

NATURAL RESOURCES DISTRICT PROFILE

UPPER BIG BLUE NATURAL RESOURCES DISTRICT



Upper Big Blue Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

2019

Local Planning Team

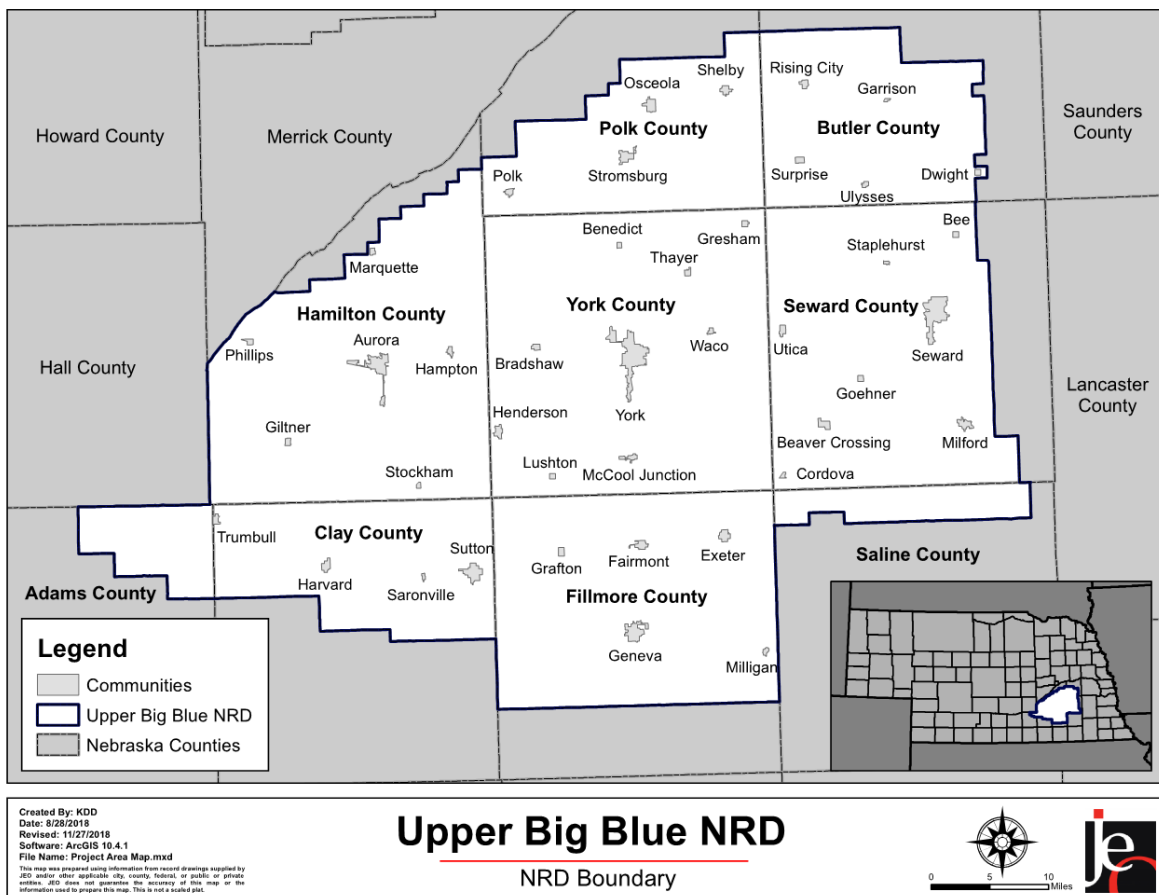
Table UBB.1: Upper Big Blue Local Planning Team

Name	Title	Jurisdiction
Rod DeBuhr	Assistant General Manager	Upper Big Blue NRD
Jack Wergin	Projects Department Manager	Upper Big Blue NRD
Jeff Ball	Lead Engineering Technician	Upper Big Blue NRD

Location and Geography

The Upper Big Blue NRD is located in east central Nebraska and is comprised of all of York County and portions of Adams, Butler, Clay, Fillmore, Hamilton, Polk, Saline, and Seward Counties (Figure UBB.1). Major waterways in the area include the Platte River, Big Blue River, and West Fork Big Blue River. The Upper Big Blue NRD topographic regions include plains and valleys and a vast majority of the NRD land is characterized by agricultural lands.¹ Altogether, the Upper Big Blue NRD covers an area of 2,865 square miles.

Figure UBB.1: NRD Boundary



Transportation

The NRD's major transportation corridors include U.S. Interstate 80 with 22,190 vehicles a day, U.S. Highway 6 with 3,615 vehicles a day, U.S. Highway 34 with 3,350 vehicles a day, U.S. Highway 81 with 3,970 vehicles a day, Nebraska Highway 14 with 2,650 vehicles a day, Nebraska Highway 15 with 3,515 vehicles a day, Nebraska Highway 66 with 1,230 vehicles a day, Nebraska Highway 69 with 980 vehicles a day, and Nebraska Highway 92 with 1,175 vehicles a day.ⁱⁱ The major railroads which travel through the NRD include the BNSF Railway, Nebraska Central Railroad Company, and Amtrak. 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. The local planning team indicated that a broad range of chemicals are regularly transported along all of the major transportation corridors.

Demographics

It is estimated that the Upper Big Blue NRD serves a population of about 56,000 people over 9 counties. However, the NRD does not collect the demographic information of the district's population, nor does the U.S. Census Bureau recognize the NRD as a distinct unit. As a result, there is no population data generated specifically for the NRD. For information regarding population data, please refer to a specific jurisdiction's community profile or to *Section Three: Demographics and Asset Inventory*.

Future Development Trends

In the last five years, a number of changes have occurred within the district. Improvements were added to Pioneer Trails Recreation Area located northeast of Aurora. Additions to the east side of the recreation area include a vault toilet, tent camping area, flush toilet, picnic shelter, amphitheater, and RV camping pads. A new public entrance and parking area were added in the northwest corner of the park. A new Upper Big Blue NRD office was also built in York.

New major facilities to the district include a new fertilizer plant located northeast of Geneva, a new corn stock/feed pellet plant located on the Northwest edge of York, three new wind turbines located west of Fairmont, and one new wind turbine located east of Tamora.

The Nebraska Department of Natural Resources is working with the Federal Emergency Management Agency (FEMA) to update flood risk information for communities throughout Nebraska. This effort is being completed under FEMA's Risk Mapping Assessment and Planning (Risk MAP) program. The Risk MAP project will produce regulatory products such as Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS). The project also creates non-regulatory flood risk projects which allow communities to make informed decisions about reducing flood loss and mitigating potential damage from flood hazards, all of which will increase public awareness of flood risk and lead to actions that reduce risk to life and property. Adams, Clay, Hamilton, York, and Seward counties were included in the Risk Map update.

Over the next five years an extension of the Seward hiking/biking trail is planned for development. Additional projects across the NRD are also being discussed, but nothing specific has been planned yet.

Parcel Improvements and Valuation

Please refer to the individual Community Profiles for information regarding parcel improvements, valuation, and discussion for specific jurisdictions across the planning area.

Critical Infrastructure/Key Resources

Chemical Storage Fixed Sites

Chemical sites are located throughout the NRD. Complete lists of chemical storage sites in each jurisdiction may be found in their community profile.

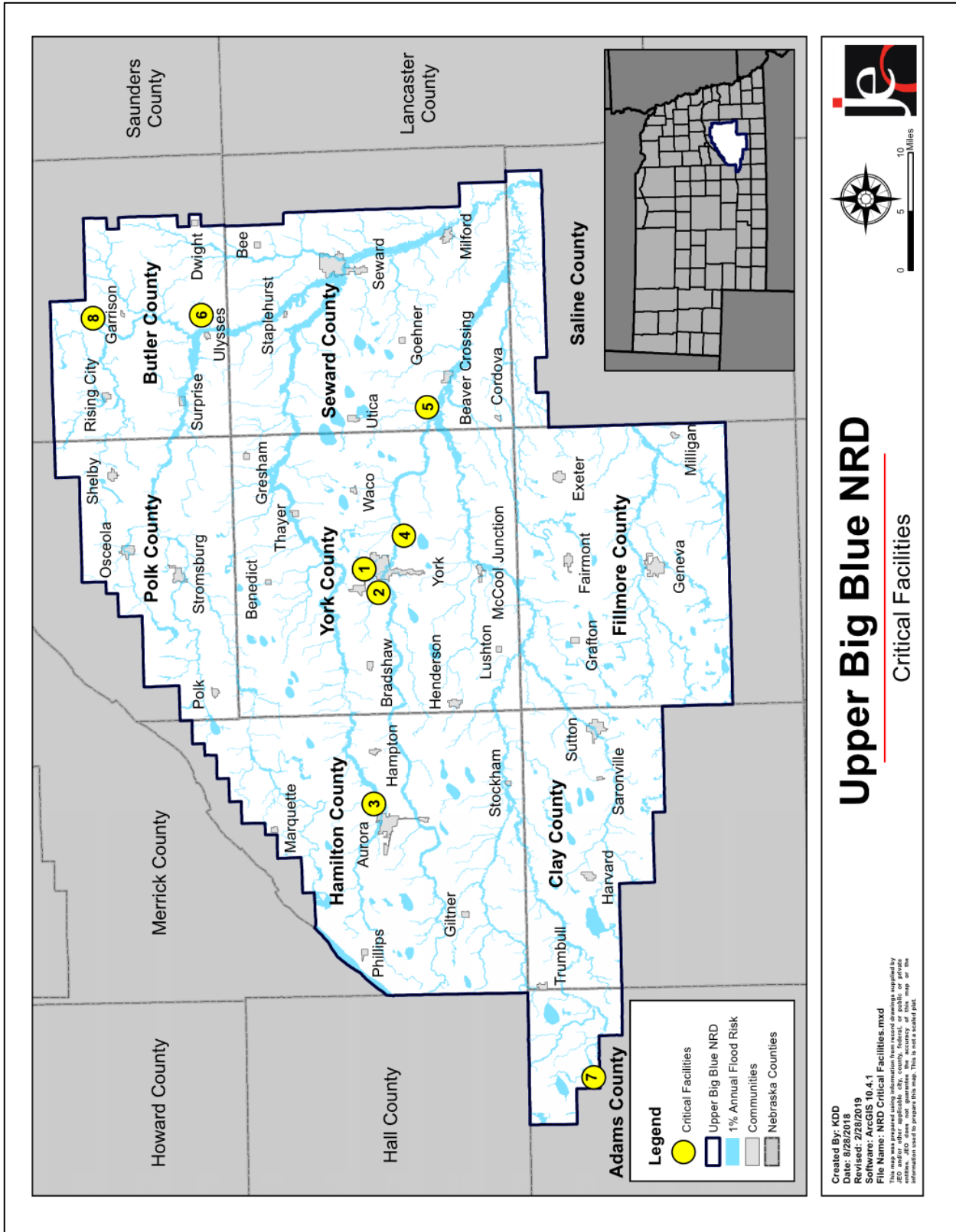
Critical Facilities

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. Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Table UBB.2: Critical Facilities

CF Number	Name	Red Cross Shelter (Y/N)	Generator (Y/N)	Located in Floodplain (Y/N)
1	Upper Big Blue NRD Office	N	N	N
2	Bruce Anderson Recreation Area & Recharge Dam (Significant Hazard Dam)	N	N	Y
3	Pioneer Trails Recreation Area	N	N	Y
4	Overland Trail Recreation Area	N	N	Y
5	Smith Creek Recreation Area	N	N	Y
6	Oxbow Trail Recreation Area & Oxbow Trails Dam (Significant Hazard Dam)	N	N	Y
7	Hastings NW Dam (High Hazard Dam)	N	N	Y
8	Streubing Dam (Significant Hazard Dam)	N	N	Y

Figure UBB.2: Critical Facilities



*Note: The floodplain in Adams, Clay, Hamilton, Seward, and York Counties is based off preliminary FIRM maps. Final effective FIRM maps are currently being produced.

Historical Occurrences

For the complete discussion on historical occurrences, please refer to *Section 4: Risk Assessment*.

Hazard Prioritization

For an in-depth discussion regarding area wide hazards, please see *Section Four: Risk Assessment*. The hazards discussed in detail below were prioritized by the local planning team based on the identification of hazards of greatest concern, hazard history, and the jurisdiction's capabilities.

Dam Failure

The dams of most concern for the Upper Big Blue NRD are the Hastings Northwest Dam, the Recharge Dam, Struebing Dam, and Oxbow Trail Dam. Background information, as well as, the main concern for each dam will be discussed in the paragraphs below.

The Hasting Northwest Dam is located approximately 1-mile northwest of the City of Hastings. This dam is owned by the Upper Big Blue NRD and has an emergency action plan which was updated in 2019 and is updated every 5 years. The Hastings Dam is a high hazard dam, which means a failure or mis-operation of the dam resulting in loss of human life is probable. This classification is based on proximity to the City of Hasting and dam failure flood inundation maps. If the dam were to fail, there would likely be damages to homes, businesses, roads, railroad, and displacement of families. The emergency action plan lists evacuation locations which would be run by the American Red Cross.

The Recharge Dam is located approximately 1-mile west of the City of York. This dam is owned by the Upper Big Blue NRD and does not need an evacuation plan. This dam is inspected every three years by the Nebraska Department of Natural Resources. The main concern with this dam is that it is a significant hazard dam. This means that a failure or mis-operation of the dam would result in no probable loss of human life, but could result in major economic loss, environmental damage, or disruption of lifeline facilities. The most likely impact of dam failure would be road damage and lowland property damage.

The Struebing Dam is located approximately 3-miles southwest of David City. This dam is owned by the Upper Big Blue NRD and does not need an evacuation plan. Struebing Dam is inspected every three years by the Nebraska Department of Natural Resources. The main concern with this dam is that it is a significant hazard dam. This means that a failure or mis-operation of the dam would result in no probable loss of human life, but could result in major economic loss, environmental damage, or disruption of lifeline facilities. The most likely impact of dam failure would be road damage and lowland property damage.

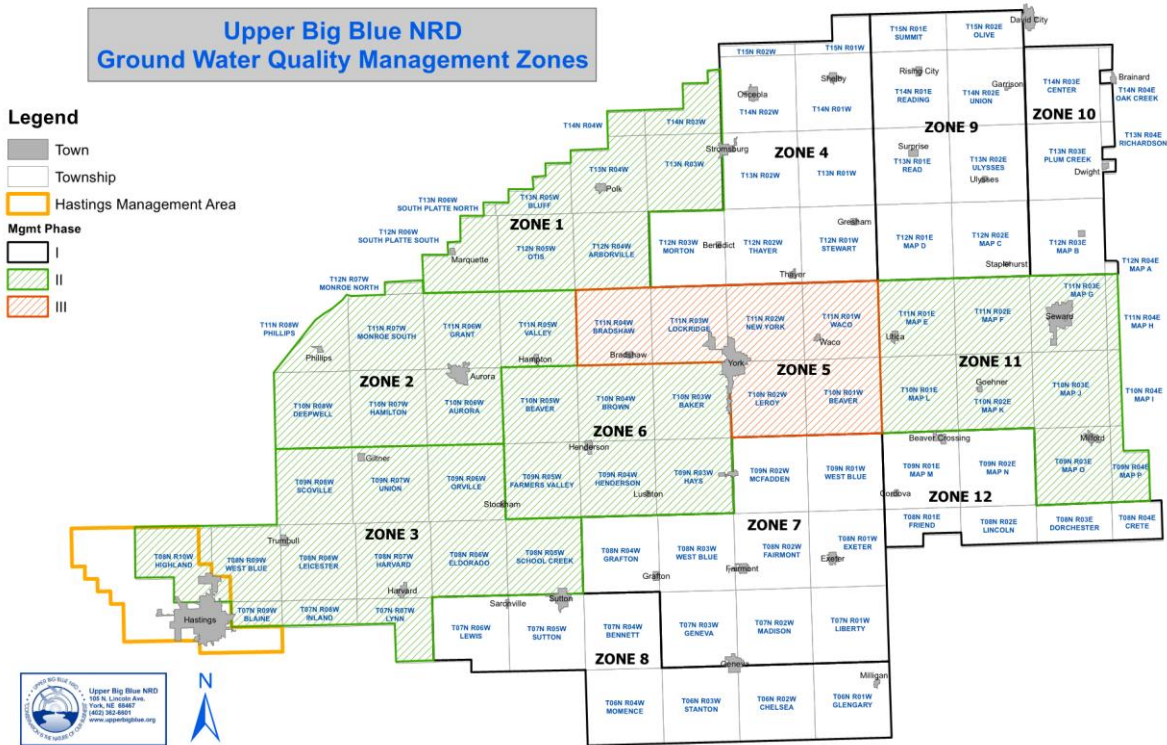
The Oxbow Trail Dam is located approximately 1.5 miles east of the Village of Ulyssess. This dam is owned by the Upper Big Blue NRD and does not need an evacuation plan. Oxbow Trial Dam is inspected every three years by the Nebraska Department of Natural Resources. The main concern with this dam is that it is a significant hazard dam. This means that a failure or mis-operation of the dam would result in no probable loss of human life, but could result in major economic loss, environmental damage, or disruption of lifeline facilities. The most likely impact of dam failure would be road damage and lowland property damage.

Drought

The long-term goal of the NRD is to hold the district groundwater level above the 1978 groundwater levels. The NRD has over 12 million irrigated acres. Extended periods of drought could result in increased groundwater withdrawals which would lower groundwater levels and trigger irrigation allocations. Past significant drought events occurred from 1988-1991, 2000-2006, and 2012-2013.

Drought conditions can exacerbate preexisting problems with high nitrates in the groundwater/drinking water supply. The NRD contains several areas with high nitrates. Zone 5 in the York area is in Phase III management, which has average nitrate levels above 10 ppm. The NRD's Zones 1,2,3,6, and 11 are Phase II management areas, which have average nitrate levels above 7 ppm. A map of the groundwater quality management zones can be found in the figure below.

Figure UBB.3: Groundwater Quality Management Zones



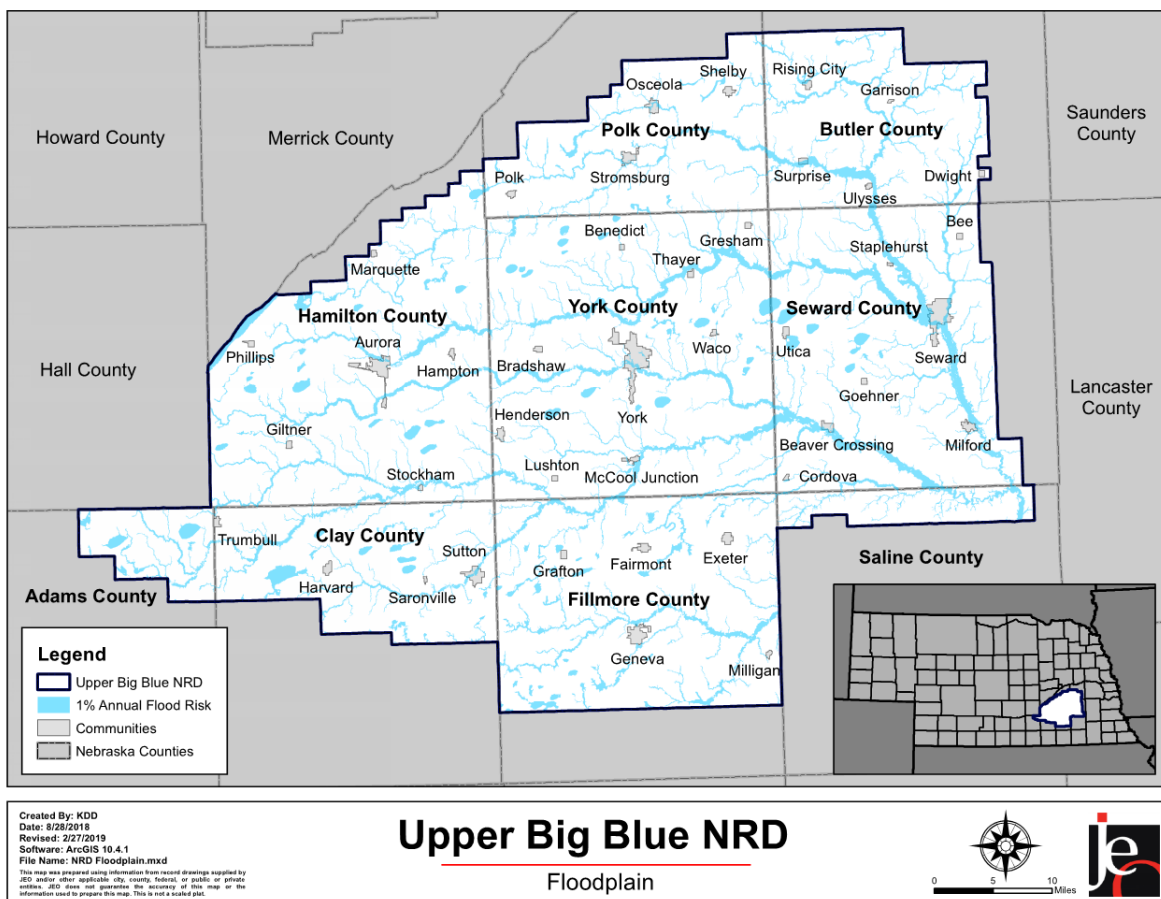
Source: Upper Big Blue NRD

The NRD monitors groundwater levels annually and requires irrigators to install meters and report groundwater use. The NRD is also currently working with the Nebraska Department of Environment and Energy to develop a Water Quality Management Plan. This plan utilizes public stakeholders to identify surface water and groundwater quality issues, selects target areas, and sets goals and objectives to improve water quality in the NRD. The NRD is also working to create a Voluntary Integrated Management Plan, which will look at the relationship between groundwater and surface water in the district. Finally, the NRD has a Municipal Water System Assistance Program that provides financial assistance to communities for improvements in their water system to mitigate the impacts of non-point source groundwater contamination for the protection and public health of the community's residents.

Flooding

Flooding is a common occurrence across the NRD. Specific flooding events and damages will be addressed in the local community profiles. Figure UBB.4 shows the mapped floodplain for the Upper Big Blue NRD. The NRD areas of responsibility include flood prevention and control, and prevention of damages from flood water and sediment. Currently the NRD is providing financial assistance to the City of Seward for the evaluation and reaccreditation of the Seward levee. The NRD did not see any major damages due to the March 2019 flooding event. Minor damages include damage to a sheet pile drop structure near Dorchester and washout of recent construction projects.

Figure UBB.4: UBBNRD Floodplain



*Note: The floodplain in Adams, Clay, Hamilton, Seward, and York Counties is based off preliminary FIRM maps. Final effective FIRM maps are currently being produced.

Tornadoes

The Upper Big Blue NRD owns several recreation locations which are used by vulnerable populations. If a tornado event were to occur in these locations, it may be difficult for users to find appropriate shelter. On June 8th, 2009 the Oxbow Trail recreation area experienced a tornado which damaged a picnic shelter roof and destroyed a restroom. The estimated repair damages were \$20,000. There are currently no shelters or sirens at the recreation areas but the NRD has discussed the possibility of installing sirens and shelters.

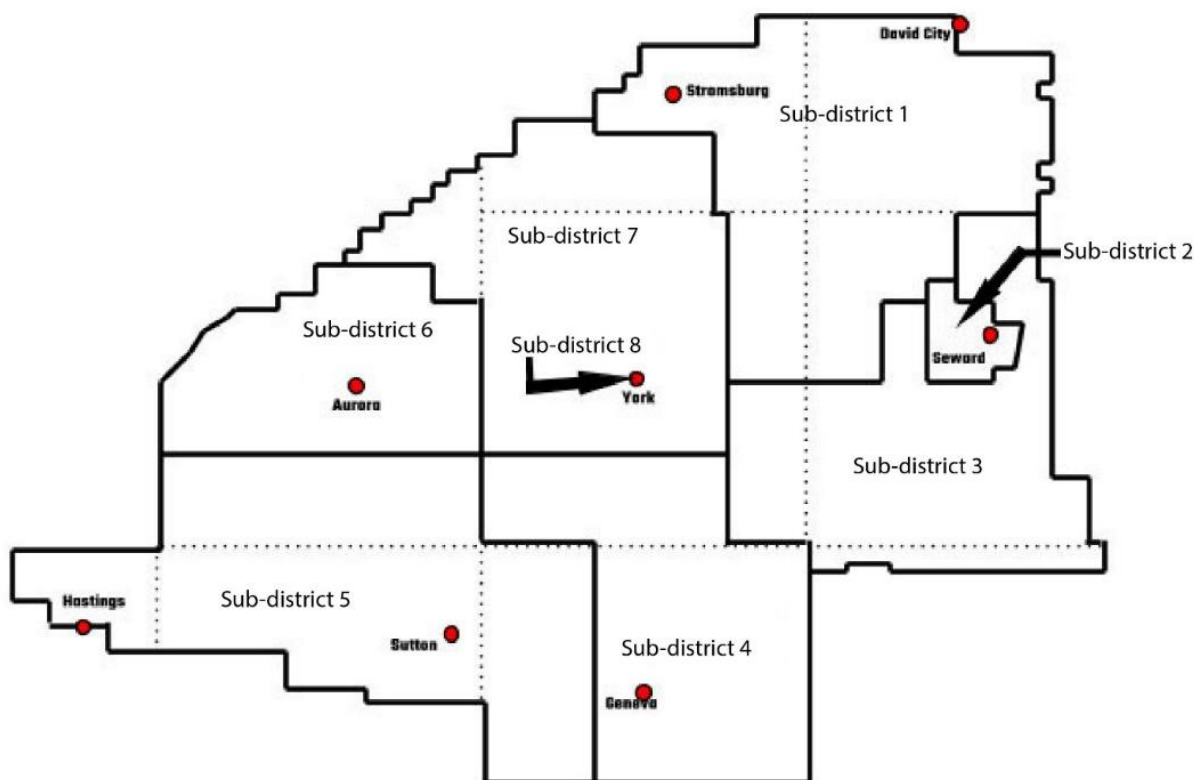
Although the Upper Big Blue NRD does not own many buildings, the most important would be the NRD office located in the City of York. This office is protected by the City of York siren and does contain two safe rooms. The office does conduct tornado drills and has a crisis communications plan in the event of a disaster.

Governance

The Upper Big Blue NRD is governed by a group of 17 elected Board of Directors and entrusted with a broad range of responsibilities to protect and enhance Nebraska's many natural resources. The NRD serves both incorporated and unincorporated areas within their district and has the capability to financially and administratively assist villages, cities, and counties with mitigation actions (most commonly flood control and drainage improvements). The following positions may help implement mitigation projects:

- General Manager
- Assistant General Manager
- Public Relations Manager
- Projects Department Manager
- Forestry Department Manager
- Water Department Manager
- Administrative Department Manager
- Lead Engineering Technician
- Maintenance Workers
- Water Resources Technicians
- Water Conservationist
- Water Data Assistants
- Secretaries
- Field Office Clerks

Figure UBB.5: NRD Voting Districts



Source: Upper Big Blue NRD

*Note: Two board members are elected from each subdistrict, one board member elected at large

Capability Assessment

The NRD has the authority to levy taxes for specific purposes and to issue general obligation bonds to finance certain projects. The NRD also regularly engages in public education and information programs related to hazard mitigation in the area, and routinely works with other counties, cities, and villages within their jurisdictional boundaries.

Overall Capability	Limited/Moderate/High
Does your agency have the financial resources needed to implement mitigation projects?	Moderate
Does your agency have the staff/expertise to implement projects?	Moderate
Does your agency have the community support to implement projects?	Moderate
Does your agency staff have the time to devote to hazard mitigation?	Moderate

Plan Integration

The NRD has several plans which relate to hazard mitigation. A brief summary of those plans is listed below.

Long Range Implementation Plan

The Long-Range Implementation Plan was updated in 2019. The plan discusses regular maintenance for drainage structures, improving transportation routes for drainage, constructing storm shelters at recreation facilities, building warning sirens at recreation facilities and improving existing structures. These projects are consistent with those identified in the hazard mitigation plan.

Groundwater Rules and Regulations

The Groundwater Rules and Regulations were updated in 2019. This plan primarily addresses drought by tracking groundwater levels and evaluating programs for non-point source contamination in order to conserve and maintain an adequate groundwater supply for the foreseeable future. These rules and regulations also set triggers for allocations if average groundwater levels fall below the 1978 groundwater level.

Integrated Management Plan

A small portion of the district along the Platte River has an Integrated Management Plan which was created in 2010. This area is currently fully appropriated and has limits on well and irrigation development.

Currently, the NRD is developing a Voluntary Integrated Management Plan (VIMP) for the entire district. This plan will likely be finalized in 2020. The goals included in the VIMP are: 1) Integrated surface and groundwater resources will proactively managed using the best available science and data 2) The public better understand and more fully support actions to restore and protect water supplies while developing a broader understanding of resource management 3) Existing and future water uses and supplies will be protected through community supported best management practices.

Water Quality Management Plan

The Upper Big Blue NRD is currently in the process of creating a Water Quality Management Plan (WQMP). This plan is expected to be submitted to EPA for approval in 2019. The WQMP provides a concise summary of water resource conditions in the district, as well as offer direction for a coordinated approach to address nonpoint source pollution.

Emergency Action Plan

The Hasting Northwest Flood Control Structure has an emergency action plan as is required for any high hazard dam. The plan was last updated in 2019 and is required to be updated every five years. Inundation maps and a notification flowchart are included in the plan. It also identifies evacuation routes, assigns individual responsibilities, and identifies scenarios that would require an evacuation.

Crisis Communications Plan

The NRD has an internal crisis communications plan which was last updated in 2019. The plan discusses communnucations hierachry in crisis situations, identifies sheltering locations, evacuation protocols, and assigns individual responsibilities. For security purposes, this plan is not made available to the public.

Safety and Loss Prevention Program

The Safety and Loss Prevention Program was last updated in 2019 and is reviewed on an annual basis. The program identifies sheltering locations, evacuation routes, and shelter in place protocol during severe thunderstorms, severe winter storms, tornadoes, and fire. All employees in the NRD are familiar with this program.

No other examples of plan integration were identified. Other than specified, there are currently no plans to further integrate existing or future planning mechanisms.

Mitigation Strategy

Ongoing and New Mitigation Actions

Mitigation Action	Alert Sirens
Description	Perform an evaluation of existing alert sirens in order to determine which sirens should be replaced, or to inform the placement of new sirens. The NRD is looking at locating warning sirens at Recharge Lake Recreation Area, Pioneer Trails Recreation Area, Oxbow Trail Recreation Area, and Smith Creek Recreation Area.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$25,000/each
Funding	NRD Budget
Timeline	1 Year
Priority	High
Lead Agency	Projects Department
Status	New Action, Not Started

Mitigation Action	Backup Generators
Description	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other critical facilities and shelters. The generator will be put in the Upper Big Blue NRD office.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes, High Winds, Hail
Estimated Cost	\$15,000 - \$30,000
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department
Status	New Action, Not Started

Mitigation Action	Dam Failure Exercises
Description	Conduct table top exercise to determine the response scenarios in the event of a dam failure. The Hasting NW flood control structure emergency action plan should be tested every five years with a tabletop exercise conducted at the Adams County Emergency Management Office.
Hazard(s) Addressed	Dam Failure, Flooding
Estimated Cost	\$5,000
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department
Status	New Action, Not Started

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Mitigation Action	Develop a Drought Management Plan
Description	Work with relevant stakeholders to develop a drought management plan. The drought management plan would identify water monitoring protocols, outline drought responses, identify opportunities to reduce water consumption, and establish the jurisdictional management procedures. The NRD is currently planning to develop a water allocation module to track water use and pooling during allocations.
Hazard(s) Addressed	Drought
Estimated Cost	\$25,000
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Water Department
Status	New Action, Not Started

Mitigation Action	Drainage Study / Stormwater Master Plan
Description	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements. The location of these plans and studies will be site specific upon request from municipality or county.
Hazard(s) Addressed	Flooding
Estimated Cost	\$10,000 to \$100,000
Funding	NRD Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Projects Department
Status	Ongoing. The Nebraska Department of Natural Resources and FEMA have updated 100-year and 500-year floodplain maps for most counties in the UBBNRD.

Mitigation Action	First Aid Training
Description	Promote first aid training for all residents.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$100 per person
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	NRD Safety Committee
Status	New Action, Ongoing. NRD employees completed training in 2019.

Mitigation Action	Grade Control Structures
Description	Stream bed degradation occurs along many rivers and creek. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented to maintain the channel bed.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department
Status	New Action, Not Started

Mitigation Action	Groundwater/Irrigation/Water Conservation Management Plan and Practices
Description	Develop and implement a plan/best management practices to conserve water use and reduce total use (high water use to low water use) and consumption of groundwater resources by citizens and irrigators of agricultural land during elongated periods of drought. Identify water saving irrigation projects, such as sprinkler systems with soil moisture sensors. Potential restrictions on water could include limitation on lawn waters, car washing, farm irrigation restrictions, or water sold to outside sources. Implement BMPs, through water conservation practices such as changes in irrigation management, education on no-till agriculture and use of xeriscaping in communities. The NRD Land Treatment Program provides cost share assistance for BMPs.
Hazard(s) Addressed	Drought
Estimated Cost	\$25,000
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department, Water Department
Status	New Action, Not Started

Mitigation Action	Hazardous Tree Removal
Description	Identify and remove hazardous limbs and/or trees. Locations for tree/limb removal include recreation areas, Recharge Lake, Pioneer Trails, Smith Creek Lake, Oxbow Trail, and Overland Trail.
Hazard(s) Addressed	Severe Thunderstorms, Tornadoes, High Winds, Severe Winter Storms
Estimated Cost	\$20,000
Funding	NRD Budget
Timeline	5+ Years
Priority	High
Lead Agency	Projects Department and Forestry, Parks, and Recreation Department
Status	Ongoing. NRD removed a number of damaged/older trees from Smith Creek tent camping area in the fall of 2016.

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Mitigation Action	Improvements to Dam Failure Warning System
Description	Install a reservoir level monitor with telemetry at Hastings Northwest flood control structure to improve warning systems. Equipment will help improve/increase evacuation warning times.
Hazard(s) Addressed	Dam Failure, Flooding
Estimated Cost	\$15,000
Funding	NRD Budget
Timeline	1 Year
Priority	High
Lead Agency	Projects Department
Status	New Action, Not Started

Mitigation Action	Improvements to Flood Warning System
Description	Update equipment, ensure equipment is in a secure location, and install additional gauges. This could include a stream gage or reservoir gage. Locations include Beaver Creek, Lincoln Creek, and Hastings NW Dam.
Hazard(s) Addressed	Flooding
Estimated Cost	\$15,000 per gage
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department, Water Department
Status	New Action, Not Started

Mitigation Action	Intergovernmental Support
Description	Support other local governmental entities, such as fire departments, schools, and townships in the identification and pursuit of mitigation actions.
Hazard(s) Addressed	All Hazards
Estimated Cost	None
Funding	N/A
Timeline	2-5 Years
Priority	Medium
Lead Agency	Public Relations Department, Water Department, Projects Department
Status	New Action, Ongoing

Mitigation Action	Levee/Floodwall Construction and/or Improvements
Description	Levees and floodwalls serve to provide flood protection to business and residents during large storm events. Improvements to existing levees and floodwalls will increase flood protection. If possible, the structure should be designed to FEMA standards to provide 1-percent flood protection providing additional flood insurance benefits. Upgrade to Seward's existing pumping station on levee. The Seward Levee evaluation was completed in 2019 and it identified needing an upgrade to existing pumping station.
Hazard(s) Addressed	Flooding, Levee Failure
Estimated Cost	\$510,000
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department
Status	New Action, Planning Stage

Mitigation Action	Monitor Water Supply
Description	Establish a system/process for monitoring municipal water supplies. This could include but is not limited to: establishing timeframes for measuring well depths and increasing stream flow monitoring. Locations of the gages will be at Beaver Creek and Lincoln Creek.
Hazard(s) Addressed	Drought, Flooding
Estimated Cost	\$15,000 per gage
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department, Water Department
Status	New Action, Not Started

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$0 - \$5,000+
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Water Department, Public Relations, and Projects Department
Status	Ongoing. NRD has held tornado and fire drills, active shooter event training, chainsaw safety, Nitrogen management training, and project grow field day throughout its jurisdiction.

Mitigation Action	Storm Shelter / Safe Rooms
Description	Assess, design and construct fully supplied safe rooms throughout the planning area. Safe rooms can either be new construction or retrofitting. Possible sites for safe rooms include Recharge Lake, Pioneer Trials, Oxbow Trail, and Smith Creek.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Thunderstorms
Estimated Cost	\$200-\$300/sf stand alone; \$150-200/sf addition/retrofit
Funding	NRD Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Projects Department
Status	In Progress. The newly constructed NRD office included a safe room.

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Mitigation Action	Stream Bank Stabilization / Grade Control Structures / Channel Improvements
Description	Stabilize banks along streams and rivers. This may include, but is not limited to: reducing bank slope, additional of riprap, installation of erosion control materials/fabrics. Also, installation of grass waterways and buffer strips.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Projects Department
Status	New Action, Not Started

Mitigation Action	Tree Inventory
Description	Tree inventory to identify problem trees that lose or drop branches. The Emerald Ash Borer is likely to cause issues with Ash trees over the next decade.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, High Wind, Tornadoes, Hail
Estimated Cost	\$1,000
Funding	NRD Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Forestry Department
Status	New Action, Ongoing

Mitigation Action	Water Conservation Awareness Programs
Description	Improve and /or develop a program to conserve water use by citizens during elongated periods of drought. Potential restrictions on water could include limitations on lawn watering, car washing, or water sold to outside sources. Work with DNR on farm irrigation restrictions.
Hazard(s) Addressed	Drought
Estimated Cost	\$3,000
Funding	NRD Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Water Department
Status	New Action, Not Started

¹Center for Applied Rural Innovation. "Topographic Regions Map of Nebraska." 2001. <http://digitalcommons.unl.edu/caripubs/62>.

²Nebraska Department of Roads. "Traffic Flow Map of the State Highways: State of Nebraska." [map]. Scale 1"= 20 miles. State of Nebraska: Department of Roads, 2015. <http://www.roads.nebraska.gov/media/2510/2014-statewide-traffic-flow-map.pdf>

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SCHOOL PROFILE

CENTRAL CITY PUBLIC SCHOOLS



Upper Big Blue Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

2019

Local Planning Team

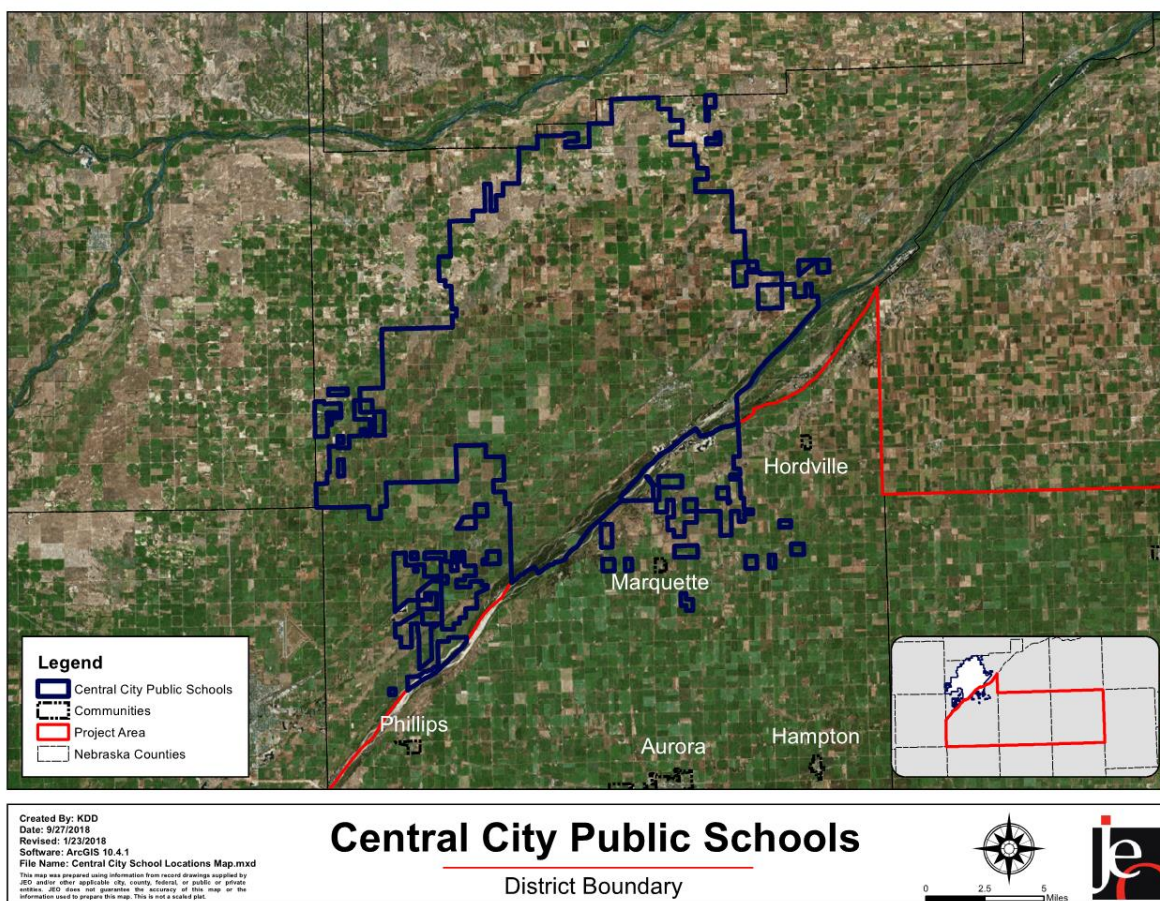
Table CSD.1: Seward Public Schools Local Planning Team

Name	Title	Jurisdiction
Jeff Jensen	Superintendent	Central City Public Schools

Location and Services

Central City Public Schools is located primarily in Merrick County and operates three schools, an elementary, middle, and high school. The school district provides services to students from the City of Central City, rural Merrick County, and parts of rural Hamilton County.

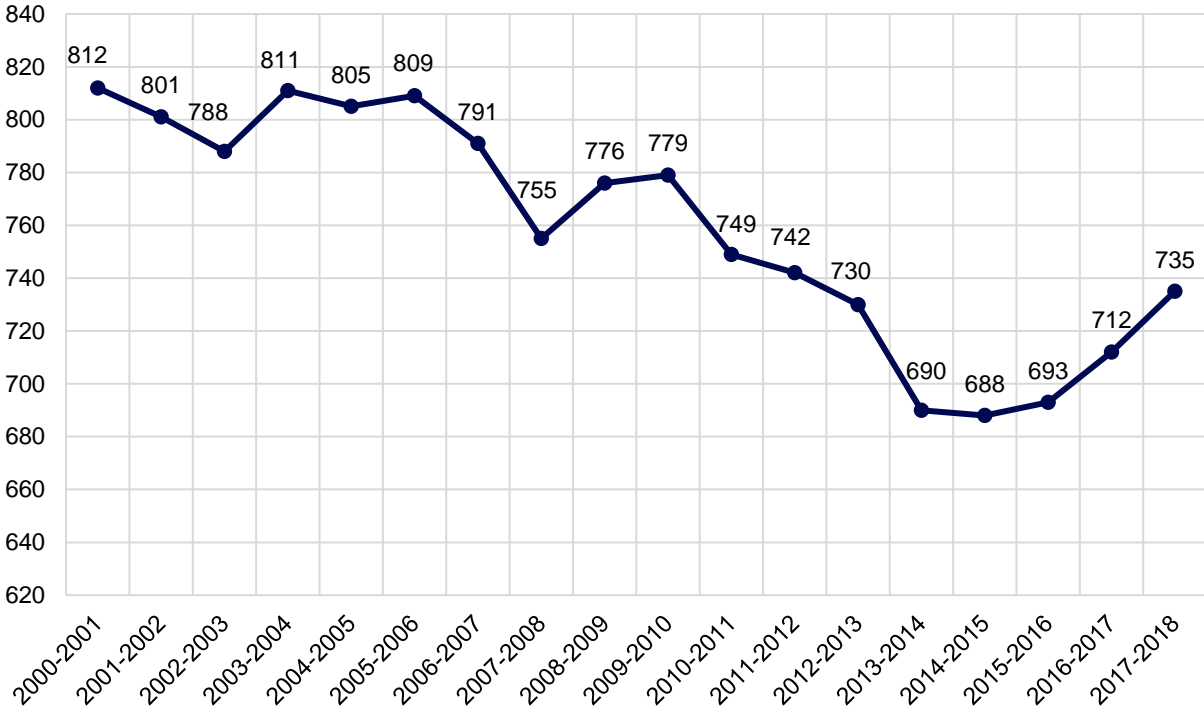
Figure CSD.1: District Boundary



Demographics

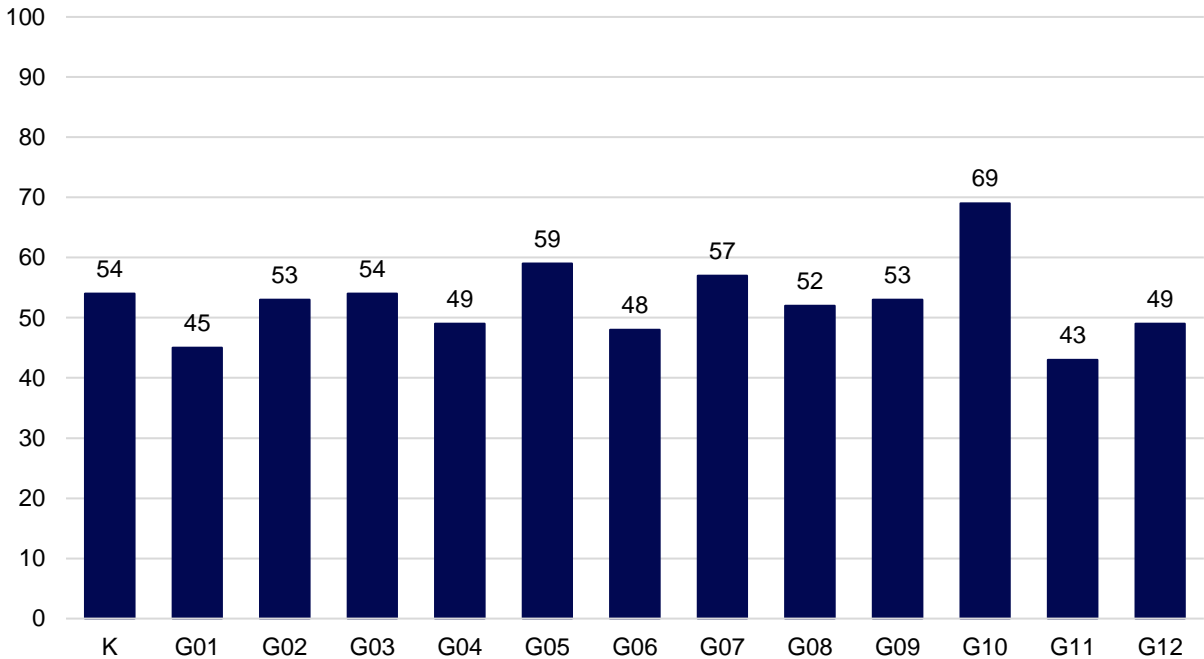
The following figure displays the historical student population trend starting with the 2000-01 school year and ending with the 2017-2018 year. It indicates that the student population has declined since 2000, however the student population has been growing since 2014. There are currently 735 students enrolled in the Central City Public School District.ⁱⁱⁱ

Figure CSD.2: Student Population 2000-2018



Source: Nebraska Department of Education

Figure CSD.3: Number of Students by Grade, 2017-2018



Source: Nebraska Department of Education

The figure above indicates that the largest number of students are in the 5th, 7th, and 10th grades. The lowest population of students are in 1st, 6th, and 11th grades. According to the Nebraska Department of Education (NDE), 41.31% of students receive either free or reduced priced meals

at school. This is lower than the state average of 45.83%. Additionally, nearly 18.46% of students are in the Special Education Program. The percentage of English Language Learners is not known as the Department of Education masks data for groups with less than 10 individuals. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table CSD.2: Student Statistics, 2017-2018

	School District	State of Nebraska
Free/Reduced Priced Meals	41.31%	45.83%
School Mobility Rate	7.98%	10.86%
English Language Learners	-	6.87%
Special Education Students	18.46%	15.12%

Source: Nebraska Department of Education^v

*Most Recent Data from 2016-2017

Future Development Trends

The school district is currently working with the City of Central City on a joint storm shelter. A grant has been written for the planned facility.

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 a total of seven chemical storage sites in the City of Central City.

Critical Facilities

Each participating district identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the district's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update. The following table and figure provide a summary of the critical facilities for the district.

Table CSD.3: Critical Facilities

CF #	Name	Address	Number of Students	Number of Staff	Red Cross Shelter (Y/N)	Safe Room (Y/N)	Generator (Y/N)	Located in Floodplain (Y/N)
1	Central City Elementary School	1711 15 th Ave, Central City, NE 68826	321	51	Y	N	N	N
2	Central City Middle School	2815 17 th Ave, Central City, NE 68826	210	47	Y	N	Y	N
3	Central City High School	1510 28 th St, Central City, NE 68826	220	57	Y	N	Y	N
4	Bus Barn	2815 17 th Ave, Central City, NE 68826	0	10	N	N	N	N
5	Greenhouse	2815 17 th Ave, Central City, NE 68826	0	0	N	N	N	N
6	Stadium Concessions	1510 28 th St, Central City, NE 68826	0	0	N	N	N	N
7	Softball & Baseball Fields	2502 17 th Ave, Central City, NE 68826	0	0	N	N	N	N

Figure CSD.4: Critical Facilities



Historical Occurrences

See the Hamilton 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 following discussion provides specific information reported by the local planning team. Only hazards either identified as a concern to the school district by the local planning team or based on the occurrence and risk of the hazard to the school district are discussed in detail below.

Chemical Spills – Transportation

Transportation chemical spills are primarily a hazard for the middle and high school buildings. Both of the schools are located adjacent to Highway 14. A large variety of chemicals are transported along this highway on a daily basis. Were a significant spill to occur, an evacuation of the schools may be necessary. The school district has a plan in place to facilitate an evacuation. Other transportation routes of concern are Highway 30 and the railroad which runs through the city.

High Winds

The district planning team planning identified high winds as a top hazard for the school district. The planning team indicated that high winds damage school property every year. Typically, it is minor items like damage to trees, but past events have damaged roofs. Along with potential property damage, high winds can also cause power outages due to downed power lines. In the event of power loss, all three schools have back up power generators. The school is also available should community members need a place to seek safe shelter.

Severe Thunderstorms

The district planning team identified severe thunderstorms as a top hazard for the school district. Severe thunderstorms can lead to water damage and power outages affecting refrigeration and communication. The planning team indicated that severe thunderstorms have not damaged any facilities in the past. However, that does not mean there is no risk, severe thunderstorms occur multiple times annually. In the event of power loss, all three schools have back up power generators. In addition, all three schools have a weather radio to help warn of impending severe weather.

Severe Winter Storms

The district planning team identified severe winter storms as a top hazard for the school district. Severe winter storms can cause power outages, impact communication infrastructure, and hinder transportation of students. In 2017 an ice storm caused the district to lose power for several days. Students living outside the city limits are especially vulnerable to snow affecting transportation routes. On school grounds the district has multiple means for snow removal and also is able to contract out removal for parking areas. The planning team indicated that snow removal resources were sufficient for what is needed on school properties.

Tornadoes

The district planning team identified tornadoes as top hazard for the school district. Tornadoes have the potential to cause significant damages to critical facilities, power outages, and loss of life. Power outages can affect communication infrastructure and refrigeration. The school district does have all files backed up in the cloud should data loss occur. The school buildings have designated areas for students and teachers to go to in the event of a tornado, however space

may become an issue as many facilities do not have low areas due to a high-water table. The district would like to have a designated safe room and have applied for funding in the past. The planning team indicated that the city has tornado sirens which can be heard at all of the school facilities.

Administration/Capability Assessment

The school district has a superintendent and three principals. The school board is made up of a six-member panel. Additional offices which may assist in mitigation projects are listed below.

- Facilities
- Business Manager
- Technology
- Transportation
- Special Education Director
- Activities Director

Overall Capability	Limited/Moderate/High
Does your district have the financial resources needed to implement mitigation projects?	Moderate
Does your district have the staff/expertise to implement projects?	Moderate
Does your district have the community support to implement projects?	Limited
Does your district staff have the time to devote to hazard mitigation?	Limited

School Drills and Staff Training

The school district conducts the following drills with their staff and students:

- Fire – ten a year
- Tornado – twice a year
- Intruder – twice a year
- Bus evacuation – twice a year
- Evacuation – once a year

The school district conducts regular in-service trainings about emergency procedures for staff and provides educational materials to students and families including: student handbooks, website updates, and newsletters. The district conducts all drills in collaboration with local police and county. There are also quarterly safety meetings and an annual insurance visit to each school.

Plan Integration

The school district has a Crisis Response Plan that addresses severe weather, fire, chemical spills, and acts of terrorism/intruders. This plan was last updated in 2017 and outlines roles, responsibilities, and procedures for response to these hazards.

No other examples of plan integration were identified and there are currently no additional plans to further integrate planning mechanisms.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Alert Sirens
Description	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking with remote activation options.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$15,000 +
Funding	School General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Superintendent
Status	Not Started

Mitigation Action	Backup Generators
Description	Provide a portable or stationary source of backup power. The district is currently looking at getting two backup generators.
Hazard(s) Addressed	High Winds, Severe Thunderstorms, Severe Winter Storms, Tornadoes
Estimated Cost	\$3,500 + depending on site requirements
Funding	School General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Superintendent
Status	Not Started

Mitigation Action	Continuity Plans
Description	Develop continuity plans for critical services in order to increase resiliency after a hazardous event.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$5,000 plus staff time
Funding	School General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Superintendent
Status	Not Started

Mitigation Action	Emergency Communication
Description	Establish an action plan to improve communication between schools and other government agencies to better assist students and staff during and following emergencies. Establish inner-operable communications.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$1,000 plus staff time
Funding	School General Fund
Timeline	5+ Years
Priority	Medium
Lead Agency	Superintendent
Status	Not Started

Mitigation Action	Install Hail Resistant Roofing
Description	Install hail resistant roofing at critical facilities.
Hazard(s) Addressed	Hail, Severe Thunderstorms, Tornadoes
Estimated Cost	\$2.50 per square foot
Funding	School General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Superintendent
Status	Not Started

Mitigation Action	Power, Service, Electrical, and Water Distribution Lines
Description	School Districts can work with their local Public Power District or community electricity department to identify vulnerable transmission and distribution lines on school property and plan to replace or retrofit existing structures to be less vulnerable to storm events.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$5,000 +
Funding	School General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Superintendent, Local Public Power District
Status	Not Started

Mitigation Action	Public Awareness/Education
Description	Educate staff, students, and parents about hazard vulnerability and mitigation measures. Activities may include classroom modules profiling certain hazards and discussing preparedness measures. Educational materials, such as brochures and fliers, can be developed and provided to parents to increase community wide hazard awareness. Staff training can be conducted regarding school hazard vulnerability. In addition, purchasing education equipment such as overhead projectors and laptops.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$3,000+
Funding	School General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Superintendent
Status	Not Started

Mitigation Action	Storm Shelter / Safe Room
Description	Design and construct fully supplied safe rooms in school facilities.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$4,000,000 +
Funding	School General Fund, Central City General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Superintendent, Central City Council
Status	Currently the project is pending and waiting upon grant approval.

ⁱ Nebraska Department of Education. August 2018. "Data Downloads" <http://nep.education.ne.gov/Links>.
^{iv} Nebraska Education Profile. "School Report Card." Accessed December 2018. <http://nep.education.ne.gov/Home/>.

SCHOOL PROFILE

SEWARD PUBLIC SCHOOLS



Upper Big Blue Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

2019

Local Planning Team

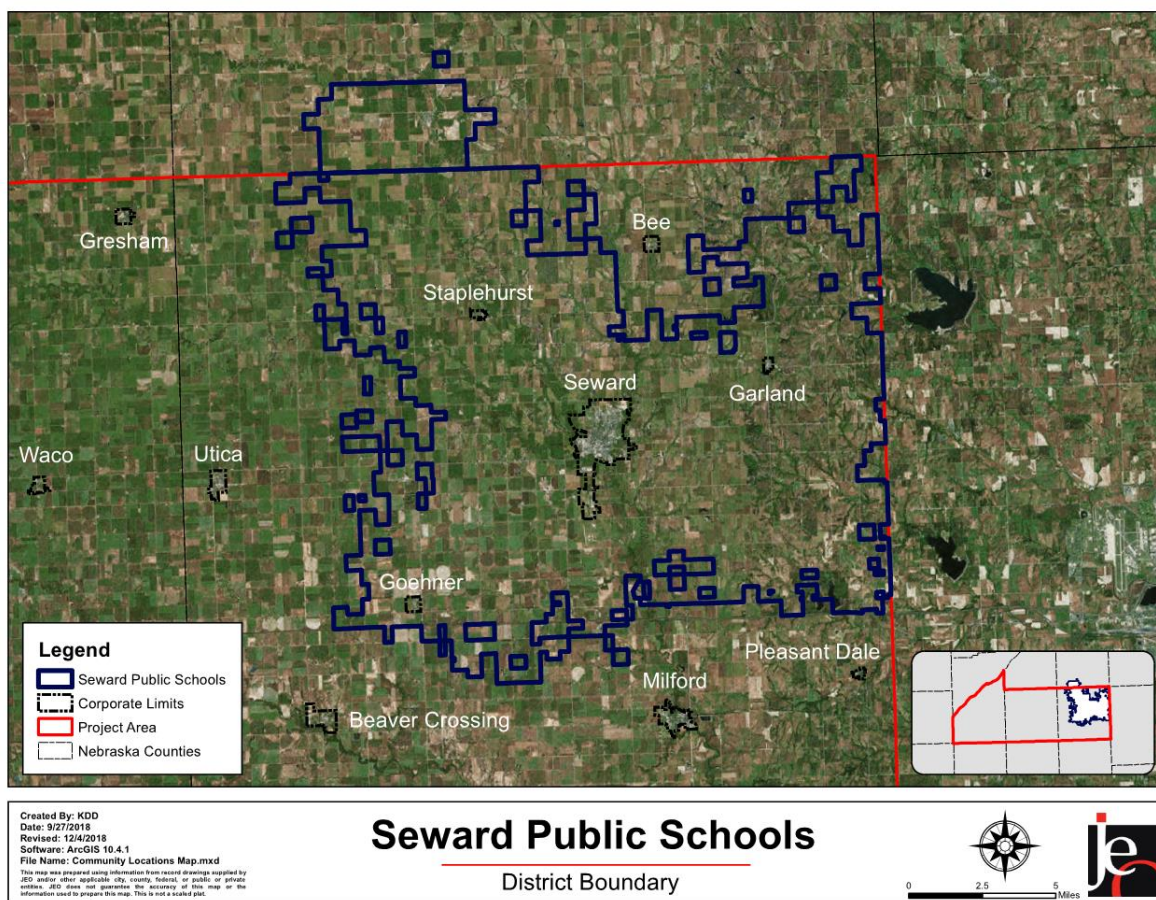
Table SPS.1: Seward Public Schools Local Planning Team

Name	Title	Jurisdiction
Dr. Josh Fields	Superintendent	Seward Public Schools
Dr. Matt Dominy	Director of Curriculum and Staff Development	Seward Public Schools

Location and Services

Seward Public Schools is located primarily in Seward County and operates three schools, an elementary, middle, and high school. The school district provides services to students from the City of Seward, Village of Garland, Village of Goehner, and Village of Staplehurst in Seward County.

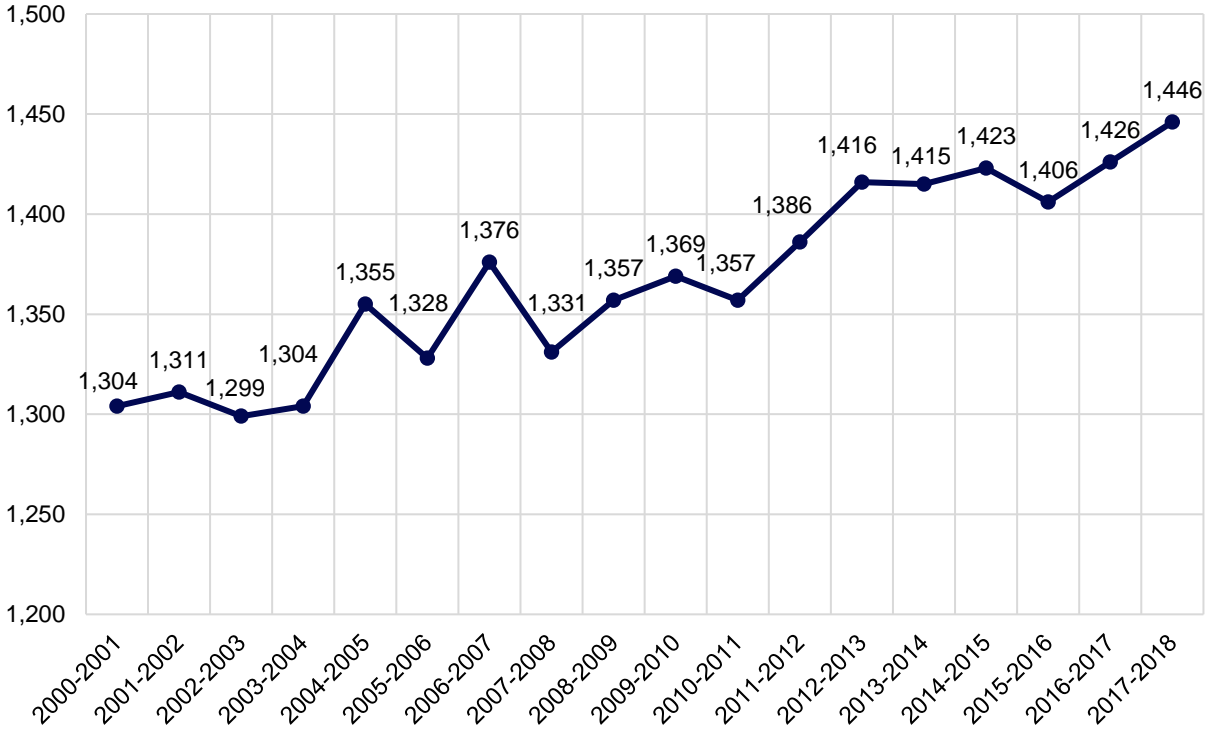
Figure SPS.1: District Boundary



Demographics

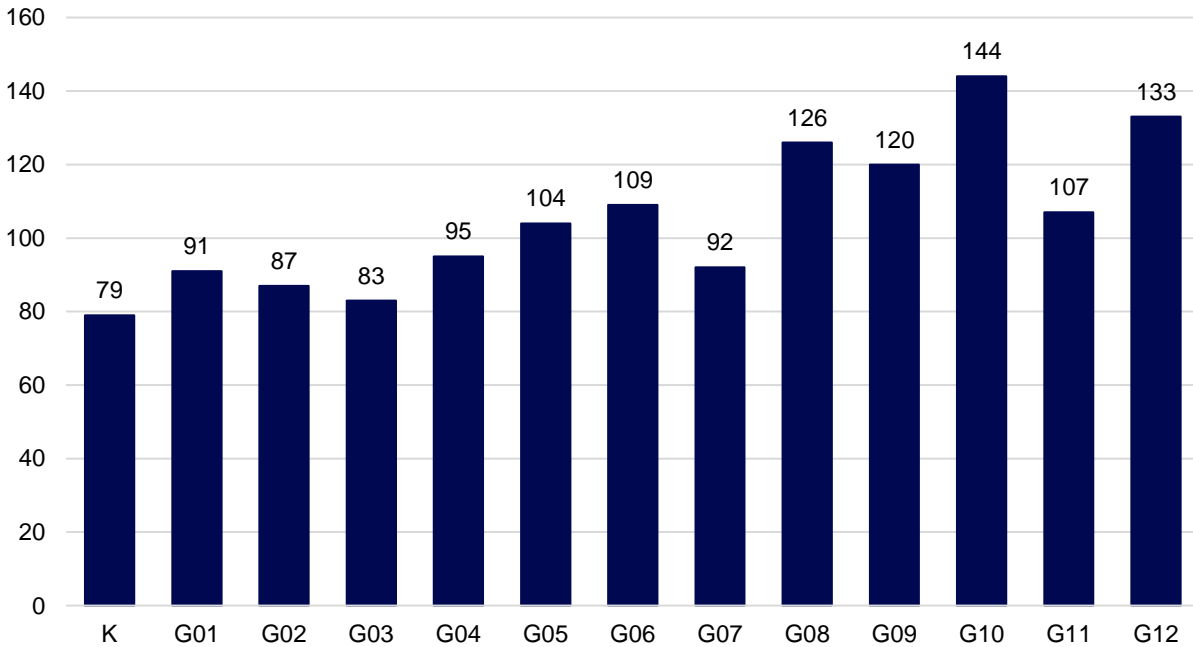
The following figure displays the historical student population trend starting with the 2000-01 school year and ending with the 2017-2018 year. It indicates that the student population has been growing since 2000. There are currently 1,446 students enrolled in the Seward Public Schools District.^v The school district expects a moderate increase in student population as the City of Seward continues to grow over the next five years.

Figure SPS.2: Student Population 2000-2018



Source: Nebraska Department of Education

Figure SPS.3: Number of Students by Grade, 2017-2018



Source: Nebraska Department of Education

The figure above indicates that the largest number of students are in the 8th, 10th, and 12th grades. The lowest population of students are in kindergarten, 2nd, and 3rd grades. According to the Nebraska Department of Education (NDE), 21.30% of students receive either free or reduced

priced meals at school. This is lower than the state average of 45.83%. Additionally, nearly 17.15% of students are in the Special Education Program and 0.8% of students are English Language Learners. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table SPS.2: Student Statistics, 2017-2018

	School District	State of Nebraska
Free/Reduced Priced Meals	21.30%	45.83%
School Mobility Rate	10.36%	10.86%
English Language Learners	0.80%*	6.87%
Special Education Students	17.15%	15.12%

Source: Nebraska Department of Educationⁱⁱ
 *Most Recent Data from 2016-2017

Future Development Trends

The elementary school was updated in 2014 and several efforts to reduce the district’s risk to hazards have been made over the past five years. A new intercom system was installed in 2017 for the high school and 2018 for the elementary school. 2-way radios and cameras were installed district wide in 2018. In addition, the high school received asbestos abatement in 2018. The school district plans to continually update the high school over the next five years.

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 a total of nine chemical storage sites in the City of Seward. The storage sites are located on the south side of the city and all three schools are located on the northern side of the city.

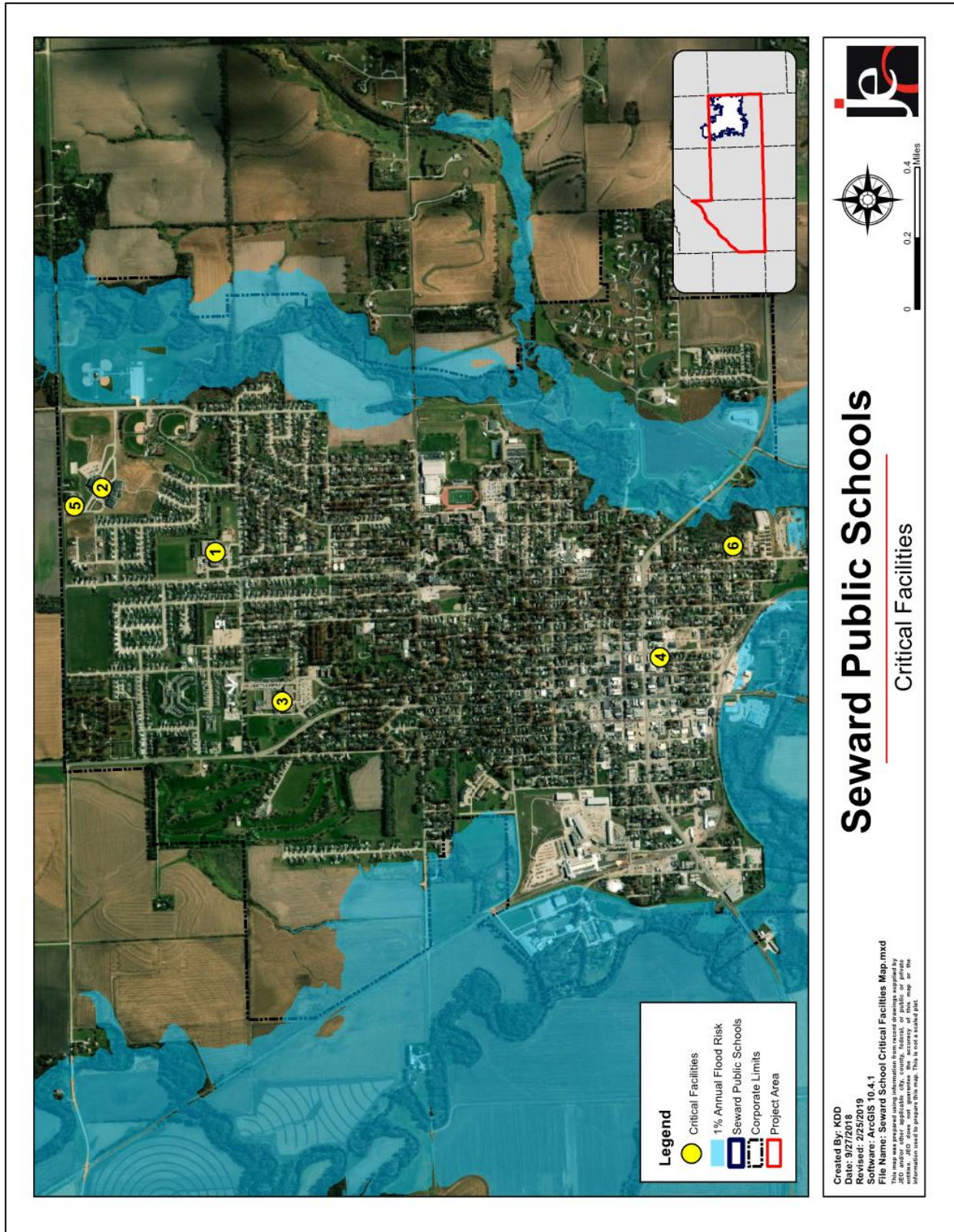
Critical Facilities

Each participating district identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the district’s functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update. The following table and figure provide a summary of the critical facilities for the district.

Table SPS.3: Critical Facilities

CF #	Name	Address	Number of Students	Number of Staff	Red Cross Shelter (Y/N)	Safe Room (Y/N)	Generator (Y/N)	Located in Floodplain (Y/N)
1	Seward Elementary School	200 E Pinewood Ave, Seward, NE 68434	511	74	Y	Y	N	N
2	Seward Middle School	2401 Karol Kay Blvd, Seward, NE 68434	431	58	Y	N	N	N
3	Seward High School	532 Northern Heights Dr, Seward, NE 68434	504	72	Y	Y	N	N
4	District Office	410 South St, Seward, NE 68434	0	3	N	N	N	N
5	Maintenance Building	2401 Karol Kay Blvd, Seward, NE 68434	0	4	N	N	N	N
6	Bus Barn	712 S Columbia Ave, Seward, NE 68434	0	14	N	N	N	N

Figure SPS.4: Critical Facilities



*Note: Floodplain is based off preliminary FIRM maps. Final effective FIRM maps are currently being produced.

Historical Occurrences

See the Seward County community profile for historical hazard events.

In the spring of 2019 Seward County and Nebraska experienced a large-scale flood event. None of the critical facilities for the district were damaged, however, getting students to and from school did become an issue. The district had to implement several alternate routes throughout the county for a significant time due to closed bridges and roads.

Hazard Prioritization

For an in-depth discussion regarding area wide hazards, please see *Section Four: Risk Assessment*. The following discussion provides specific information reported by the local planning team. Only hazards either identified as a concern to the school district by the local planning team or based on the occurrence and risk of the hazard to the school district are discussed in detail below.

Chemical Spills – Fixed Site

The school district planning team identified fixed site chemical spills as a top hazard due the nearby Anhydrous Ammonia storage facility. If a leak were to occur and the wind was out of the west, the fumes may require an evacuation. The school district has a plan in place to facilitate an evacuation. In addition, there are eight other Tier II chemical storage sites located within the City of Seward. A spill at any of these locations could potentially impact the district's critical facilities.

Chemical Spills – Transportation

Transportation chemical spills are primarily a hazard for the high school building. The building is located adjacent to both a rail line and highway. Both the rail line and highway regularly transport a wide variety of bulk and hazardous chemicals. Were a significant spill to occur, an evacuation may be necessary. Spills along these routes may also disrupt transportation to and from the school buildings.

Severe Thunderstorms

Severe Thunderstorms have the potential to cause significant damages to critical facilities and power outages. Power outages can affect communication infrastructure and refrigeration. If a severe thunderstorm happened to displace residents in Seward or the surrounding areas, the school buildings could serve as a community shelter; however, space may become an issue. In addition, none of the schools have a backup power generator.

Severe Winter Storms

Severe winter storms can affect travel to and from the schools. The district relies on the county, city, and state to clear roads along bus routes. A large snow event could cause potential transportation delays and could force the school to close for a day or two. The district does have snow days built in, however, multiple large events throughout the winter could cause planning and testing related issues. In addition, severe winter storms can cause prolonged power outages. The schools do act as a community shelter; however, if a loss of power were to occur, there are no backup generators at any of the schools.

Terrorism/Civil Disorder

The school district planning team identified terrorism as a top hazard for the school district. School districts are regularly targeted for terrorist events due to the large number of vulnerable individuals in one area and because of the emotional response it creates. Fortunately, there have not been any recorded acts of terrorism that have affected Seward Public Schools. Terrorism can take

many forms but political- and cyber-terrorism are the most likely. The school district practices crisis response four times a year.

Administration/Capability Assessment

The school district has a superintendent and three principals. The school board is made up of a six-member panel. Additional offices which may assist in mitigation projects are listed below.

- Curriculum/Assessment
- Facilities
- Finance Department
- Technology
- Transportation
- Special Services Staff

Overall Capability	Limited/Moderate/High
Does your district have the financial resources needed to implement mitigation projects?	Limited to Moderate
Does your district have the staff/expertise to implement projects?	Limited
Does your district have the community support to implement projects?	Moderate to High
Does your district staff have the time to devote to hazard mitigation?	Limited

School Drills and Staff Training

The school district conducts the following drills with their staff and students:

- Fire – ten times a year
- Tornado – twice a year
- Crisis – four times a year

The school district has a crisis, safety, and threat assessment team. This team includes local individuals, police, and parents. The local police department also performs an annual walk-through of each school to identify areas of concern. In 2016 the Department of Homeland Security conducted an assessment of the school district. The State of Nebraska also conducts an annual liability assessment for the district.

Plan Integration

The school district has a Crisis Response Plan that addresses severe weather, fire, chemical spills, and acts of terrorism/intruders. This plan is updated annually and outlines roles, responsibilities, and procedures for response to these hazards. The district also has a District Strategic Plan that was created in 2019 and runs until 2024. The strategic plan discusses potential physical and mental health issues along with goals and strategies to address them. There are no additional plans to further integrate the hazard mitigation plan at this time.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Backup Generators
Description	Provide a portable or stationary source of backup power at all three schools.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$35,000 to \$75,000
Funding	School General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Superintendent
Status	New Project. Not Started.

Mitigation Action	Electronic Door Access
Description	Install electronic door access which will be able to lock and unlock doors from a secure location at all three schools.
Hazard(s) Addressed	Terrorism/Civil Disorder
Estimated Cost	\$60,000+
Funding	School General Fund
Timeline	1 Year
Priority	High
Lead Agency	Superintendent
Status	New Project. Not Started.

Mitigation Action	Interior Door Locking Mechanisms
Description	Install interior classroom door locking mechanisms, so that teachers can lock their classrooms from the inside at all three schools.
Hazard(s) Addressed	Terrorism/Civil Disorder
Estimated Cost	\$200,000+
Funding	School General Fund
Timeline	1 Year
Priority	High
Lead Agency	Superintendent
Status	New Project. Not Started.

Mitigation Action	Physical Security Systems
Description	Install vehicular barriers and bollards around the high school and install improved glass windows in the front of the high school.
Hazard(s) Addressed	Terrorism/Civil Disorder, Chemical Spills Transportation, High Winds, Tornadoes, Severe Thunderstorms, Severe Winter Storms, Hail
Estimated Cost	\$5,000 to \$20,000+
Funding	School General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Superintendent
Status	New Project. Not Started.

Section Seven | Seward Public Schools School Profile

Mitigation Action	Transportation Communication System Upgrades
Description	Upgrade the current analog communication system to a digital communication system in the buses.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$45,000+
Funding	School General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Superintendent
Status	New Project. Not Started.

i Nebraska Department of Education. August 2018. "Data Downloads" <http://nep.education.ne.gov/Links>.
 vi Nebraska Education Profile. "School Report Card." Accessed December 2018. <http://nep.education.ne.gov/Home/>.

PARTICIPANT PROFILE

TAMORA VOLUNTEER FIRE DEPARTMENT



Upper Big Blue Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update

2019

Local Planning Team

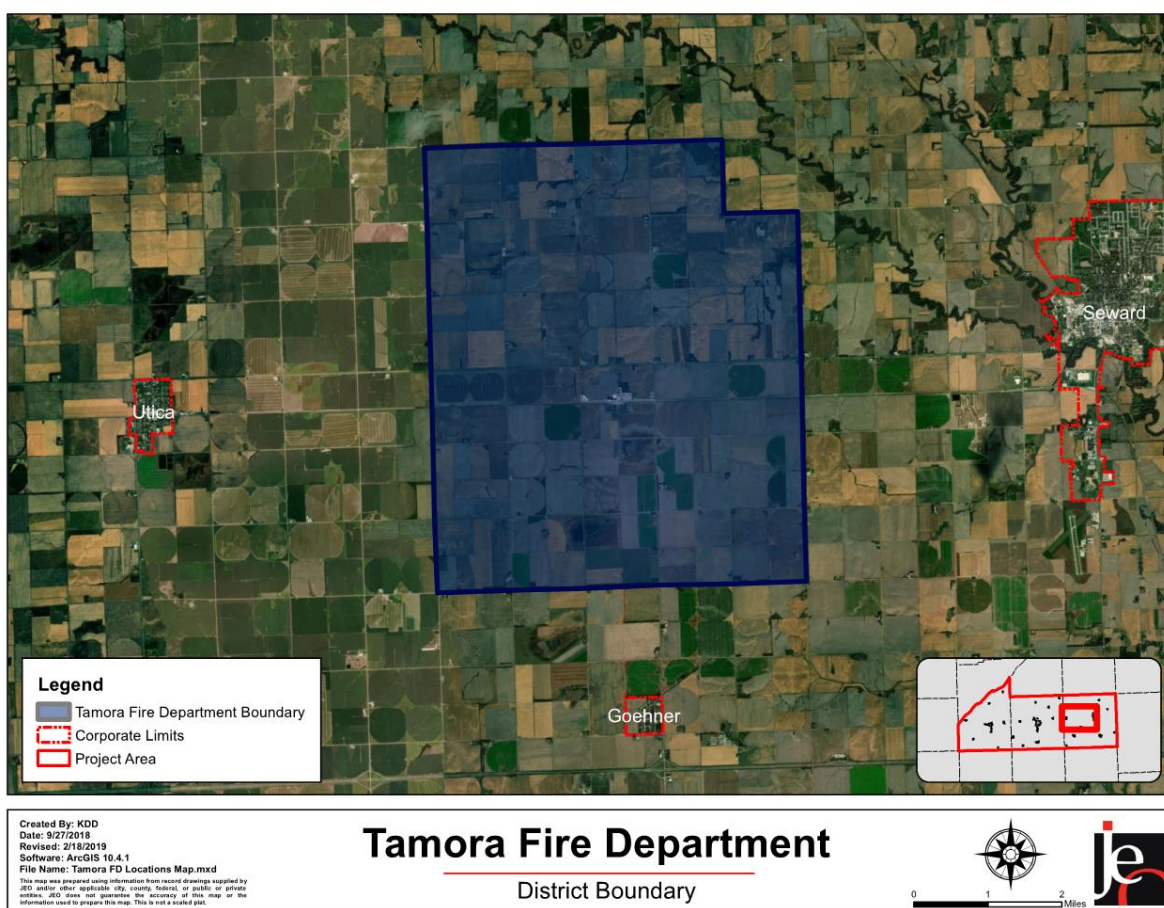
Table TMR.1: Tamora Volunteer Fire Department Local Planning Team

Name	Title	Jurisdiction
Cody Meredith	Training Officer	Tamora Fire Department
Jon Propst	Fire Chief	Tamora Fire Department

Location and Geography

The Tamora Fire Department is responsible for fire response in much of the rural area between the City of Seward and Village of Utica. The district does not contain any incorporated cities or villages but does contain the unincorporated community of Tamora. As such, most of the fire response will be rural in nature.

Figure TMR.1: District Boundary



Transportation

Tamora Fire Department’s major transportation corridor includes U.S. Highway 34 with 2,500 vehicles a day and Nebraska Highway L-80G with 690 vehicles a day.^{vii} The district has one Burlington Northern rail line running east west through the central portion of the boundary. The district does not have any airports within its boundaries. 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. The local planning team indicated that

liquid fertilizer, dry fertilizer, herbicides, insecticides, and Anhydrous Ammonia are regularly transported along many roads in the area.

Demographics

The Tamora Fire Department does not collect data on demographics. However, the unincorporated community of Tamora does contain the majority of the population in the fire district. Tamora's population increased from about 58 people in 2010 to 76 people in 2016, an average annual increase of 31.03%. This is important because the population growth means the potential for less unoccupied housing. Tamora's population accounted for 0.44% of Seward County's population.^{viii}

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

- **Older.** The median age of Tamora was 59.2 years old in 2016, compared with the county average of 38.1 years. Tamora's population grew older since 2010, when the median age was 41.0 years old. Tamora had a smaller proportion of people under 20 years old (27.6%) than the county (28.2%).^{ix}
- **Less ethnically diverse.** In 2016, Tamora had 0.0% of the population Hispanic or Latino. During that same time, the Hispanic population in the county was 2.3%.^x

Employment and Economics

The Tamora Fire Department does not collect data on employment and economics. However, the unincorporated community of Tamora does contain the majority of the population in the fire district. The Tamora economic base is a mixture wholesale trade and transportation uses. In comparison to Seward County, Tamora's economy had:

- **Different mix of industries.** Tamora's major employment sectors, accounting for 10% or more of employment each, were: wholesale trade; retail trade; transportation and warehousing and utilities; and professional, scientific, and management, and administrative and waste management services.^{xi}
- **Higher household income.** Tamora's median household income in 2016 (\$84,286) was about \$22,700 higher than the county (\$61,563).^{xii}
- **More long-distance commuters.** About 19.5% of workers in Tamora commuted for fewer than 15 minutes, compared with about 49.8% of workers in Seward County. About 26.8% of workers in Tamora commute 30 minutes or more to work, compared to about 24.6% of the county workers.^{xiii}

Housing

The Tamora Fire Department does not collect data on housing. However, the unincorporated community of Tamora does contain the majority of the population in the fire district. In comparison to Seward County, Tamora's housing stock was:

- **Less renter-occupied.** About 0.0% of occupied housing units in Tamora are renter occupied compared with 27.9% of occupied housing in Seward County.^{xiv}
- **Younger.** Tamora had a smaller share of housing built prior to 1970 than the county (30.8% compared to 48.5%).^{xv}
- **Less multifamily.** Although the predominant housing type in the village is single family detached, Tamora contains much less multifamily housing with five or more units per

structure compared to the county (0.0% compared to 6.9%). About 100% of housing in Tamora was single-family detached, compared with 80.8% of the county's housing. Tamora has a much smaller share of mobile and manufactured housing (0.0%) compared to the county (3.2%).^{xvi} Tamora does not have any mobile homes located within the community.

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

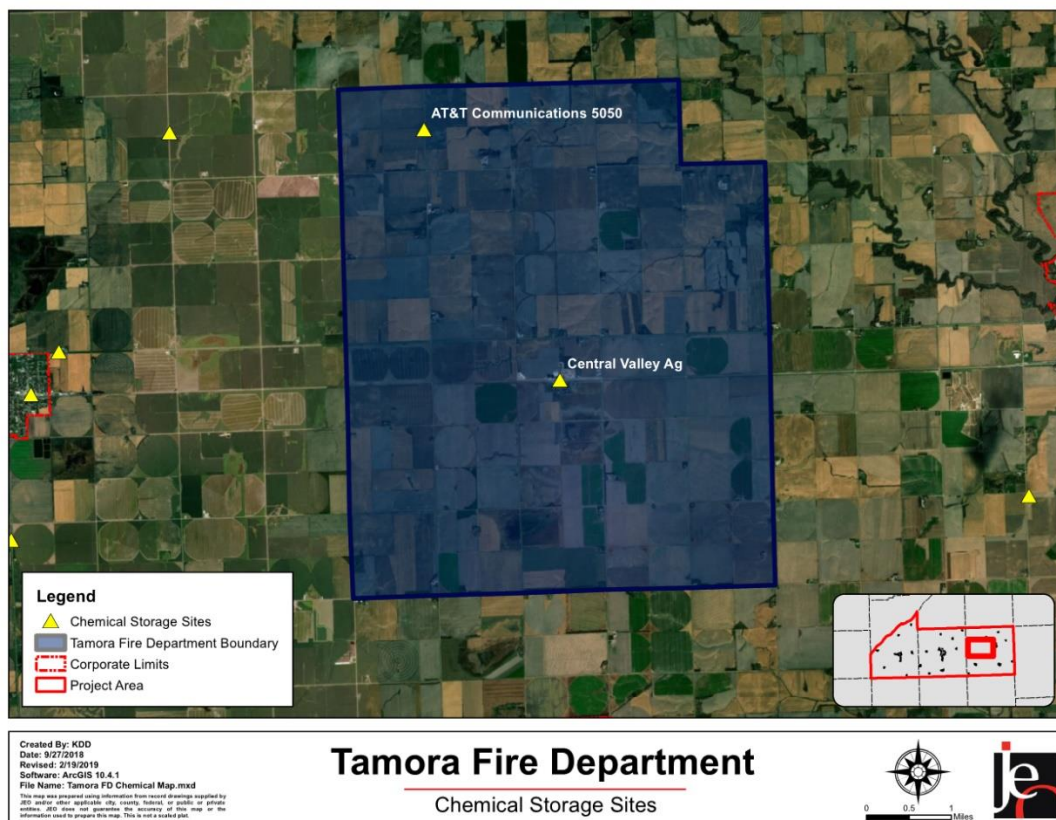
No significant changes have occurred in the district the last five years. Although there are currently no planned changes for the next five years, the district will continue to incorporate mitigation into future development.

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 is a total of two chemical storage sites within the boundaries of the Tamora Fire Department. The map below shows the name and location of the chemical storage sites.

Figure TMR.2: Chemical Storage Fixed Sites



Source: Nebraska Department of Environment and Energy^{xvii}

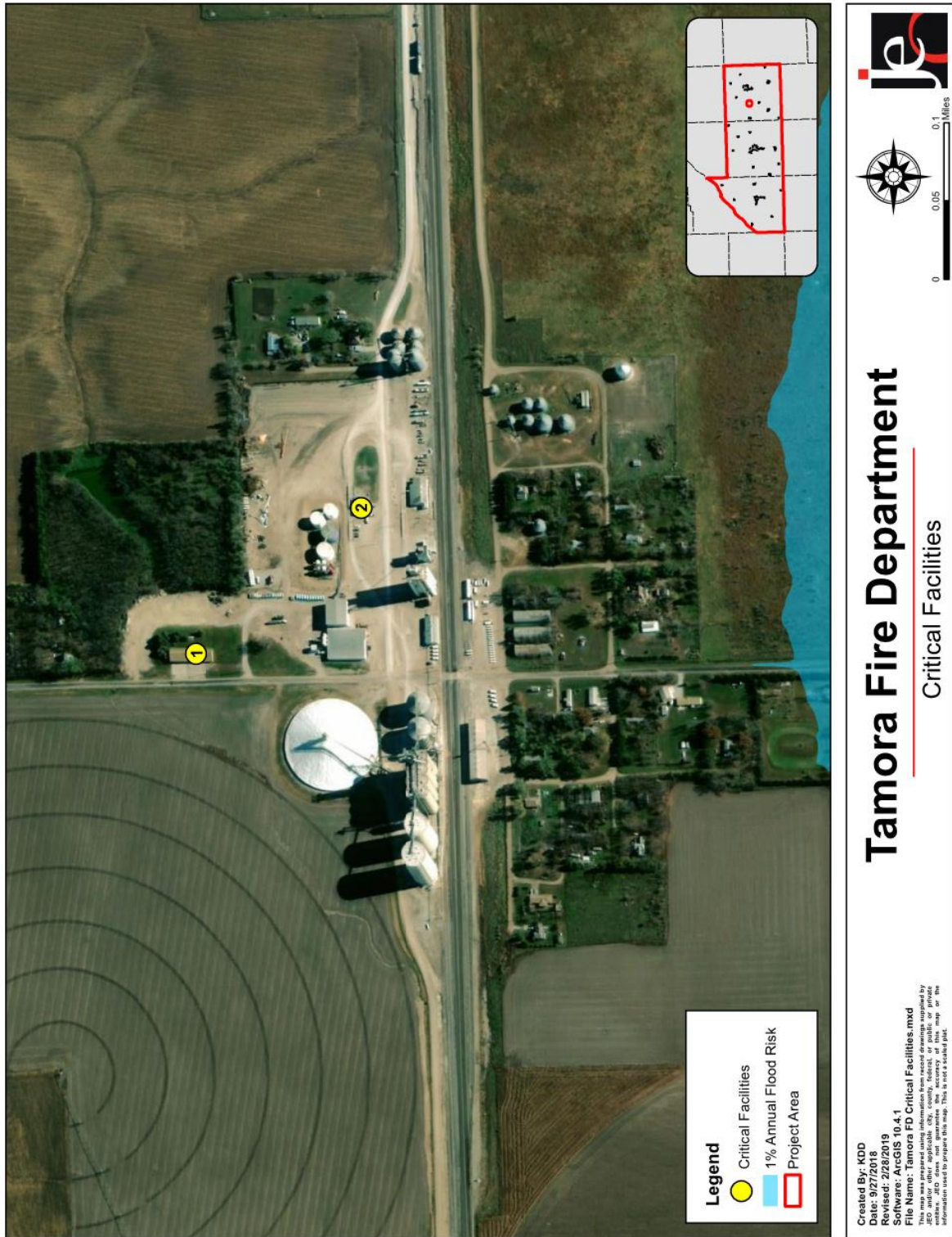
Critical Facilities

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. Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update. The following table and figure provide a summary of the critical facilities for the fire department.

Table TMR.2: Critical Facilities

CF Number	Name	Red Cross Shelter (Y/N)	Generator (Y/N)	Located in Floodplain (Y/N)
1	Fire Station	N	Y	N
2	Co-op Office	N	Y	N

Figure TMR.3: Critical Facilities



*Note: Floodplain is based off preliminary FIRM maps. Final effective FIRM maps are currently being produced.

Historical Occurrences

See the Seward 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 prioritized by the local planning team based on the identification of hazards of greatest concern, hazard history, and the jurisdiction's capabilities.

Chemical Spills – Fixed Site

Both critical facilities for the fire department are located one block away from chemical fixed sites. The planning team indicated that no major spills have occurred, but that does not mean that there is no risk. Seward County has experienced multiple major spills in the last 18 years. If a fixed site spill were to occur, both the fire department and the co-op have specially trained groups with some resources to perform a response effort. The planning team indicated that nearby residents are not educated about the threat and appropriate response to a chemical spill.

Chemical Spills – Transportation

Significant transportation spills include overturned Anhydrous Ammonia trailers and trucks carrying farm chemical having caught on fire/wrecked. These spills have caused evacuations and dead vegetation in the spill areas. Intersections within the district are a top concern for potential spills due to crashes. This primarily occurs when crops are fully grown and cause site problems for drivers. If a transportation chemical spill were to occur, the fire department would respond and typically have the resources to clean up the spill.

Severe Thunderstorms

The primary concern regarding severe thunderstorms is high winds causing blocked road ways, damaging the co-op, and damaging emergency services. The planning team noted that 2018 had several severe thunderstorm events with high winds and hail which damaged the fire station. Both critical facilities have backup power generators in case of a loss of power, however those facilities do not contain weather radios. The planning team also indicated that there are hazardous trees that need to be removed, especially on abandoned properties.

Severe Winter Storms

In 2014 a heavy snow event blocked access to and from the fire station. The snow also blocked other roads in the area, which left several stranded motorists. The primary concern regarding severe winter storms is snow blocking the roadway to Tamora and the fire department. A backup generator is available at the fire station, but access to Tamora is needed to start it and refuel it. Snow removal can be very difficult for the district because they are reliant on Seward County Roads Department to remove snow. Their resources are usually insufficient, and it can take time for them to get all the roads clear. The fire department does not have any snow removal equipment but can contact the co-op for snow removal if necessary.

Tornadoes

No tornadoes have occurred in the district, but that does not mean there is zero risk. Seward County has experienced 14 tornado events since 1996. Even a small magnitude tornado could have a large impact on the district. There are no tornado shelters in the area and most homes do not have basements. Approximately 25% of residents in Tamora live in mobile homes, which can

easily tip over or be destroyed during a high wind or tornado event. There is no tornado siren in the district but there are radio remote signals.

Governance

The Tamora Fire Department is a rural fire department consisting of 24 volunteers. The Department is led by a governing board.

Capability Assessment

Table TMR.3: Capability Assessment

Overall Capability	Limited/Moderate/High
Does the department have the financial resources needed to implement mitigation projects?	Limited
Does the department have the staff/expertise to implement projects?	Limited
Does the department have the community support to implement projects?	Limited
Does the department staff have the time to devote to hazard mitigation?	Limited

Plan Integration

No examples of plan integration were identified by the Fire Department. There are currently no plans to further integrate existing or future planning mechanisms.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Alert Sirens
Description	Perform an evaluation of existing alert sirens in order to determine which sirens should be replaced or to inform the placement of new sirens.
Hazard(s) Addressed	Tornadoes, Severe Thunderstorms, High Winds
Estimated Cost	\$15,000+
Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Fire Chief, County Emergency Management
Status	Not Started, New Action

Mitigation Action	Backup Generators
Description	Provide a portable or stationary source of backup power to critical facilities.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Winter Storms, Severe Thunderstorms
Estimated Cost	\$15,000 - \$30,000 per generator
Funding	General Fund
Timeline	2 - 5 Years
Priority	Medium
Lead Agency	Fire Chief
Status	Not Started, New Action

Section Seven | Tamora Volunteer Fire Department Participant Profile

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing emergency response equipment. Ex: fire trucks, ATV's, water tanks/trucks, snow removal equipment, etc. This would also include developing backup systems for emergency vehicles and identifying and training additional personnel for emergency response.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies by equipment
Funding	General Fund
Timeline	5+ Years
Priority	High
Lead Agency	Fire Chief
Status	Not Started, New Action

^{vii} Nebraska Department of Roads. "Traffic Flow Map of the State Highways: State of Nebraska." [map]. Scale 1"= 20 miles. State of Nebraska: Department of Roads, 2015. <http://www.roads.nebraska.gov/media/2510/2014-statewide-traffic-flow-map.pdf>

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

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

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

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

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

^{xiii} United States Census Bureau. "American Fact Finder: S0804: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

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

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

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

^{xvii} Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed September 2018. <https://deg-ies.ne.gov/tier2/tier2Download.html>.