UPDATING FLOOD AND WATER QUALITY PROTECTIONS

MAYOR'S NEIGHBORHOOD ROUNDTABLE

November 14, 2022

Tim Zach, Superintendent of Stormwater

LTU Watershed Management Division

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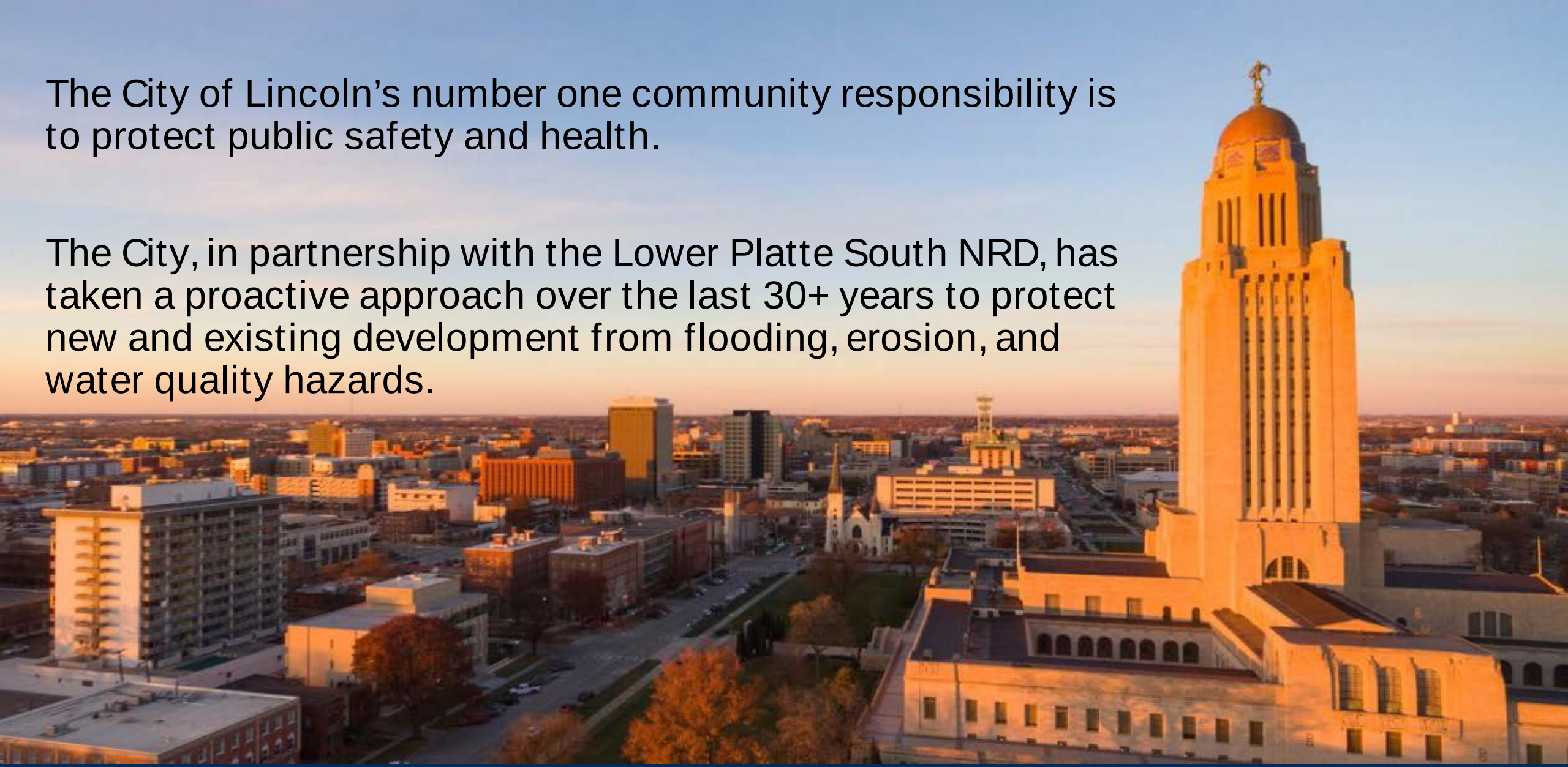
APWA



The City of Lincoln's number one community responsibility is to protect public safety and health.

The City, in partnership with the Lower Platte South NRD, has taken a proactive approach over the last 30+ years to protect new and existing development from flooding, erosion, and water quality hazards.

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IT IS OUR MISSION to responsibly deliver, enhance and maintain vital infrastructure and services for the good of our community.

CLIMATE CHANGE IS HAPPENING AND THE IMPACTS TO OUR COMMUNITY ARE REAL

- The existing floodplain maps were created using rainfall data from 1961 – over 60 years ago.

- Updated rainfall totals from U.S. National Ocean and Atmospheric Association (NOAA) and hydrological analysis indicate that **the flood map is <u>too low</u>.**

- Anyone wanting to construct a new building or invest in a significant rehab of an existing building could potentially be risking that investment if they build to a level that is too low and still floods.

FAMILIES AND BUSINESSES ACROSS LINCOLN FACE DANGER DUE TO INCREASED RISK OF FLOODING

Two cars are barely visible above the flood water on Old Cheney Road near U.S. 77.

A house basement near Old Cheney and Hunts Drive is a total loss.

Water covers the parking lot at Lincoln Southwest High School on Thursday, May 7, 2015.

FAMILIES AND BUSINESSES ACROSS LINCOLN FACE DANGER DUE TO INCREASED RISK OF FLOODING

Residents remove contaminated belongings, debris, and building materials from their homes on Huntington Ave in May 2015 after flooding caused raw sewage backups in north Lincoln.

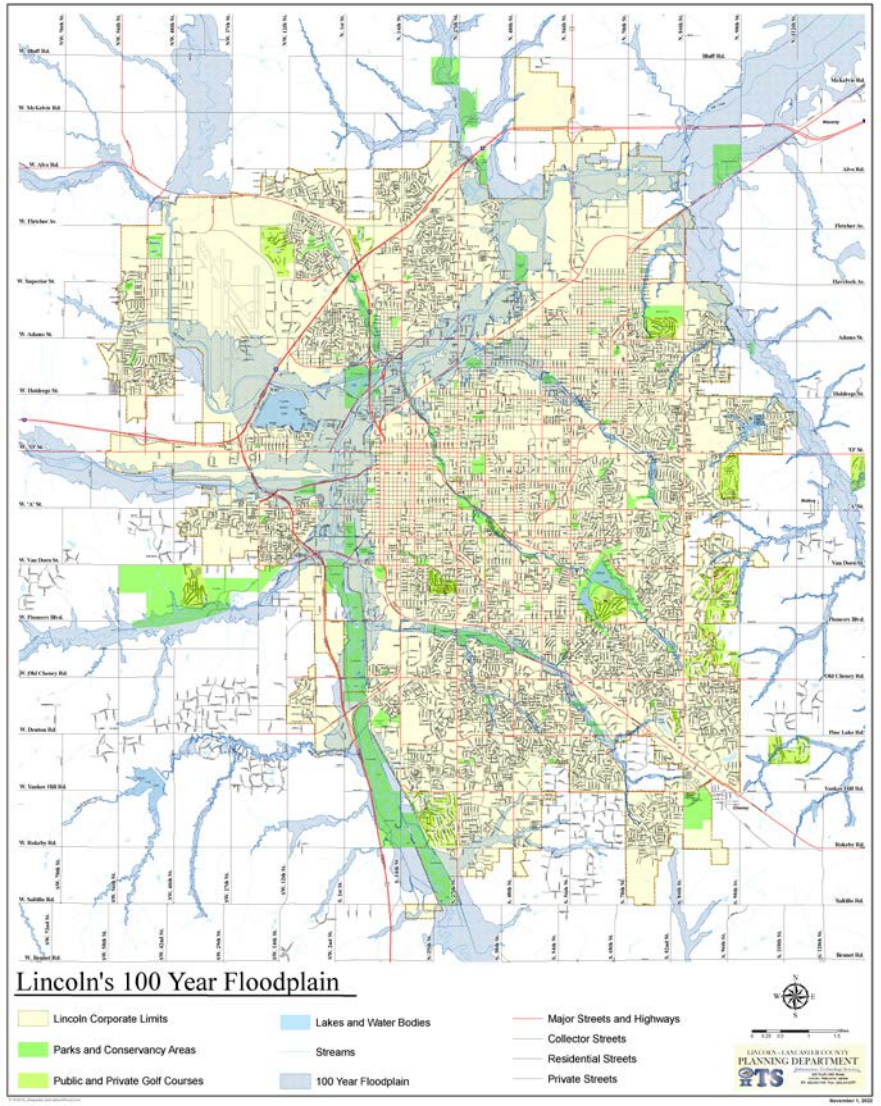
The city confirmed 174 properties had sewer water backups during the May storm. Lincoln City Council approved a $1 million disaster assistance fund aimed at providing some money to help affected property owners and renters pay for sewer-backup cleanup costs.

FAMILIES AND BUSINESSES ACROSS LINCOLN FACE DANGER DUE TO INCREASED RISK OF FLOODING

Residents are rescued from rising flood waters in south central Lincoln. Lincoln Fire and Rescue swift water team, LPD, and Lancaster County Sheriff helped lead the evacuation of entire neighborhoods.

IF THE FLOOD MAPS ARE TOO LOW, WHAT ARE WE DOING TO PROTECT OUR COMMUNITY?

- The City, in partnership with Federal Emergency Management Association (FEMA), has begun the process to **update the flood map**.
- However, that effort is estimated to take **5-8 years to complete**.
- We need to **update the flood protections in the interim** to keep homes and businesses safe.



What are the significant updates to the flood protections?

- Since 2000, the Flood and Water Quality Protections Manual has helped ensure any construction of homes or businesses in the floodplain is built to protect the occupants and goods from possible flooding.
- Two of the most significant guidelines being updated are:
  - “Freeboard”
  - “Minimum Stream Corridors”.

FREEBOARD PROTECTS FROM FLOODING

- **Freeboard is a factor of safety expressed as the distance between the flood water and the lowest floor of a building.**
- The State of Nebraska **requires one foot of freeboard** – using the FEMA floodplain maps to determine the flood level. If you are in the floodplain, that typically involves raising the ground level (adding more dirt) to the lot during construction work.
- However, the **current maps are using outdated rainfall information** and the flood water will be higher.
- In response, the **updated flood protections require an additional foot** (total of two feet) of freeboard in order to ensure properties are up out of the flood waters. **After the floodplain remapping is completed** using the updated rainfall data, we will be able to **resume the one-foot freeboard**.

STREAM CORRIDORS PROTECT FROM FLOODING

Maintaining a properly sized corridor around the channels in Lincoln provides cleaner, healthier, safer streams for everyone:

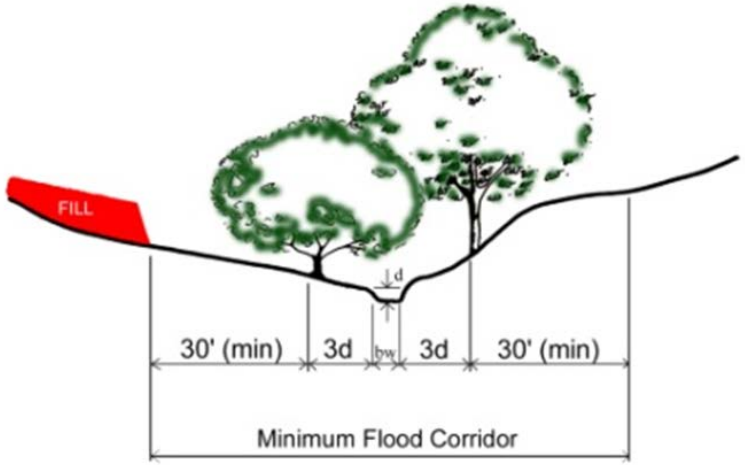
- Enhance adjacent property values
- Provide natural screening between properties
- Protect structures from channel erosion
- Improve flood flow attenuation
- Improve stormwater quality
- Improve aesthetics and provide recreational opportunities

MINIMUM FLOOD CORRIDOR

Current Criteria

- Minimum Flood Corridor is required where:
  - drainage area is over 150 acres

    -OR-
  - defined bed and bank is present



Why change criteria?

- Not Consistent – Existing method of using “defined bed and bank” is subjective & produced widely varying results
- Costly to development – Requires an engineer or environmental scientist to determine where “defined bed and bank” starts and calculate buffer width
- Not fair and equitable to everyone

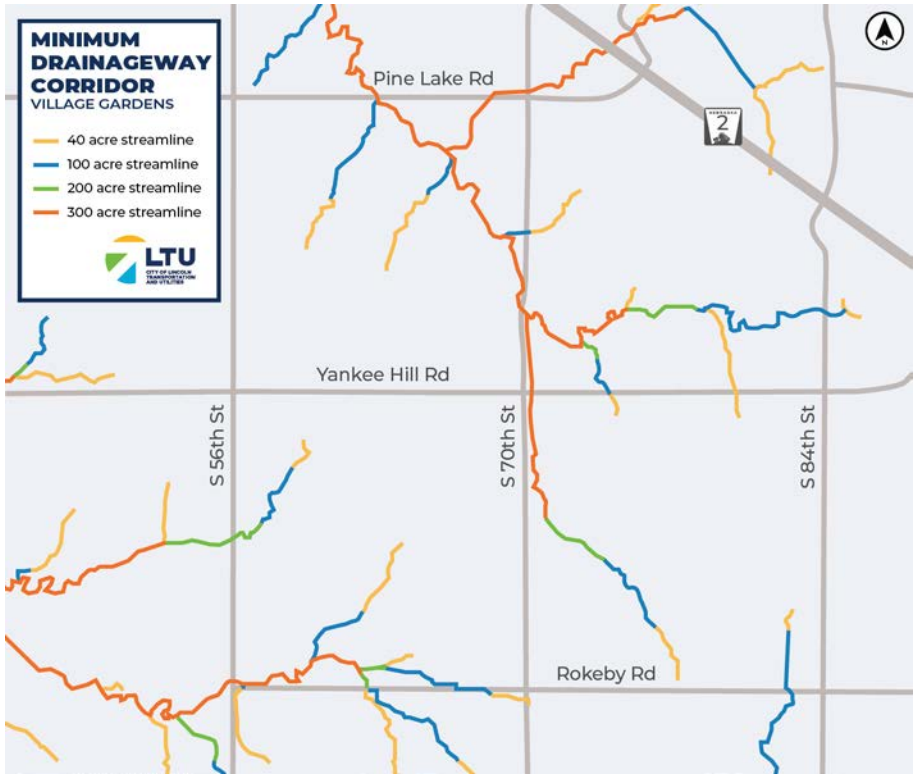
Proposed Criteria: consistent & simplified, cost savings, property owners know what is required

MINIMUM FLOOD CORRIDOR

Updated Proposal:

- drainage area 40 – 100 ac
  - 90 ft wide corridor
- drainage area 100 – 200 ac
  - 100 ft wide corridor
- drainage area 200 – 300 ac
  - 120 ft wide corridor
- drainage area over 300 ac
  - buffer width = channel width + (6 x depth]) + 60 ft

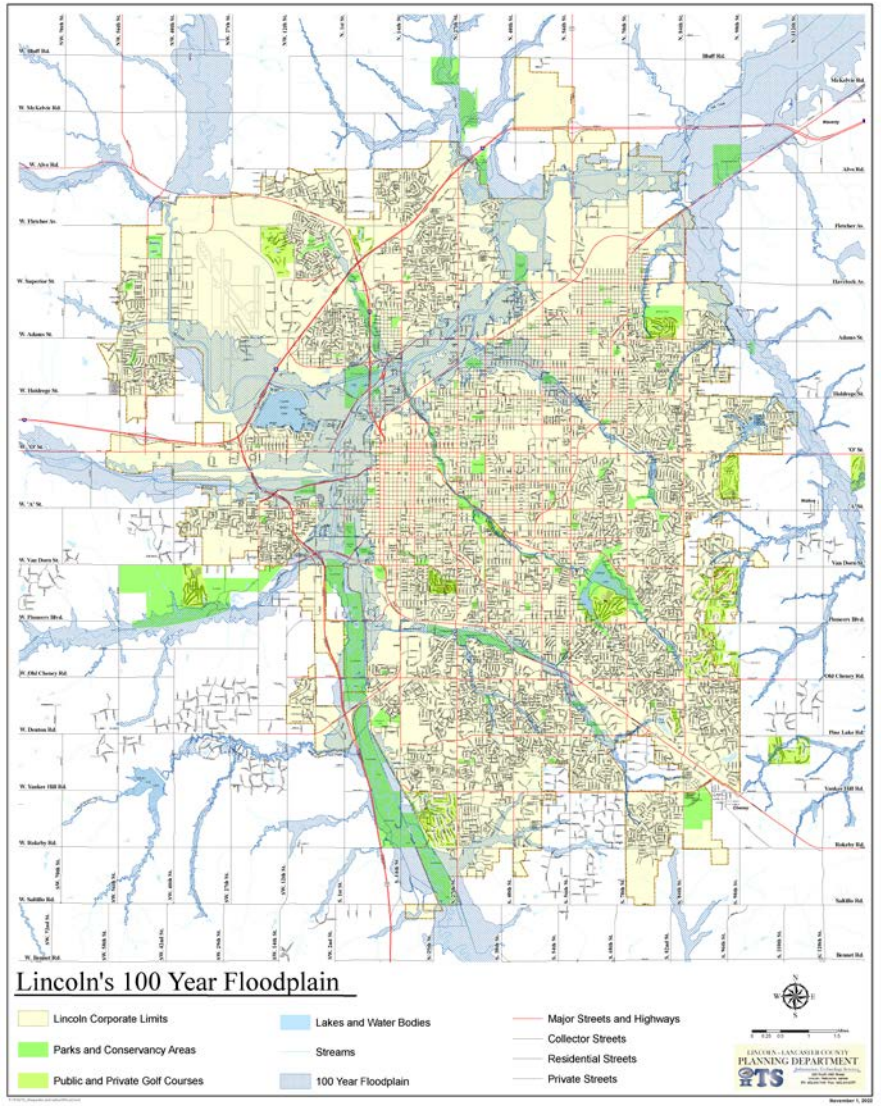
NOTE: Comparison of existing calculation vs updated shows on average corridor widths remain the same.
This update saves time and money.



HOW DOES THIS AFFECT EXISTING NEIGHBORHOODS?

- The vast majority of neighborhoods (84%) are **not** located within the floodplain and are unaffected.

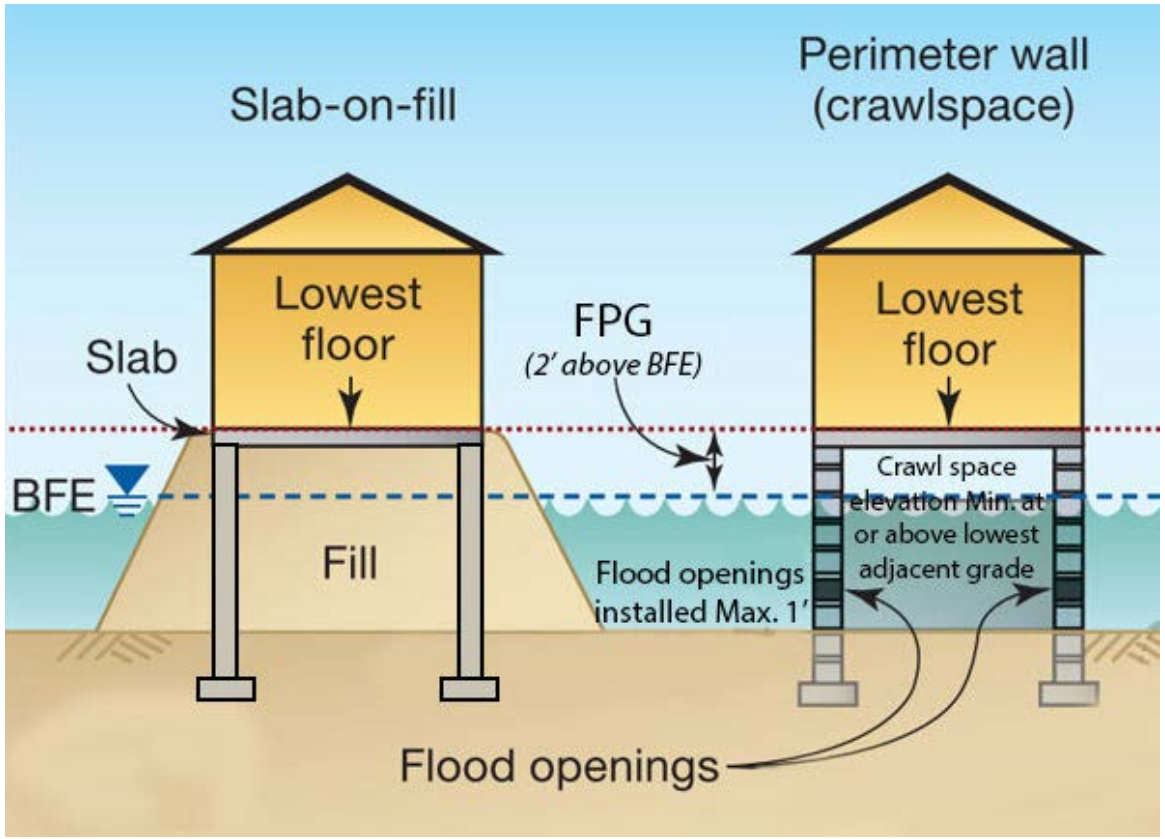
- However, we need to provide protections for the families, homes and businesses that are within the floodplain.



WHO IS IMPACTED BY THE FLOOD PROTECTION UPDATES?

Only construction activity within or immediately adjacent to the current floodplain:

- A new home or business wanting to be built within the floodplain
- An existing home or business within the floodplain that wants to invest more than 50% of the current value of the property in an expansion or rehab
- Property immediately adjacent to the floodplain that is too low and at risk for flooding



DOES THIS IMPACT AFFORDABILITY?

- Sub-standard construction is NOT an affordability strategy. Buildings must be constructed to protect families and businesses from loss of life or property.
- Meeting the new flood protection standards only increases construction costs by a minimal amount. FEMA estimates one additional foot of freeboard adds between 0.25 and 1.5 percent to the total cost of construction.
- Properties built in the flood plain must purchase flood insurance. Building to the updated standards can lower flood insurance premiums. The payback with lower premiums is typically 2-3 years. It's more affordable to simply build it safely.
- Nation-wide data shows every $1 spent flood proofing saves $4 - $11 dollars in flood damages to property...AND reduces the threat to loss of life.
- The best strategy is to build according to the updated safety standards **AND** provide additional funding for affordable housing as needed. City of Lincoln budget has affordable housing funds to help close financing gaps for affordable projects.

WHAT IF MY HOUSE IS CURRENTLY IN THE FLOODPLAIN?

- You are not required to do anything unless you expand or remodel and the project cost is 50% or more of the value of the house.

- This is the current rule and the update does not change it.

- The updated standards simply add an additional one foot of freeboard (two feet total) to ensure that anyone making a substantial investment in their property (over 50% of the value), doesn't have their investment flooded because they build it too low.

HOW ELSE ARE WE HELPING PROPERTIES IN THE FLOODPLAIN NOW?

- The City continues to do **structural stormwater improvements** that reduce the size of the floodplain and help protect properties.
- For example, Antelope Valley reduced the size of the floodplain, so over **1,000 homes and businesses** were no longer in danger of flooding.
- Current improvements to **Dead Man's Run** near University Place and East Campus will so the same for several hundred more.
- We recently created a comprehensive **Watershed Master Plan** that lists needs and priorities for the entire community. This will guide our continued investment in **structural solutions** to protect neighborhoods.

THIS UPDATE CONTINUES OUR LONG HISTORY OF PROTECTING OUR COMMUNITY

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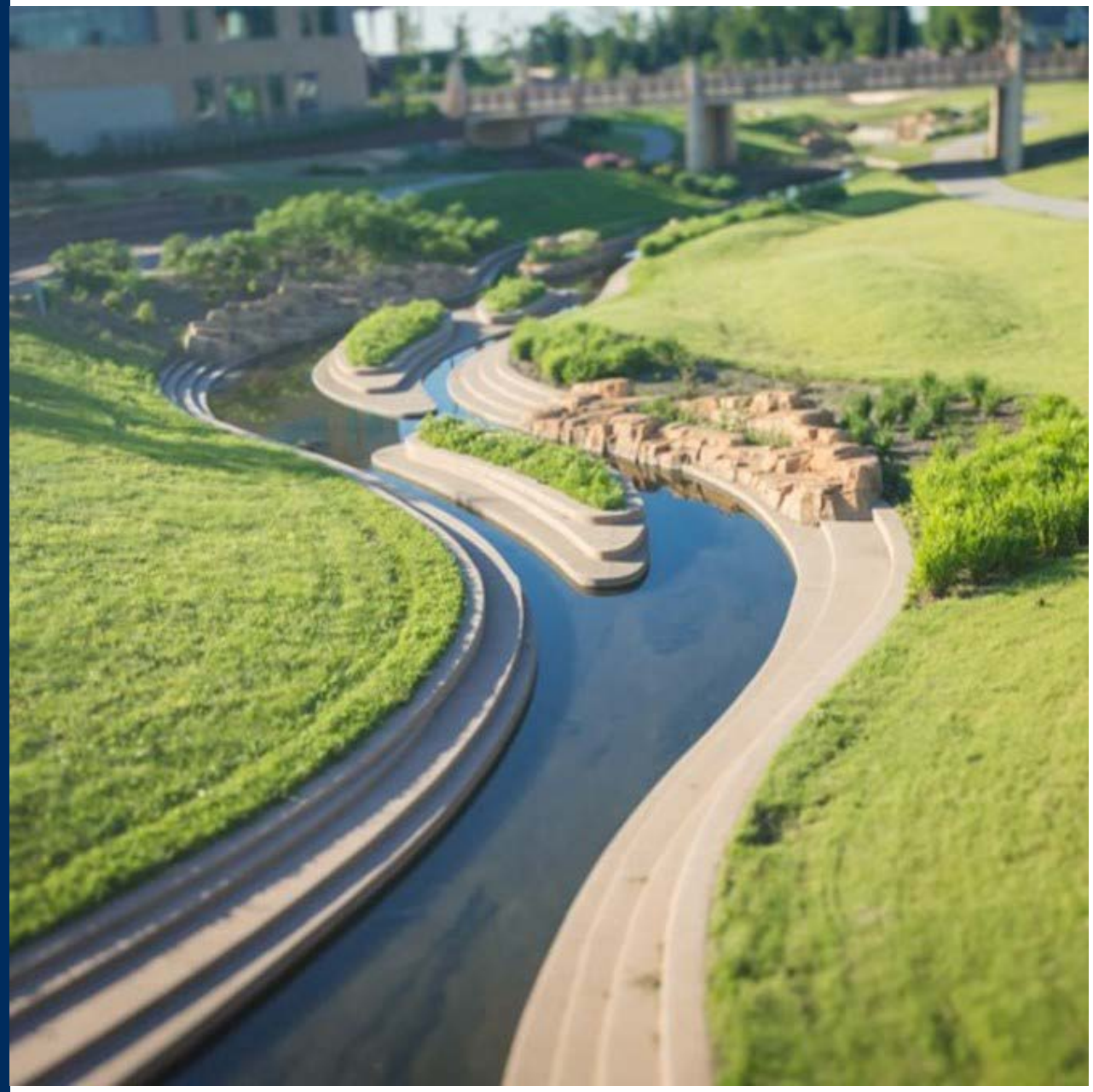

WATERSHED MANAGEMENT & MASTER PLANNING HISTORY

1954 – Present

The City and Lower Platte South NRD have coordinated with the U.S. Army Corps of Engineers (USACE) regarding multiple flood risk reduction actions including:

Salt Creek and Tributaries Flood Control project, Antelope Valley project, Deadmans Run Flood Risk Management project

April 1971

The City of Lincoln joins the NFIP.

July 1972

Lower Platte South NRD formed from the Salt Wahoo SID #1.

October 1991

The City joins the NFIP CRS program.

1994

Mayor's Stormwater Task Force – developed stormwater quantity management recommendations.

Watershed Master Plan Development & Implementation

PHASE 1: 2000-2009

Focus on flood risk reduction, stream stability, and water quality with an emphasis on flood risk analysis and reduction. Plans developed during this phase included:

Beal Slough (2000), Southeast Upper Salt Creek (2003), Stevens Creek (2005), Cardwell Branch (2007), Deadmans Run (2007), Little Salt Creek (2009).

2000-2012

Antelope Valley Project.

February 2000

Initial adoption of Drainage Criteria Manual (DCM).

August 2001

Mayor's Floodplain Task Force – developed floodplain management policy recommendations.

2003

Watershed Management Division of Public Works and Utilities formed.

September 2002

Implementation of large development construction stormwater runoff management through sediment and erosion control.

May 2004

Implementation of updated floodplain standards pursuant to the Floodplain Task Force Recommendations. These standards included the addition of a Minimum Flood Corridor (MFC).

December 2006

Development of Master Plan Capital Improvement Project Prioritization scoring methodology.

December 2007

Salt Creek floodplain study.

2008

Development of the Lower Platte South NRD's first Hazard Mitigation Plan (HMP), with the City as a participating jurisdiction. The plan was then updated in 2015 and in 2020.

Watershed Master Plan Development & Implementation

PHASE 2: 2012-2018

Focus on stream stability and water quality with a lower emphasis on flood risk reduction. Plans developed during this phase included:

Antelope Creek (2012), Haines Branch (2015), Middle Creek (2015), South Salt Creek (2015), Upper Wagon Train (2017), Oak Creek (2018), Lynn Creek (2018), North Salt Creek (2018).

February 2014

Implementation of post-construction stormwater management regulations for individual sites.

2015-Present

Deadmans Run Flood Risk Management Project.

2016-2020

Development of the Salt Creek Levee Assessment and Systemwide Improvement Framework (SWIF).

August 2015

The City achieves a CRS ranking of Class 5, providing a 25% flood insurance discount to NFIP policy holders.

2020

Salt Creek Floodplain Resiliency Study.

2020-Present

Adoption of the Comprehensive Watershed Master plan, and updates to the Flood & Water Quality Protection Manual.

WHAT WAS THE PROCESS FOR UPDATING THE FLOOD PROTECTIONS?

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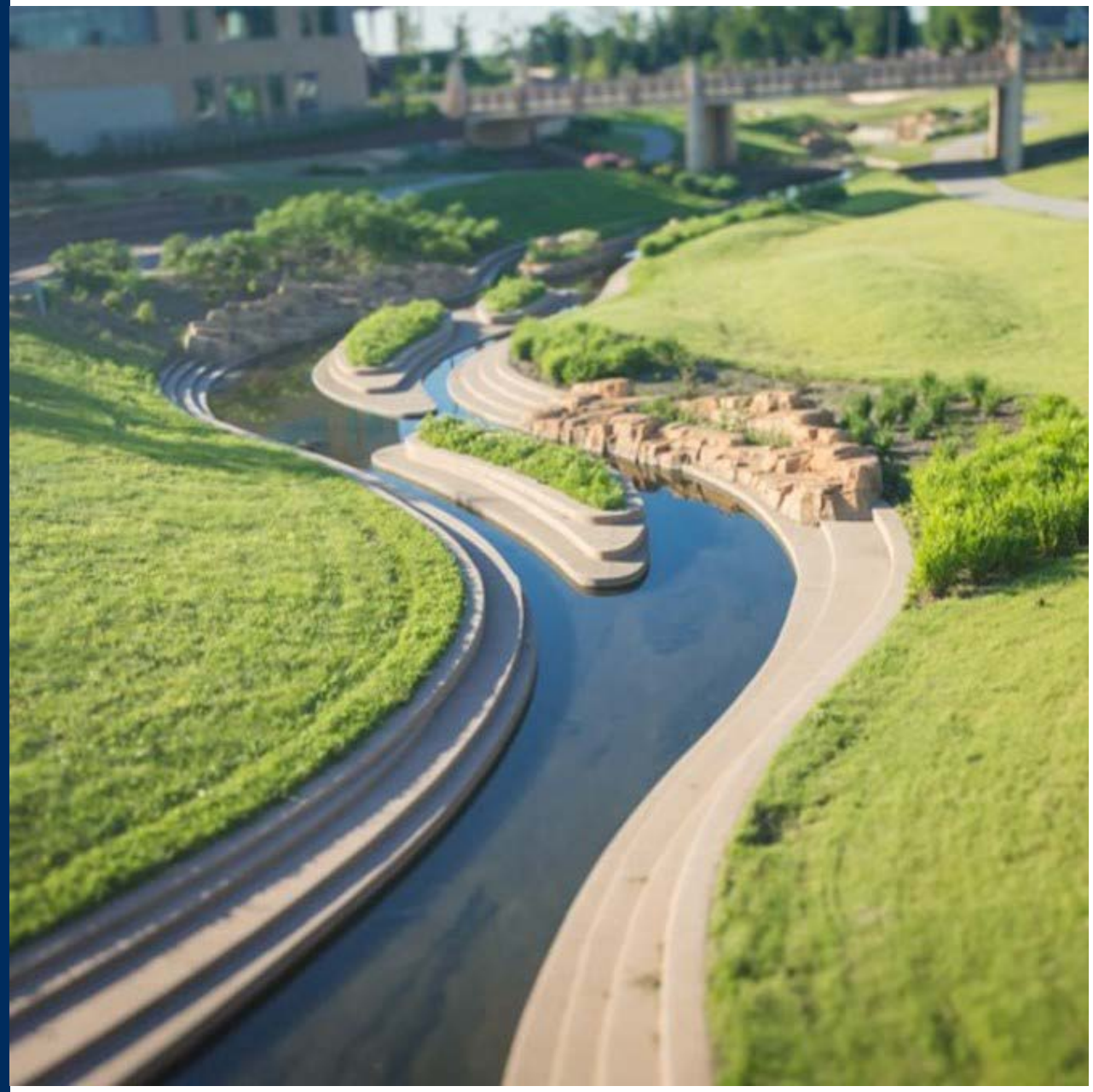
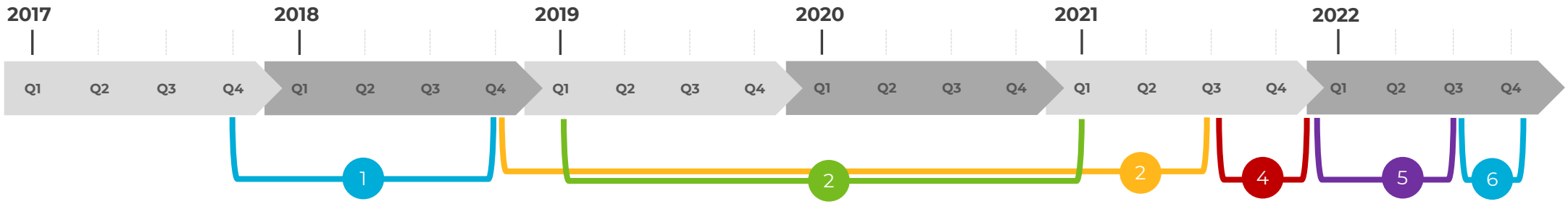


FLOOD & WATER QUALITY PROTECTION MANUAL - UPDATE HISTORY (4+ YEARS)

1	Oct 2017 – Oct 2018	Manual Chapter-by-Chapter Workshops
2	Jan 2019 – Jan 2021	Salt Creek Floodplain Resiliency Study
3	Oct 2018 – July 2021	Drafting of Manual / Ordinance Revisions
4	July 2021 – Oct 2021	Public Review & Stakeholder Meetings
5	Oct 2021 – June 2022	Individual Meetings & Feedback
6	July 2022 – Oct 2022	Review Workshops & Proposal Update based on Feedback



SALT CREEK FLOODPLAIN RESILIENCY STUDY

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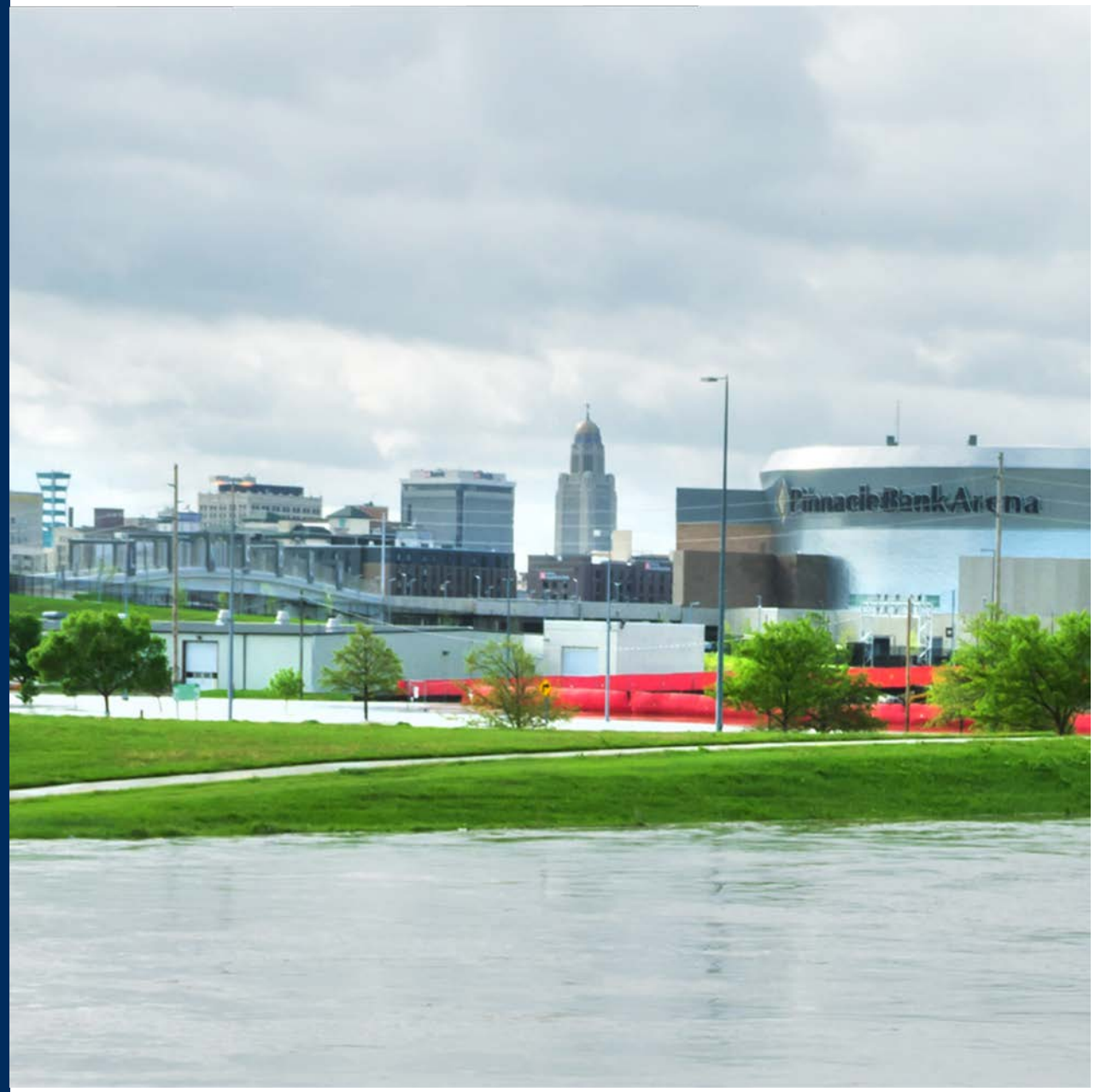

SALT CREEK FLOODPLAIN RESILIENCY STUDY

- Two-year process (2019-2021) working with community stakeholders and technical experts to determine the impacts of increased rainfall on our community.
- Community stakeholder committee that included neighborhood associations, engineers, developers, environmental experts, business owners, and more.
- Hydrological analysis of Salt Creek and the tributaries that feed into it (ex: Antelope Creek, Deadman's Run, Beal Slough) determined that updated rainfall will lead to a 15% increase in flow, resulting in an average rise of 0.8 ft along Salt Creek
- The study shows that there is a **higher risk of flooding** in our community today than what is shown on the FEMA floodplain maps.

SALT CREEK FLOODPLAIN RESILIENCY STUDY

Recommendations:

- Continue active participation in FEMA's Community Rating System
- **Adopt higher floodplain regulatory standards (this proposal)**
- Initiate the development of new floodplain maps (underway)
- Use national best management practices (BMPs) identified to guide planning objectives
- Consider implementation of nonstructural flood resiliency strategies
- Continue with the development of a resiliency strategy for Salt Creek

FLOOD PROTECTION UPDATES

Draft Proposal Based on Salt Creek Study and Stakeholder Feedback

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PUBLIC REVIEW AND FEEDBACK

The City has spent the last **16 months** meeting with stakeholders and receiving feedback on the proposed flood protection updates.

July 2021	Draft of Manual / Ordinance Revisions Available for Review
July 2021 – Oct 2021	Public Review & Stakeholder Meetings
Nov 2021 – June 2022	Individual Meetings & Feedback
July 2022 – Oct 2022	Review Workshops & Proposal Update based on Feedback

SUMMARY OF PROPOSED REVISIONS

2021 Proposal

- Floodplain Requirements
  - Permanent 2 ft freeboard
  - Lowest floor elevations for both lots in and adjacent to the floodplain
  - No-net rise reduced for named streams, minor streams left at 0.05’
- Rainfall Data
  - Updating from TP-40 to NOAA Atlas 14
- Minimum Flood Corridor
  - Simplifying standard to be based on drainage area & set width

2022 Changes based on Feedback

- Floodplain Requirements
  - Temporary 2 ft freeboard (reverts to 1 ft with floodplain maps based on NOAA Atlas 14)
  - Lowest floor elevations for lots in the floodplain, minimum opening elevations for lots adjacent to the floodplain
  - LOMC before final plat, not building permit for residential
  - No-net rise only reduced for Salt Creek, all other streams left at 0.05’
- Rainfall Data
  - Same as 2021 Proposal
- Minimum Flood Corridor
  - Added alternatives to allow flexibility
  - Revised block length to reduce crossings

SUMMARY OF PROPOSED REVISIONS

2021 Proposal

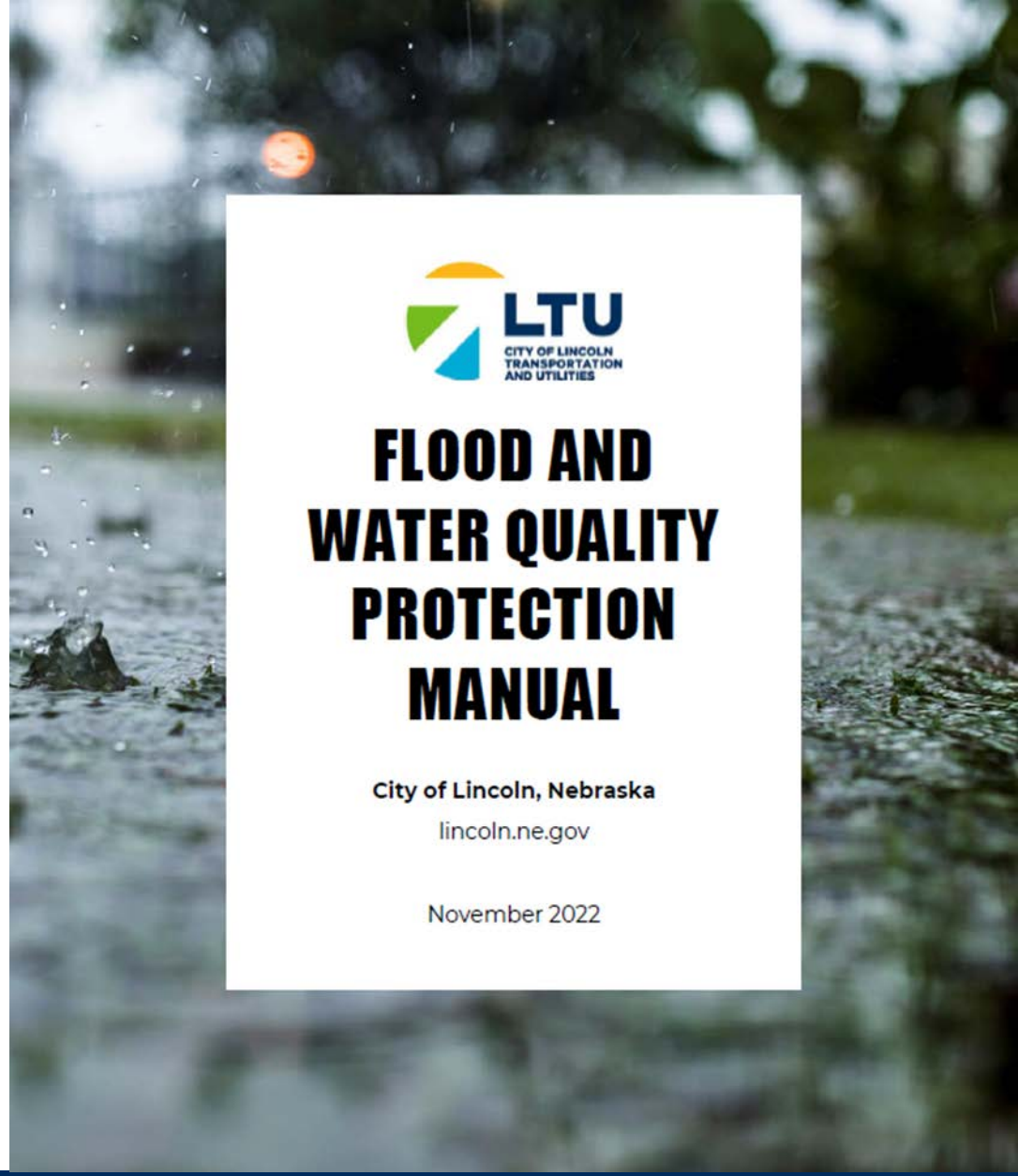
- Detention
  - Top width & side slopes same as current
  - Establish certification process
- Post Construction BMPs
  - Adding new standard BMPs to simplify process
  - Requiring surety, as-built plans, and certification form
- Storm Drainage System
  - Allowing flexibility with horizontal/vertical alignment
- Minimum Street Grade
  - Going from 0.5% to 1.0% minimum to reduce standing water in street
- Erosion & Sediment Control
  - Updated enforcement requirement

2022 Changes based on Feedback

- Detention
  - Allowing flexibility to reduce footprint
- Post Construction BMPs
  - Same as 2021 Proposal
- Storm Drainage System
  - Same as 2021 Proposal
- Minimum Street Grade
  - Reverted to 0.5% minimum, but clarified grade is along curb line to reduce standing water in street
- Erosion & Sediment Control
  - Revised based on updated States requirements

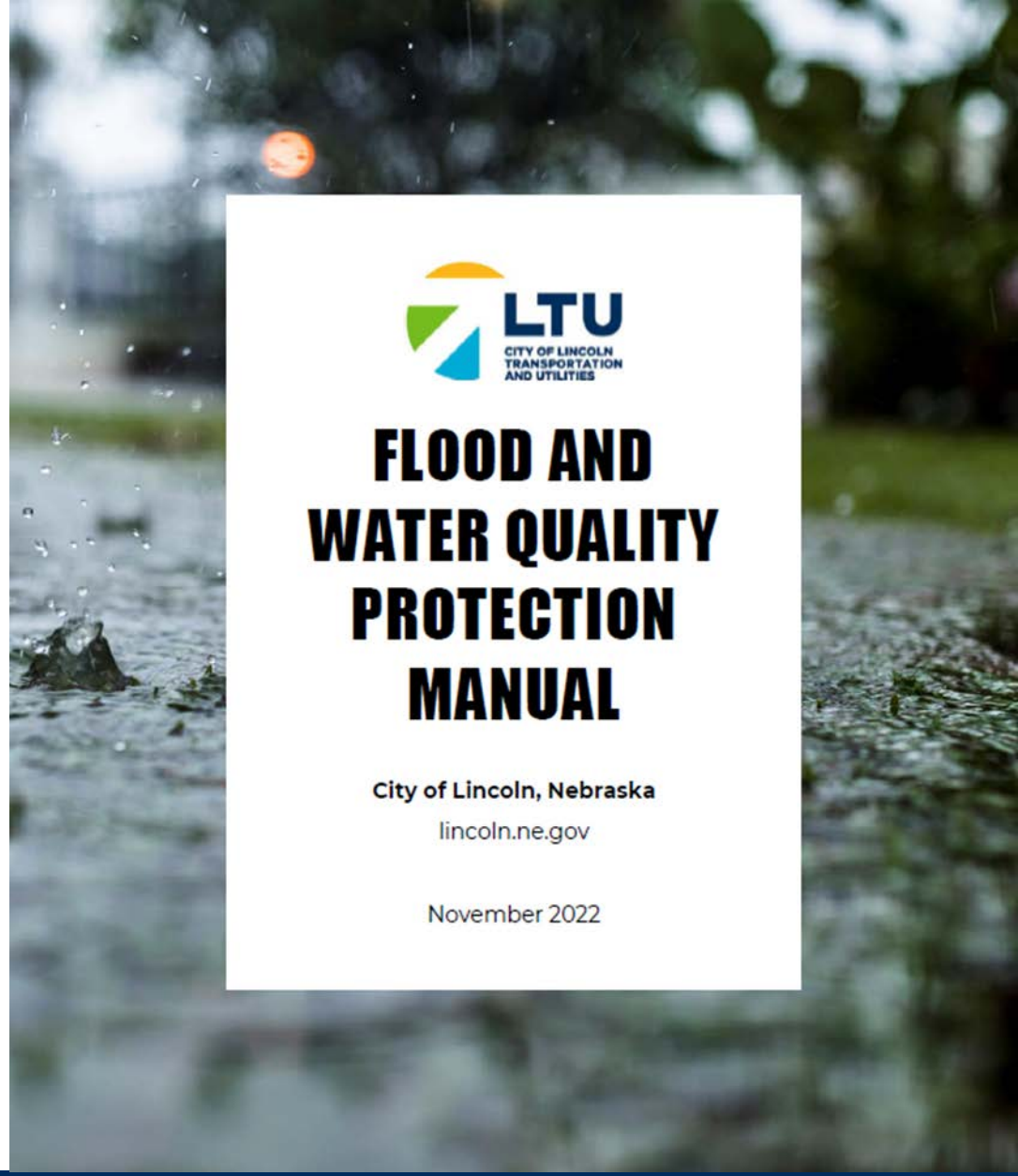
PROPOSED REVISIONS

- Flood and Water Quality Protection Manual
- Lincoln Municipal Code:
  - Title 26
  - Title 27
  - Title 28.01
  - Title 28.03
- Design Standards
- More information at lincoln.ne.gov
  - Type "flood and water" into search box



IMPLEMENTATION

- Updated requirements will go into effect **60 days** after adoption by City Council
- Preliminary Plats approved prior to updated requirements will be grandfathered in
  - Unless a final plat has not been submitted in the last 5 years
- Building permits **in** the floodplain will be required to meet the updated requirement
- LTU Watershed is planning to have **quarterly** review workshops with development / engineering community to assess the effectiveness of the updated requirements
  - Will move to biannual or annual review workshops in the future



TAKING ACTION TO PROTECT OUR COMMUNITY

- **Adopt needed flood protection and water quality updates (this proposal)**
  - Planning Commission: 11-16-22 at 1pm
  - City Council: 12-12-22 Public Hearing at 3pm; 12-19-22 Action
- **Initiate the development of new floodplain maps**
  - FEMA Cooperating Technical Partnership (CTP) FY2022 grant of $515,450 awarded to the City to start remapping efforts with Beal Slough and Cardwell Branch (Phase 1)
- **Continue additional resiliency strategies for Salt Creek**
  - Analyzing structural flood resiliency strategies
    - FEMA Building Resilient Infrastructure and Communities (BRIC) grant application submitted January 2022; application in review, expected award Q1 2023
    - Additional stakeholder engagement
- **Expanding funding opportunities**
  - Local, State, and federal
  - Additional community discussion and stakeholder engagement

Planning Commission

Wed, November 16th at 1:00 pm

plan@lincoln.ne.gov

City Council

Mon, December 12th starting at 3:00 pm

councilpacket@lincoln.ne.gov

QUESTIONS?

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