood event. The R-613-616 levee was overtopped during the 2019 flood along the left bank of the Papillion Creek approximately 9,000 lineal feet upstream of the Missouri River. The R-613 Levee was completely overtopped along the entire length of the Platte River, Missouri River and about 2 miles of the right bank Papillion Creek closest to the Missouri River. Under the PL84-99 program, USACE completed necessary repairs on all overtopped levee sections between July 2019 and April 2020. The P-MRNRD continues to complete the levee modifications required for accreditation including levee raises, seepage berms, and rehabilitated pipe penetrations. Completion of construction and submittal of levee certification documentation is anticipated by the end of 2021. Total costs of the USACE repairs was approx. \$10 million and the levee improvements are expected to exceed \$32 million. The P-MRNRD has proposed a cost share agreement with the City of Omaha, City of Bellevue, and Sarpy County to fund the needed modifications.

Heavy rain events since March 2019 have contributed to overall damages to levee systems along the Missouri River. Several flood gates were damaged and remained open after the flood; heavy rains have subsequently caused damage to the infrastructure.

Coordination for levee inspections, maintenance, and repair is an ongoing action between the City, P-MRNRD, and USACE. The City is currently evaluating various actions to reduce risk of damage from future events including automation of flap gates, installing temporary pumping infrastructure, hardening facilities, and improving access to infrastructure.

³⁸ United States Army Corps of Engineers. May 2020. "Omaha District System Restoration Team." <https://www.nwo.usace.army.mil/Omaha-District-System-Restoration-Team/>.

Figure OMA.6: Leveed Areas in Omaha



Flooding

As a large metropolitan area, stormwater runoff causes flooding issues as intense rainfalls occasionally surpass the capabilities of the stormwater management systems. Furthermore, Omaha has a combined stormwater and wastewater system (viewable here: <https://www.dogis.org/Html5Viewer/?viewer=dogis&viewer=dogis>), which can result in additional flooding issues. In addition to stormwater runoff flooding, there are several riverine flood sources which impact the city. These include the Missouri River, Big Papillion Creek, Little Papillion Creek, West Papillion Creek, Saddle Creek, Hell Creek, Cole Creek, Thomas Creek, Boxelder Creek and others.

As of fall 2020, new floodplain maps were underway for the Papio Creek System with technical studies completed. Preliminary floodplain maps are anticipated to be completed by summer 2021 and, thus, are not included in this planning process. Future updates and reviews to this HMP should include information from these updated maps.

The following history of Missouri River flooding in Omaha is primarily taken from the Douglas County Flood Insurance Study dated May 2010:

Missouri River

The first flood record that could be found was dated April 6, 1881, which was a major flood because a large ice jam was breached in Cedar County. This flood swept away entire towns and the Missouri

was five miles wide at Omaha. People were forced to evacuate to the roofs of their homes on 9th Street. Along the Missouri, there was a total of three people killed, thousands of livestock perished, and damaged was placed in the “many millions”. Another major flood occurred in 1943. At Omaha, the river crested at 22.45 feet and had a discharge of 200,000 cubic feet/second (89,760,000 gallons/minute). Three thousand men helped fight the flood, but after a week, the Missouri found a weak spot in the temporary dike and the battle was lost. One hundred homes were flooded when the floodwater also breached a new dike at Locust Street. The industrial section on Grace Street was flooded, and businesses were closed several days. One thousand people were evacuated from Carter Lake and East Omaha as the old Lake Florence bed filled and inundated the airport with seven feet of water in 18 hours. One person was killed in Omaha, and the damage estimate there was \$1.4 million. A \$6 million floodwall was constructed as a result of the 1943 flood, which served Omaha well during major floods in 1947 and 1950. The flood of record on the Missouri River took place on April 16, 1952 with a recorded discharge of 396,000 cfs (177,724,800 gallons per minute) with a record stage of 40.2 feet (flood stage at Omaha is 29 feet). Emergency freeboard was added to the top of the floodwall in order to keep Omaha from being flooded. The severe flooding on the Missouri River in the 1940s and 50s led to the authorization for the construction of six large dams by the United States Army Corps of Engineers. These dams were completed in the early 1960s, and flooding on the Missouri has not been a significant problem since. The Corps also constructed a levee/floodwall system in Omaha which provides protection to the 500-year (0.2% change per-year) flood. The only significant flooding at Omaha after the completion of the dams took place in 1993, the year with record flooding over the entire Midwest. However, Missouri River flooding was much more pronounced south of Omaha, below the juncture with the Platte River and other large rivers from Iowa.

For information regarding the Missouri River flood of 2011, please refer to *Section Four: Risk Assessment*. Some major past flood events from major waterways in Omaha are described below:

Big Papillion Creek

Two of the largest floods of record on the Big Papillion Creek took place in 1964 (45,900 cfs) and 1965 (31,200 cfs). The flood of June 16th and 17th, 1964, killed seven people and caused \$5 million in damage, not including losses to personal property. Approximately 95 trailer homes were destroyed, with several being swept more than a half-mile downstream by the torrent. Flood damages were recorded in the Big Papio Creek watershed from the consistent heavy downpours in the summer of 1993. Many homeowners had problems with bowing or collapsed foundation and retaining walls. The greatest historic crest on Big Papillion Creek came from the March 2019 flooding event when the creek crested at 28.14ft.

Little Papillion Creek

The flood of record for Little Papillion Creek took place on June 21, 1960. Intense localized thunderstorms in the watershed led to a discharge of 15,300 cfs at Irvington Street and 10,000 cfs at Cass Street. The severe thunderstorm of September 6, 1965 caused a discharge of 12,800 cfs at the mouth with the Big Papillion Creek.

West Papillion Creek

The historic crest on record on the West Papillion Creek occurred in June 2014 with a crest of 26.59 ft. A flood occurred in 1948, which was estimated as a 60-year event, with discharges of 25,500 cfs reported. Another flood occurred in 1959, which was estimated as a 35-year event and a discharge of 22,500 cfs. The June 16th – 17th, 1964 flood led to a 1 percent annual chance (or 100-year) discharge of 31,500 cfs at the mouth and 40,800 cfs at Giles Road. Mobile homes were swept away by this flood in the Millard area.

Hell Creek

Hell Creek flows from Boys Town to its confluence with West Papillion Creek. The flood of June 16-17, 1964 was caused by eight inches of rain falling in three hours. The 500-year flood discharge was exceeded, and reports noted that Hell Creek was fifty feet wide and had five-foot waves.

Houses were moved from their foundations and garages were destroyed by these floodwaters. After some channel improvements earlier in 1965, the September 7, 1965, flood event on Hell Creek nearly equaled the severity of the 1964 event.

Cole Creek

Up to ten inches of rain fell overnight on August 6-7, 1999, forcing Cole Creek out of its banks. Cole Creek flows through the fully-urbanized watershed in northern Omaha including the Debolt and Benson neighborhoods before joining the Little Papillion Creek near 77th & Dodge. One man was killed from the 1999 flood as a result of a basement wall caving in on top of him.

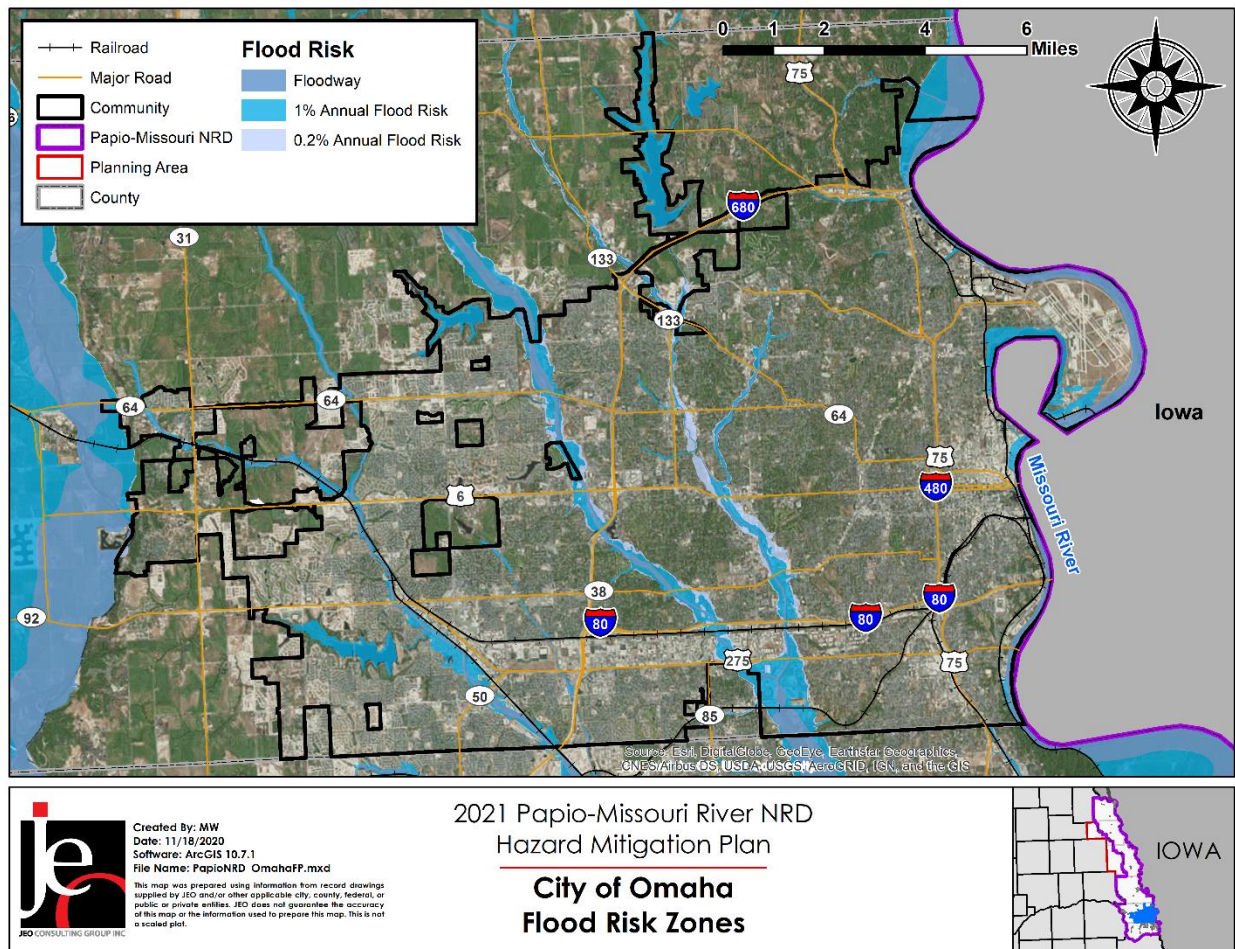
Thomas Creek

Thomas Creek flows primarily north-to-south past Irvington before joining Little Papillion Creek at Blair High Road. The Thomas Creek watershed has been rapidly developing in the last ten years, and downstream flood problems have been the result. During the August 1999 storm, one property owner was trapped by the rising water and nearly lost her life while trying to open the fences for her horses.

Boxelder Creek

Much of rapidly developing west Omaha is drained by Boxelder Creek. As a result, it should be expected that runoff rates may increase which will cause more water to flow into the creek more quickly. However, Zorinsky Lake is a flood control structure on Boxelder Creek which will minimize flooding.

Additionally, Saddle Creek has experienced localized flooding issues during heavy rain events. Douglas County also has a Flood Insurance Study last revised May 19, 2014 and reprinted with corrections on January 17, 2020. The study includes unincorporated Douglas Counties and the communities of Bennington, Boys Town, Omaha, Ralston, Valley, and Waterloo. The study identified principal flood problems primarily from the Missouri River on the City of Omaha. The low-lying areas in the City of Valley and the unincorporated areas of Douglas County are subject to periodic flooding caused by the overflow of the Platte and Elkhorn Rivers. Most floods in the Platte River basin occur from April to June, usually as the result of rapid snowmelt and rainfall runoff. These floods are often aggravated by ice jams on the Platte River and its tributaries. The tributary floods are generally of short duration, since many of these streams have steep gradients, which cause rapid runoff. Conversely, the floods that occur along the Platte River are prolonged because of the wide, shallow valley slopes. Flood protection measures include numerous dams, reservoirs, levees, and dikes throughout the watershed. Channel straightening has also occurred on Big Papillion Creek, Cole Creek, Hell Creek, Rockbrook Creek, and West Papillion Creek. Additionally, Omaha is included in the Big Papillion-Mosquito Watershed Flood Risk Report (9/12/2016). The report utilized HAZUS to estimate potential losses for flood event scenarios. For the City of Omaha the inventory estimated value was \$95,151,900,000.

Figure OMA.7: Omaha 1% and 0.2% Annual Chance Floodplain

Flooding is and will continue to be a hazard of top concern for the city with widespread impacts. Local vulnerabilities and potential impacts have been summarized below.

Life

Persons in the city who work, live, or play in flood risk hazard areas are at risk during flood events. Employees of businesses located within the floodplain are at risk if proper notification systems are not in place or evacuation routes are blocked. Residential areas in flood risk hazard areas put residents and their families at risk. If a one percent annual chance flood event were to take place, it is estimated 2,340 people would be displaced and 145 would need short term sheltering according to a Level 1 HAZUS analysis. No fatalities have been reported in the City of Omaha from past flood events.

Health and Safety

Contact with flood waters can pose health and safety concerns as flood water is commonly contaminated by bacteria and/or viruses. This is of particular concern when floodwaters travel from heavily agricultural areas such as upstream of the city. Additionally during flood events, injuries or threats to resident health and safety can occur when people attempt to drive through floodwaters (hidden debris or washouts). The City does not have publicly available evacuation plan; however, the city and county emergency management release information for flood specific evacuation orders via social media, the city website, and local news media.

Buildings and Building Damage

Infrastructure and property damages are top concerns for the city during flood events. According to the Douglas County assessor, approximately 2% of all Omaha improvements (structures located on parcels) are located within the floodplain. A HAZUS analysis of the city for building counts and types of buildings damaged noted that approximately 356 buildings would sustain up to significant damage (16 commercial, six industrial, and 334 residential) with total damage estimates ranging past \$105 million.

Note that the 2020 analysis included both the 1% annual flood chance and the 0.2% annual flood chance hazard area while the 2016 plan only identified improvements within the 1% annual flood chance. Due to the increasing prevalence of severe events, both floodplain hazard layers were identified as a concern.

Table OMA.18: Improvements in the Floodplain

YEAR	VALUE OF IMPROVEMENTS IN FLOODPLAIN	NUMBER OF IMPROVEMENTS AFFECTED	NUMBER OF IMPROVEMENTS IN COMMUNITY	PERCENTAGE OF AFFECTED IMPROVEMENTS
2016	\$23,739,271,700	2,374	131,618	2%
2020	\$2,436,132,446	3,351	144,345	2%

Source: Douglas County Assessor

Repetitive Losses

According to FEMA as of March 2020, Omaha participates in the NFIP and has 844 NFIP policies in-force for \$231,698,500. There have been 272 reported total loss claims for the city which have a total of \$5,074,607.90 paid out. There are 10 single family, one other residence, and one other non-residence repetitive flood loss properties in the City of Omaha according to NeDNR as of February 2020.

Economic Impact

A HAZUS analysis of the city for anticipated economic losses from business interruptions indicated the city would experience more than \$513 million in revenue during a 1% annual flood event.

The Future

Flood events are likely to continue into the future and impacts will be exacerbated by climate change. Worsening climate change conditions may cause more frequent and more severe hazard type events and/or cause undue stress and pressure on flood management resources. The city has identified the need to limit development in the floodplain and all future developments must go through a permitting process.

Two of the most recent significant flood events for the county and City of Omaha include the 2011 and 2019 floods. The 2011 Missouri River flood showed several deficiencies in flood risk management that the City addressed prior to the 2019 flood. The city attributes some of these improvements to reduced potential damages during the 2019 flood. Such projects included elevating roads, stabilizing stream banks, and improving emergency response actions.

The March 2019 flood caused the following impacts and subsequent actions for the City:

- Elevated water levels remained on the Elkhorn and Missouri Rivers from March to December 2019.

- Damage to the wastewater treatment facility. HESCO baskets were constructed during the midst of the flood to provide some protection. As of fall 2020 a HMGP grant application was under development to address these issues.
- Damage occurred to flap gates on the critical sanitary system in downtown and north downtown areas which impacted the City's ability to provide sanitary services to residents. Projects to repair and replace them are currently in the works and the City is currently looking into adding an additional pump station in north downtown (Millwork district). Sewer separation projects are also currently being evaluated to improve overall resiliency. While much of the north downtown area is a separated system, the remainder is a combined system.
- Sanitary sewer system failed in the stream bank near 144th and Grover due to high waterway levels, high water table, unstable soils, and original 1969 design not designed for resiliency in the waterway. Additionally, heavy runoff and snow melt caused several other stream banks to slough and exposed sanitary sewers. A sanitary sewer interceptor near Carter Lake also suffered failures due to prolonged exposure to saturated soils from high river levels in 2018 and the flood of 2019. The city developed a Sewer Assets in Waterways risk management plan under a separate HMGP grant initiated April 27, 2021. Recommendations are published in this plan and filed with Public Works. Where practical and cost-effective, the City will look to reroute infrastructure away from the degraded waterway channels and embankments.
- Significant levels of damage occurred at King Lake, a riverfront community along the Elkhorn River. While not an incorporated community, the majority of King Lake is within the ETJ and zoning jurisdiction of the City. The Papio-Missouri River NRD is assisting with property acquisition projects in the area and additional CDBG funding is being used for property redevelopment and improvements to reduce future flood risk.
- Numerous parks were damaged from high water levels including: Big Papio Trail damage; Big Papio Creek erosion by Peterson Park; Memorial Park creek erosion by the trailhead; damage at NP Dodge Park with marina, public docks, sports fields (majority of the park was completely inundated and will likely not be replaced – the area will become a greenspace); Freedom Park was closed to the public and experienced damage to military artifacts; Lewis and Clark Park filled with silt and debris with extensive cleanup efforts.

Overall, the local planning team indicated that the storm and sanitary water system for the City is aged and in need of significant repair and upgrading efforts. The gravity wastewater sewer system was cataloged into a risk model for use in making investigation, maintenance, and rehabilitation decisions. Continual flood events have exposed deficiencies and unstable areas which have been identified for mitigation and hardening efforts. A risk refinement plan for specifically sanitary Sewer Assets in Waterways (SAWs) has been developed enabling the city to plan resources, methodology, prioritization and scheduling of the remediation and protection activities. The following figures were provided by the city and identify critical sewers, sewer interceptors at risk during flood events, streets in Omaha with specific flood reports, and reported sewer system problems during wet weather between 2007 and 2019.

Figure OMA.9: Critical Sewer Locations in Omaha

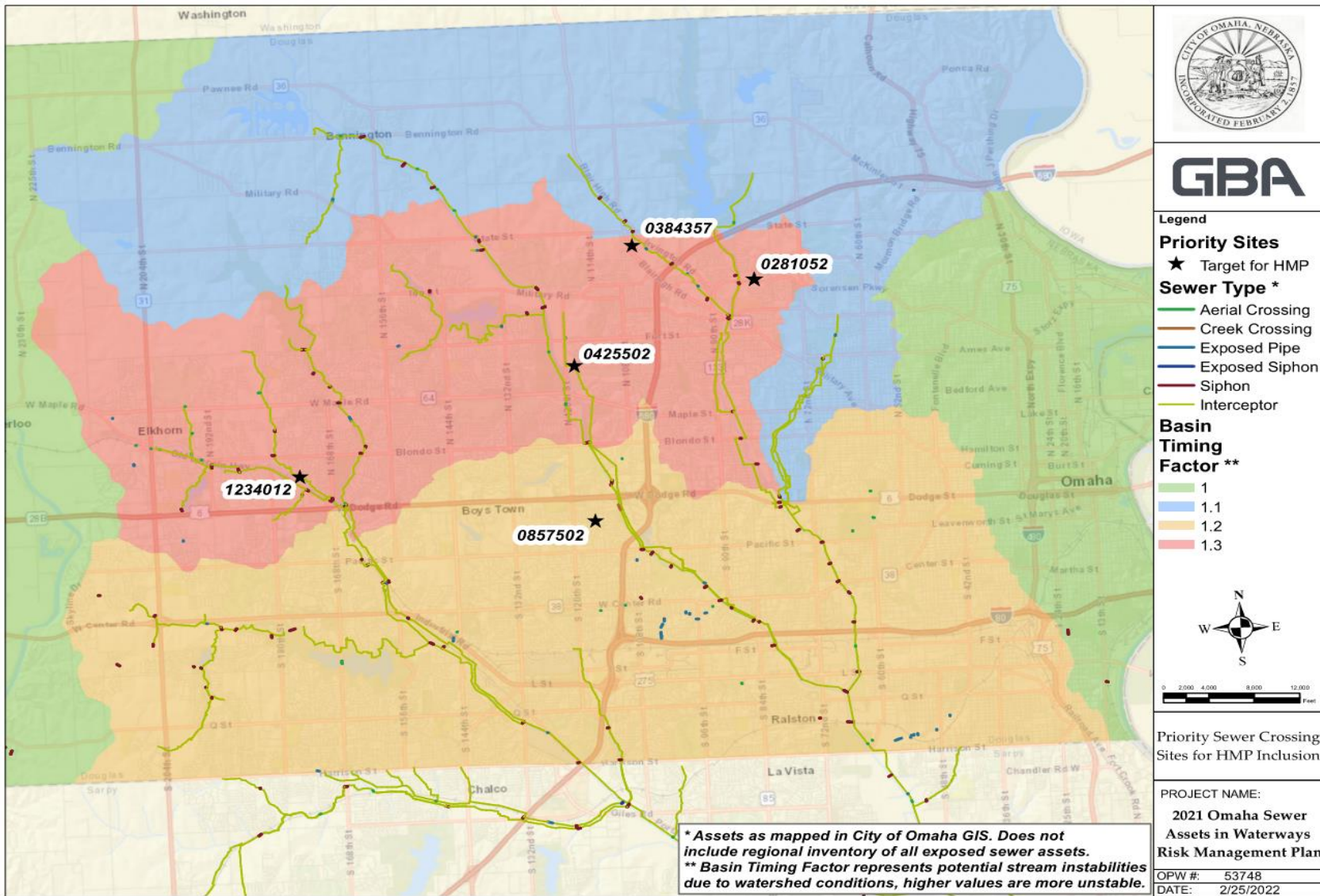


Figure OMA.10: Sewer Interceptor Locations at Risk in Omaha

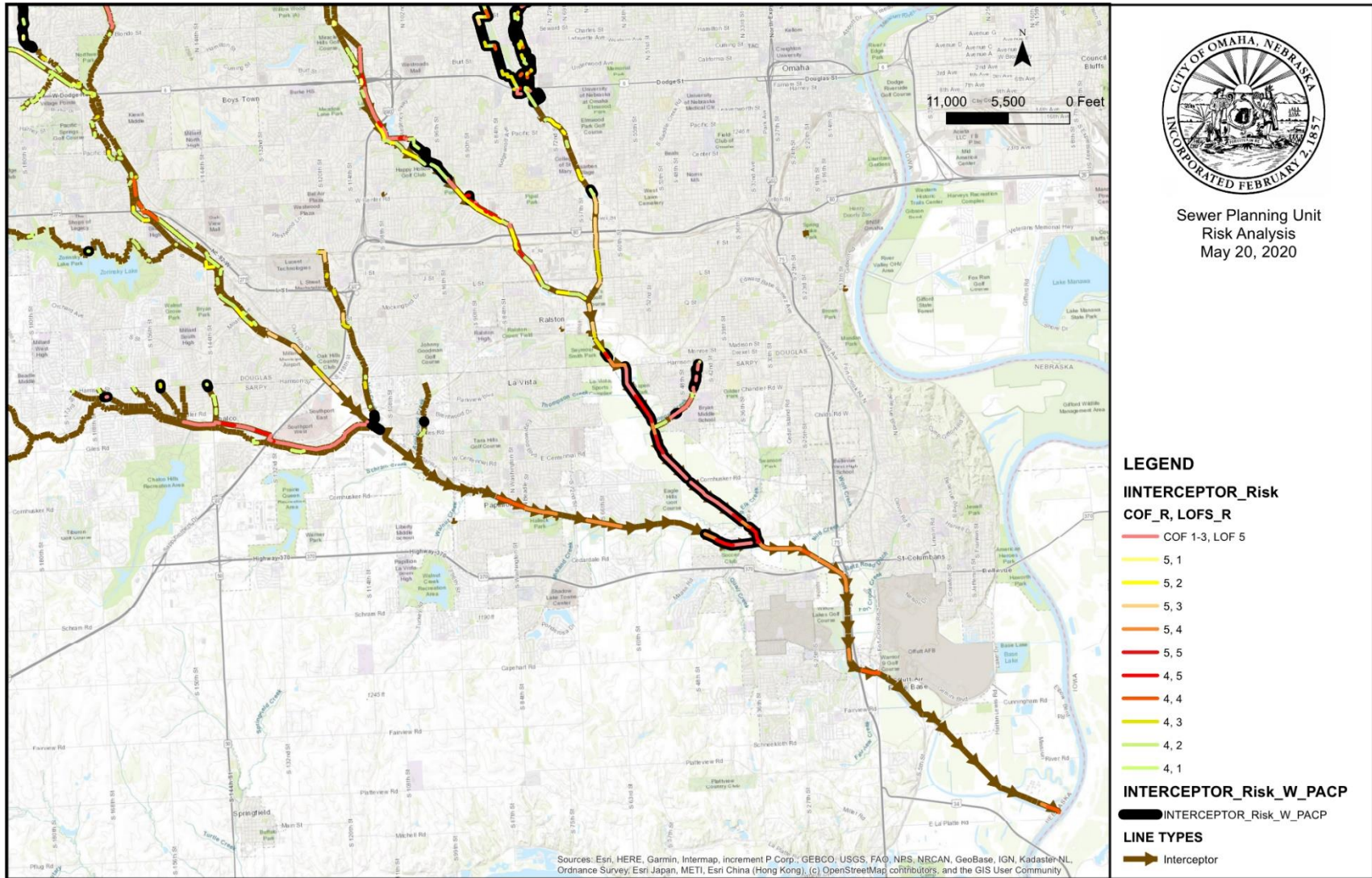


Figure OMA.11: Street Flooding Reports in Omaha

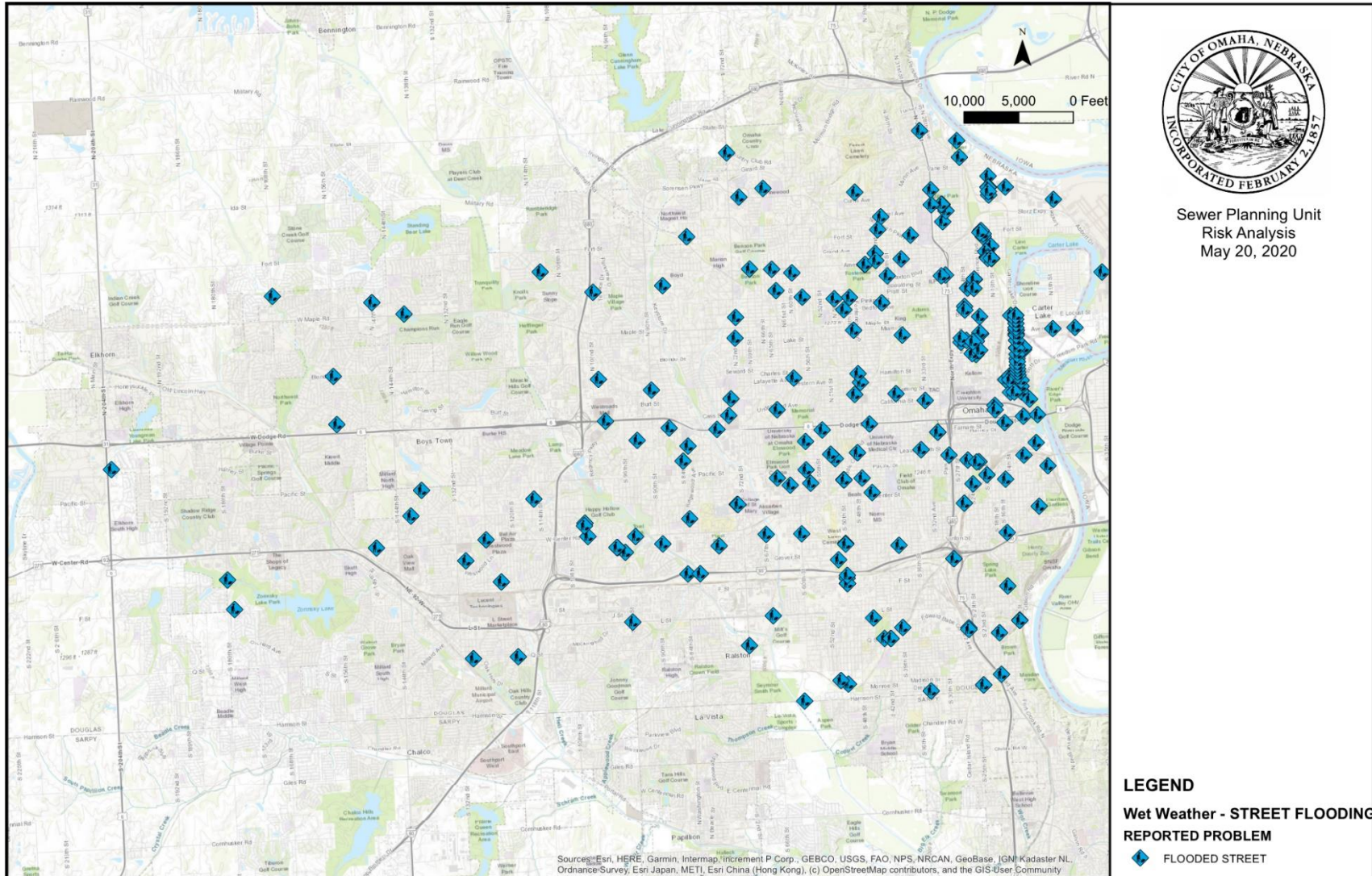
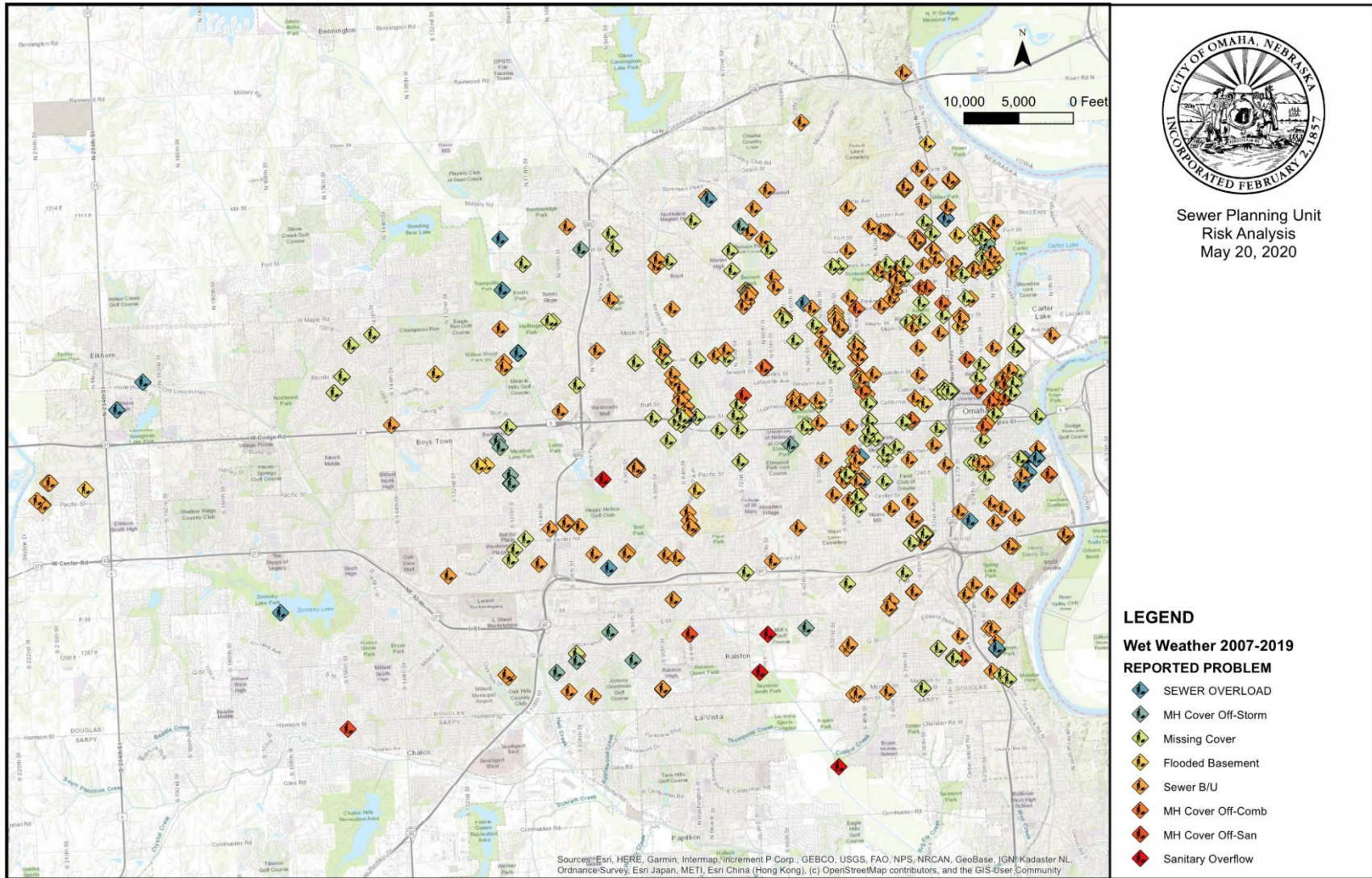


Figure OMA.12: Sewer System Reported Problems from Wet Weather in Omaha



The City identified the need to evaluate all stormwater pump stations for current capabilities and potential response for future flood events. The local planning team highlighted the need to know any deficiencies and cost estimates to address them prior to completing future repairs or infrastructure upgrades. Currently the city has some evaluations and studies to evaluate creek systems for streambank stabilization and critical infrastructure areas such as the Oakbrook channel system and the Cole Creek System which have interlocal agreements with the Papio-Missouri River NRD.

Chemical Spills (Fixed Sites)

The local planning team identified chemical spills from fixed site locations as one of the concerns for the City of Omaha. According to the U.S. Coast Guard's National Response Center database, there have been 140 fixed site chemical spill events in Omaha between 1982 and 2014. Property damages were reported for three separate chemical spill events totaling \$185,000, which were all caused by fire from natural gas leaks. Thirteen people were injured in three separate spills and no deaths. The following table shows only the largest spills recorded in Omaha, events that caused damage, or spills that caused injuries.

Table OMA.15: Fixed Site Chemical Spills in Omaha

DATE OF EVENT	LOCATION OF RELEASE	QUANTITY SPILLED	MATERIAL INVOLVED	NUMBER OF INJURIES	PROPERTY DAMAGE
12/20/1990	Omaha	Unknown	Unknown Material	2	\$0
3/22/1991	Omaha	Unknown	Chlorine	10	\$0
4/6/1991	Omaha	11,000 Gallons	Asphalt Emulsion	0	\$0
5/19/1992	Omaha	2,800 Gallons	Sodium Hypochlorite	0	\$0
6/1/1992	Omaha	5,000 Gallons	Sulfuric Acid (Diluted to 8% Solution)	0	\$0
6/23/1996	Omaha	5,000 Gallons	Waste Oil	0	\$0
11/25/1996	Omaha	78,000 Pounds	Sodium Hypochlorite	0	\$0
10/31/1998	Omaha	10,000 Pounds	Sulfuric Acid	0	\$0
2/28/2006	Omaha	Unknown	Unknown Material	1	\$0
8/26/2010	Omaha	0	Natural Gas	0	\$75,000
9/18/2010	Omaha	0	Natural Gas	0	\$60,000
11/14/2010	Omaha	0	Natural Gas	0	\$50,000
6/26/2011	Omaha	16,000,000 Gallons	Sewage	0	\$0

Source: National Response Center, 1982-2014

The local planning team is especially concerned with facilities that are not known and not registered with the city. In one instance, an unregistered plant was found working near a school. However, the city was notified and was able to shut down the facility. The team also noted two explosions in the past. The first occurred while a train car was being cleaned, and the second was

from a fertilizer plant. The fire department is trained to respond to these situations, and there is a local hazardous materials team in Omaha.

High Winds and Tornadoes

Tornadoes and high winds are identified as a high concern for the community due to the previous occurrences and reported economic losses. Two 1996 high wind events in Douglas County caused one death and \$34,000 in property damages respectively. Tornadoes and high winds have the potential for significant damages and loss of life. The NCEI reports an EF2 tornado that was recorded in the City of Omaha in 2008 that caused 3 injuries and unknown damages. According to the USDA Risk Assessment Management Agency claim reports in the period from 2000 to 2019 in Douglas County, a single tornado event produced \$115,547 in crop damages. The local planning team noted a tornado in the surrounding Douglas County area caused damages to power facilities. Parts of the city and surrounding communities lost power for several hours. A power outage at Zorinsky Lake led to the lift station overflowing. The City has evaluated all lift stations for power redundancy issues and addressed them. High winds commonly damage roofs of city and community buildings. All city owned facilities are insured. While there are no FEMA certified safe rooms located in the City or in Douglas County, local building codes require all single family homes to have basements and all multi-dwelling units (apartments) to have a storm rated portion of the building available for residents. The city and county are currently evaluating the feasibility to reinforce fire stations.

Severe Thunderstorms

Severe Thunderstorms are identified as a significant concern to the community due to the previous occurrences and reported property damage. Severe thunderstorms are part of regular climate in the region, including the City of Omaha and can include impacts from heavy rain, lightning, strong winds, and hail. The NCEI reported nearly 500 thunderstorm events which resulted in more than \$561,624,000 in property damages across Douglas County, with the majority directly impacting the City of Omaha or its surrounding areas. Two hail events in April of 2001 caused a combined property damage estimate of 500,000,000. Event narratives from NCEI of these storms are below:

April 10, 2001 - "A 5 to 15 minute hail storm hit the Omaha, Council Bluffs and Bellevue area causing extensive auto and roof damage. The hail covered the ground to several inches in some locations with most stones in the 1/2 to 1 1/2 inch range, although some were larger. From central into downtown Omaha, as the hail fell the visibility was lowered to near zero and the hail drifted like snow and shovels were used to clear some sidewalks. An elderly Omaha woman was injured with some cuts and bruises from the hail when she was caught outside."

April 30, 2001 - Two large hail producing thunderstorm cells tracked across the greater Omaha area this day, one across Douglas county and the other across Sarpy county. The storm that moved across Douglas county began producing large hail around Yutan, in Saunders county just to the west of the Douglas county line. The cell tracked across Elkhorn and then hit the western portions of Omaha with hail up to golfball size. The hail decreased in size to around 3/4 inch by the time the storm reached the eastern parts of the city. The majority of hail damage from the storm was in a 2 or 3 mile wide west to east strip centered on Blondo Street beginning west of 156th Street in far western Omaha and ending around 40th street in the east central part of the city. Damage included roof and skylights along with vehicles. Since the storm occurred in the late evening, and many vehicles were in garages, vehicle damage was not as severe as what was recorded with the hailstorm that hit Omaha earlier in the month.

Severe thunderstorms combined with heavy rain can produce flash flood, power outages and tree damages along with groundwater in basements. Hail events can cause significant, widespread damages to critical facilities, business, and personal property. Heavy wind and rain events can cause tree damage. The local planning team noted tree debris builds up in arterial sewer creek crossing and stresses the infrastructure or causes damage (such as cracking bulkheads). Heavy rainfall can also lead to sewer system issues with excessive debris blocking pipes and overloading the system. Hail has also entered the sanitary system in the past and caused it to backup. Numerous picnic shelters have been damaged in city parks from severe storms. The city regularly is home to many outdoor events including festivals, concerts, and downtown life. Residents and tourists caught outside during storm events and local concerns exist for the health and safety of residents. Alert and warning sirens are located throughout the Omaha Metropolitan Area as managed by Douglas County EMA. Outdoor warning sirens are installed in areas of new development if siren coverage is inadequate, and all new subdivisions are sent to the County Emergency Management Office for review before construction may begin. As sirens are evaluated and updated, additional updates should be evaluated and/or implemented to address potential cyber-security risks.

Severe Winter Storms

Severe winter storms was identified as a hazard of top concern for the City. Severe winter storms include blizzards, extreme cold, ice accumulation, heavy snow, and overall winter weather conditions. The City is responsible for clearing snow from city streets, but due to the large metropolitan area snow removal can take several days to reach all arterial roads. Designated snow routes and snow drop locations have been developed. The local planning team indicated freeze/thaw cycles have caused ice plugs in the storm sewer system and contributed to localized street flooding issues as snow melts. Past major storm events have dropped upwards of a foot of snow on the city and surrounding areas, causing power outages and blocked transportation routes.

Social Media Engagement

The Papio-Missouri River NRD launched a “Would You Rather” themed social media campaign during the 2021 HMP update to garner local input on hazard priorities, residential capabilities, and action items residents would like to see the community take in the future to reduce potential impacts from hazard events.

The City of Omaha had 370 reported respondents in the campaign (based upon general zip code analysis). According to those respondents the top hazards of concern for them (from most concerning to least concerning) were: High Winds and Tornadoes, Drought and Extreme Heat, Severe Thunderstorms, Flooding, Severe Winter Storms, Agricultural Plant and Animal Disease, Wildfire, and Earthquakes.

Some ways residents have indicated they had reduced their personal risk to hazard events included: identifying safe places at home for hazard events (347 respondents), signed up for emergency alerts (253 respondents), attended safety related trainings or certifications (224 respondents), developed a Home Emergency Action Plan (177 respondents), and used fire resistant building materials on their homes (94 respondents).

The local respondents noted text alerts, social media posts, and updates to the community website or Papio-Missouri River NRD website are the preferred methods of notification for major events. Top priorities for identify hazard mitigation actions (from most important to least important) were: protecting people, protecting critical facilities, improving emergency response capabilities,

improving community notification and weather alert systems, protecting natural environments, preventing development in hazardous areas, protecting private property, protecting historical/cultural resources, and protecting community assets.

Due to the volume of responses from residents on ways residents they would like to see the community pursue, responses were broken down into 13 general categories as listed in the table below. General trends from responses as well as comments with specific opportunities or actions the city may pursue are also listed where relevant.

Table OMA.16: Community Actions for Omaha – Social Media Campaign

CATEGORY OF RESPONSE	COMMENTS
<p style="text-align: center;">ALERT SIRENS/NOTIFICATION SYSTEMS</p>	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Improve and/or expand emergency alert notification system (text alerts)</i> • <i>Install/expand outdoor warning/alert sirens in developed areas</i> • <i>Provide accessible and free weather alert systems (TV, weather radio dispersal, app without data requirement, etc.)</i> • <i>Improve speed of warning messaging sent to residents prior to hazard events</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Commit to Universal way of notifying residence of impending severe weather. This can be a multi-faceted approach such as emergency text messaging and emergency alerts on TV and radio</i> • <i>In a time when media is changing, not everyone turns on the television to learn about what is impacting the community. I think moving towards a mobile device based alert would be more impactful in events of significant weather, natural disasters, etc while maintaining current traditional media since in the area there is a significant older population that may not have access to mobile devices</i> • <i>Text messages are always nice when severe weather is coming. For instance I have HULU and do not have access to the weather channel so if something that has a relatively high risk for disaster an emergency broadcast would be useful.</i>
<p style="text-align: center;">CLIMATE CHANGE</p>	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Institute policies to address and mitigate climate change at local and state levels</i> • <i>Evaluate climate change impacts for all new developments and projects</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>I would like Nebraska to come up with policy that will prepare us for global warming and the extreme droughts and or extreme storms that will follow. As a state there has been little to no initiative to prepare us for or to mitigate climate change.</i>
<p style="text-align: center;">COORDINATION AND COMMUNICATION</p>	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Develop a community action team for residents to train and respond together during hazard events with various training opportunities (times and platforms)</i> • <i>Build stronger community connections to assist elderly residents and other vulnerable populations</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Have a citizen’s response team that can help respond when other departments are back logged or all called out</i>

CATEGORY OF RESPONSE	COMMENTS
	<ul style="list-style-type: none"> • <i>Have a team assigned to different neighborhoods that go around monthly to assess safety issues (if that doesn't already exist) and work WITH citizens to take care of issues rather than just fining them or threatening them with legal action.</i> • <i>Continuing to put information out about how families can be prepared. Also work with businesses to help themselves but also as a way to share information with their employees.</i>
EDUCATION	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Provide educational opportunities for residents for ways to pursue household mitigation and how to respond during hazard events (Facebook streams, HOAs, fair events, schools, etc.)</i> • <i>Share information about established stormwater management projects and their benefits</i> • <i>Provide information to residents and businesses in hazardous areas (floodplains, levee protected areas, chemical storage sites)</i> • <i>Provide area/neighborhood specific information about risks and impacts (risks to Ralston vs in rural Papillion)</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Continue to educate people about the risks we face and reasonable steps to mitigate risk and respond to disasters. Provide easy to digest information which isn't overly simplified or alarmist.</i> • <i>Educate people about the weather events and what they can do to beat protect themselves and their property (safe place to go, reinforced materials, do not go outside, park your vehicle in a covered place, make sure your trees are healthy and strong).</i> • <i>Provide more information on what resources are available in the community other than 911.</i>
EMERGENCY SERVICES	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Expand funding to support emergency responders and equipment</i> • <i>Conduct emergency exercises that include the public</i>
FLOOD RISK REDUCTION	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Prevent future and remove current development in the floodplain</i> • <i>Construct/install additional and maintain current flood control structures (dams, reservoirs, levees)</i> • <i>Clear waterways of debris or other restrictions</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Improve drainage near creeks and on streets prone to standing water. Invest in road technology that regulates temperature for safer winter driving.</i> • <i>Invest in nature based solutions; invest in buyouts and restoring the floodplain; promote benefits/use of conservation easements as a necessary tool/support Nebraska Environmental Trust</i>
INFRASTRUCTURE	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Maintain and invest in infrastructure</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Stay on top of keeping things repaired and in good working order. Warning systems, levees etc.</i>
PLANNING	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Develop a comprehensive disaster response plan available for residents to reference</i> • <i>Utilize smart development planning for future city expansion</i>

CATEGORY OF RESPONSE	COMMENTS
POWER	<ul style="list-style-type: none"> • <i>Encourage residents to develop and exercise Home Emergency Preparedness Plans</i> • <i>Adopt and enforce more stringent building codes and zoning regulations in hazardous areas</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>A disaster plan available for all to have access. Knowing what to do or where to care in case of emergency</i> • <i>Encourage families/individuals to create safety plans. Maybe apps that help do that.</i> • <i>People should know how to make and stock an evac kit. Have copies of documents in another location. The govt agencies need to assist people to safety and provide resources for health and getting back to work</i> <ul style="list-style-type: none"> • <i>Tools to help evaluate risk of various threats and build a plan/checklist for families, individuals, or small businesses.</i> <p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Bury overhead power lines</i> • <i>Remove hazardous trees and tree limbs from overhead power lines</i> • <i>Diversify power resources by utilizing renewables</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Have back-up systems in place such as generators if power goes out</i> • <i>Reinforce power and water infrastructure, redundancies, planned emergency responses</i>
SHELTERS	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Install or require shelters in apartment buildings</i> • <i>Build community center to serve as shelters and educational centers</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Build community centers. A place for neighborhood areas to gather for activities and to get to know each other. If there is a sense of community in a neighborhood, people will take care of each other costing the city less money overall. It also builds pride in communities.</i> • <i>Talk about tornado plans if you live in an apartment. There's lots of safety precautions for homeowners telling them to stay in the basement but none for people living in apartments.</i>
SNOW REMOVAL	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Improve/continue pretreating roads for snow/ice</i> • <i>Improve snow removal resources and actions</i>
TRANSPORTATION	<p>Overall Trend:</p> <ul style="list-style-type: none"> • <i>Improve road maintenance and safety measures for residents and emergency/utility personnel, especially during winter weather events</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Increase public transportation to limit vehicle traffic and minimize the impact of severe weather on transportation system.</i>
TREE MAINTENANCE	<p>Overall trend:</p> <ul style="list-style-type: none"> • <i>Remove old, dying trees and hazardous tree limbs, specifically around power lines and critical facilities or older more vulnerable areas of the city</i> <p>Specific Comments:</p> <ul style="list-style-type: none"> • <i>Cut down all old/dangerous trees. City arborist need to be increased to keep a check on trees. Increase fines for vacant lot owners who ignore lots.</i>

CATEGORY OF RESPONSE	COMMENTS
	<ul style="list-style-type: none"> • <i>Enact local ordinances (and enforce them) regarding tree health - such as pruning and removal to mitigate or avoid tree and branch damage caused during wind events. Dead trees should be removed, large trees should be pruned to reduce wind resistance.</i>

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Omaha has a number of offices or departments that may be involved in implementing hazard mitigation initiatives. The City has a mayor and a seven member council and the following offices.

- Mayor's Office
- City Clerk
- Finance Department
- Fire Department
- Human Resources
- Library
- Parks, Recreation, & Public Property
- Planning Department
- Police Department
- Public Works
- Tree Board

Capability Assessment

The capability assessment consisted of a Capability Assessment Survey completed by the jurisdiction and a review of local existing policies, regulations, plans, and the programs. The survey is used to gather information regarding the jurisdiction's planning and regulatory capability; administrative and technical capability; fiscal capability; and educational and outreach capability.

Table OMA.5: Capability Assessment

SURVEY COMPONENTS/SUBCOMPONENTS	YES/NO	
PLANNING & REGULATORY CAPABILITY	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Emergency Operational Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	Yes
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	Yes

SURVEY COMPONENTS/SUBCOMPONENTS		Yes/No
	Other (if any)	
ADMINISTRATIVE & TECHNICAL CAPABILITY	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
FISCAL CAPABILITY	Capital Improvement Plan/ 1 & 6 Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	Yes
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
EDUCATION & OUTREACH CAPABILITY	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	<i>Yes (Red Cross, Salvation Army, etc.)</i>
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	Yes
	Other (if any)	

OVERALL CAPABILITY	LIMITED/MODERATE/HIGH
FINANCIAL RESOURCES NEED TO IMPLEMENT MITIGATION PROJECTS	High
STAFF/EXPERTISE TO IMPLEMENT PROJECTS	High
COMMUNITY SUPPORT TO IMPLEMENT PROJECTS	Moderate
TIME TO DEVOTE TO HAZARD MITIGATION	High

Plan Integration

The Local Emergency Operations Plan (LEOP) for Omaha, which was last updated in 2015, is an annex of Douglas County's LEOP. It is an all-hazards plan that does not address specific natural and man-made disasters. It provides a clear assignment of responsibility in case of an emergency, shelter locations, evacuation procedures, and roles and responsibilities.

Omaha's Master Plan includes the following elements: Concept Element, Environment Element, Public Facilities Element, Housing Element, Transportation Element, Future Land Use Element, Parks Master Plan Element, and Urban Development Element. These elements are updated and reviewed separately and on an as needed basis per element. The local planning team noted the Future Land Use element is updated the most frequently to reflect changes in development or redevelopment for the City and the Environmental Element includes a Sanitary Sewer Master Plan which is updated every three years.

The Environmental Element mentions Hazard Mitigation, and the hazards identified in the plan. It discusses the need for mitigation to reduce or eliminate the vulnerability of people and property from natural hazards and their effects. One of several objectives listed in the plan includes the need to minimize the potential for flooding as well as the potential cost of damage and loss of life in case of flooding. It notes that development within the floodplain should be prevented or reduced. Additionally, it suggests that the city strengthen the emergency response warning system to reach all residents and address language barriers and to actively plan for community safety, including climate change and emergency prevention and adaptability. As part of the Future Land Use Element and Environmental Element, there are two environmental overlay districts in the city – North Hill (created in 1980) and Lake Cunningham (created in 2018). These districts include restrictions and guidance for grading, stormwater management, required tree canopy coverage, and require special permitting if any threshold is exceeded. Overlays can be seen on the Future Land Use Map.

Omaha's Floodplain Ordinance was last updated in 2014. The ordinance requires all new construction, cumulative substantial improvements, or substantial improvements of residential structures have the lowest floor elevated to or above one foot above the base flood elevation. Additionally, there are restrictions in place that limit development to only 25% of the flood fringe area. Since the ordinance includes a one foot freeboard, this should be sufficient in reducing losses in current and most likely future flooding conditions. Development of residential structures in the floodway are prohibited. The Zoning Ordinance contains flood fringe and floodway overlay districts that set conditions, as described in the floodplain ordinance, for land use within these districts. Buoyant, flammable, explosive, or could be injurious is prohibited in the floodplain. The storage of material is allowed if firmly anchored to prevent flotation during a flood. The zoning ordinance is updated on an as needed basis. All new development areas are required to meet current stormwater system regulations, but it should be noted some areas still have combined systems.

The Subdivision Regulations contain restrictions for subdivision development where land is known to flood or have poor drainage. It states that if a subdivision is traversed by the Big Papillion, Little Papillion, or West Branch Papillion Creeks, there must be a permanent easement allowed for construction, operation, and maintenance of the channel and flood control improvements and public recreational trails.

As of August 2020, the city has adopted the International Building Code (2012 edition) but will be updating to the 2018 IBC by the end of 2021.

Local police and fire departments are integrated into City services and have mutual aid agreements in place for assistance during disaster events.

The Omaha Suburban Park Master Plan was updated in 2016 and provides an overview of all city parks and recreation spaces. As of the plan update, the city had 229 park units with 9,552 acres. Many city parks are located along the eastern edge of the city and border the Missouri River. The Suburban Park Master Plan was developed in concurrence with the City of Omaha Master Plan. Values discussed in the plan which align with hazard mitigation principals, such as maintaining functionality of natural landscapes.

The City of Omaha is located within the Papio Watershed and is included in the Papillion Creek Watershed Plan which was last updated in 2019. This plan was developed specifically to look at stream degradation in the watershed and future impacts. The overall goal of the plan is to inform new policies for stream setback for all new development throughout the watershed and ensuring all communities in the watersheds are cohesive in their stormwater management policies and guidelines. As redevelopment efforts expand across the city, the local planning team noted changes may occur to the Dodge Street corridor and Crossroads (72nd and Dodge).

The Omaha Capital Improvement Plan is currently being updated to the 2021-2026 CIP. The six-year CIP is adopted annually along with the City budget and serves as the primary tool for coordinating major projects involving the City's street and sewer systems, parks, public facilities, and other infrastructure. At this time major programs include the Combined Sewer Overflow (CSO) and the recertification and repair work being done on the Missouri River Levee.

The CSO program is an EPA mandated endeavor to reduce the volume of combined sewer overflows entering waterways, primarily in the eastern third of the city. This program has been ongoing in the past decade with an additional seventeen years to completion (2037). This estimated \$2.4 billion program is being funded primarily by sewer ratepayers, with some supplemental funding from grant programs. While primarily aimed at addressing water quality issues, it remains an ongoing and high priority program for the City and is currently the largest earmarked program on the annual City budget.

The city's two wastewater treatment plants, Papillion Creek and Missouri River facilities, were granted HMGP funding in early 2021 from the major disaster declaration, DR-4420, to develop Flood Risk Assessment and Emergency Response Plans. This planning related activity aims to enhance and provide information for this local hazard mitigation plan. The plans will provide information on the facilities' flood risk, vulnerabilities, and identified mitigation strategies. The planning process is currently underway and will be completed in 2022. Information from these plans will be integrated into this HMP upon completion.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (i.e. annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this community profile as changes occur, projects are implemented, or after a major event. The local planning team includes members from various departments from the city including: the Mayor's Office, Parks and Recreation, Public Works, Planning and Zoning, and County Emergency Management.

The local planning team will review the plan no less than annually, particularly after major events occur or as CRS updates are required. The city will include the public in the review and revision process by: holding public meetings, updating the community website, social media posts, and releases with local media outlets.

Mitigation Strategy

Completed Mitigation Actions

MITIGATION ACTION		FLOODPLAIN REGULATION ENFORCEMENT/UPDATES
DESCRIPTION		Continue to enforce local floodplain regulations for structures located in the 1 percent annual chance floodplain. Continue education of building inspectors or Certified Floodplain Managers.
HAZARD(S) CATEGORY OF FLOODPLAIN MANAGEMENT		Flooding Preventive
STATUS		Current floodplain regulations are sufficient and are enforced as appropriate. The City maintains at least one Certified Floodplain Manager staff member which meets local needs.

MITIGATION ACTION		PROMOTE INFILTRATION
DESCRIPTION		Convert concrete-lined channels to natural channels to promote infiltration.
HAZARD(S) CATEGORY OF FLOODPLAIN MANAGEMENT		Flooding Structural Projects
STATUS		Hell Creek was converted through NET grant funding and NRD cost-share partnership. No other concrete lined channels have been identified for improvement.

Continued Mitigation Actions

CRS Related Mitigation Actions

The local planning team met to discuss a wide range of possible mitigation activities that the city could include in the HMP to improve flood resiliency. As required for Activity 510 *Floodplain Management Planning* for consideration of CRS points, the discussion included activities that are currently implemented or ongoing that should be added to this HMP as well as activities that were not selected as they were either inappropriate for the community or not feasible. As part of the CRS process, the local planning team for the City of Omaha identified mitigation strategies to address the six categories of mitigation actions³⁹. These actions and subsequent descriptions of each are listed below:

Categories of Floodplain Management

- Preventive Measures
 - Community Rating System
 - Community Wide Master Plan to Prioritize all Flood Projects
 - Low Impact Development
 - Stormwater Management Committee
- Property Protection
 - Facility Flood Proofing
 - Mitigate Repetitive Loss Properties
 - Parcel Level Evaluation of Flood Prone Properties
 - Sewer Infrastructure Upgrades and Improvements
 - Site Hardening
- Natural Resource Protection
 - Bank Stabilization for Erosion Control
 - Floodplain Management
 - Wetlands Protection
- Emergency Services
 - Develop Flood Assistance Strategies
 - Emergency Management Exercise
- Structural Flood Control Projects
 - Upgrades and Improvements to Levees MR-R-613 and MR-R-616
 - Levee Certification and Accreditation
 - Protect Sanitary Sewer Stream Crossing (#1)
 - Protect Sanitary Sewer Stream Crossing (#2)
 - Protect Sanitary Sewer Stream Crossing (#3)
 - Protect Sanitary Sewer Stream Crossing (#4)
 - Protect Sanitary Sewer Stream Crossing (#5)
- Public Information
 - Risk Communication

³⁹ FEMA. October 2018. "Mitigation Planning and the Community Rating System Key Topics Bulletin." https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-planning-and-the-community-rating-system-key-topics-bulletin_10-1-2018.pdf.

MITIGATION ACTION	BANK STABILIZATION FOR EROSION CONTROL
DESCRIPTION	Stabilize banks along streams and rivers. This may include, but is not limited to reducing bank slope, addition of riprap, installation of erosion control materials/fabrics.
HAZARD(S)	Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT	Natural Resource Protection
ESTIMATED COST	Varies
FUNDING	City budget, FMA, BRIC, P-MRNRD
TIMELINE	5+ years
PRIORITY	High
LEAD AGENCY	Public Works, Parks, P-MRNRD
STATUS	The March 2019 flood event identified areas with erosion issues. Thomas Creek and Blood Creek are currently being evaluated for stabilization and restoration efforts. Other areas at need include the Oakbrook channel system and the Cole Creek System. Project area determines lead agency (streams in parks are Parks Dept, through city are Public Works, etc.) The City's CIP includes line items for channel and stream bed restoration.
CURRENTLY MEETING EXPECTATIONS?	Yes

MITIGATION ACTION	COMMUNITY RATING SYSTEM
DESCRIPTION	Improve overall standing as an NFIP Community Rating System (CRS) community to reduce flood insurance premiums.
HAZARD(S)	Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT	Preventive
ESTIMATED COST	Staff Time
FUNDING	N/A
TIMELINE	2-5 years
PRIORITY	High
LEAD AGENCY	Floodplain Administrator, Planning Department
STATUS	The City is currently discussing updating to 2018 IBC which would allow the city to improve overall CRS standing in a future CRS verification visit.
CURRENTLY MEETING EXPECTATIONS?	Yes

COMMUNITY WIDE MASTER PLAN TO PRIORITIZE ALL FLOOD PROJECTS	
MITIGATION ACTION	
DESCRIPTION	Identify potential flooding sources and flood-vulnerable areas. Explore solutions and prioritize projects. Develop and maintain a list of flood risk reduction projects, priority areas, and cost-benefit analysis for each project.
HAZARD(S)	Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT	Preventive
ESTIMATED COST	Staff Time
FUNDING	City budget
TIMELINE	5+ years
PRIORITY	High
LEAD AGENCY	Public Works, Planning Department
STATUS	While projects are identified on an as needed basis, they are prioritized and funding is allocated as available. A full list of completed, ongoing, and potential future projects should be developed to assist in prioritizing projects and available funding. Current prioritized projects include response plans and facility upgrades to various Water Resource Recovery Facilities (i.e. wastewater treatment plants).
CURRENTLY MEETING EXPECTATIONS?	Yes

DEVELOP FLOOD ASSISTANCE STRATEGIES	
MITIGATION ACTION	
DESCRIPTION	Develop strategies and projects to assist landowners and private property receive necessary emergency and utility services in the event of flooding or other major disaster events.
HAZARD(S)	Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT	Emergency Services
ESTIMATED COST	Staff Time
FUNDING	N/A
TIMELINE	5+ years
PRIORITY	Medium
LEAD AGENCY	Planning Department,
STATUS	The City has good working relationships between OPPD and the Electrical Department to return power to residents. During the March 2019 flood event, it was determined additional assistance was needed for property inspections, primarily in the Elkhorn River basin area. Additionally, septic tanks and systems are primarily private and additional strategies are needed to address proper response after a disaster.
CURRENTLY MEETING EXPECTATIONS?	Yes

MITIGATION ACTION		EMERGENCY MANAGEMENT EXERCISE	
DESCRIPTION	Develop and facilitate an exercise to identify gaps in planning and to ensure that community response plans are sufficient to meet the needs of the jurisdiction. Develop after action report and plan for city actions post exercise.		
HAZARD(S)	Flooding, Dam Failure, Levee Failure, Tornado, Chemical Spills		
CATEGORY OF FLOODPLAIN MANAGEMENT	Emergency Services		
ESTIMATED COST	\$10,000		
FUNDING	City budget, BRIC, HMGP		
TIMELINE	5+ years		
PRIORITY	Low		
LEAD AGENCY	Fire Department (Fire Chief), Douglas County Emergency Management Agency, Emergency Response entities as applicable		
STATUS	Douglas County EMA had begun development of an emergency exercise in early 2020, however due to COVID-19 the exercise was cancelled. Additional exercise activities should be explored in the future with an emphasis on partnering with the City and appropriate departments as identified per the type of event. Douglas County EMA regularly hosts hazard event exercises, primarily with emergency response representatives. Additionally, the City will continue to be invited to/attend Dam Failure exercises as hosted by the NRD, Douglas County EMA, NeDNR, and/or USACE.		
CURRENTLY MEETING EXPECTATIONS?	Yes		

MITIGATION ACTION		FACILITY FLOOD PROOFING	
DESCRIPTION	Explore the possibility of flood proofing for facilities which fall into the one percent annual chance floodplain.		
HAZARD(S)	Flooding		
CATEGORY OF FLOODPLAIN MANAGEMENT	Property Protection		
ESTIMATED COST	\$3M for Papio, \$19M for MO River		
FUNDING	HMGP and Sewer Revenue		
TIMELINE	2-5 years		
PRIORITY	High		
LEAD AGENCY	Public Works		
STATUS	Two lift station facilities are currently undergoing floodproofing. Papio station is at 60% design phase, expected completion by 2021. MO River station expects study phase for design to take place in 2021 and construction in 2022. Additionally the city identified the need to evaluate all stormwater pump stations for current capabilities and future floodproofing needs.		
CURRENTLY MEETING EXPECTATIONS?	Yes		

MITIGATION ACTION		FLOODPLAIN MANAGEMENT
DESCRIPTION	Preserve natural and beneficial functions of floodplain land through measures such as retaining natural vegetation, restoring streambeds, and preserving open space in the floodplain, particularly for parks located near flood prone areas.	
HAZARD(S)	Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Natural Resource Protection	
ESTIMATED COST	Varies	
FUNDING	City budget, FMA, BRIC	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	Parks and Recreation, Planning and Zoning Department, Public Works	
STATUS	<p>The NP Dodge park was damaged during March 2019 flood and is expected to reopen as a park but without the structures. This park will be maintained as an open space area. The campground was removed in the past, while the soccer and ballfields removed post event. Local baseball groups assisting with cost.</p> <p>Freedom Park has numerous historical and military structures – leased to a private company and will remain in place. Currently cost to relocate structures is prohibitive. Knolls Golf Course has some stream restoration projects identified.</p> <p>Currently, city subdivision regulations include minimum setbacks to waterways – but the city is discussing if those measures are sufficient or if they should be increased. These regulations are the main way the city maintains greenspace and floodplain areas.</p>	
CURRENTLY MEETING EXPECTATIONS?	Yes	
MITIGATION ACTION		LEVEE CERTIFICATION AND ACCREDITATION
DESCRIPTION	Work with USACE and Papio-Missouri River NRD to recertify the Missouri River Levee.	
HAZARD(S)	Levee Failure, Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Flood Control Projects	
ESTIMATED COST	\$6 million	
FUNDING	City budget, USACE, P-MRNRD cost share	
TIMELINE	2-5 years	
PRIORITY	High	
LEAD AGENCY	Public Works	
STATUS	This is a new mitigation action.	

MITIGATION ACTION		LOW IMPACT DEVELOPMENT
DESCRIPTION	Utilize low impact development practices and green infrastructure to reduce flood risk.	
HAZARD(S)	Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Preventive	
ESTIMATED COST	Variable	
FUNDING	City budget, BRIC, FMA	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	Planning Department	
STATUS	The city has restrictive ordinances in place for development in the floodway and flood fringe areas. Although no projects are currently identified, the City of Omaha will continue to explore opportunities for low impact development and green infrastructure. No changes to floodplain or stormwater management regulations are anticipated at this time.	

MITIGATION ACTION		MITIGATE REPETITIVE LOSS PROPERTIES
DESCRIPTION	Mitigate repetitive loss properties through voluntary acquisition, elevation, etc.	
HAZARD(S)	Flood	
CATEGORY OF FLOODPLAIN MANAGEMENT	Property Protection	
ESTIMATED COST	Varies	
FUNDING	Douglas County EM, City of Omaha, FEMA, NEMA, P-MRNRD, HMGP, BRIC	
TIMELINE	5+ years	
PRIORITY	High	
LEAD AGENCY	Public Works, Planning Department, Floodplain Administrator	
STATUS	Over the past five years properties were acquired along Cole Creek. As part of the CRS program, the city reviews a list for repetitive loss properties as provided by state partners. However, during the most recent CAV, this information was unavailable due to privacy concerns. This is an ongoing project, however additional information and data is needed from partner agencies to pursue additional action.	
CURRENTLY MEETING EXPECTATIONS?	No – need additional support and data from state agencies.	

MITIGATION ACTION		PARCEL LEVEL EVALUATION OF FLOOD PRONE PROPERTIES
DESCRIPTION	Conduct a study examining parcels located in flood prone areas and identify mitigation measures that can reduce future impacts.	
HAZARD(S)	Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Property Protection	
ESTIMATED COST	\$50,000	
FUNDING	City budget, FMA	
TIMELINE	5+ years	
PRIORITY	Low	
LEAD AGENCY	Planning and Zoning, Public Works	
STATUS	An evaluation of Cole Creek is currently under development. Other flood prone areas have not yet been evaluated. Additional areas may need to be included once floodplain remapping efforts are completed.	
CURRENTLY MEETING EXPECTATIONS?	Yes	

MITIGATION ACTION		PROPERTY OWNER PUBLIC INFORMATION
DESCRIPTION	As new mapping efforts are completed, newly added properties to the floodplain should be notified and informed. The city should consider working with the NRD to host a map server with changes to floodplain status, info with insurance changes for required flood insurance requirements. Host an open house with FEMA/DNR experts.	
HAZARD(S)	Flooding, Levee Failure	
CATEGORY OF FLOODPLAIN MANAGEMENT	Public Information	
ESTIMATED COST	\$10,000+, Staff Time	
FUNDING	General Fund, P-MRNRD	
TIMELINE	2-5 years	
PRIORITY	High – particularly for property owners with changed floodplain status	
LEAD AGENCY	Planning and Zoning	
STATUS	This is a new mitigation action.	

MITIGATION ACTION		PROTECT SANITARY SEWER STREAM CROSSING (#1)
DESCRIPTION	Facility ID 0281052 – 6707 Wenninghoff Road: the 1998 ductile iron sanitary sewer 2-barrel 6” siphon at this location has been exposed due to stream erosion and is at risk to failure. A series of four in-stream rock grade control structures is recommended to manage stream energies and restore cover to the siphon. A concrete grade control structure at the siphon is also recommended to protect the pipes from further undermining.	
HAZARD(S)	Flooding, Severe Thunderstorms	
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Flood Control Projects	
ESTIMATED COST	\$300,000	
FUNDING	Omaha SRI, FMA, BRIC, P-MRNRD, others	
TIMELINE	1-2 years	
PRIORITY	High	
LEAD AGENCY	Public Works	
STATUS	This is a new mitigation action. A CIP project recommendation has been developed and is ready to proceed to design phase.	

MITIGATION ACTION		PROTECT SANITARY SEWER STREAM CROSSING (#2)
DESCRIPTION	Facility ID 0857008 (0857502i-exposure note) – 11501 Farnam Street: this 1962 18” cast iron aerial crossing pipe has experienced damage due to high stream flows and accumulation of debris. Recommended mitigation at this location includes rebuilding the crossing with new concrete abutments set back into the stream bank. New concrete piers are also recommended to support the new steel support pipe.	
HAZARD(S)	Flooding, Severe Thunderstorms	
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Flood Control Projects	
ESTIMATED COST	\$140,000	
FUNDING	Omaha SRI, FMA, BRIC, P-MRNRD, others	
TIMELINE	1-2 years	
PRIORITY	High	
LEAD AGENCY	Public Works	
STATUS	This is a new mitigation action. A CIP project recommendation has been developed and is ready to proceed to design phase.	

MITIGATION ACTION		PROTECT SANITARY SEWER STREAM CROSSING (#3)
DESCRIPTION	Facility ID 0426051 (0425502i – collar node) – 3909 N 117 th Street: stream erosion has exposed the 1968 cast iron sewer pipe at this location and threatened the concrete collars. The commended solution includes protecting the interceptor at two locations as well as the adjacent manhole. This would include nudging the creek to the south away from the manhole, building a rock revetment on the north bank, extend the storm outfall over the interceptor, and construct a grade control encasement over the pipe crossing the creek.	
HAZARD(S)	Flooding, Severe Thunderstorms	
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Flood Control Projects	
ESTIMATED COST	\$165,000	
FUNDING	Omaha SRI, FMA, BRIC, P-MRNRD, others	
TIMELINE	2-3 years	
PRIORITY	High	
LEAD AGENCY	Public Works	
STATUS	This is a new mitigation action. A CIP project recommendation has been developed and is ready to proceed to design phase.	

MITIGATION ACTION		PROTECT SANITARY SEWER STREAM CROSSING (#4)
DESCRIPTION	Facility ID 0384354 (0384357i exposure note) – 7949 Blaire High Road: the 2003 10” PVC sanitary sewer crossing at this location has failed repeatedly, primarily due to stream instability caused by development in the watershed. Short-term repair recommendations include constructing a concrete encasement to protect the pipe from further incision. Long-term relocation of the crossing is recommended as part of future development of the adjacent agricultural fields (not included with this mitigation action).	
HAZARD(S)	Flooding, Severe Thunderstorms	
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Flood Control Projects	
ESTIMATED COST	\$75,000	
FUNDING	Omaha SRI, FMA, BRIC, P-MRNRD, others	
TIMELINE	4-5 years	
PRIORITY	High	
LEAD AGENCY	Public Works	
STATUS	This is a new mitigation action. A CIP project recommendation has been developed and is ready to proceed to design phase.	

MITIGATION ACTION		PROTECT SANITARY SEWER STREAM CROSSING (#5)
DESCRIPTION	Facility ID 1234012 – 1642 N 174 th Street: head cutting in the stream has exposed the 2005 sanitary sewer triple-barrel HDPE siphon at this location. This system runs parallel to a pedestrian bridge and collects over 800 acres of residential wastewater. A sheet pile grade control structure immediately downstream is recommended to stabilize and restore the stream bed and cover over the pipe.	
HAZARD(S)	Flooding, Severe Thunderstorms	
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Flood Control Projects	
ESTIMATED COST	\$655,000	
FUNDING	Omaha SRI, FMA, BRIC, P-MRNRD, others	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	Public Works	
STATUS	This is a new mitigation action. A CIP project recommendation has been developed and is ready to proceed to design phase.	

MITIGATION ACTION		RISK COMMUNICATION
DESCRIPTION	Provide information on the floodplain to area residents. Outreach activities may include distributing maps, evacuation plans, environmental education, etc.	
HAZARD(S)	Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Public Information	
ESTIMATED COST	\$20,000	
FUNDING	City budget, HMGP, FMA, BRIC	
TIMELINE	2-5 years	
PRIORITY	High	
LEAD AGENCY	Planning Department	
STATUS	City sends out notifications to property owners for S/RL properties (as lists are provided from state agencies – updated information is needed). Additionally, flood risk information is available online for residents through CRS Activity 300 requirements with supplemental information available at the library. In the next five years the City is looking to update and improve accuracy of lists of flood prone areas and create contact lists for insurance/brokers in the city to ensure they provide adequate and accurate flood information to consumers.	
CURRENTLY MEETING EXPECTATIONS?	Yes	

SEWER INFRASTRUCTURE UPGRADES AND IMPROVEMENTS	
MITIGATION ACTION	
DESCRIPTION	Explore upgrading and improving storm and sanitary sewer infrastructure that have been identified as in critical condition or in a high-risk location near streams or levees.
HAZARD(S) CATEGORY OF FLOODPLAIN MANAGEMENT	Flooding, Levee Failure Property Protection
ESTIMATED COST	\$50M+ Project cost includes approximately \$8.8M for Copper Creek Interceptor Sewer Relocation, \$6.5M for Omaha South Papio Interceptor Siphon (Giles Rd Siphon), and \$6M for 36 th Street siphon.
FUNDING	City Budget, HMA
TIMELINE	5+ years
PRIORITY	High
LEAD AGENCY	Public Works
STATUS	Both the Omaha South Papio Interceptor Siphon and Copper Creek Sewer Interceptor Relocation projects are planned for final design completion by early 2022 and start of construction by the fall of 2022. The 36th Street siphon project is scheduled for early 2022 construction but is currently in the funding application process. Other projects to be completed based on risk evaluations.
CURRENTLY MEETING EXPECTATIONS?	Yes

SITE HARDENING	
MITIGATION ACTION	
DESCRIPTION	Identify needs for critical systems and consider moving electrical systems to higher floors or the roof rather than the basement
HAZARD(S) CATEGORY OF FLOODPLAIN MANAGEMENT	Flooding, Severe Thunderstorms, High Winds and Tornadoes Property Protection
ESTIMATED COST	Grace Street \$500-\$750k, Hickory Station (unknown cost PL-94)
FUNDING	City budget, HMA flood damage reimbursements for Grace Street, USACE cost share or full coverage for Hickory (TBD).
TIMELINE	2-5 years
PRIORITY	High
LEAD AGENCY	Public Works
STATUS	Improvements are currently in progress. Papio WRRF relocating electrical equipment based on where it's located on the property. Some electrical relocation will likely occur at MO river – to be determined once design is completed. A Grace Street CSO screen hardening project is at 60% design and the Hickory (pumping station) is currently underway raising electrical equipment,
CURRENTLY MEETING EXPECTATIONS?	Yes

MITIGATION ACTION		STORMWATER MANAGEMENT COMMITTEE
DESCRIPTION	Establish a stormwater development committee to oversee improvements to the stormwater system and to respond to community concerns.	
HAZARD(S)	Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Preventive	
ESTIMATED COST	Staff Time	
FUNDING	N/A	
TIMELINE	1 year	
PRIORITY	Medium	
LEAD AGENCY	Public Works	
STATUS	No official committee has been established, but regular meetings are held to establish priority areas or areas in need of resources. City staff also attend monthly update meetings between the P-MRNRD, Parks, Public Works. Improved communication is a priority and need. The City will evaluate if additional communication procedures or specific committees are needed by the end of 2021.	
CURRENTLY MEETING EXPECTATIONS?	No – evaluation to be completed by 2021.	

MITIGATION ACTION	UPGRADES AND IMPROVEMENTS TO LEVEES MR-R-613 AND MR-R-616
DESCRIPTION	Complete construction upgrades and improvements to levees MR-R-613 and 616 in order to maintain FEMA accreditation. These levees protect Offutt and the Papillion Creek Wastewater Treatment Plant at the mouth of the river.
HAZARD(S)	Flooding, Levee Failure
CATEGORY OF FLOODPLAIN MANAGEMENT	Structural Projects
ESTIMATED COST	\$32 million (City has \$3,000,000 share)
FUNDING	P-MRNRD, City of Bellevue, City of Omaha, Sarpy County, State of Nebraska
TIMELINE	2-year construction timeframe
PRIORITY	High
LEAD AGENCY	P-MRNRD, City of Omaha Public Works, City of Papillion, Sarpy County, USACE
STATUS	<p>The R-613-616 levee was overtopped during the 2019 flood along the left bank of the Papillion Creek approximately 9,000 lineal feet upstream of the Missouri River. The R-613 Levee was completely overtopped along the entire length of the Platte River, Missouri River and about 2 miles of the right bank Papillion Creek closest to the Missouri River.</p> <p>Under the PL84-99 program, USACE completed necessary repairs on all overtopped levee sections between July 2019 and April 2020. The P-MRNRD continues to complete the levee modifications required for accreditation including levee raises, seepage berms, and rehabilitated pipe penetrations. Completion of construction and submittal of levee certification documentation is anticipated by the end of 2021. Total costs of the USACE repairs was approx. \$10 million and the levee improvements are expected to exceed \$32 million.</p>
CURRENTLY MEETING EXPECTATIONS?	Yes

MITIGATION ACTION		WETLANDS PROTECTION
DESCRIPTION	Preserve and protect wetland areas	
HAZARD(S)	Flooding	
CATEGORY OF FLOODPLAIN MANAGEMENT	Natural Resource Protection	
ESTIMATED COST	Varies	
FUNDING	City budget, FMA	
TIMELINE	2-5 years	
PRIORITY	High	
LEAD AGENCY	Planning and Zoning	
STATUS	Omaha master plan requires all wetlands disturbed via development must be mitigated to a 3:1 ratio. Currently city is discussing with USACE and city offices if that standard is appropriate or additional changes are needed.	
CURRENTLY MEETING EXPECTATIONS?	Yes	

Continued non-CRS Mitigation Actions

MITIGATION ACTION		BURY POWER LINES
DESCRIPTION	Initiate a power line burying project	
HAZARD(S)	Tornado, Thunderstorm, High Wind, Hail, Sever Winter Storm	
ESTIMATED COST	\$2M per mile	
FUNDING	General Fund, Omaha Public Power District	
TIMELINE	5+ years	
PRIORITY	Low	
LEAD AGENCY	Public Works, OPPD	
STATUS	Currently exploring funding opportunities. Some power lines are currently being buried for outdoor warning sirens.	

MITIGATION ACTION		DATABASE OF VULNERABLE STRUCTURES
DESCRIPTION	Complete inventory of vulnerable structures	
HAZARD(S)	All	
ESTIMATED COST	Staff Time	
FUNDING	General Fund	
TIMELINE	5+ years	
PRIORITY	Low	
LEAD AGENCY	Planning Department	
STATUS	The city maintains a list of Repetitive Loss homes in the floodplain. No other inventories of vulnerable structures are currently developed but would be valuable for future CRS recertification efforts.	

MITIGATION ACTION		DEVELOP AN URBAN TREE MANAGEMENT PROGRAM
DESCRIPTION	Develop an urban tree management program, particularly for the Emerald Ash Borer. This would include an inventory of the location, size, and whether the tree can be or has been removed.	
HAZARD(S)	All hazards	
ESTIMATED COST	Staff Time, \$10,000	
FUNDING	City of Omaha	
TIMELINE	2-5 years	
PRIORITY	Medium	
LEAD AGENCY	Planning and Zoning, Parks Department	
STATUS	A committee has been established by Long Range Planning. The committee is currently establishing goals to create subcommittees on data collection and public outreach.	

MITIGATION ACTION		IDENTIFY, DESIGNATE AND PUBLICIZE TORNADO SHELTERS
DESCRIPTION	Identify, designate and publicize tornado shelters	
HAZARD(S)	Severe Thunderstorms, High Wind and Tornadoes	
ESTIMATED COST	Staff Time	
FUNDING	City of Omaha	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	City Administration	
STATUS	This project has not yet been started.	

MITIGATION ACTION		WEATHER RADIOS
DESCRIPTION	Ensure adequate severe weather notifications to critical facilities by purchasing weather radios	
HAZARD(S)	All	
ESTIMATED COST	\$50/radio	
FUNDING	City of Omaha, HMGP	
TIMELINE	2-5 years	
PRIORITY	Medium	
LEAD AGENCY	Every department responsible	
STATUS	This project has not yet been started.	

Removed Mitigation Actions

MITIGATION ACTION		CONTINUE ENFORCEMENT OF STORMWATER MANAGEMENT ORDINANCE
DESCRIPTION		Continue enforcement of stormwater management ordinance
HAZARD(S)		Flood, Thunderstorm, High Wind, Hail
CATEGORY OF FLOODPLAIN MANAGEMENT		Preventive
REASON FOR REMOVAL		While the City will continue to enforce the stormwater management ordinance as required, this project can be removed as it is a considered an ongoing effort.

MITIGATION ACTION		FLOODPLAIN REGULATIONS/DEVELOPMENT RESTRICTIONS
DESCRIPTION		Continue to enforce floodplain regulations and floodplain development restrictions.
HAZARD(S)		Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT		Preventive
REASON FOR REMOVAL		While the City will continue to enforce the floodplain regulations as required, this project can be removed as it is considered an ongoing effort however, continued enforcement is no longer considered a mitigation action by FEMA.

MITIGATION ACTION		IMPROVEMENTS TO FLOOD WARNING SYSTEM
DESCRIPTION		Update equipment, ensure equipment is in a secure location, and install additional gauges.
HAZARD(S)		Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT		Emergency Services
REASON FOR REMOVAL		Current flood warning system equipment is owned by other agencies including NWS, USGS, and P-MRNRD. Maintaining and updating that equipment is not the responsibility of the City.

MITIGATION ACTION		MAINTAIN GOOD STANDING IN NFIP
DESCRIPTION		Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
HAZARD(S)		Flooding
CATEGORY OF FLOODPLAIN MANAGEMENT		Property Protection
REASON FOR REMOVAL		While the community will continue to participate in the NFIP, this project can be removed as it is considered an ongoing effort.