Policy Framework Discussion: Safety & Flood Resilience

Climate Action Commission | June 13, 2024
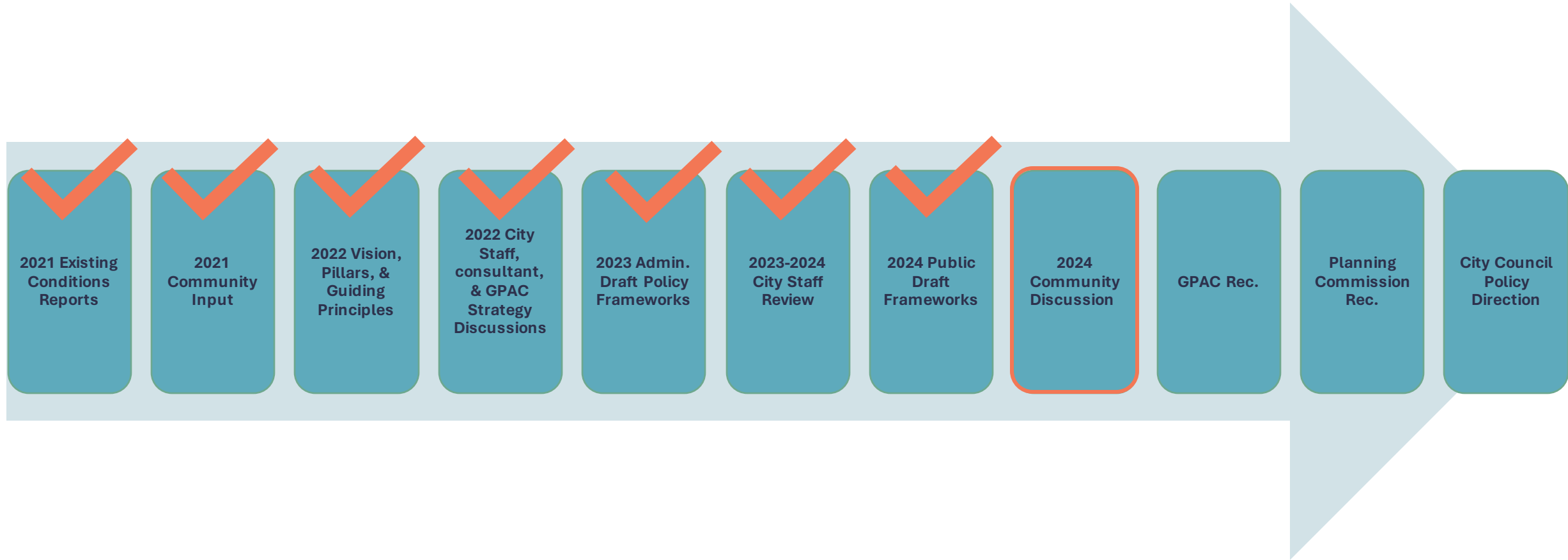
CITY OF PETALUMA
GENERAL PLAN UPDATE

raimi+associates

Policy Framework Purpose & Structure

- **Purpose of the Frameworks**: Outline the proposed General Plan goals, policies, and implementation actions

- **Goals:** A general statement that expresses the outcomes towards which planning efforts are directed; often a topic-specific component of the Vision

- **Policies:** A statement of intent or direction that contributes toward achieving a goal and that guides decision-making

- **Actions:** A specific activity, procedure, program, or project aimed at implementing a policy

Example

- Goal FAC-1: High-Quality Public Facilities

  - Policy FAC-1.1: Update, expand, relocate, or replace public facilities

    - Action FAC-1.1.3: Plan, design, and construct a new centrally located Fire Station and Emergency Operations Center, to include shared meeting spaces and flex space for other public uses.

Policy Framework Evolution

| 2021 Existing Conditions Reports ✓ | 2021 Community Input ✓ | 2022 Vision, Pillars, & Guiding Principles ✓ | 2022 City Staff, consultant, & GPAC Strategy Discussions ✓ | 2023 Admin. Draft Policy Frameworks ✓ | 2023-2024 City Staff Review ✓ | 2024 Public Draft Frameworks ✓ | 2024 Community Discussion | GPAC Rec. | Planning Commission Rec. | City Council Policy Direction |

Policy Frameworks

ARTS, CREATIVITY, AND CULTURE

PARKS

HISTORIC RESOURCES

ENVIRONMENTAL JUSTICE

SAFETY

ECONOMIC DEVELOPMENT

INFRASTRUCTURE AND UTILITIES

MOBILITY AND TRANSPORTATION

NATURAL ENVIRONMENT

FLOOD RESILIENCE

PUBLIC FACILITIES

NOISE

GOVERNANCE AND IMPLEMENTATION

LAND USE

View the Frameworks
planpetaluma.org

The General Plan will be different...

- Compelling, holistic, integrated, strategic approach
- Different organization
    - By element
    - By themes
    - By City department
- Digital General Plan: https://shapessf.com/ example
- Implementation Plan
    - Action matrix: action, implementor, priority, timeframe
    - Roles for City, community, State, etc.
- Tracking progress (see the Implementation & Governance framework)
    - Track Implementation Plan progress
    - Monitor Performance Metrics Dashboard

How to Provide Input

CITY OF PETALUMA
GENERAL PLAN UPDATE

Framework Review Form

In light of the **Vision, Pillars, and Guiding Principles** prepared by the GPAC and adopted by the City Council (https://www.planpetaluma.org/documents#gpuvision):

What are the **most important** policies in this framework? We recommend identifying the top 5 (or fewer) policies and ranking them in order of importance.

Policy	Explanation

What **concerns** do you have about the policies in this framework? For example, are they unclear? Should they be softened or strengthened? Do you disagree with the policy direction?

Policy	Explanation

Policy Framework Community Meetings

CCB	Meeting Date	Key Frameworks to be Reviewed
Bike + Ped (PBAC) Transit	May 1, 2024	Transportation
Airport	May 2, 2024	Transportation
Historic & Cultural (HCPC)	May 7, 2024	Historic Resources
Climate Action Commission (CAC)	May 9, 2024	Transportation & Natural Environment
Senior	May 9, 2024	Environmental Justice
PlanFest – Public Event	May 11, 2024	All!
Recreation, Music, & Parks Tree Advisory	May 15, 2024	Parks, Natural Environment, Public Facilities
Public Art	May 30, 2024	Arts, Creativity, and Culture
Planning Commission	May 28, June 11, June 18, June 25, 2024	Natural Environment, Transportation, Parks, Flood Resilience, Economic Development, Infrastructure and Utilities, Environmental Justice, Noise, Land Use
Climate Action Commission (CAC)	**June 13, 2024**	**Flood Resilience & Safety**
GPAC	June 20, 2024	Working Group recommendations on all Frameworks

Providing Feedback

Project Website

- Organized by Policy Framework topic

- Links to complete Policy Framework documents

- Embeded Online Feedback Form

Review other Policy Frameworks and provide feedback:

https://www.planpetaluma.org/policy-frameworks

Policy Framework Presentations On-Demand

Presentations to the committees and commissions are available at
planpetaluma.org/frameworkrecordings

Note: No recording available for Senior Advisory Committee on May 9, 2024.

Providing Feedback

Online Feedback Form for each Framework

- Provide goal- and policy-specific feedback

- Provide general feedback

Review other Policy Frameworks and provide feedback:
https://www.planpetaluma.org/policy-frameworks

Safety Policy Framework

Natural Hazards

- **Petaluma is exposed to a variety of natural and man-made hazards, many of which will be exacerbated by climate change.**

- Seismic activity continues to be a significant hazard risk.

- Heavy precipitation events have a high risk of causing flooding events on the back side of Industrial Ave and within the Payran neighborhood where there has been a history of flooding.

- There are high fire hazards areas near the city, particularly near the WUI.

- Areas like Downtown and the southwest may be exposed to multiple hazards, including flooding, sea level rise, seismic, and wildfire.
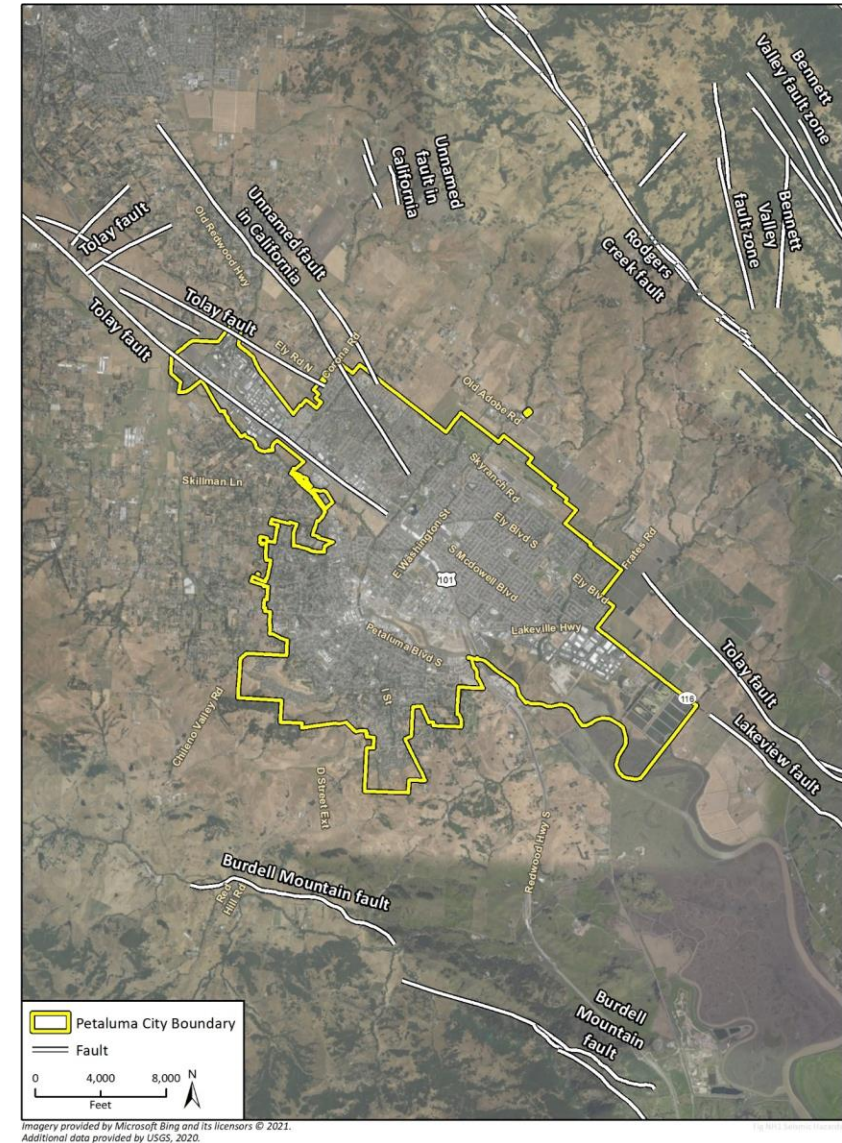
Manmade Hazards

- **There are currently 20 active hazardous material sites in the city.**

- Most of the hazardous material sites are concentrated in the Downtown area.

- Sites include 14 Leaking Underground Storage Tank Cleanup Sites, and a previous superfund site along Highway 116 near South McDowell Boulevard was removed from superfund by EPA following cleanup.
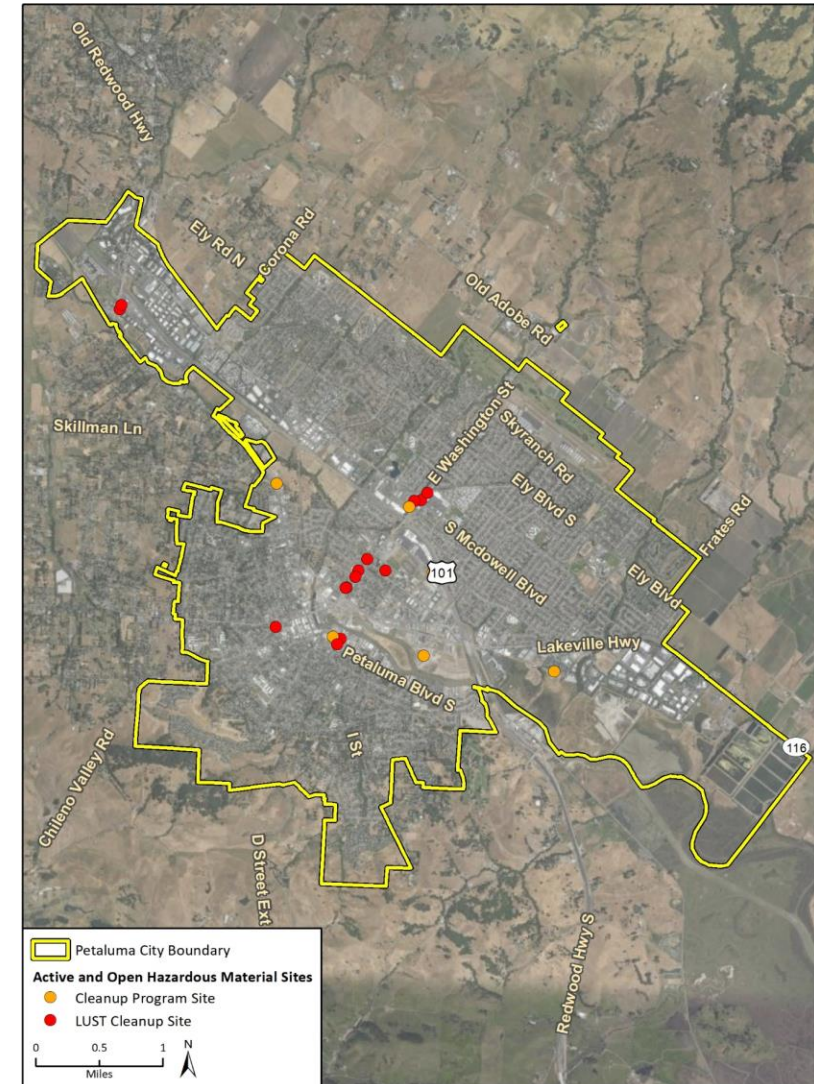
Wildfire Hazards

- **Petaluma is mostly surrounded by areas in the Moderate or High Fire Hazard Severity Zone.**

- Many areas in the wildland-urban interface are residential areas near fire-prone vegetation.
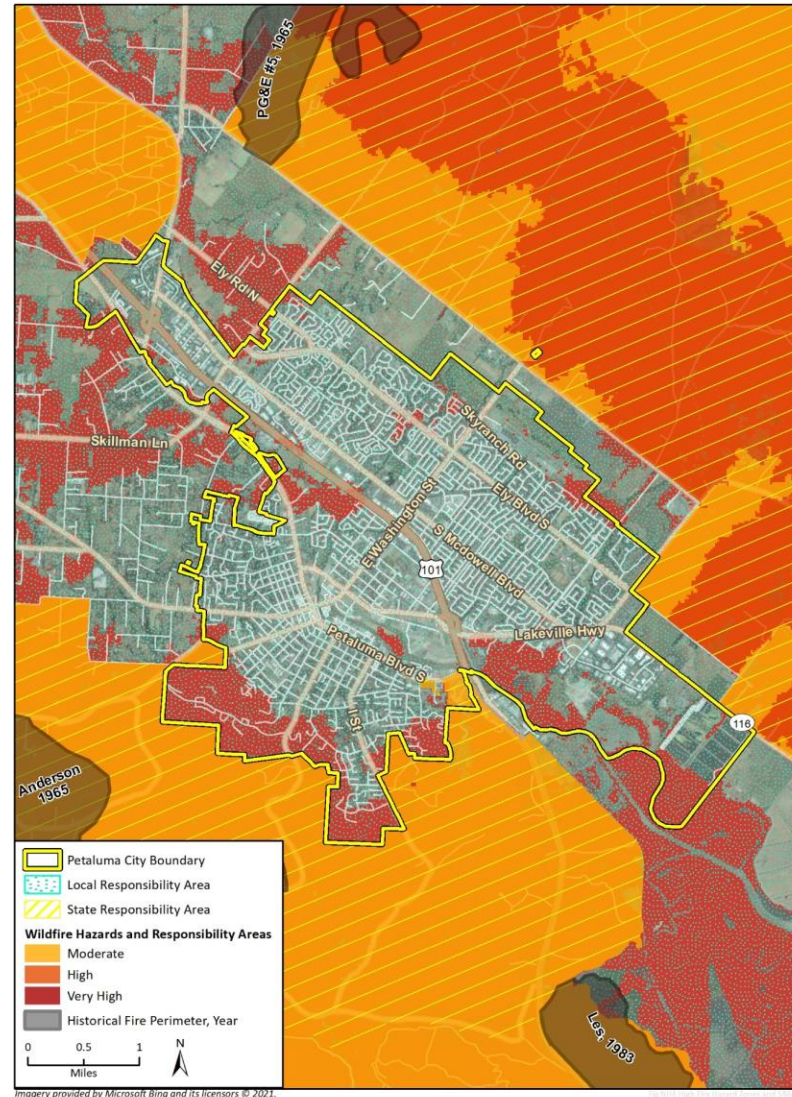
Petaluma City Boundary
Local Responsibility Area
State Responsibility Area

Wildfire Hazards and Responsibility Areas
Moderate
High
Very High
Historical Fire Perimeter, Year

0   0.5   1
Miles

Imagery provided by Microsoft Bing and its licensors © 2021.
Additional data provided by CalFire, 2021; Wildfire Severity Hazard Class - City of Petaluma, Calfira. Fire Responsibility Area, Historic Fire
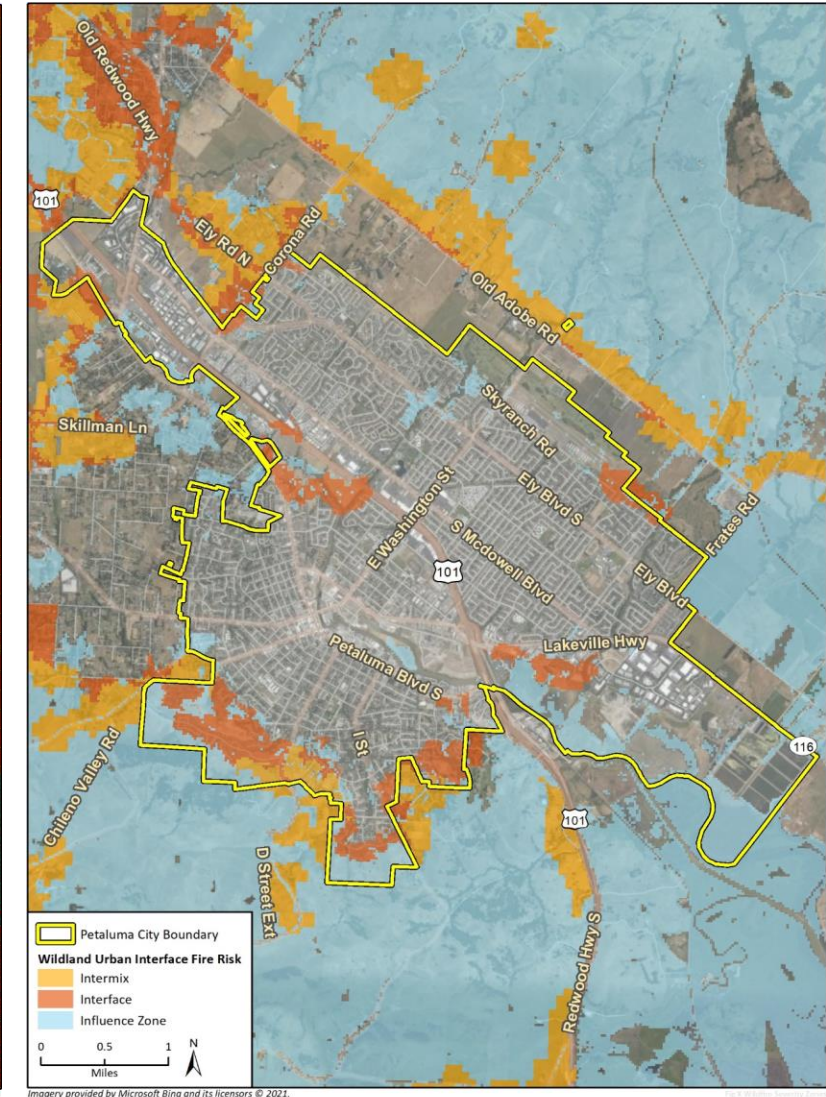
Petaluma City Boundary

Wildland Urban Interface Fire Risk
Intermix
Interface
Influence Zone

0   0.5   1
Miles

Imagery provided by Microsoft Bing and its licensors © 2021.
Additional data provided by Cal Fire and Resource Assessment Program, 2021

Geologic Hazards

- **The eastern and southeastern areas of the city will be most impacted by groundshaking in the event of a severe earthquake.**

- **Most of Petaluma is moderately susceptible to landslides.**

- The hills to the northeast and southeast of the city have historically had the most landslide issues.
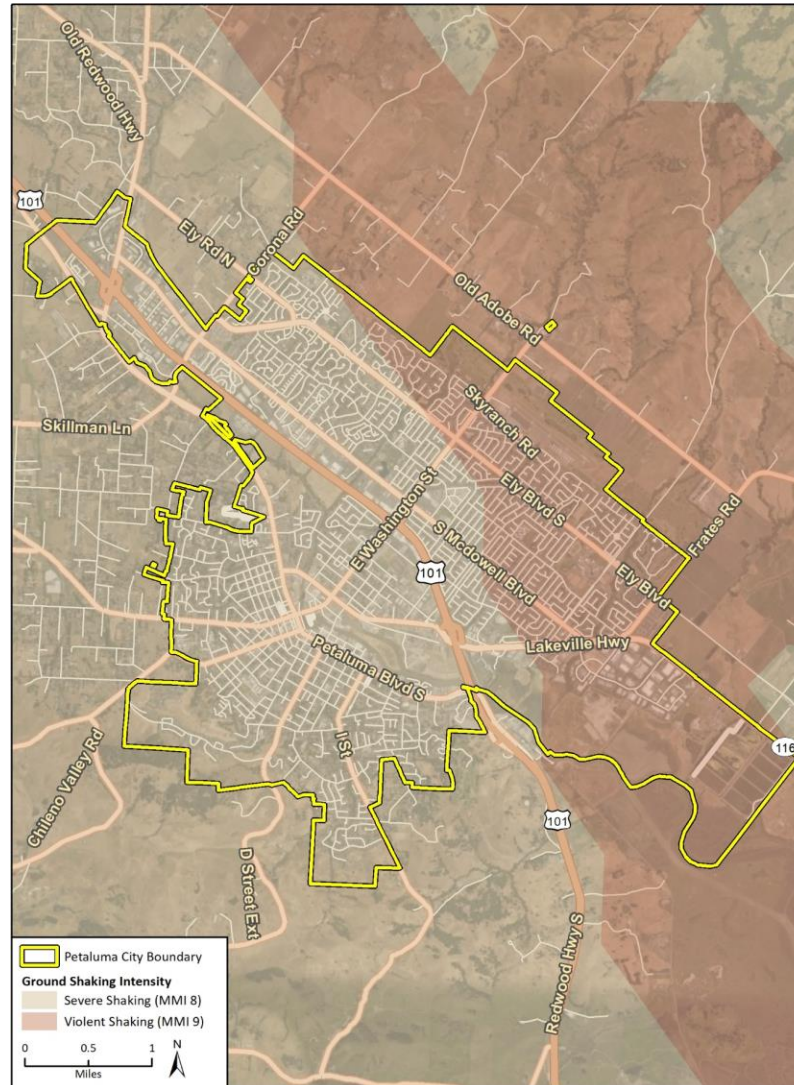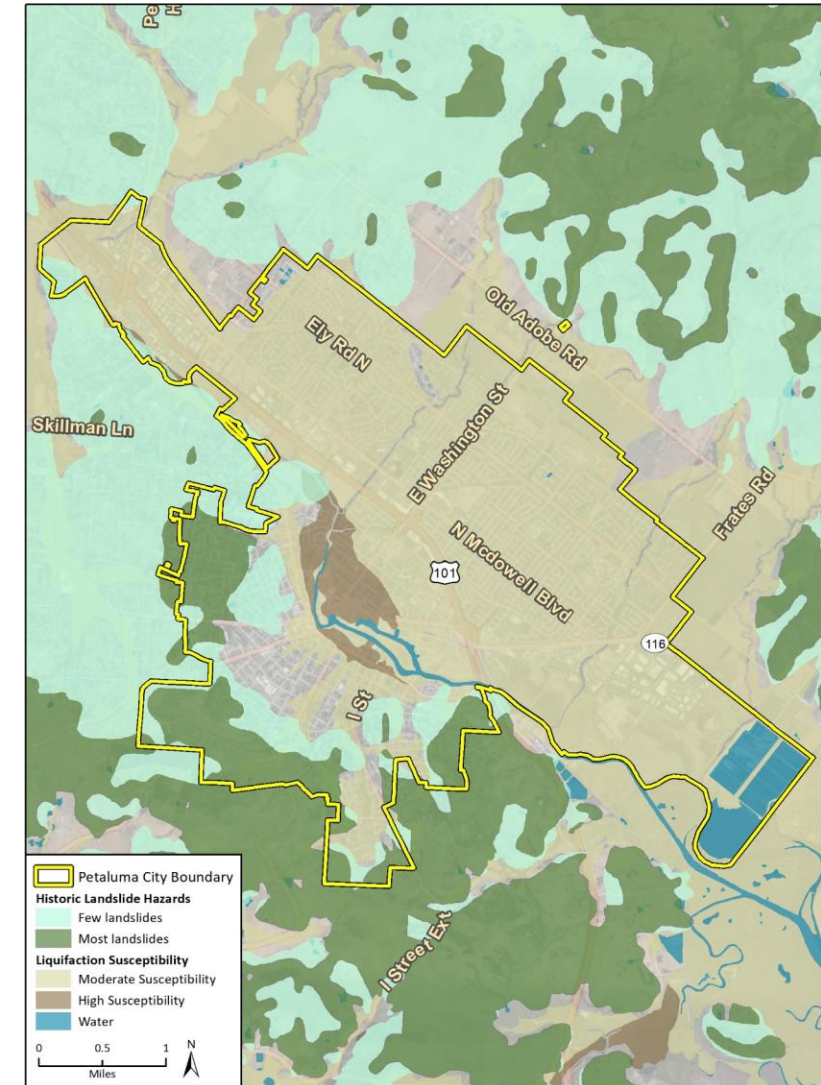
Climate Change Implications for Hazards

Increasing Temperatures

- Extreme heat days will increase considerably in the city.

- Increasing temperatures and changing precipitation patterns can create periods of abnormally dry weather that create drought.

- Warmer, drier summers, high wind events, such as the Diablo winds, and increased vegetation growth, can create conditions suitable for wildfires.

Changing Precipitation Patterns

- The Bay Area will continue to see larger precipitation fluctuations over the next century with very wet and very dry years.

- Boom to bust rainfall patterns will make it far more likely for wildfires to occur in the region and for "atmospheric rivers", which can bring up to 50% of the region's rainfall in a few days.

Rising Sea Levels

- More extensive coastal flooding during storm events

- Higher groundwater table

- Stormwater flooding may increase as high bay levels can impede drainage of stormwater runoff.

Source: Ackerly, D and et. al. 2018. California Fourth Climate Change Assessment: San Francisco Bay Area Region Report.

Fire & Police Services

Fire

- The Petaluma Fire Department provides fire protection services to a total area of 184 square miles and a population of 70,000 people.

- The Department's fire service area includes portions of southern Sonoma County and Marin County.

- There are three Fire Department Stations located within the city limits and two volunteer fire stations are located southwest of the city.

- In response to wildfires, the Fire Department offers several resources to residents such as weed abatement and access to wildfire disaster loans.

Police

- The Department has two stations (Police Department and Annex, Police Substation - Petaluma Valley Hospital).

Foundations: Community Priorities

Vision

- **We invest in each other**. We are a community where children and youth thrive, families in all forms are supported, and our elders flourish as they age in place.

- **We are forward-thinking leaders**. We have adapted to climate change with a community-driven, whole systems, and nature-based approach to development.

Guiding Principles

1. Achieve carbon neutrality by 2030 and equitably foster a sustainable and resilient community in which today's needs do not compromise the ability of the community to meet its future needs.

5. Ensure the health and wellness of all residents.

6. Physically and psychologically integrate and connect the East and West sides of town.

13. Ensure infrastructure supports infill development and addresses the impacts of climate change.

Pillars

- **Climate Action, Resilience, and Sustainability**. The General Plan must build climate-ready communities using science, technology, and bold ways of thinking to advance change in our relationship with the natural environment and to plan for current and future impacts.

- **Equity, Justice, and Demographic Changes**. Current demographic trends indicate that Petaluma will have an older, more diverse population well into the future. Petaluma commits to advancing social and economic justice to create an inclusive and equitable city in which all can thrive. The General Plan must prioritize supporting those who have been most affected by injustice and inequity and advances bold action in terms of housing, transportation, public spaces, and intergenerational and multi-cultural programs to take advantage of opportunities and meet challenges as they arise.

Safety Goals

Goal SAF-1: Emergency Guidance and Tools

Goal SAF-2: High-Quality Emergency Services

Goal SAF-3: Responsive Public Safety Services

Goal SAF-4: Evacuation

Goal SAF-5: Critical Facilities Resiliency

Goal SAF-6: Climate Resilience

Goal SAF-7: Drought

Goal SAF-8: Wildfire Risk Management

Goal SAF-9: Earthquake Resiliency

Goal SAF-10: Hazardous Materials Management

Goal SAF-1: Emergency Guidance and Tools

- Policy SAF-1.1: Update Emergency Operation Plans
- Policy SAF-1.2: Prepare the Community for Emergencies
- Policy SAF-1.3: Seek Funds for Emergency Operations

Goal SAF-2: High-Quality Emergency Services

- Policy SAF-2.1: Maintain Quality Emergency Response Service
- Policy SAF-2.2: Maintain ISO Rating
- Policy SAF-2.3: Provide Adequate EMS Services
- Policy SAF-2.4: Educate the Public on Risk Reduction
- Policy SAF-2.5: Maintain Mutual Aid Agreements

Goal SAF-3: Responsive Public Safety Services

- Policy SAF-3.1: Ensure Staffing for Emergency Response

- Policy SAF-3.2: Fund Crime Prevention Programs

- Policy SAF-3.3: Implement Public Safety Recommendations

- Policy SAF-3.4: Use Design Standards for Crime Prevention

- Policy SAF-3.5: Provide Rapid Police Response

- Policy SAF-3.6: Provide Proficient Operations Management

- Policy SAF-3.7: Consider Crime Analysis Unit

- Policy SAF-3.8: Engage the Community on Policing Policies

Goal SAF-4: Evacuation

- Policy SAF-4.1: Prepare Single-Access Neighborhoods
- Policy SAF-4.2: Provide Emergency Evacuation Resources

Goal SAF-5: Critical Facilities Resiliency

- Policy SAF-5.1: Establish Resilient Resource Centers
- Policy SAF-5.2: Establish Inter-Jurisdictional Evacuation Plans
- Policy SAF-5.3: Create Hazard Resilient Critical Facilities
- Policy SAF-5.4: Prepare for Multi-Hazard Scenarios
- Policy SAF-5.5: Ensure Public Services During Emergencies

Goal SAF-6: Climate Resilience

- Policy SAF-6.1: Update Climate Resiliency Plans

- Policy SAF-6.2: Consider Climate in Development Standards

- Policy SAF-6.3: Prepare Buildings for Climate Change

Goal SAF-7: Drought

- Policy SAF-7.1: Update the Urban Water Management Plan

- Policy SAF-7.2: Increase Water Efficiency

Goal SAF-8: Wildfire Risk Management

- Policy SAF-8.1: Maintain Fire Response Coordination

- Policy SAF-8.2: Implement Fire Protection Programs

- Policy SAF-8.3: Create Fuel Management Plan

- Policy SAF-8.4: Minimize Wildland-Urban Interface Risk

- Policy SAF-8.5: Promote Fire Safe Development

Goal SAF-9: Earthquake Resiliency

- Policy SAF-9.1: Reduce Seismic Risk on Critical Infrastructure

- Policy SAF-9.2: Consider Geotechnical Information for Development

Goal SAF-10: Hazardous Materials Management

- Policy SAF-10.1: Maintain Hazardous Materials Standards

- Policy SAF-10.2: Promote Safe Transport of Hazardous Material

- Policy SAF-10.3: Update Resources on Household Hazards

- Policy SAF-10.4: Reduce Use of Toxic Materials

- Policy SAF-10.5: Ensure Site Remediation

Flood Resilience Policy Framework

Water comes down the land, creeks and river from rain

Water also comes up the River from the Bay

Current FEMA 100-yr (1% Chance) Floodplain
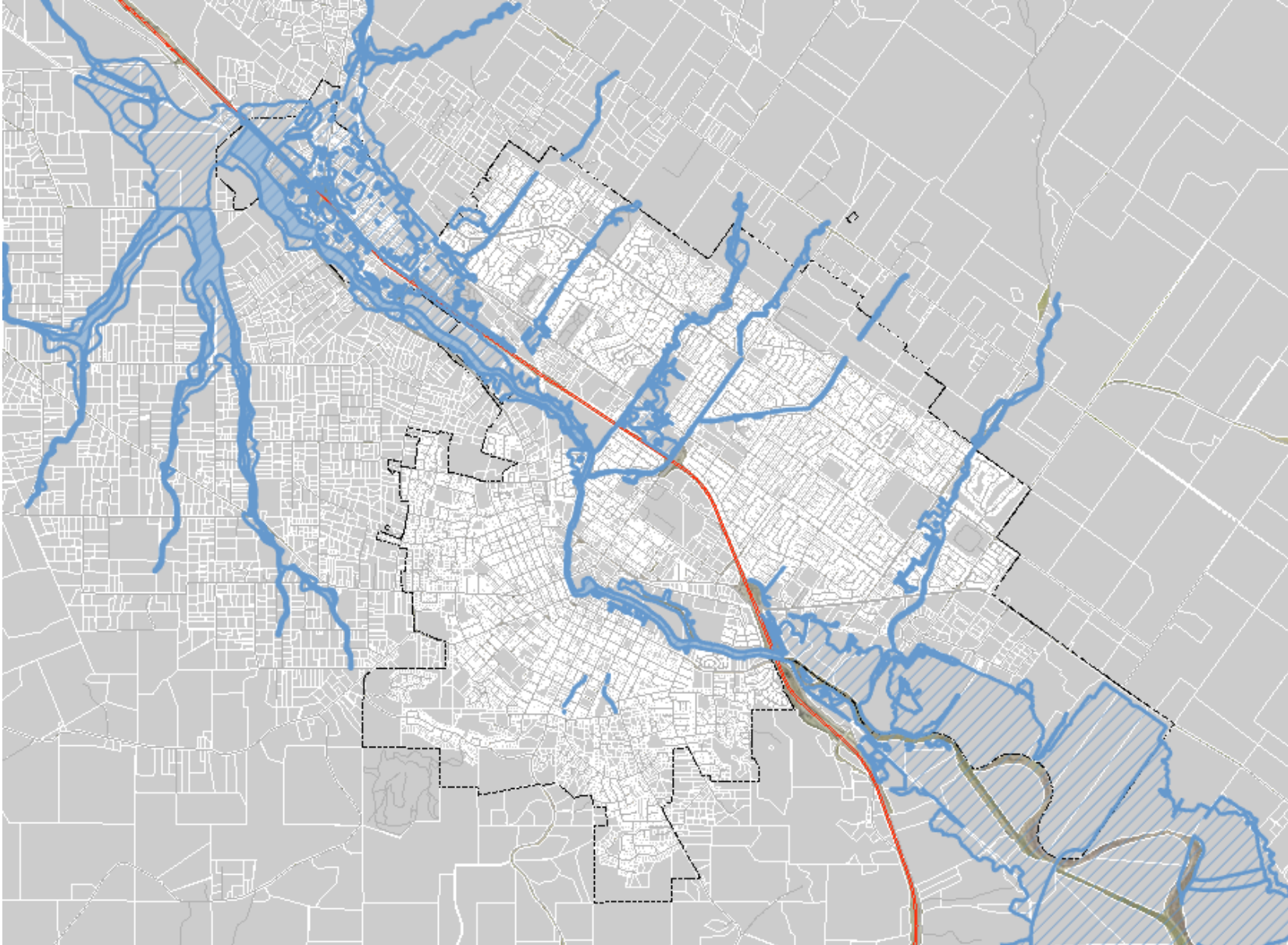
- FEMA maps show modeling based on historic precipitation data and existing land use.

- Utilized to meet regulations required for funding mechanisms and compliance

- FEMA maps do <u>not</u> consider climate change impacts, including increased precipitation, changes to development patterns, and sea level rise, and do not compound with the following sea level rise maps.

MODEL PROCESS WAS PRECISE, PETALUMA FOCUSED

USED BEST MODEL
HEC-HMS and HEC-RAS 2D

USED BEST, PETALUMA DATA
Rainfall data, terrain data (ground surface), structure data

01

02

03

04

GOT AS GRANULAR AS POSSIBLE
We walked the streams to determine roughness values, hundreds of culverts/bridges

RAN MODEL, COMPARED TO DATA, DOUBLE CHECKED

Calibrated to the three largest events of record, checked model results carefully for reasonableness stream by stream, reach by reach
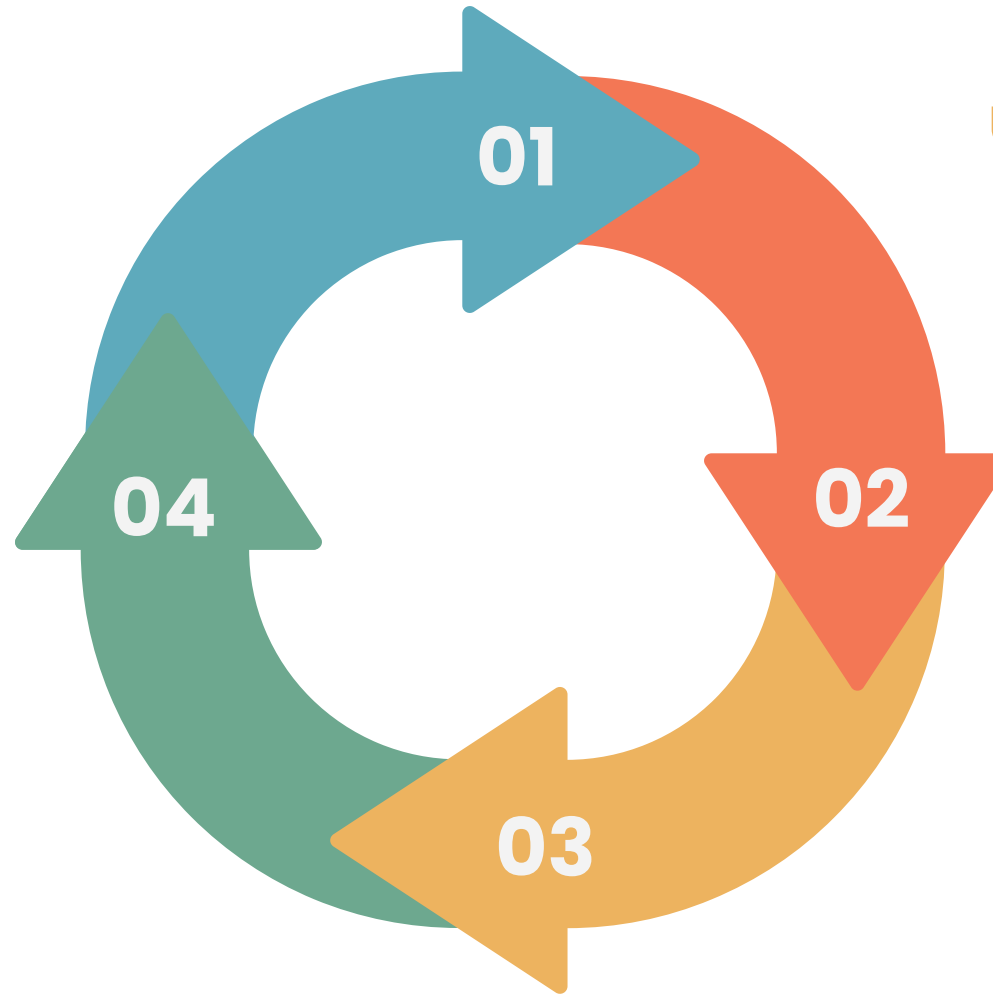
PETALUMA FLOOD MODELING

Includes Climate Change Impacts, Uses Petaluma Specific Data

SEA LEVEL RISE

Based on current science

MEAN HIGHER HIGH TIDE

The average of the highest tides each year as provided by NOAA.

FLOOD MODEL
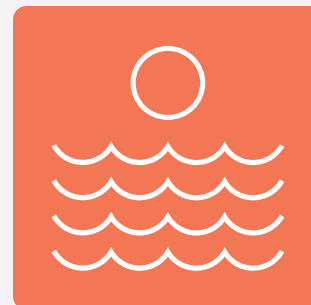
HYDROLOGY and HYDRAULICS

Ground Surface Terrain, Field Surveys, Land Uses, Vegetation levels

RAIN

Custom rain study specific to Petaluma in 2023. Considered how much rain is reasonable, where it falls in the watershed heaviest, and how quickly it falls.

Mid-Century SLR (1.9 feet), Rain and Storm Surge

City of Petaluma, California

Mid-Century Storm/Rain Flooding with Storm Surge
and Very Low Probability SLR of 1.9 Feet
(0.5% chance SLR; MaximumElevation of Projected SLR Range)

Vertical Datum = NAVD 88
August 25, 2023

Rdw Hwy @ 101

City Limit

Flooded Areas

Lakeville @ 101

Turning Basin

Shollenberger

Flooded Areas

Legend

City Limit

Mid-Century Storm/Rain Flooding with Storm Surge
and Very Low Probability SLR of 1.9 Feet

<= 0.5 ft
0.5 - 1 ft
1.01 - 2 ft
2.01 - 3 ft
3.01 - 4 ft
4.01 - 5 ft
> 5 ft
Parcel and Building

Mid-Century SLR (1.9 feet), King Tide

End-of-Century SLR (3.4 feet), Rain and Storm Surge
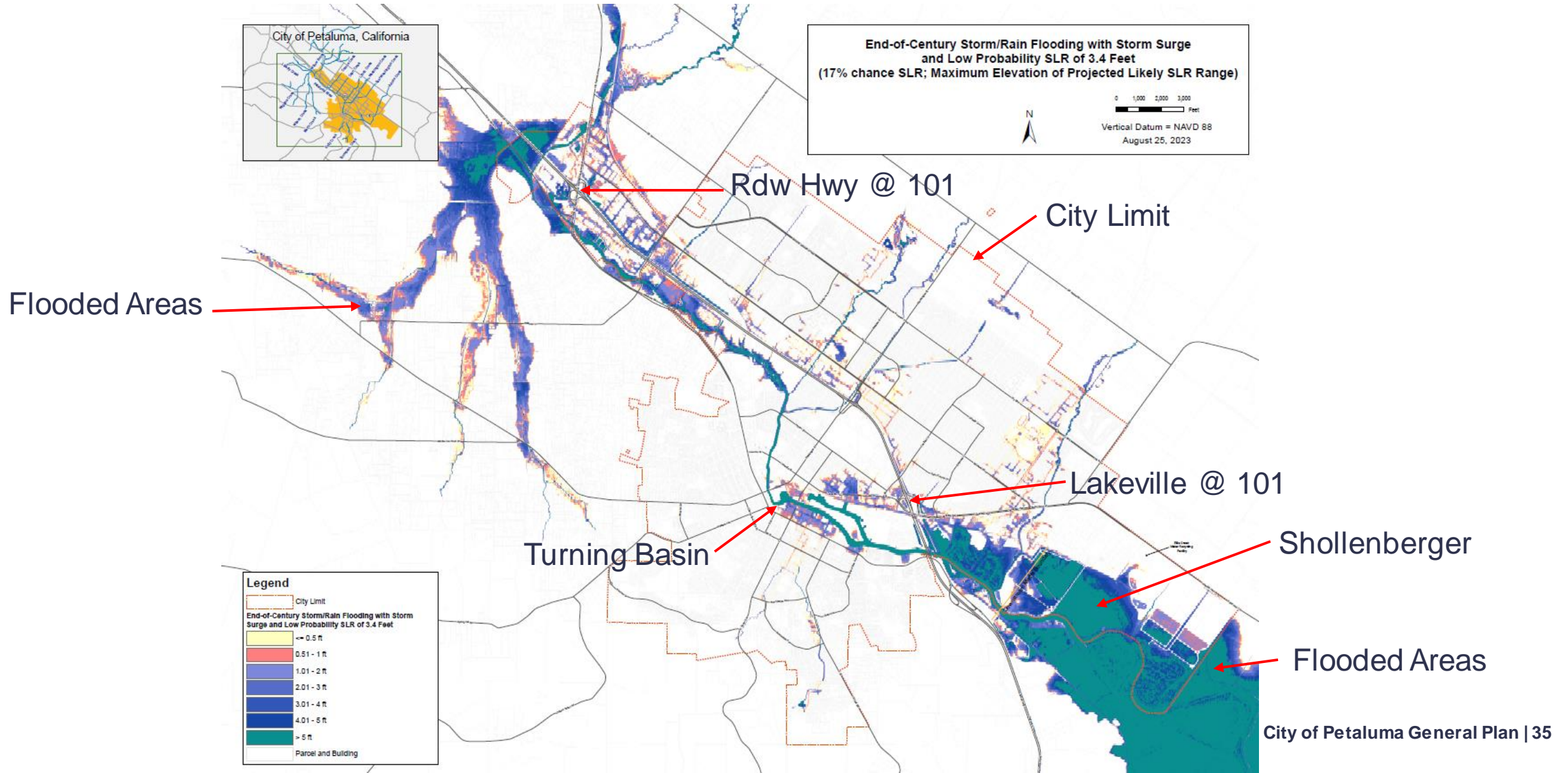
End-of-Century SLR (3.4 feet), King Tide
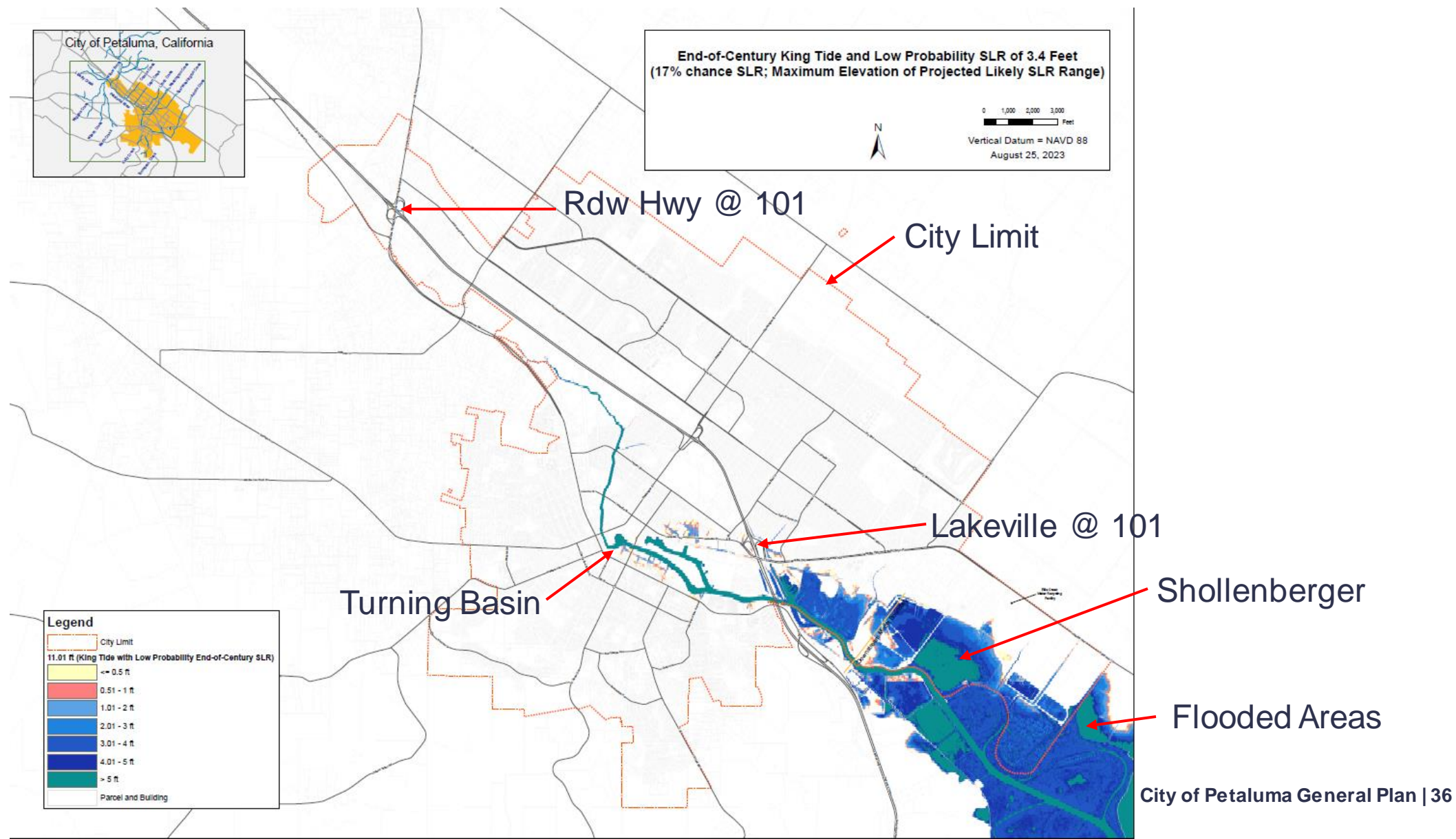
End-of-Century SLR (6.9 feet), Rain and Storm Surge
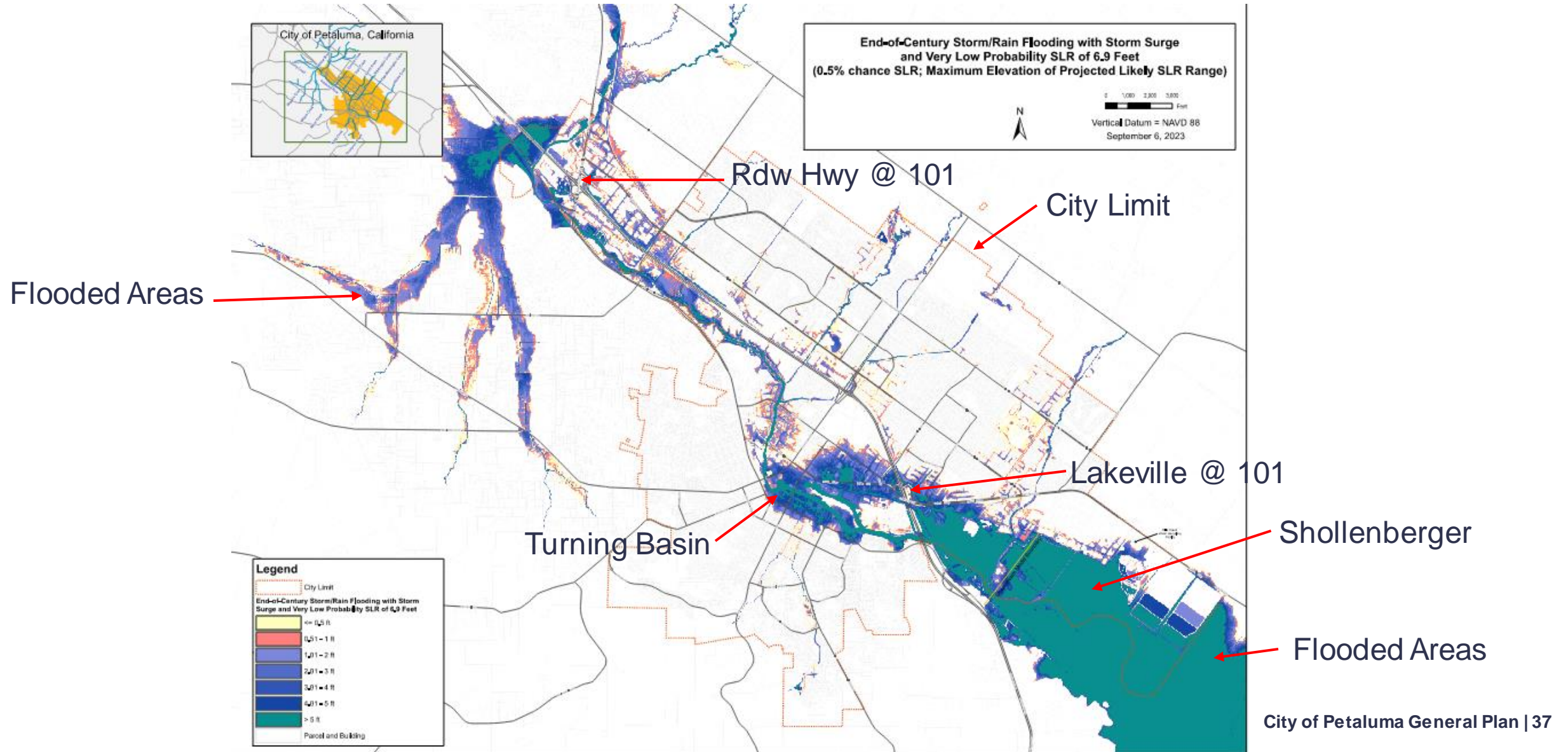
End-of-Century SLR (6.9 feet), King Tide
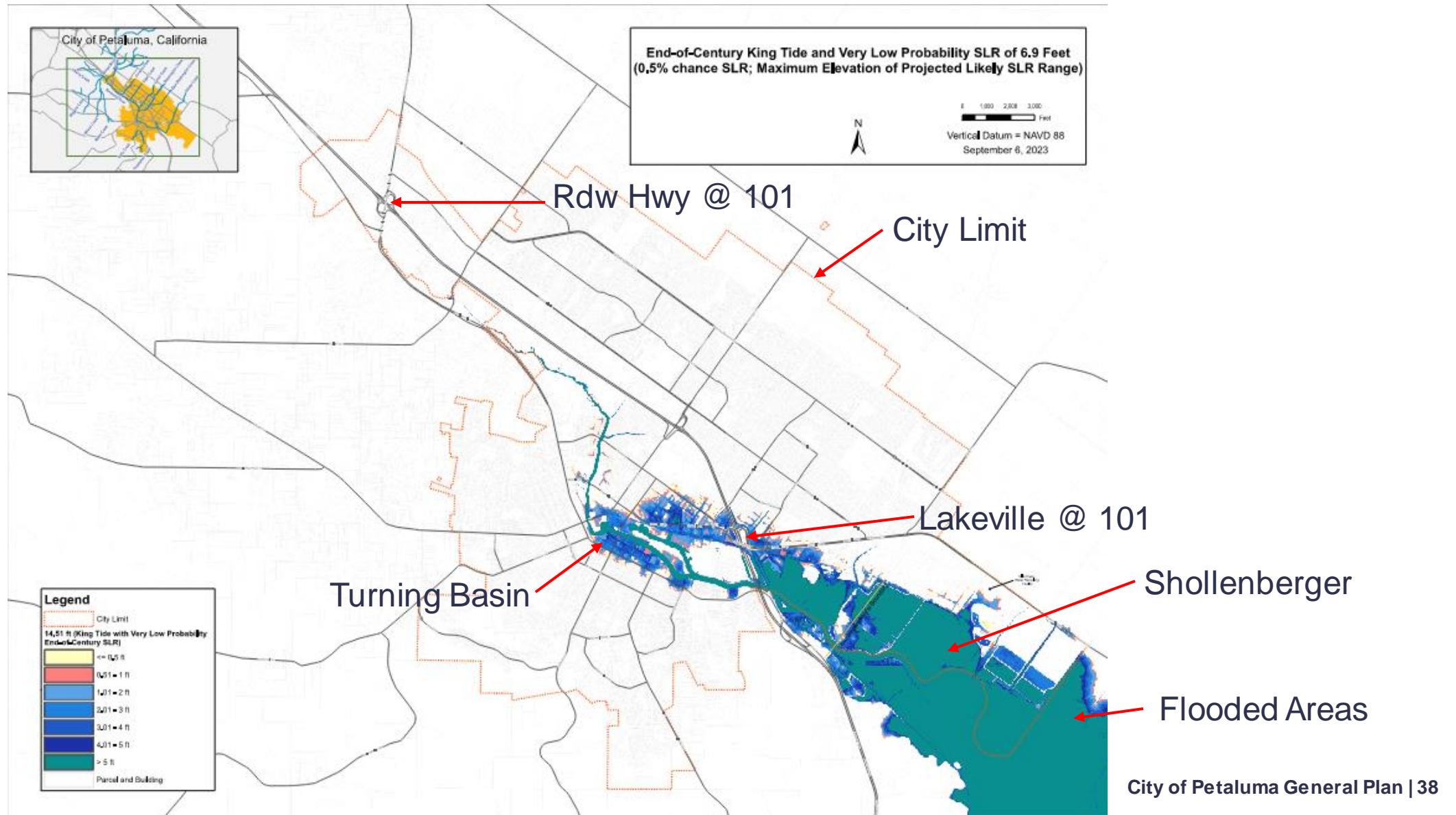
Where does SLR affect the City in the Future

Let's zoom in to the same maps

Mid-Century SLR (1.9 ft), Rain + Storm Surge

Zoom to main areas affected by SLR

Lakeville @ 101

City Limit

Ellis Creek Water Recycling Facility

Downstream Model Boundary

Shollenberger

D Street Bridge

Flooded Areas

Legend

Mid-Century Storm/Rain Flooding with Storm Surge and Very Low Probability SLR of 1.9 Feet

	<= 0.5 ft
	0.5 - 1 ft
	1.01 - 2 ft
	2.01 - 3 ft
	3.01 - 4 ft
	4.01 - 5 ft
	> 5 ft
	City Limit
	Parcel and Building
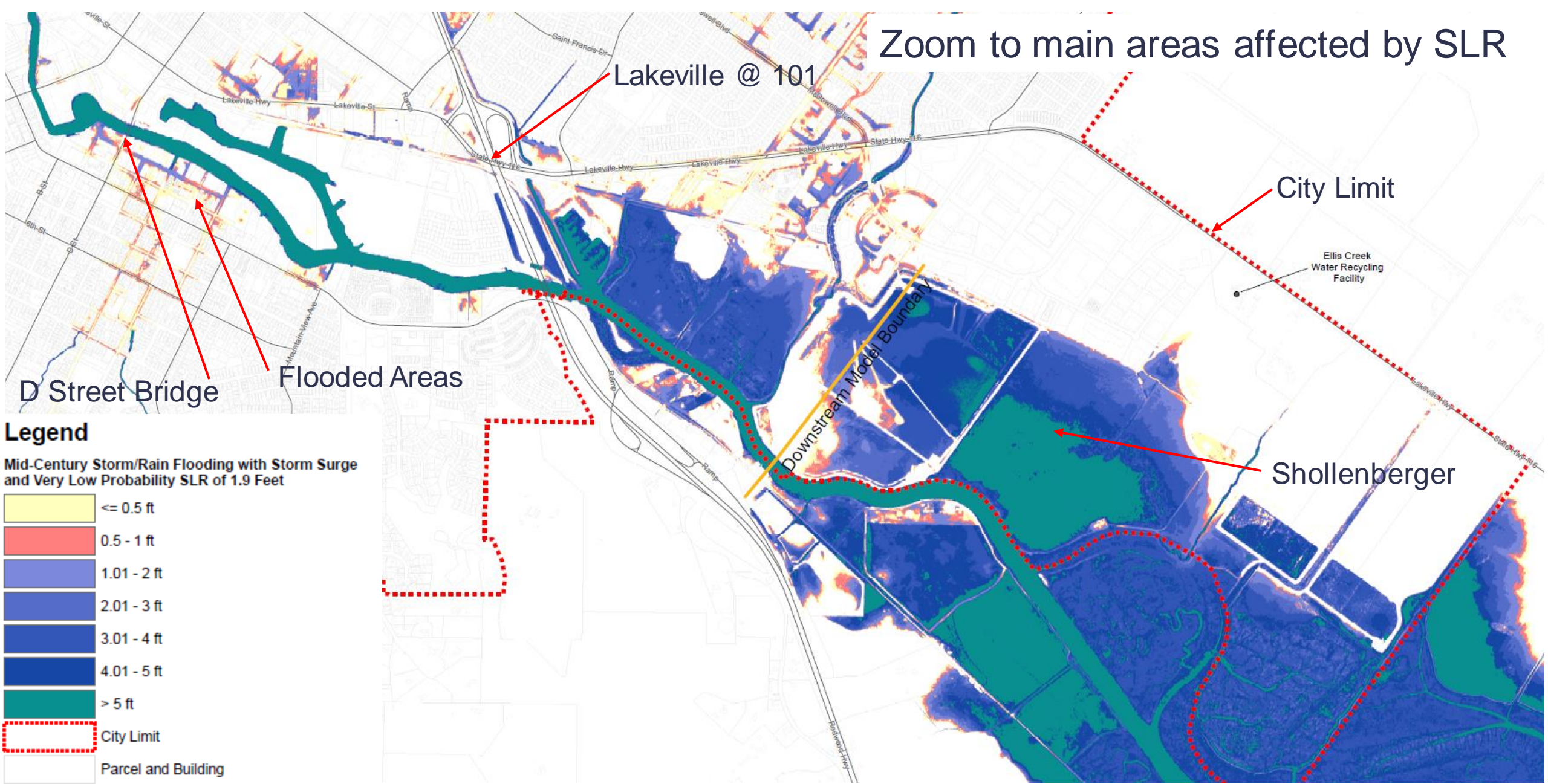
Mid-Century SLR (1.9 feet), King Tide
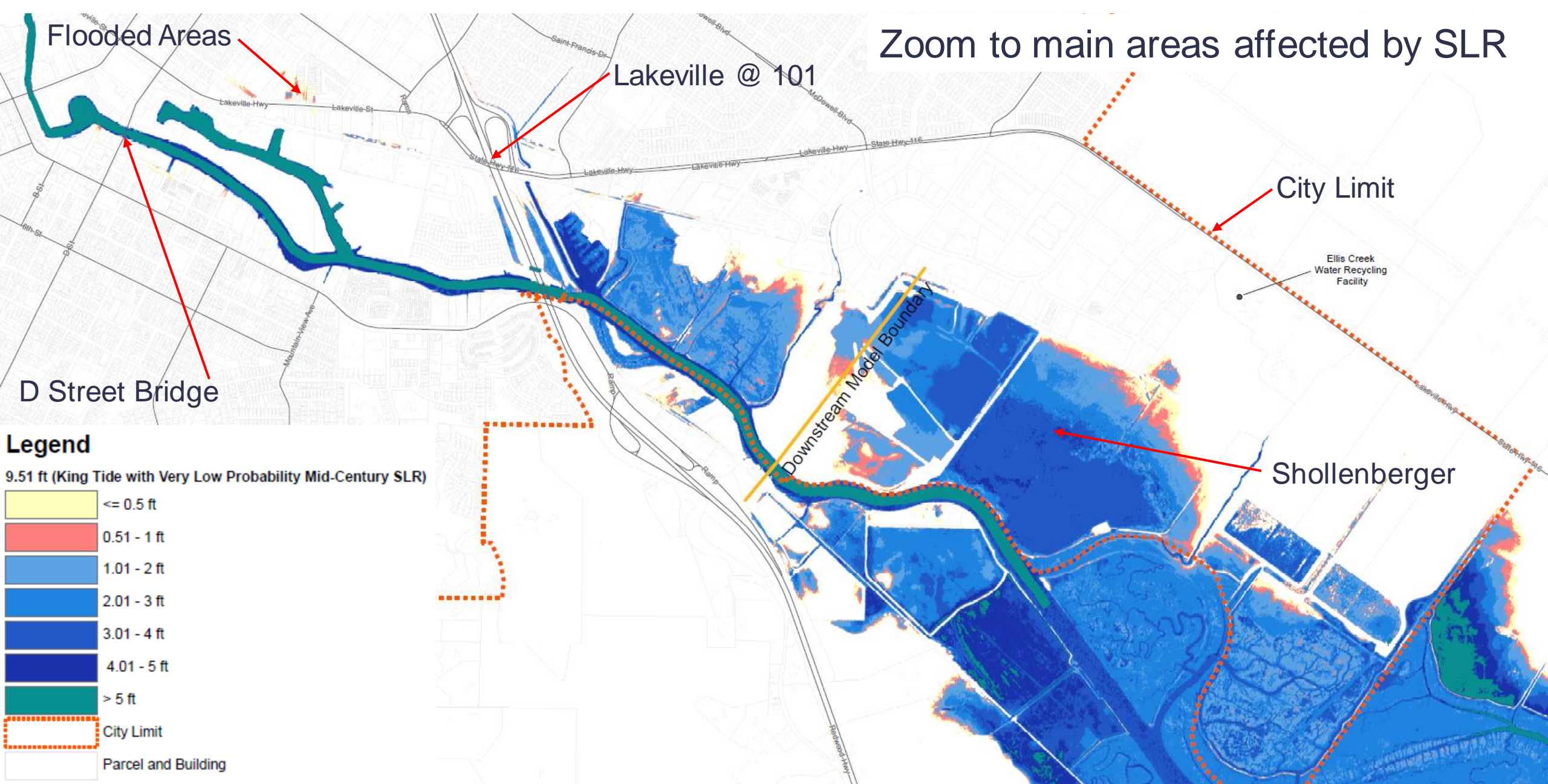
End-of-Century SLR (3.4 ft), Rain + Storm Surge

Zoom to main areas affected by SLR

Lakeville @ 101

City Limit

Flooded Areas

Flooded Areas

D Street Bridge

Downstream Model Boundary

Ellis Creek Water Recycling Facility

Shollenberger

Legend

End-of-Century Storm/Rain Flooding with Storm Surge and Low Probability SLR of 3.4 Feet

	<= 0.5 ft
	0.51 - 1 ft
	1.01 - 2 ft
	2.01 - 3 ft
	3.01 - 4 ft
	4.01 - 5 ft
	> 5 ft
	City Limit
	Parcel and Building
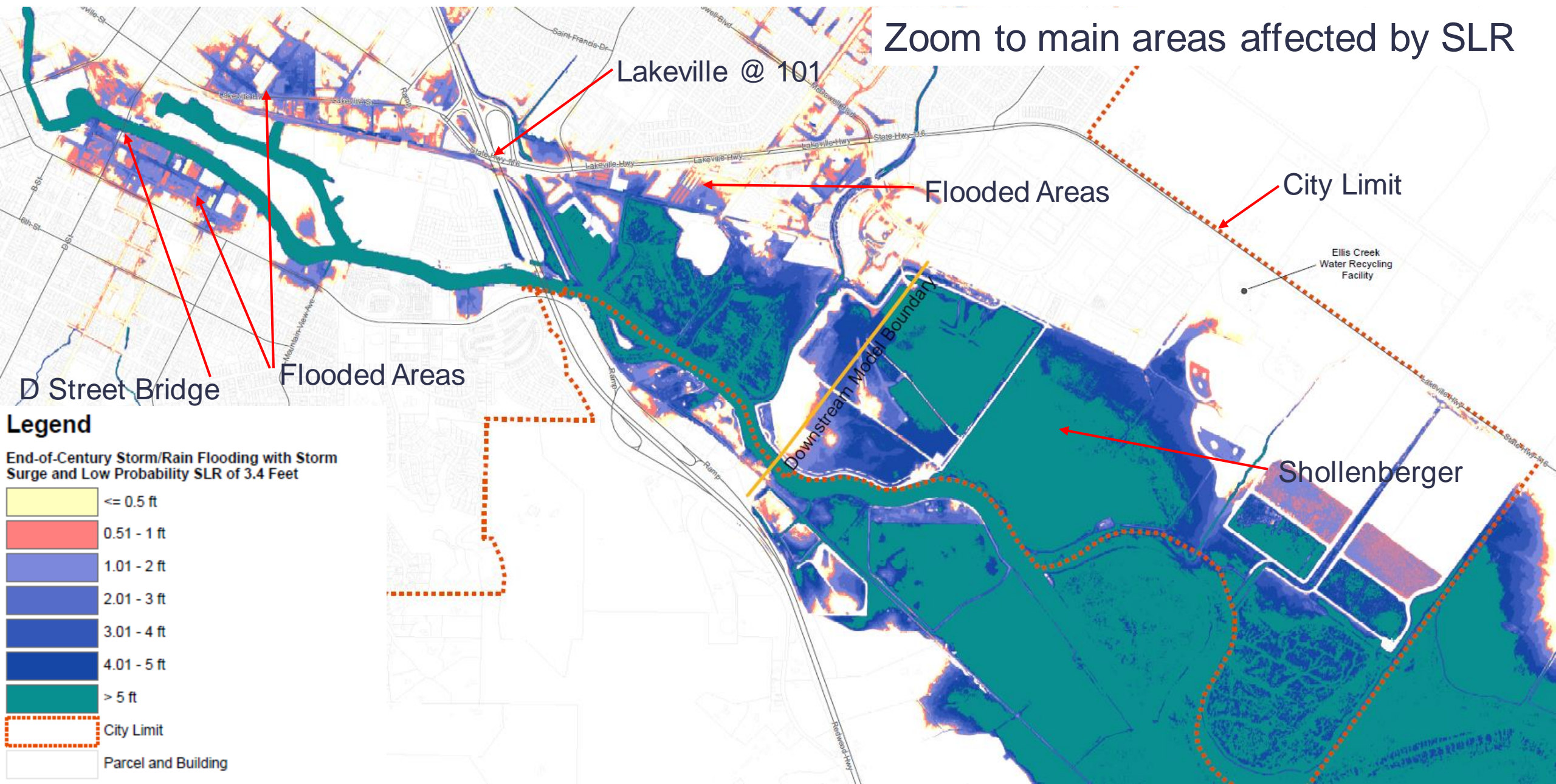
End-of-Century SLR (3.4 feet), King Tide

Zoom to main areas affected by SLR

Lakeville @ 101

City Limit

Ellis Creek Water Recycling Facility

Downstream Model Boundary

Shollenberger

D Street Bridge

Flooded Areas

Legend

11.01 ft (King Tide with Low Probability End-of-Century SLR)

▨	<= 0.5 ft
▨	0.51 - 1 ft
▨	1.01 - 2 ft
▨	2.01 - 3 ft
▨	3.01 - 4 ft
▨	4.01 - 5 ft
▨	> 5 ft
▨	City Limit
	Parcel and Building
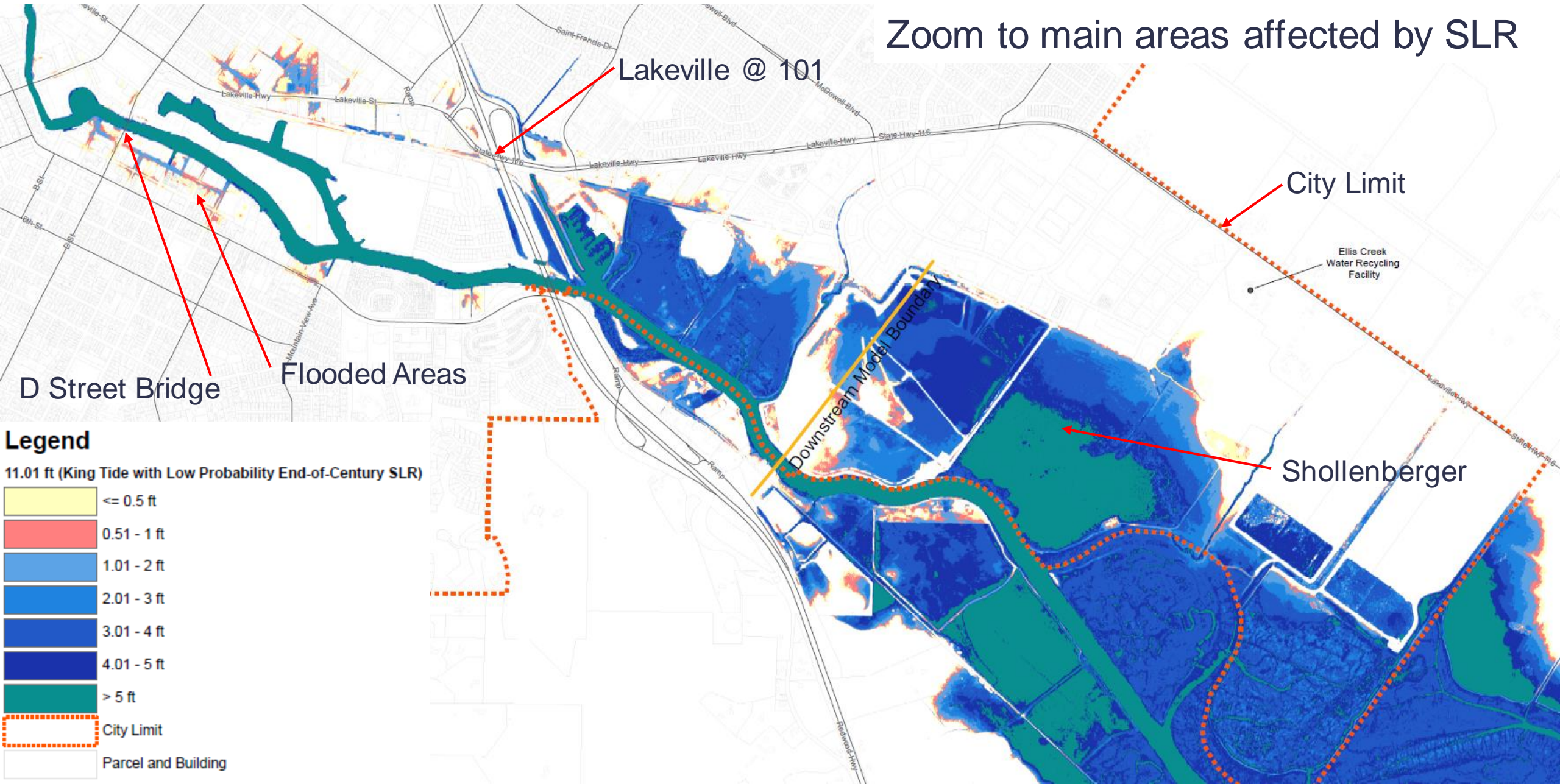
Very Low Probability, End of Century SLR (6.9'), Storm Surge

Flooded Areas

D Street Bridge

City Limit

Downstream Model Boundary

End-of-Century Storm/Rain Flooding with Storm Surge and Very Low Probability SLR of 6.9 Feet

- <= 0.5 ft
- 0.51 - 1 ft
- 1.01 - 2 ft
- 2.01 - 3 ft
- 3.01 - 4 ft
- 4.01 - 5 ft
- > 5 ft
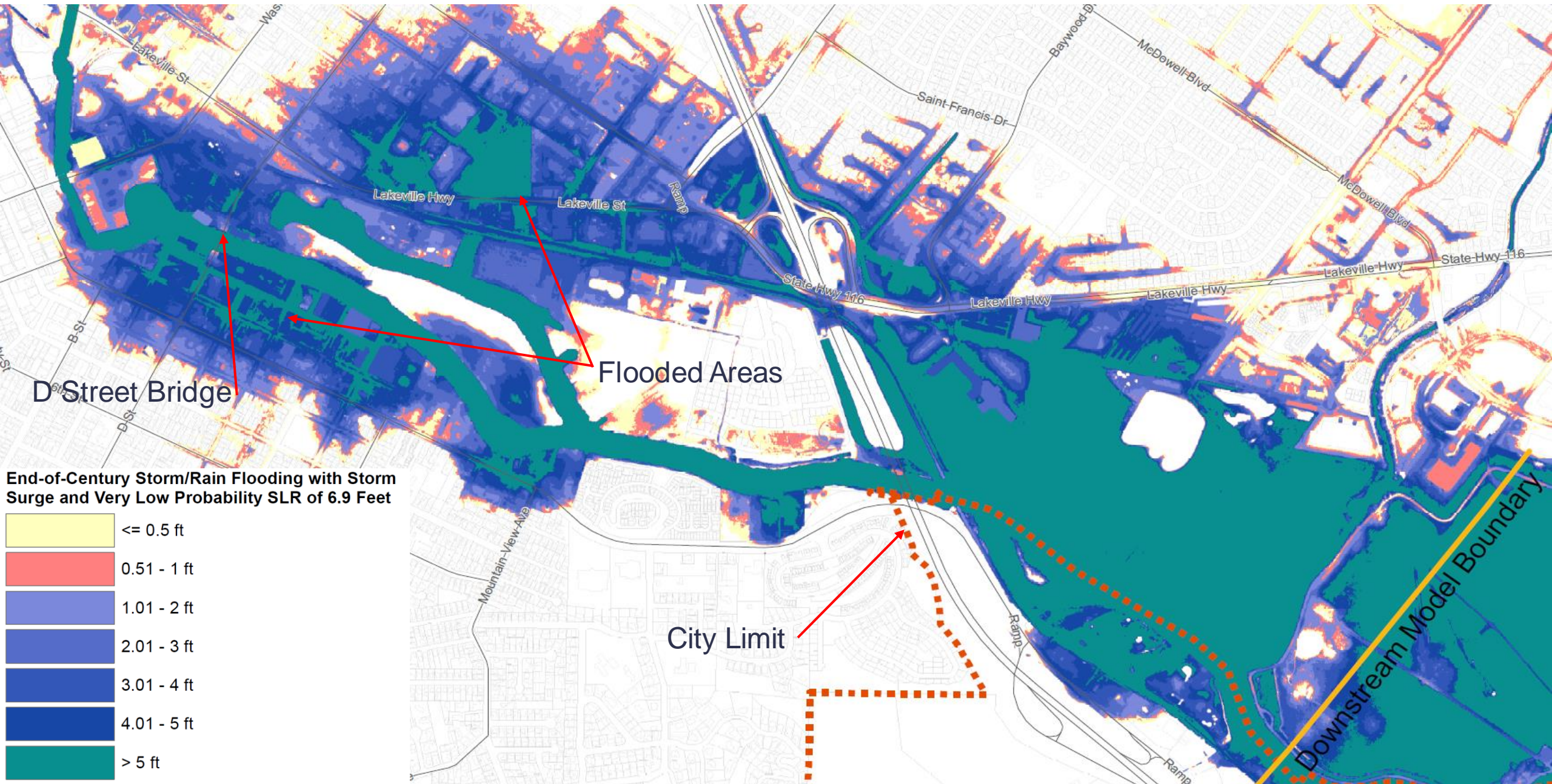
Very Low Probability, End-of-Century SLR (6.9'), King Tide

14.51 ft (King Tide with Very Low Probability End-of-Century SLR)

	<= 0.5 ft
	0.51 - 1 ft
	1.01 - 2 ft
	2.01 - 3 ft
	3.01 - 4 ft
	4.01 - 5 ft
	> 5 ft

D Street Bridge

Flooded Areas

City Limit

Downstream Model Boundary
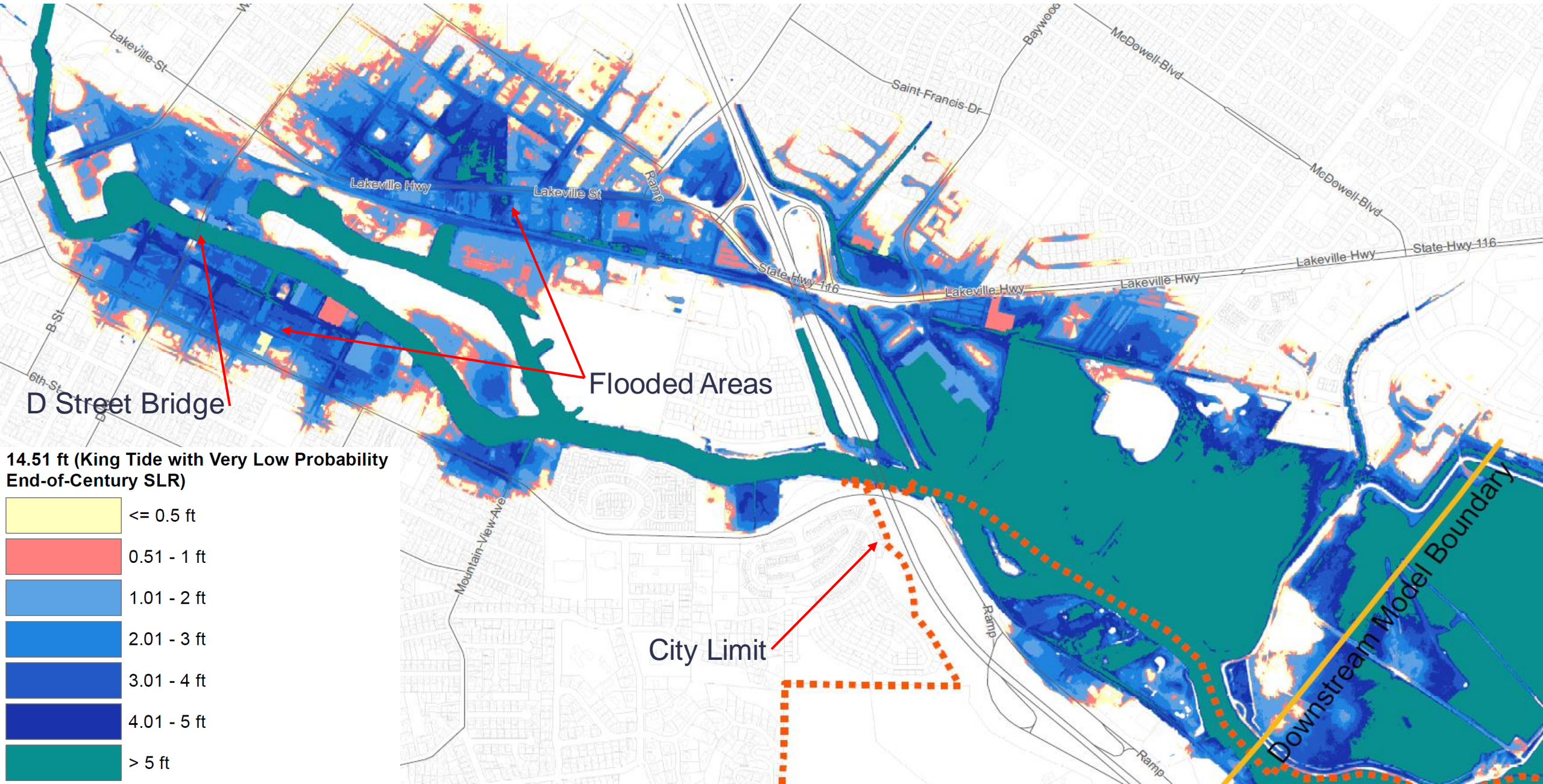
Foundations: Community Priorities

Vision

- **We are prosperous**. Our City infrastructure and facilities are sustainably financed, resilient, and well-maintained.

- **We are forward-thinking leaders.** By achieving carbon neutrality in 2030, we demonstrate that equitable, carbon-neutral, regenerative communities and economies are possible through action and collaboration with other cities, communities, and our region. We have adapted to climate change with a community-driven, whole systems, and nature-based approach to development.

Pillars

- **Climate Action, Resilience, and Sustainability**. Petaluma is committed to bold action to achieve carbon neutrality by 2030 and to building resilience to climate change impacts, including sea level rise, increasing temperatures, drought, and wildfire intensity. The General Plan must build climate-ready communities using science, technology, and bold ways of thinking to advance change in our relationship with the natural environment and to plan for current and future impacts.

Foundations: Community Priorities

Guiding Principles

1. Achieve carbon neutrality by 2030 and equitably foster a **sustainable and resilient community** in which today's needs do not compromise the ability of the community to meet its future needs.

3. **Protect and restore the natural function of the Petaluma River** and its tributaries while expanding complementary recreational, entertainment, and civic opportunities.

13. **Ensure infrastructure supports infill development and addresses the impacts of climate change**.

16. **Be a leader** in advancing these guiding principles within the region and beyond.

Flood Resilience Goals

Goal FR-1: Safe from the Current Flood

Goal FR-2: Understand the Future Flood

Goal FR-3: Flood Adaptation Master Plan

Goal FR-4: Prepared for Flood Recovery

Goal FR-5: Future Looking Plans and Regulations

Goal FR-6: Safe Against Rising Floods

Goal FR-7: Empowered Stakeholders

Flood Resilience Goals

Goal FR-1: Safe from the current flood

Policy Areas FR-1.1: Understand the current flood conditions

Policy Areas FR-1.2 & FR-1.3: Exceed FEMA standards Reduce current risk

Goal FR-2: Understand the Future Flood

Policy Area FR-2.1: Track climate change impacts

Policy Area FR-2.2: Model future floods

Goal FR-3: Flood Adaptation Master Plan

Policy Area FR-3.1 Develop a Flood Adaptation Master Plan

Policy Area FR-3.2 Study the impacts of future floods

Goal FR-4: Prepared for Flood Recovery

Policy Area FR-4.1 Prepare post-disaster plans

Goal FR-5: Future Looking Plans & Regulations

Policy Area FR-5.1 Update building codes to provide future flood resilience

Goal FR-6: Safe Against Rising Floods

Policy Area FR-6.1: Build for long-term flood resilience

Policy Area FR-6.2: Develop flood control efforts

Policy Area FR-6.3: Identify funding sources

Policy Area FR-7.1: Expand public education

Policy Area FR-7.2: Partner with regional stakeholders

Policy Area FR-7.3 and FR-7.4: Encourage development and community to protectively adapt

Goal FR-7: Enpowered Stakeholders

Goal FR-1: Safe from the Current Flood

- Policy FR-1.1: Understand the current flood conditions

- Policy FR-1.2: Exceed FEMA standards

- Policy FR-1.3: Reduce current risk

Goal FR-2: Understand the Future Flood

- Policy FR-2.1: Track climate change impacts

- Policy FR-2.2: Model future floods

Goal FR-3: Flood Adaptation Master Plan

- Policy FR-3.1: Develop a Flood Adaptation Master Plan
- Policy FR-3.2: Study the impacts of future floods

Goal FR-4: Prepared for Flood Recovery

- Policy FR-4.1: Prepare post-disaster plans

Goal FR-5: Future Looking Plans and Regulations

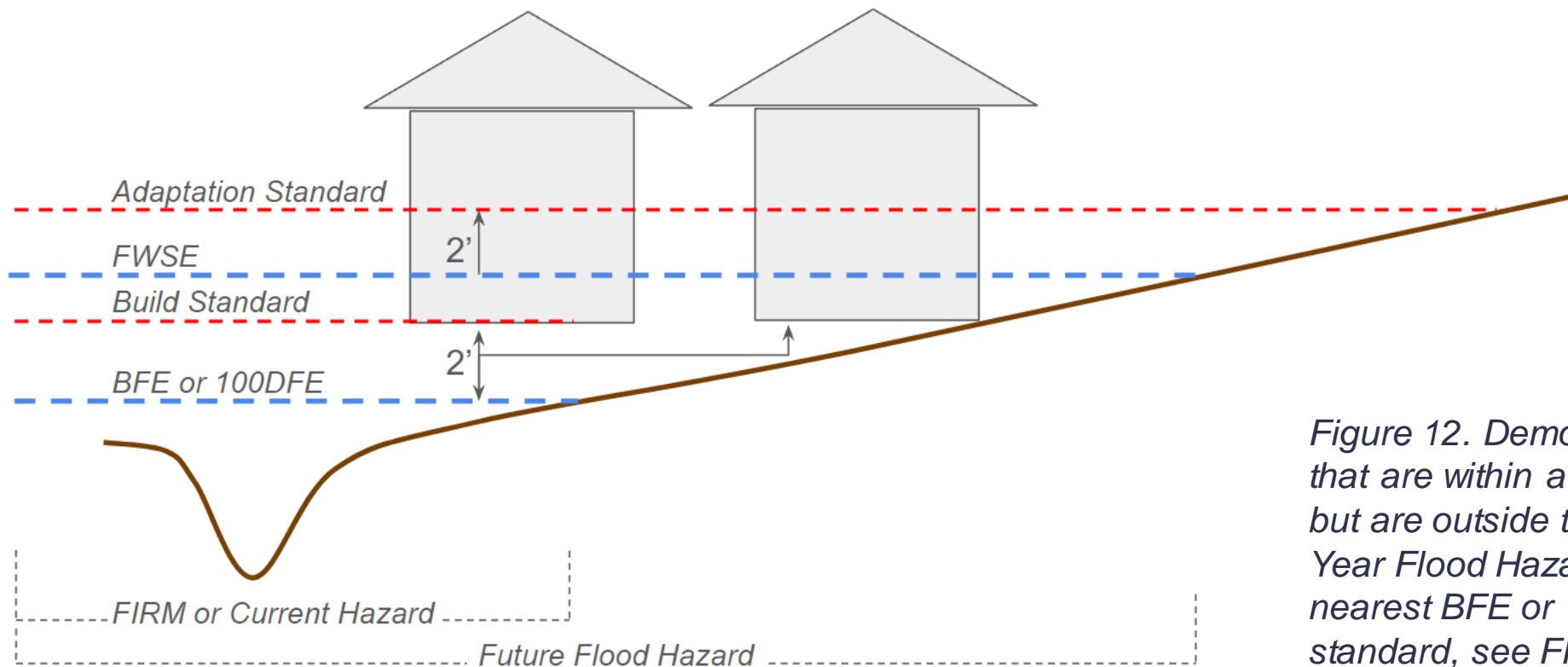- Policy FR-5.1: Update building codes to provide future flood resilience

Figure 12. Demonstrating how projects that are within a future flood hazard map but are outside the FIRM or Current 100-Year Flood Hazard Map will reference the nearest BFE or 100DFE to set their FFE standard, see FR-5, General Plan Standards

Goal FR-6: Safe Against Rising Floods

- Policy FR-6.1: Build for long-term flood resilience

- Policy FR-6.2: Develop flood control efforts

- Policy FR-6.3: Identify funding sources

Goal FR-7: Empowered Stakeholders

- Policy FR-7.1: Expand public education

- Policy FR-7.2: Partner with regional stakeholders

- Policy FR-7.3: Promote proactive adaptation

- Policy FR-7.4: Support community efforts

Questions & Comments

CITY OF PETALUMA
GENERAL PLAN UPDATE

What feedback to you have?

Considering your technical expertise…

- What are the **most important** policies in each framework?
  - We recommend identifying the top 5 (or fewer) policies and ranking them in order of importance.

- What **concerns** do you have about the policies in each framework?
  - For example, are they unclear? Should they be softened or strengthened? Do you disagree with the policy direction?

Thank you!