SPECIAL MEETING AGENDA

Planning and Zoning Board
City of St. Augustine, Florida
Alcazar Room
Wednesday, April 30, 2025, at 1:30 pm

Agenda

1. **Roll Call**

2. **General Public Comments for Items Not on the Agenda**

3. **Discussion and Recommendation of the Update to the City of St. Augustine Vision Statement**

   a. Discussion related to the proposed update of the City's Vision Statement
   b. Public Comment
   c. Planning and Zoning Board discussion and recommendation

4. **Discussion and Recommendation Regarding an Initiative to Develop more Resilient Criteria for Building for Flood Prevention**

   a. Discussion related to developing criteria in the land development code to incorporate more resilient types of construction and site development techniques in flood prone areas
   b. Public Comment
   c. Planning and Zoning Board discussion and recommendation

5. **Discussion and Recommendation Regarding the Required Update to the City's Water Supply Plan**

   a. Discussion related to the proposed update of the City's Water Supply Plan
   b. Public Comment
   c. Planning and Zoning Board discussion and recommendation

6. **Adjournment**

Notices: In accordance with Florida Statute 286.0105: "If any person decides to appeal any decision made by the Planning and Zoning Board with respect to any matter considered at this scheduled meeting or hearing, the person will need a record of the proceedings, and for such purpose the person may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based."
In accordance with the Americans with Disabilities Act, persons needing a special accommodation to participate in this proceeding should contact the individual or agency sending notice not later than seven days prior to the proceeding at the address given on the notice. Telephone: (904) 825-1007; 1-800-955-8771 (TDD) or 1-800-955-8770 (V), via Florida Relay Service.

Please note that one or more members of the City Commission or its appointed boards or committees may attend this meeting and participate, however they may not engage in a discussion or debate amongst themselves on any issue that will likely come before their respectively elected or appointed body.

The materials prepared and presented are part of the City's ongoing Florida Public Records and Government in the Sunshine compliance and are not intended to be relied upon or to reach investors or the trading markets.

CITY OF AUGUSTINE

CITY OF ST. AUGUSTINE

2024 VISION PLAN UPDATE

ADOPTED BY:
CITY OF ST. AUGUSTINE CITY COMMISSION
MAY 12, 2025

RESOLUTION NO. 2025-XX

City Commission
Mayor Nancy Sikes-Kline
Vice Mayor Barbara Blonder
Cynthia Garris
Jim Springfield
Jon DePreter

Planning and Zoning Board
Chair Christina Tucker
Dr. Ashleigh Barnes
Mike Davis
Carl Blow
Charles Pappas
Susan Johns
Matthew Shaffer

Historic Architectural Review Board
Chair Gaere MacDonald
Brad Beach
Paul Weaver, III
Catherine Duncan
Linda Potter

Corridor Review Committee
Chair Michael Dixon
Vaughn Cochran
Lorna MacDonald

Prepared by: City of St. Augustine
Planning and Building Department
75 King Street
St. Augustine, Florida 32084

In conjunction with and assistance from the Northeast Florida Regional Council
May 2025

TABLE OF CONTENTS

Vision Statement	1
2024 Vision Plan Themes	2
Defining Themes	3
The Four Themes	5
Livability	6
Authentic Character	9
Vitality	12
Resiliency	15

VISION STATEMENT

St. Augustine will remain a vibrant waterfront city with an authentic character that celebrates its rich history and protects its natural environment. The city will foster a unique community characterized by a healthy economy, diverse population, and a variety of experiences for both residents and visitors, all while ensuring the city remains resilient for generations to come.

2024 VISION PLAN THEMES

- LIVABILITY
- AUTHENTIC CHARACTER
- VITALITY
- RESILIENCY

DEFINING THE THEMES

Throughout the public involvement process, it was clear that the four (4) themes identified in the 2014 visioning process - Livability, Authenticity, Character, and Vitality - were still important priorities for St. Augustine residents.

City staff and officials have made a good-faith effort to move forward supporting decision making that is consistent with all of the themes. Based on this priority the city has achieved many of the objectives and has incorporated Vision objectives into city standard policy proposed in 2014. However, many residents who participated in the public involvement process were unaware of the City's accomplishments over the last 10 years. The city should more clearly communicate its priority to promote the community vision through its work efforts.

Concerns about resiliency were much more pronounced during this public involvement process with flooding more common outside of major storm events and worsening impacts from recent hurricanes. St. Augustine must balance its unique responsibility to protect its irreplaceable historic, archaeological and architectural heritage while ensuring a positive quality of life for residents throughout its historic neighborhoods with development, redevelopment and commercial and tourism pressures.

The City has become a statewide leader in resiliency planning, but these projects require extensive research and planning to be effective and are expensive to design and construct. While resiliency is mentioned in the 2014 and Beyond Vision Plan, it became clear that resiliency needed to be elevated to one of the central pillars of an updated vision statement.

At the same time, through the public outreach efforts it became clear that the city's feeling of authenticity and character are important to maintain. Therefore, these themes have been combined into one referred to as Authentic Character for this Vision update.

The Vitality and Livability themes remain major concerns for city residents and also require balance. The city has made major strides by developing and adopting the Mobility Plan and continues to work toward implementing the priorities articulated in the Plan.

The City has also made significant efforts by developing a program and initiatives as well as partnering with the County and other groups to address homelessness issues.

The tension in the community due to the large tourism economy and pressures necessitates consideration of a better balance between residents' livability and the community's broader economic vitality. While tourism drives the economy in areas such as downtown St. Augustine, there are other opportunities to elevate other historic or commercial corridor areas of the city to spread economic activity and promote vitality across the city.

THE NEED FOR BALANCE

A quote from the 2014 and Beyond Vision Plan:

"St. Augustine experiences the natural tension present in communities with an extensive tourism industry, the pressures of large numbers of visitors vs. the daily experience of residential life in such a community. St. Augustine certainly has those tensions.

Tourism undergirds much of our economy, bringing both benefits and costs, and while tourism generates much of the tension mentioned before, we also recognize that the industry brings economic benefits and is the source of the many quality of life features that would not otherwise exist in a similar sized city."

Ten years later, the city still needs to balance the benefits and costs of tourism for the residents and the local economy. It is evident that the pressures of the current level of tourism is a heavy burden on the city as a whole and especially the neighborhoods close to downtown. Additionally, balancing the needs of all residents and neighborhoods is imperative to create an equitable environment to create opportunities for all.

THE FOUR THEMES

LIVABILITY	The City of St. Augustine is a safe and pleasant place to live, where the experiences and services that make life enjoyable and rewarding are accessible. It is a welcoming and compassionate community that embraces diversity in all its senses. With livability as a core theme, St. Augustine will be an even more desirable place to live by offering the full range of opportunities that make a city livable for all residents.
AUTHENTIC CHARACTER	In the City of St. Augustine, the rich layers of history and people create the city's unique character. The city's-built scale and architecture support the "small town" feel that draws people worldwide to live in and visit St. Augustine. The city has distinguished itself as an arts and cultural hub, which enriches the social and cultural character of the city. The Vision Plan intends to protect and enhance those features of the city which form St. Augustine's distinctive authentic character.
VITALITY	The City of St. Augustine has a thriving economy and culture, creating a vibrant community. By elevating the community's pride, the city can advance projects to beautify itself and encourage new entrepreneurial drivers to support the diverse group of people who call St. Augustine home.
RESILIENCY	The City of St. Augustine is taking steps to increase its ability to thrive in the face of climate-related shocks and stressors. As a first step, the city will prioritize maintaining and restoring its rich and healthy ecosystem. Over time, the city will implement projects to adapt to and mitigate the impacts of climate-related changes, improving the community's safety for generations to come.

LIVABILITY

Highlight of Achievements

Throughout the past 10 years, the City of St. Augustine has focused on policies and resources to enhance livability. A notable first step was adopting the Mobility Plan 2040, hiring a mobility coordinator, and implementing a Mobility Fee. Additionally, the city offers discounted parking across St. Augustine to its residents.

The city has also supported the St. Johns County Continuum of Care (CoC) in advocating for people who are homeless or at risk of homelessness.

These initiatives demonstrate a commitment to improving the quality of life for all community members by addressing transportation, housing, and accessibility needs.

Goal

The City of St. Augustine will continue to promote city policies and direct resources to enhance residents' livability and quality of life.

OBJECTIVES

CONTINUE ADDRESSING MOBILITY

To improve mobility, the City of St. Augustine should continue enhancing walkability by maintaining wide, obstacle-free sidewalks and ensuring safe street crossings with well-marked crosswalks and pedestrian signals.

Initiatives such as the shuttle service to downtown and the circulator around town reduce the number of cars on the road and parking demand, making downtown St. Augustine more accessible and easing traffic congestion.

IMPROVING SAFETY ACROSS THE CITY

Enhancing crosswalks with clear markings and pedestrian signals ensures safer crossings for everyone, especially in high-traffic areas located in under-resourced communities.

Upgrading street lighting in poorly lit areas will help deter crime and increase visibility, making residents feel more secure at night, as well as a higher sense of safety for pedestrians.

PROVIDE ANNUAL REPORTS ON VISION RELATED PROJECTS

By sharing updates on milestones reached and resources allocated, the city can demonstrate accountability and commitment to its Vision goals. Additionally, these reports play a dual role: They offer an opportunity for residents to provide feedback and engage in the decision-making process and fulfill the City of St. Augustine's mission of creating a collaborative environment where community input is valued.

OBJECTIVES

COLLABORATE ON SOLUTIONS FOR AFFORDABLE HOUSING AND HOMELESSNESS

By prioritizing the development of affordable housing units for all income levels, the City of St. Augustine can ensure that all residents can access safe and stable living conditions.

Collaborating between government agencies, non-profits, and private sector partners is essential to create sustainable and practical solutions.

ADDRESS FOOD DESERTS ACROSS THE CITY OF ST. AUGUSTINE

Addressing food deserts in neighborhoods across the city is vital for ensuring all residents have access to nutritious and affordable food. Partnerships with nonprofit and community organizations can also play a crucial role in educating people on healthy eating, cooking and food distribution.

AUTHENTIC CHARACTER

Highlight of Achievements

The City of St. Augustine prioritizes distinctive places that honor its unique history, look, and feel. Tools such as the Neighborhood Zoning Workbooks empower neighborhoods to define and protect their community's unique characteristics.

Design Standards for Entry Corridors and the Corridor Review Committee ensure that entryways to the city maintain a welcoming, authentic aesthetic.

Goal

The City of St. Augustine will preserve its “small town” feel by preserving and maintaining the historic character that is consistent with the community's look and ambiance.

OBJECTIVES

PROTECT HISTORIC CHARACTER IN BUILDING DESIGNS AND PRESERVE HISTORIC STRUCTURES

History is ingrained in the fabric of St. Augustine's built environment, telling the story of how the city has been shaped over the past 450 or more years. To honor St. Augustine's authenticity, the city should take steps to preserve and rehabilitate historic structures in every neighborhood.

New or revitalized areas should also follow the look and feel of their respective neighborhoods to uphold the neighborhood's authentic character.

ALIGN CITY EFFORTS TO SUPPORT A "SMALL TOWN" FEEL THROUGH SMART GROWTH PRACTICES

St. Augustine residents appreciate the city's "small town" size and scale. To curb urban sprawl and curate development consistent with its neighborhoods, the city should implement smart growth practices, such as improving walkability and encouraging redevelopment and infill development within existing neighborhoods.

OBJECTIVES

CONTINUE STRENGTHENING THE UNIQUENESS OF NEIGHBORHOODS

Every neighborhood in St. Augustine has a unique history. Some date back to the city's founding, while others have a more recent, mid-century timeframe. The city should take steps to celebrate each neighborhood's unique history, culture, and architecture.

Like considering implementing design standards, supplemental regulations and/or overlay districts in other neighborhoods and commercial corridors to support the distinctive character of all parts of the city.

PROMOTE CULTURE AND THE ARTS

The residents—their stories, backgrounds, cultures, and traditions—shape St. Augustine's authentic character. The city will make strides to promote its cultural elements to ensure residents enjoy a sense of place and community.

The city will also encourage the arts, including providing opportunities to local artists and increasing public art to celebrate the creativity and talent of St. Augustine residents. The city should consider methods to safeguard the unique people, culture, and art that thrive in the historic city environment.

VITALITY

Highlight of Achievements

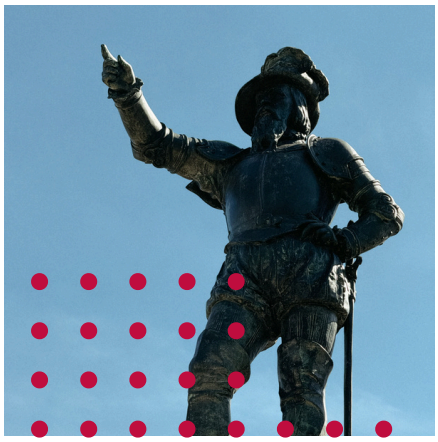
In the 2014 Vision Plan, the Vitality theme covered a number of economic development and environmental issues. The city has developed a deeper understanding of the tourism industry, which helps drive the local economy and creates unique challenges for residents. As part of the city's Comprehensive Plan update in 2020 the city included more detailed discussion and analysis of the impacts and contributions of tourism on the local economy including recognizing that it is the city that draws many tourists to the county.

Additionally, capital improvements are reviewed annually and are reviewed for potential deficiencies as well as increased efficiency over a five (5) year period. This review process is a way to ensure that improvements are planned with the city's Vision setting the priorities.

Several items that were previously discussed related to the environment are now highlighted under the new Resiliency theme.

Goal

Strengthen the local economy of St. Augustine to provide opportunities for residents and visitors alike through policies and practices that will support the prosperity of all community members.



OBJECTIVES

SUPPORT LOCALLY DRIVEN ECONOMIC DEVELOPMENT

The City of St. Augustine should enhance support for small businesses throughout its commercial corridors. By improving accessibility to small businesses in all parts of the city, residents will be encouraged to shop locally instead of traveling outside the city.

FOSTER A DIVERSE BUSINESS ENVIRONMENT

By embracing diversity in the business community, the City of St. Augustine can help promote inclusive hiring practices and equal opportunities for advancement. Additionally, supporting minority-owned businesses and encouraging diverse partnerships can strengthen the local economy and build a more resilient business community.

OBJECTIVES

INVEST IN ST. AUGUSTINE'S WORKFORCE AND EDUCATION

The City of St. Augustine should invest resources in workforce development and education. As the City's population ages, the community must attract and train younger talent to fill the employment gap. Investing in workforce education will ensure that St. Augustine businesses can employ highly trained individuals. The City must consider options such as higher education and skill-based trade opportunities to create a robust, multigenerational workforce.

PROMOTE BEAUTIFICATION ACROSS THE CITY

The City of St. Augustine will promote beautification across the city to improve the quality of life in neighborhoods and attract new business opportunities in commercial areas. The City will also find solutions to address blighted properties that have fallen into disrepair, prioritizing historic properties.

These strategies could include tree planting, urban tree management, property recognition awards, volunteer clean up days, and sidewalk repair to make the city more enjoyable to walk around and improve residents' perceptions of their neighborhoods.

RESILIENCY

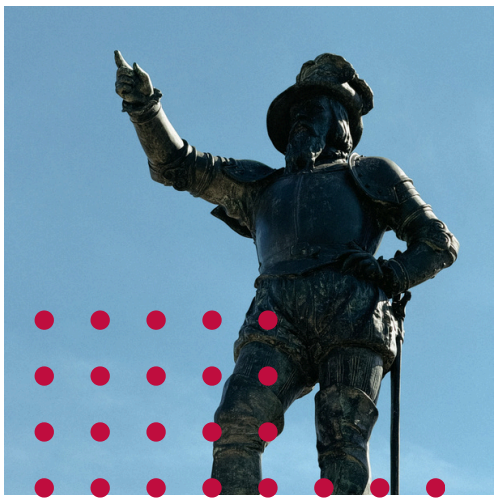
Highlight of Achievements

The City of St. Augustine completed its Sustainability Plan in 2019, marking a significant step towards a more resilient and sustainable future. The City's efforts include comprehensive studies on the city's resiliency and qualifying for state and federal funding for future projects.

The city is one of only two local governments in the region to have a Chief Resilience Officer, and it has played a leading role in Resilient First Coast, the regional resiliency collaborative group. Now, the city is beginning to move past the planning stage and into designing and implementing projects that will improve local resiliency. This ongoing commitment highlights the City of St. Augustine's proactive approach to fostering a sustainable and resilient community.

Goal

Enhance the resilience of the City of St. Augustine to ensure the ability of individuals, communities, businesses, and the natural and built environment to survive, adapt, grow, and thrive in the face of climate-related shocks and chronic stressors.



OBJECTIVES

FOCUS ON PROTECTING HISTORIC AND CULTURAL ASSETS

The City of St. Augustine will focus resiliency efforts on historic and cultural assets and neighborhoods to preserve the unique identity and heritage of St. Augustine. By protecting historic landmarks and cultural sites, the city can ensure that future generations can appreciate and learn from the city's rich history.

CONSERVE THE NATURAL ENVIRONMENT

Conserving natural resources and ecosystems helps maintain the environmental health and sustainability of the whole city. These efforts safeguard the city's character and enhance its ability to withstand and recover from various environmental challenges.

IMPROVE EDUCATION AND PUBLIC OUTREACH ON RESILIENCY, SUSTAINABILITY, AND CITY PROJECTS

Education and public outreach are crucial for fostering an informed and engaged community. The city can raise awareness about the importance of resilience and sustainable practices by offering educational opportunities such as workshops, seminars, and informational campaigns.

These initiatives can help residents understand how to prepare for and respond to various challenges, from natural disasters to everyday environmental impacts.

Engaging the community through educational efforts empowers individuals and strengthens the collective ability to build a more resilient and sustainable city.

OBJECTIVES

UPHOLD THE CITY OF ST. AUGUSTINE AS A REGIONAL LEADER IN RESILIENCY

Upholding St. Augustine as a regional leader in resiliency requires a proactive approach to addressing immediate and long-term challenges. By implementing innovative strategies and best practices, the city can effectively manage risks and enhance its capacity to recover from adverse events.

This includes investing in resilient infrastructure, promoting sustainable development, and fostering strong community partnerships. By continuously adapting and improving its resilience strategies, the City of St. Augustine can inspire neighboring communities and set a benchmark for regional resilience.

SUPPORT GREEN INFRASTRUCTURE

Supporting green infrastructure, such as tree planting and preservation, low impact development (LID) stormwater techniques and other more resilient development practices, are crucial for creating sustainable and resilient urban environments.

Green infrastructure investment is a proactive step towards a healthier, more sustainable future for all.

PREPARED IN CONJUNCTION WITH AND ASSISTANCE FROM

NORTHEAST FLORIDA REGIONAL COUNCIL

The Northeast Florida Regional Council (NEFRC) is a dynamic network of local governance serving seven (7) counties (Baker, Clay, Duval, Flagler, Putnam, Nassau, and St. Johns) and 25 municipalities since 1977. The NEFRC assists municipal and county staff with planning, economic development, emergency preparedness, resiliency, and healthcare coalitions to support local planning and development efforts. The NEFRC is the designated Economic Development District for northeast Florida and covers 4,428 square miles with a population of approximately 1.5 million.

Planning and Zoning Board

Planning Division Memorandum
Planning and Building Department

TO: Planning and Zoning Board

DATE: April 30, 2025

RE: Discussion and Recommendation related an Initiative to Develop more Resilient Criteria for Building for Flood Prevention.

The City Commission has directed staff to work with the city's Citizen Boards to examine concerns related to development in low-lying and/or flood prone areas. This issue has become more of a concern recently with more frequent development applications proposing significant amounts of fill, higher than minimum finished floor elevations, and building techniques or design, such as on slab construction that minimizes the options to control drainage, runoff and water for residential development.

You may recall that several years ago the city did have an initiative with a "Building Code Task Force" that looked at this issue. This group recommended the adoption of a maximum impervious surface ratio (70% of the lot) in addition to the preexisting lot coverage limits, and the requirement for lot grading plans for new single-family development. These recommendations were adopted and are enforced through the city's building permit process.

However, the Planning and Zoning Board (PZB) has recognized that these issues impact proposed development which includes infill development in older areas, redevelopment as properties are demolished and redeveloped with new proposals, and character defining features in our historic districts, historic neighborhoods and our entry corridors. As well as, on specific historic structures as property owners and others work to protect their "investment" in the city.

The city held a joint meeting with all three (3) citizen boards in December 2024 to give the Boards an opportunity to discuss these issues as an introduction to the topic. Subsequently, the PZB held its own workshop in February 2025 to specifically discuss this issue. At this meeting staff was able to review current city projects, review current floodplain, CRS and building requirements, and discuss potential enforcement options with the Board. Based on this discussion a revised list of higher regulatory options is attached for your review.

Additionally, the PZB requested that staff hold a Public Workshop specifically so that the public can provide feedback and input on this issue. Graphics provided for information at the subsequent March Public Workshop are also attached for your information.

The March Public Workshop was well attended. Staff worked through a presentation with relevant information that included several stopping points to garner as much feedback from attendees as possible. Those that attended included a mix of contractors as well as property owners. The workshop PowerPoint is attached for your information.

The main concerns expressed at the Workshop related to the fill issue included:

- Bringing in fill should not adversely impact neighboring properties.
- The need to clarify if any requirements/limitations related to fill are for bringing in fill to raise the entire property or is the fill just related to the type of construction.
- Requirements/limitations on fill should consider surrounding grade and be defined so that the points/references are measurable and can be consistently applied.
- And that the definition of side yards, swales and grading requirements and if fill is considered a structure and therefore limited by a height of less than 30 inches within yards needs to be clarified.

The city has received draft amendment language to Chapter 11 Conservation Overlay Zone regulations, and Chapter 25 Landscape Code regulations from the city consultant. This draft language is attached for your review.

The draft Chapter 11 language includes:

- Adding definitions for retaining wall and shoreline modification.
- Adding an 18th criterion to the list of 17 Criteria that discusses fill, and minimum and maximum top elevations for armored shorelines.
- Adding standards for issuing permits for fill and shoreline modifications, and
- Maintenance and operations of fill and shoreline modifications.

The draft Chapter 25 language includes:

- Adding a definition for fill and yard and amending the yard definition, and
- Adding criteria for development utilizing fill into the General landscape requirements.

Staff do have several concerns related to the current proposed language:

- The retaining wall definition should include language related to change of ground elevation.
- Add definition of flood protection wall.
- Add definitions of bulkhead and seawalls.
- References in the new 18th criteria including minimum and maximum top elevations for bulkheads and hybrid and natural shoreline standards may need to wait until we are ready to specifically discuss shoreline standards.

- All updates or revisions should probably be contained within Chapter 11. There may be no need to also amend Chapter 25, which is the Landscape Code.
- The proposed language currently inserted into Chapter 25 is too stringent and not feasible for single family residential construction on individual lots.
- Any standards for single family residential development should be simple, measurable, easily obtained by the applicant, and easily reviewed and enforceable.

Since the April 1st PZB meeting city staff have worked diligently on drafting potential land development code language. Also find attached this draft language with the markups included for your information. The staff draft language focuses on the lot grading issue, which relates to fill and construction techniques and stormwater and master drainage plans.

The draft Chapter XX language includes:

- Specific lot grading requirements and clarification that this would apply to 1 and 2 family dwellings that are exempt per the Stormwater code.
- Recognition that buildable lots are in different areas that may have different levels of existing conditions in the area or neighborhood related to stormwater controls. This creates a table that refers an applicant to certain standards based on the specific situation of a stormwater system in the specific subdivision.
- Establishing guidelines and clarifying grading plans, and
- Recognizing the importance of erosion control and low impact design.

The draft Chapter 11 language includes:

- Includes minor changes.

Outstanding issues to be resolved:

- Will we allow an appeal or variance process?
    a. If we do, does it go through civil plan review?
    b. Does it include everything in lot grading ordinance or just some categories?

    Ex. Fill vs. ISR vs. 3-foot setbacks to impervious surfaces.

An option that could be considered is that we could allow additional fill to be placed if some set measure of stormwater is retained on site (e.g. 1:1 cf of capacity) if over some number of cubic feet, it would trigger engineered plans though civil plan review.

- Where should the Ordinance be placed, Chapter 29 Stormwater, Chapter 28 Article IV. Supplementary Regulations, other?
    a. If we go with no variance or appeal, then Chapter 29 has advantages but would presumably need approval from Public Works?
    b. If we go with a variance process, then Chapter 28 Article IV has advantages.

- The General Lot Grading Conditions Chart needs to be finalized and placed in the correct hierarchy and references that refer to it would need to be updated accordingly.

- Do lots within an approved Master Grading Plan need to submit a lot grading plan?

Based on feedback from the Public Workshop, the PZB and internal staff review, staff would like feedback and comments regarding a direction to move forward with detailed proposed language regarding this issue.

Thank you for your attention to this matter. We look forward to hearing any of your questions, concerns and input on this important topic.

If you have any questions or require additional information, please do not hesitate to call me at (904) 209-4320 or email at askinner@citystaug.com. Or contact other staff members, Sarah Daugherty, Jessica Beach, Buddy Schauland or Ray Deschler.

Amy McClure Skinner, AICP
Director
Planning and Building Department

Example Higher Regulatory Standards and Graphics

March 19, 2025

RE: Building Techniques for Resiliency – Public Workshop

Summary: Below is a list of higher regulatory development standards/policy options categorized in terms of their impact on community level flood risk reduction as determined by the City's floodplain coordinator. Most of these policies are recognized as higher regulatory standards or "Best Practices" under FEMA's Community Rating System (CRS), and through the Association of State Floodplain Manager's (ASFPM) "No Adverse Impacts" toolkit.

Tier 1 – High Impact

1. **Prohibit the use of fill in all Special Flood Hazard Areas** (SFHA) (Flood Zones A, AE, V, and VE). Exceptions made for small amounts (6 in. or less) of fill dirt used for landscaping and grading purposes only. (Possible CRS points)

2. **Prohibit slab-on-grade and backfilled stem-wall foundation types within the SFHA**. This would allow for crawlspace foundations only (ie. piers or pilings) within the SFHA.

3. **Raising the freeboard requirement**. The City currently requires all new or substantially renovated residential structures built within the SFHA to have their finished floor elevation a minimum of 1 ft above the property's base flood elevation (BFE). A property's BFE is the predicted flood height during a %1 annual-chance-flood event. Further increasing the finished floor elevation height requirement (ex. BFE + 2ft) would provide added protection and reduced flood risk for all newly built or substantially renovated residential structures. (Possible CRS points)

Tier 2 – Moderate Impact

1. **Limiting the use of fill to a "reasonable" amount**. Instead of completely prohibiting the use of fill, another option is setting a maximum allowable amount.
    - Example 1 - A maximum of 2 feet of fill above the existing grade is permitted around the perimeter of a proposed structure only. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches within the first 10 feet.
    - Example 2 – The amount of fill will not exceed the BFE of the property around the perimeter of the proposed structure. *Lots* shall be graded to drain surface water away from foundation walls. The *grade* shall fall a minimum of 6 inches within the first 10 feet.

2. **Require a "Certification of No Adverse Impact" signed by a licensed engineer** stating that "*the proposed development will not adversely affect flood risks for other properties and communities as measured by increased flood stages, flood velocities, or increased potential for erosion and sedimentation. or any other impact deemed important or as specified by the city of St. Augustine, unless the impact is mitigated as provided for in a community or watershed-based plan. This certification shall employ industry standards for hydraulic and hydrological analysis to determine no adverse impact and all data shall be provided in hard copy and digitally for review and corroboration by the city's engineer or any governmental review agency acceptable to the city of St. Augustine*"

   A *certification of no adverse impact* could be applied widely, to say to all development related permits involving the use fill within the SFHA, or more narrowly, for unique permit specific circumstances or specific areas.

3. **Applying floodplain management regulations in the 0.2%-annual-flood-hazard area**. This would mean flood zones "X", and "X – shaded" located within the City are treated as "A" zones in regard to floodplain regulations. In other words, the entire City would be treated as a part of the SFHA, and would be subject to all applicable higher regulatory standards and floodplain regulations. (Possible CRS points)

   FEMA's classifies flood zones "X" and "X – shaded" as areas of minimal and moderate flood hazard, respectively. They are normally excluded from the SFHA, and unlike flood zones "A", "AE", and "V", are not subject to FEMA NFIP regulations.

Tier 3 - Low Impact

1. **Limit Lot Coverage**. Consider reductions to allowed lot impervious coverage (e.g. 50%). Consider increasing allowed heights in exchange for smaller building footprints. Also consider prohibiting or limiting the footprint of accessory structures, such as storage structures or detached buildings.

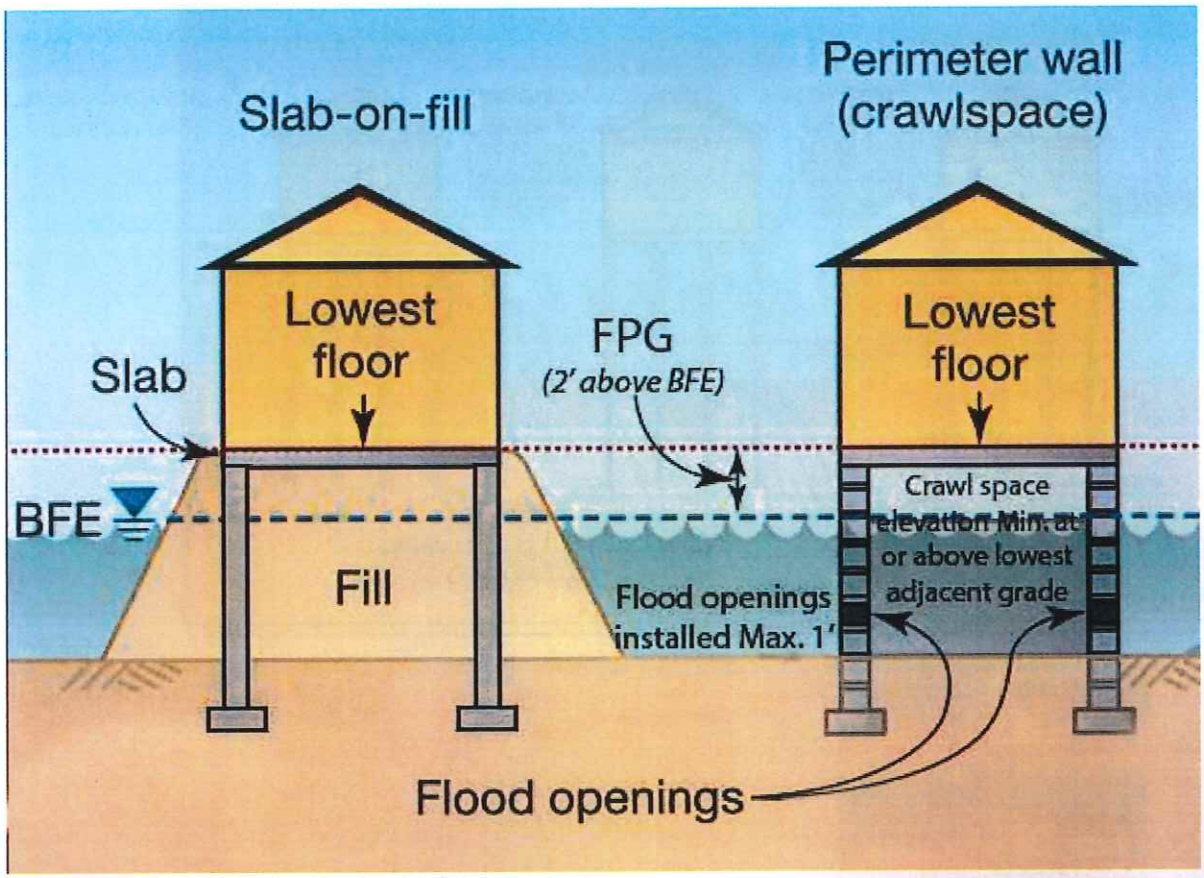
2. **Low Impact Development / Green Infrastructure**. Consider requiring or incentivizing the installation of green infrastructure to store and infiltrate runoff onsite from new impervious surfaces.

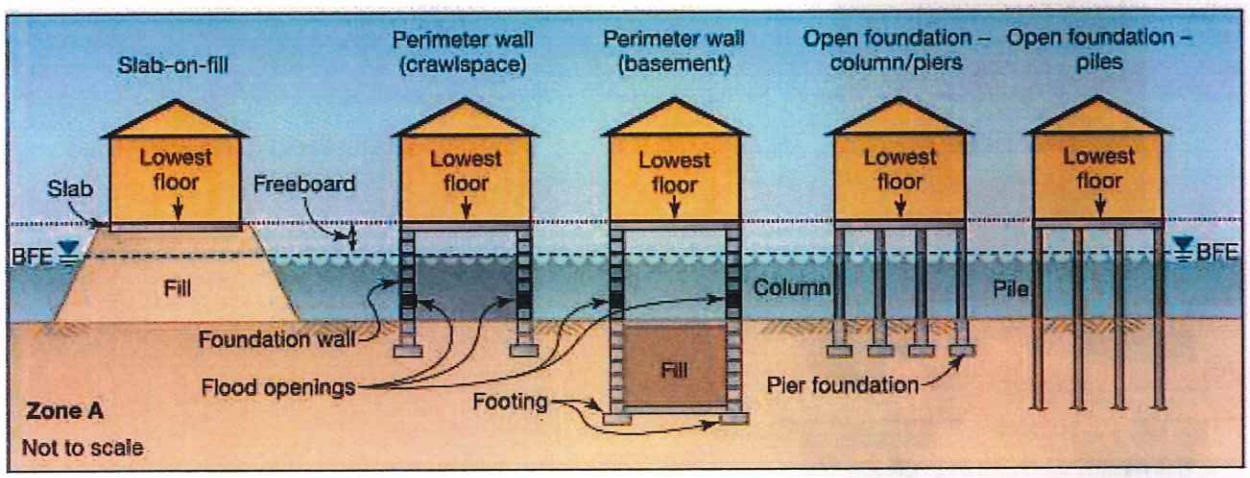
3. **Limit Impervious Surfaces (Private properties).** Explore providing information and support to private property owners to reduce impervious services. Consider offering reductions to stormwater utility fees for reduction in impervious surfaces or other incentives. The previous Building Code Task Force recommended utilizing incentive programs to implement porous materials for driveways and patios, and to cap the maximum impervious surface ratio at 70%.

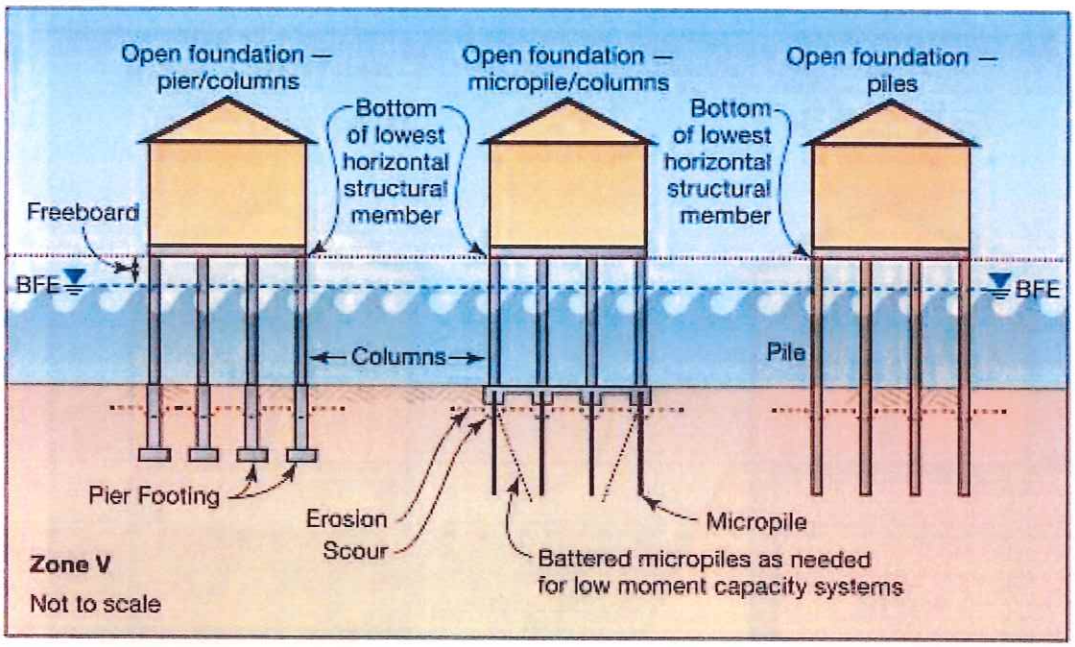
4. **Enclosure Limitations**. Consider prohibiting or limiting the size of enclosures below the lowest floor / lowest horizontal structure member. The construction method could also be limited to require breakaway walls in lieu of walls of enclosures with flood openings.

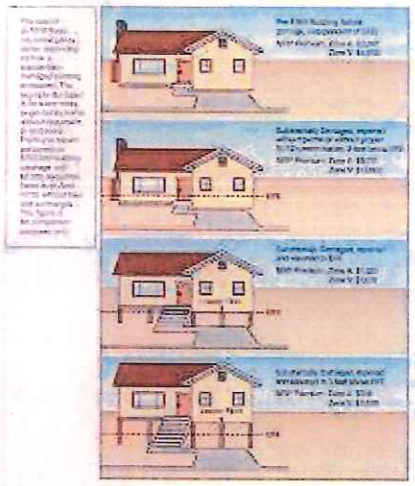
These items are suggested for discussion purposes and are listed from the highest development related impacts to the lowest discussed items that could be implemented by land development code revisions.

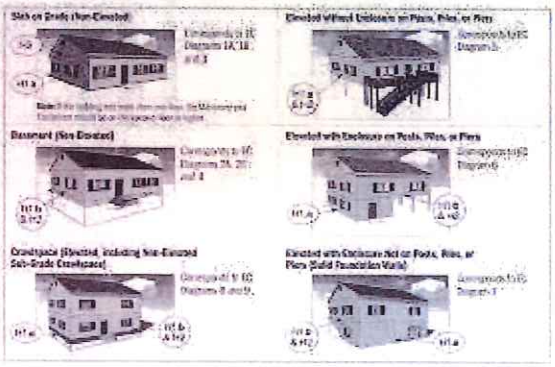
Raymond Deschler, CFM
Floodplain Coodinator

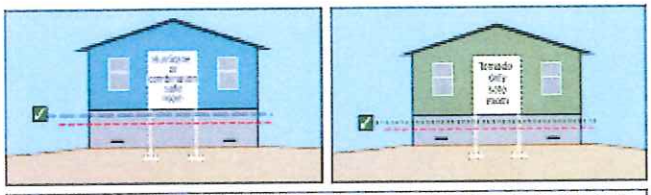

Slab-on-fill
Perimeter wall
(crawlspace)
Lowest
floor
Slab
FPG
(2' above BFE)
Lowest
floor
BFE
Fill
Crawl space
elevation Min. at
or above lowest
adjacent grade
Flood openings
installed Max. 1'
Flood openings


Slab-on-fill
Perimeter wall
(crawlspace)
Perimeter wall
(basement)
Open foundation –
column/piers
Open foundation –
piles
Lowest
floor
Slab
Freeboard
BFE
Fill
Foundation wall
Flood openings
Footing
Fill
Column
Pier foundation
Pile
Zone A
Not to scale


Open foundation — pier/columns
Open foundation — micropile/columns
Open foundation — piles
Bottom of lowest horizontal structural member
Bottom of lowest horizontal structural member
Freeboard
BFE
BFE
Columns
Pile
Pier Footing
Erosion
Scour
Micropile
Battered micropiles as needed for low moment capacity systems
Zone V
Not to scale



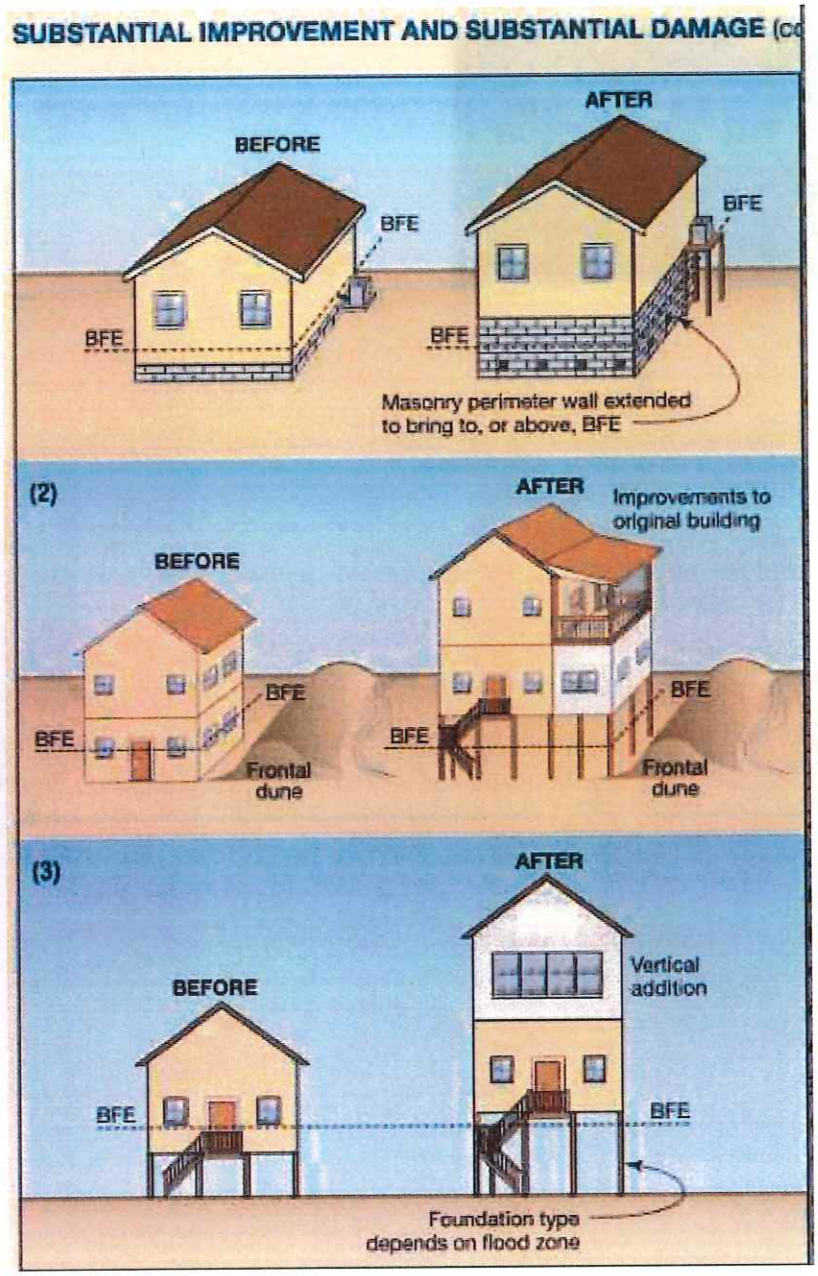


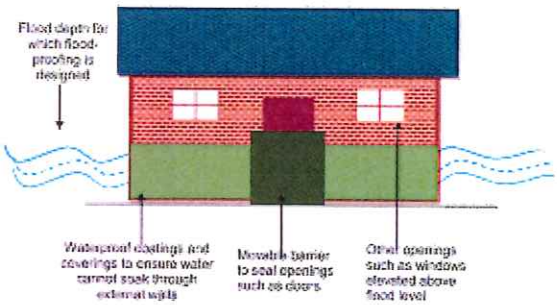


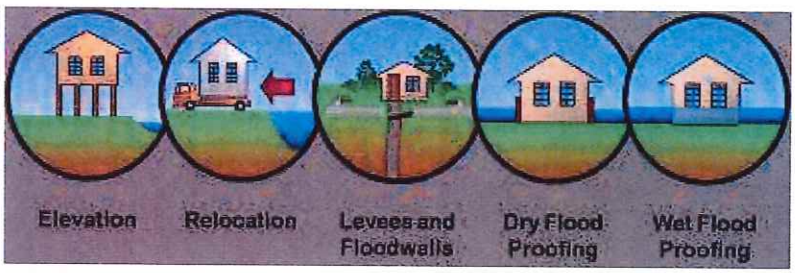
- - - Minimum elevation of the lowest floor required by the authority having jurisdiction. For communities with more than one foot of freeboard, this elevation may exceed
- · · · · One foot above the base flood elevation*
- — — 500-year flood elevation*

* If flood elevations for your safe room site are not shown on the flood hazard map or flood elevation study adopted by your community, then flood elevations should be determined as detailed in ICC 500 Section 402.3.

✓ Denotes minimum acceptable safe room elevation.




Flood depth for which flood-proofing is designed
Waterproof coatings and coverings to ensure water cannot soak through external walls
Movable barrier to seal openings such as doors
Other openings such as windows elevated above flood level


Elevation
Relocation
Levees and Floodwalls
Dry Flood Proofing
Wet Flood Proofing

Example Slab-On-Grade Building Types

BUILDING DIAGRAM #1A

Distinguishing Feature: The bottom floor is at or above ground level (grade) on at least one side.

Lowest Floor for Rating: Top of slab or lower attached garage if it has machinery and equipment below BFE unless the garage is properly vented

Elevation Needed for Rating from FEMA EC: Item C2.a or Item C2.d (if structure has attached garage)

All slab-on-grade single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses); with or without attached garage.

BUILDING DIAGRAM #1B

Distinguishing Feature: The bottom floor is at or above ground level (grade) on at least one side.

Lowest Floor for Rating: Top of slab or lower attached garage if it has machinery and equipment below BFE unless the garage is properly vented

Elevation Needed for Rating from FEMA EC: Item C2.a or Item C2.d (if structure has attached garage)

All raised slab-on-grade or slab-on-stem-wall-with-fill single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses); with or without attached garage.

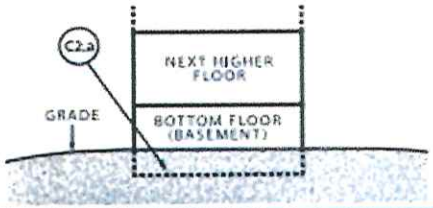
BUILDING DIAGRAM #2A

Distinguishing Feature: The bottom floor (basement or underground garage) is below ground level (grade) on all sides.[1]

Lowest Floor for Rating: Top of basement floor

Elevation Needed for Rating from FEMA EC: Item C2.a

All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.



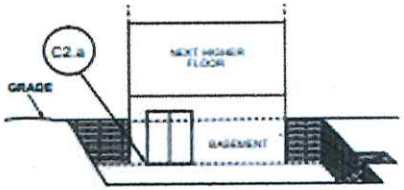
BUILDING DIAGRAM #2B

Distinguishing Feature: The bottom floor (basement or underground garage) is below ground level (grade) on all sides; most of the height of the walls are below ground level on all sides and the door and area of egress is also below ground level on all sides.[1]

Lowest Floor for Rating: Top of basement floor

Elevation Needed for Rating from FEMA EC: Item C2.a

All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.



Source: FEMA

Example Piers-Pilings-Crawlspace Building Types

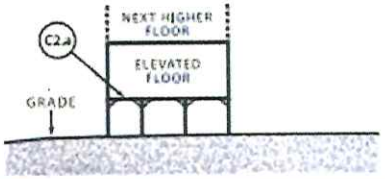
BUILDING DIAGRAM #5

Distinguishing Feature: The area below the elevated floor is open, with no obstruction to flow of floodwaters (open lattice work and/or insect screening is permissible).

Lowest Floor for Rating: Lowest elevated floor

Elevation Needed for Rating from FEMA EC: Item C2.a

All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the elevated floor.



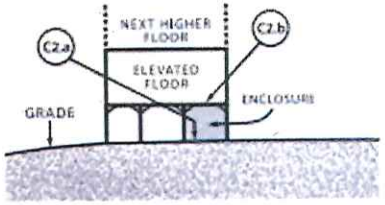
BUILDING DIAGRAM #6

Distinguishing Feature: The area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings[1] present in the walls of the enclosure.

Lowest Floor for Rating: Lowest elevated floor or top of bottom floor if conditions in the FIM are met

Elevation Needed for Rating from FEMA EC: Item C2.a or Item C2.b

All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.



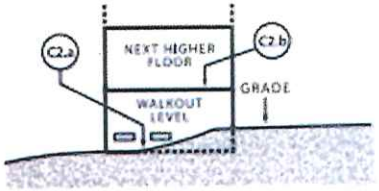
BUILDING DIAGRAM #7

Distinguishing Feature: The area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings[1] present in the walls of the enclosure.

Lowest Floor for Rating: Lowest elevated floor or top of bottom floor if conditions in the FIM are met

Elevation Needed for Rating from FEMA EC: Item C2.a or Item C2.b

All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least one side is at or above grade. The principal use of this building is located in the elevated floors of the building.



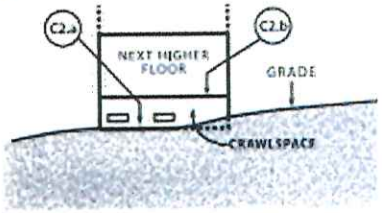
BUILDING DIAGRAM #8

Distinguishing Feature: The area below the first floor is enclosed by solid or partial perimeter walls. In A Zones, the crawlspace is with or without openings[1] present in the walls of the crawlspace.

Lowest Floor for Rating: Next higher floor or top of bottom floor if conditions in the FIM (Lowest Floor Determination) for A zones are met

Elevation Needed for Rating from FEMA EC: Item C2.a or Item C2.b

All buildings elevated on a crawlspace with the floor of the crawlspace at or above grade on at least one side, with or without attached garage.



Source: FEMA

STORMWATER, RESILIENCE, AND LOW IMPACT DEVELOPMENT

STORMWATER DESIGN OVERVIEW

Stormwater is recommended to be incorporated into the overall design of the project as amenities. The goal of encouraging the use of these mechanisms is to reduce stormwater runoff, capture contaminants closer to the source and reduce the use of potable water for irrigation and grey water activities.

LOW IMPACT DEVELOPMENT (LID) STORMWATER TECHNIQUES

It is recommended that projects include **at least two of the following** low impact design concepts, which may be located anywhere on the project (including the front setback):

A. **Raised pier construction for homes** (allowing for movement of stormwater and additional infiltration area)

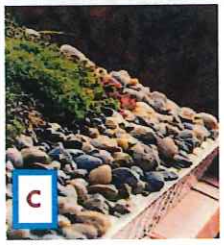
B. Rain water harvesting (rain barrels, underground cisterns, and similar to assist in water conservation)

C. Green roofs

D. Bio-swales

E. Rain gardens

F. **Pervious pavement** (pervious concrete, pervious pavers, and/or other pervious pavements)

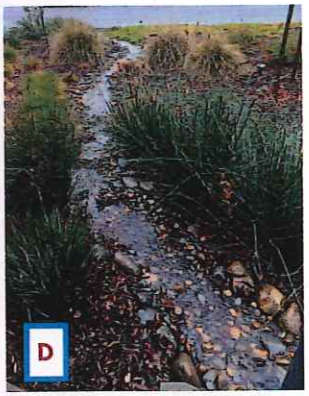


Example of Rainwater harvesting and green roof.

Image from Unsplash and Shutterstock.

Example of rain garden and raised pier construction with porous skirting.

Image from Shutterstock and ML+H.



Examples of Stormwater Facility Design

Sources: The Urban Report; Green and Sustainable Services, LLC.

Masonry site walls with floodgates can provide flood protection. Image from ML+H.

A low site wall can help to provide flood protection. Also shown is an open "pier system" for the front porch. Image from ML+H.

Example of Raised Pier construction with porous skirting (lattice). Image from ML+H.

STREET WALL AS FLOOD PROTECTION

1. It is recommended that the street wall be considered as part of flood protection to the site. When used in conjunction with neighboring walls and earthen berms, it is possible to create an initial barrier to storm surge and flooding.

2. Openings in the wall for pedestrian walkways and driveways can be closed during storm events by using temporary barriers.

STREET WALLS

1. Low block / masonry walls may be appropriate. Street walls are recommended to not exceed 36", but four (4) feet is the maximum per Code. Wall height should be measured from the lower elevation of the public sidewalk or final elevation of adjacent interior development.

2.Portions of the wall above 3 feet should not be more than 50% solid.

3. Street walls shall be constructed of brick or masonry. Fencing may be included.

4. When landscaping is provided between the wall and the sidewalk, the landscaping strip is recommended to be a minimum of two (2) feet wide.

FOUNDATION

The relationship of the building floor height to the surrounding context of the neighborhood is important to consider.

Raised Pier Foundations: There are multiple advantages to raising the foundation, including (a) opportunities for stormwater infiltration, (b) movement of storm surge through a site in hurricane events, and (c) cross ventilation.

Design recommendations should consider:

1. Brick, tabby or concrete block (with texture) piers.
2. Spaces between piers left open.
3. Lattice infill between piers is common.

RECOMMENDED FIRST FLOOR ELEVATIONS

Homeowners may consider further elevating the first floor. General recommendations to keep the architectural context of the homes include:

1. Take into consideration maximum heights of FEMA and City required minimum elevations of 35' (conforming lot) and 30' (non conforming lot).

2. Do not raise the home more than 4' from existing grade.

3. When raising the home more than 4' from existing grade, consider bringing it up one floor by building a non-occupied space such as garages, storage, and similar under the structure. The inclusion of an exterior porch and first floor entry should be considered in lieu of open "stilt house" base.

4.The City encourages sensitivity to the neighborhood character and sense of place created by the streetscape.

APPENDIX G

Mitigation Strategies

MITIGATION STRATEGIES

**Represent Guidelines for Rehabilitating Historic Buildings issued in 2017 part of The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings. Planning and Assessment for Flood Risk Reduction is a step that should be completed for all project prior to selecting a mitigation strategy. The U.S. Department of the Interior, National Park Service publication: Guidelines on Flood Adaptation for Rehabilitating Historic Buildings, 2019 offers guidance for appropriate mitigation strategies for historic buildings and offers the recommended and not recommended modes of action.*

Temporary Protective Measures

*Temporary Protective Measures **

- Flood Wrapping Systems
- Temporary Flood Barrier, System, or Equipment*
- Install Fastening Devices or Stanchions for Temporary Barriers*
- Evaluate Walls & Flood Barrier Against the Forces Induced by Flooding*
- Fill the Basement*
- Develop Procedure, Responsibilities & Training for Temporary Deployment of Flood Systems*
- Install a Generator*
- Relocate Valuable Collections to Higher Floors, Upper Shelves, Or Offsite*

Utilities + Life Safety

- Install Generators*
- Protect Utilities*
- Protection of Life Support Facilities / Dangerous Goods

Post-Event Stabilization + Protection

- Mold Remediation
- Structural Remediation

Site & Landscape

*Site Adaptations**

- Plan & Implement Site Investigation*
- Provide Proper Drainage*
- Improve or Design New Stormwater Management System*
- Porous Pavements
- Infiltration Fields and Strips with Above-Ground Storage
- Rainwater Retention Ponds With or Without Infiltration Possibilities
- Shallow Infiltration Measures
- Rain Water Tanks
- Reduced Paved Surfaces
- Gutter
- Artificial Islands
- Storage / Settling Tank and Storage Basins

*Landscape Adaptations**

- Improve, Restore, or Implement Natural Systems
- Use of Groundcover and Shrubbery
- Add trees as "straws" to help draw water from soil
- Improve Soil Infiltration Capacity
- Stormwater Park / "Water Squares"
- Raising Land
- Swales / Directing Stormwater
- Biofiltration
- Levee, Berm, or Embankment*

Public Lands / Streets / ROW

- Public Infrastructure Design
- Increase Height Difference Between Street /Ground Floor Level
- Raised Curbs / Hollow Roads
- Increased Capacity of Sewer System
- Increased Capacity of Stormwater Infrastructure
- Reconstruct Combined Sewer Systems to Separate Sewer Systems
- Smart-Drain (Ground Water)
- Infiltration and Transport Sewer
- Dikes / Levees / Seawalls
- Living Shoreline
- Green Spaces

Protect Utilities

*Protect Utilities**

- Protect Utilities in a Watertight Impermeable Enclosure*
- Protection of Exposed Risers, Conduits, and Cables
- Relocate Ducts, Pipes, & Conduits*
- Utilize Duct Installation That Can Be Removed After Flood*
- Install Electrical Disconnect Above Flood Risk Level*
- Eliminate Electrical Servia From Flood Prone Areas*
- Increased Pump Capacity
- Increased Storage or Discharge Capacity of Surface Water

Pumping Stations
Relocate All Utilities Above the Flood Risk Level*
Elevate & Anchor Exterior Mechanical Equipment*
Relocate Interior Mechanical Equipment*
Install Backflow Prevention Devices*
Install Sump Pumps

Building Infrastructure

*Move the Historic Building**

Relocate Building, Utilities, Facilities, and Infrastructure*
Find an Available Site with as Similar Setting as Possible While Also Eliminating Flood Risk*
Document the Historic Building with Photographs*

*Elevate Building on a New Foundation**

Assess Potential Impacts of Elevation*
Document the Property with Photographs and/or Drawings*
Elevate the Building on a New Foundation*

*Elevate the Interior Structure**

Assess Potential Impacts of Elevation*
Document the Property with Photographs and/or Drawings*
Elevate the Interior Structure (i.e. build up interior floor)*

*Dry Floodproofing**

Evaluate the Strength of Masonry Walls & Footing Against Flood*
Anchor the Structure to the Foundation*
Implement Site Drainage to Manage Floodwaters*
Create Plan for Post Flood Water Removal*
Install Backflow Prevention Devices*
Install Sump Pumps*
Design Temporary or Permanent Closures*
Install Stanchions, Fasteners, or Tracks for Flood Shields*
Install a Low Wall Around Basement Windows*
Install Vents in Foundations Walls that Can be Sealed*
Coasting or Covering the Exterior of Foundation Wall Surfaces*
Temporary Removable Waterproof Membrane*
Elevated Flood Wall / Flood Gate
By-Pass Creation
Building on Partially Elevated Areas
Construction on Piles

*Wet Floodproofing**

Evaluate the Strength of Masonry Walls & Footing Against Flood*
Anchor the Structure*
Relocate Utilities*
Install a Ground Fault Circuit Interrupter*
Install Hydrostatic Flood Vents (following Engineering Guidance)*
Install a Pumping System*
Remove Non-Historic Finishes & Furnishings that Retain Moisture*
Relocate Electrical Outlets & Panels Above Flood Risk Level*
Wet Proofing (Water Resistant Crawl Space or Interiors)
Install a Horizontal Water Stop*
Abandon the First Story*
Utilize Flood Damage-Resistant Materials*
Fast Replacement Components

*Fill the Basement**

Assess Strength of Basement Walls & Footings (Modify if Necessary)*
Remove or Breakup Non-Porous/Concrete Basement Floor Slabs*
Relocate All Systems & Utilities*
Fill Basement Using Removable Fill Material (Gravel, Soil, or Sand) & Compact*

Abandon the First Story

*Abandon the First Story**

Evaluate the Strength of Walls, Columns, & Footings*
Document Interior Materials, Features, Finishes, & Spaces*
Abandon the First Story*

Planning & Assessment for Flood Risk Reduction

*Planning and Assessment for Flood Risk Reduction**

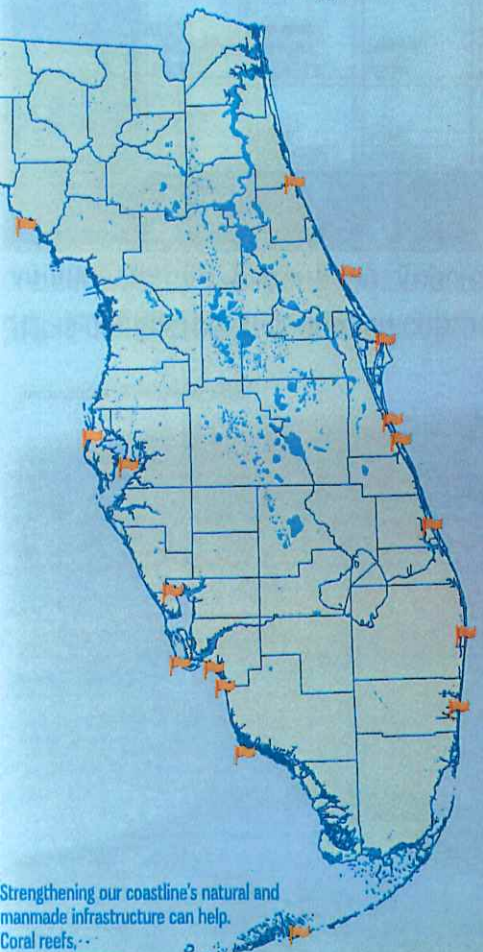
Identify & Catalogue Important Historic Features*
Develop an Adaptive Strategies Implementation Plan*
Identify & Evaluate Vulnerabilities*
Document Properties & Defining Characteristics*
Monitor Character Defining Features*
Identify, Utilize, & Maintain Existing Characteristics that Minimize Flood Impacts*

Policies

Policy - Regulations
Policy - Incentives

Post-Event "Historic Resiliency Triage" Teams

Trades and Vocational Training
Integration into Higher Education
Identify & Assess Flood-Damage*
Information Resources
Checklist for preparation of historic property / resources
Checklist for post-event recovery of historic property / resources
Centralized website / digital platform of tools, standards, checklists
Education
Public Awareness
Healthy Waterways / Wetlands Education
Public Education
Educate Tourists
Mapping + Data
Online Mapping
Sea Level Rise Visualization
Ongoing Data Collection of Flood / Storm Surge / Tidal Data
Identify Vulnerable Cultural Resources
Natural Systems Monitoring
Vulnerability of Flora and Fauna
Mapping of Impacts on Watersheds
Economic Disruption Mitigation
Assess Value of Business or Property Services
Tourism Climate Change Assessment



Strengthening our coastline's natural and manmade infrastructure can help. Coral reefs, mangroves, oyster reefs and marshes are our first lines of defense.

Funding for all highlighted projects was provided by DEP in partnership with NOAA and the Florida Coastal Management Program.

OUR VISION

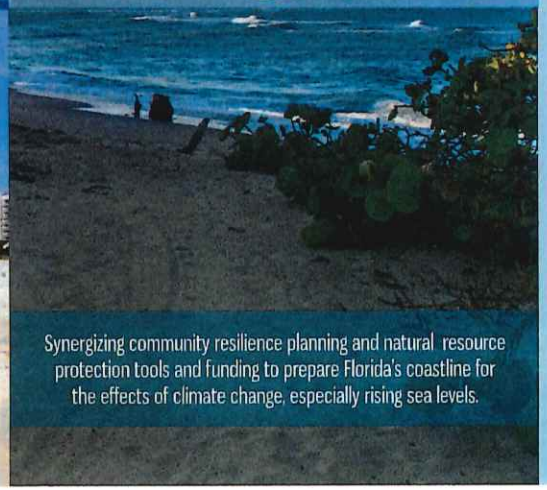
Florida's coastal communities are resilient and prepared for the effects of rising sea levels, including coastal flooding, erosion, and ecosystem changes.

The Florida Department of Environmental Protection's Florida Coastal Office is committed to marshalling resources to prepare Florida's communities and habitats for changes resulting from sea level rise. Our history of protecting, preserving, and restoring habitats has set the stage for this continuing effort.

For more information about past and current projects, funding opportunities, technical assistance and speaker availability contact:

Florida Coastal Office
FloridaCoasts@FloridaDEP.gov
(850)245-2094
3900 Commonwealth Blvd. MS 235
Tallahassee, FL 32399-3000

Florida Resilient Coastlines Program



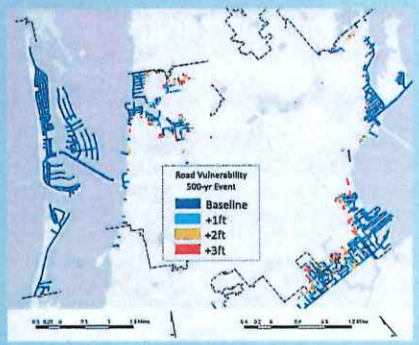
Synergizing community resilience planning and natural resource protection tools and funding to prepare Florida's coastline for the effects of climate change, especially rising sea levels.

PROJECT HIGHLIGHT INFORMATION

The Cities of Clearwater and St. Augustine and Escambia County were chosen as pilot communities to assess vulnerabilities to projected increases in coastal flooding and develop strategies to make affected areas more resilient. They received assistance from the Community Resiliency Initiative (CRI), a partnership between DEP and the Department of Economic Opportunity, with funding from NOAA and the Florida Coastal Management Program.

A guidebook for adaptation planning in Florida will be the next product from the CRI, available summer 2018.

Sea level rise is affecting Florida communities, especially along the coast. DEP is committed to continuing our efforts to help ensure collaboration among our coastal communities to help them address the increasingly complex effects of sea level rise, including tidal "sunny day" flooding, habitat shifts, and erosion.



Part of Clearwater's vulnerability assessment was to identify roads likely to flood during various rain events combined with sea level rise.

FLORIDA RESILIENT COASTLINES PROGRAM

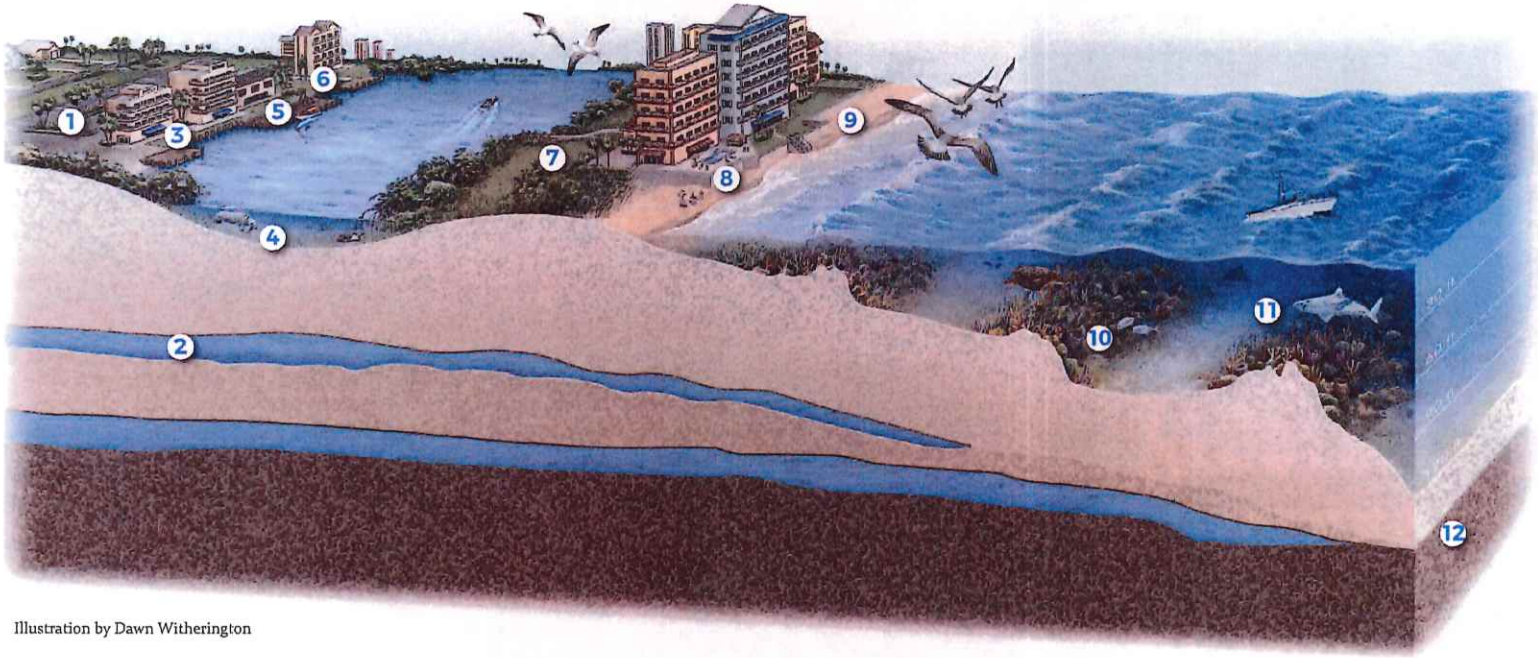


Illustration by Dawn Witherington

DEP is committed to continued collaboration with federal, state and local agencies to ensure Florida's coastal communities are resilient and prepared for the effects of climate change, especially rising sea levels.

Florida Resource	1 Watershed	2 Water Supply	3 Underground Tanks	4 Aquatic Vegetation	5 Shoreline	6 Marinas	7 Cultural	8 Coastal Infrastructure	9 Beaches	10 Coral Reefs	11 Fisheries	12 Ocean Energy Resources
Issues/Threats	Saltwater Intrusion; Stormwater Runoff	Reduced Water Quantity	Inundation & Leaking	Scarring & Health	Loss of Habitat and/or Infrastructure from Erosion	Reduced Water Quality from Runoff, Inundation/Leaking Tanks	Intrinsic Value	Tidal Flooding, Storm Surge	Erosion	Disease, Bleaching, Damage	Habitat Loss	Impacts to Natural Resources
Benefits of Resilience	Maintain or Improve Water Quality	Community & Natural Area Water Needs	Pollution Prevention	Protection of Fisheries; Wave Attenuation	Maintain Habitat & Infrastructure; Use of Habitat for Flood Mitigation; Wave/Wind Attenuation	Faster Rebound from Flooding/ Storms	Protection of Tourism Assets & Heritage	Protection of Infrastructure & Tourism Assets	Protection of Tourism Assets & Habitats; Wave Attenuation	Protection of Tourism Assets & Habitats; Wave Attenuation	Protection of Economically Important Species	Protection of Tourism Assets & Habitats

DEP-P00101 Rev. 5/07

- Synergizing community resilience planning and natural resource protection tools.
- Providing funding and technical assistance to prepare Florida's coastal communities for sea level rise.
- Continuing to promote and ensure a coordinated approach to sea level rise planning among state, regional and local agencies.

Nature-based solutions at FEMA

Overview

FEMA and other federal agencies have steadily increased the use of nature-based solutions to assist communities reduce disaster risk and the loss of life and property resulting from some of our nation's most common natural hazards. This evolution is in response to communities across the US recognizing the benefits of nature-based solutions and sustainable practices, and increasingly looking for federal support to implement solutions. FEMA has worked to ensure that the path to implementing nature-based solutions is as straightforward as possible, driving innovation and encouraging wider adoption of sustainable practices and hazard mitigation solutions.

Importance of nature-based solutions

The *Fifth National Climate Assessment* states the "effects of human-caused climate change are already far-reaching and worsening across every region of the United States."[i] At the same time, people are moving to more disaster-prone areas in the United States. In the 1980s, the country experienced an average of 3.3 weather and climate disasters each year that exceeded $1 billion in damages (adjusted for inflation to 2023 dollars). In the last five years (2019-2023), the U.S. experienced an average of 20 such disasters annually. These weather and climate disasters have resulted in more than 5,000 deaths and caused more than $1 trillion in damage since 2016.[ii]

Urban and suburban development, especially in the last two centuries, often worked against nature. People drained wetlands, channelized streams, cut down forests and paved over soils. Many cities relied on "gray infrastructure" – concrete, asphalt, and steel – to move stormwater off roads and into pipes as quickly as possible.[iii] In other places, natural shorelines that once intercepted polluted stormwater runoff were replaced with steel and concrete seawalls. The hardened shoreline consequently allowed contaminants to flow into lakes, rivers, and streams unimpeded.[iv] However, cities, suburbs and small towns are running into the limits of the gray infrastructure paradigm. Gray infrastructure tends to serve only a single purpose; it often works against nature; and it is increasingly expensive to operate and maintain.

Nature-based solutions offer an alternative paradigm. Nature-based solutions are sometimes called green or blue infrastructure, low-impact development, bioengineering, natural engineering, or engineering with nature. Examples of nature-based solutions that mitigate hazards include[1]:

1. Huntington, West Virginia using rain gardens to manage stormwater to reduce urban flooding.

---

[1] Information in this document is meant solely for informational purposes and is not intended to be an endorsement of any non-federal entity by FEMA, the U.S. Department of Homeland Security, or the U.S. Government.

FEMA

2. Milwaukee, Wisconsin preserving natural areas to store flood waters.
3. Tucson, Arizona mitigating drought risk by harvesting rainwater for landscaping needs.[v]
4. San Juan, Puerto Rico restoring coral reefs to protect vulnerable shorelines from erosion and protect the city and its inhabitants from damaging storm surge.[vi]

Nature-based solutions can also provide many co-benefits beyond hazard mitigation, including:

- Storing carbon.
- Improving air and water quality.
- Improving crop pollination.
- Enhancing human physical and mental well-being.
- Restoring habitats for ecological functionality, connectivity, and support of biodiversity.
- Creating economic growth through green jobs and increased property values.
- Expanding community education of innovative, resilient, nature-positive approaches to hazard mitigation.

Nature-based solutions serve multiple purposes – not just one. They work with natural systems – not against them. They are often cost-effective to implement and maintain. Economists have shown that the overall benefits of nature-based solutions frequently exceed their costs over time, making them more economical than traditional engineering alternatives.[vii]

Although nature-based solutions currently represent a small but growing portion of FEMA's flood mitigation strategies, the Congressional Budget Office (CBO) 2024 report on *Federal Spending for Flood Adaptations* indicates that these solutions yield an expected return of $1.80-$2.20 for every dollar invested in flood mitigation and adaptation programs.[viii] This assessment includes various FEMA programs, such as, Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA) and Public Assistance (PA) programs. Whether used independently or as a part of larger mitigation initiatives, nature-based solutions can enhance resilience and provide cost-effective solutions in the aftermath of disasters.

Nature-based solutions at FEMA

FEMA recognizes the importance of nature-based solutions as an important method in mitigating the impacts of disasters and promoting community resilience. This factsheet provides examples of and resources for implementing nature-based solutions, leveraging current authorities and available resources.

Communities are implementing nature-based solutions in various innovative ways. To effectively prioritize and create pathways for these solutions, FEMA is imbedding nature-based solutions into its actions. Notably, approximately 60-70% of projects funded under the Building Resilient Infrastructure and Communities (BRIC) program FY2023 incorporated nature-based solutions due to changes in project type funding that encouraged the development of specific project types. For further insights, FEMA has published resources such as the *FEMA Risk MAP Nature-Based Solutions Guide* and the *Building Community Resilience with Nature-Based Solutions: Strategies for Success* documents, which highlight best practices and strategies for integrating nature-based solutions into community resilience efforts. FEMA is supporting the implementation of nature-based solutions in many other ways:

- State, local, Tribal, and territorial (SLTT) entities interested in using FEMA funds to support nature-based solutions activity should consult the *Hazard Mitigation Assistance Program and Policy Guide*. This document provides guidance on how to use FEMA's hazard mitigation programs to evaluate nature-based solutions as a cost-effective and resilience-building approach to keep natural hazards from becoming costly disasters. This includes the Hazard Mitigation Grant Program, HMGP Post-Fire, Building Resilient Infrastructure and Communities and Flood Mitigation Assistance. The most recent update included modifying the discount rate in the benefit-cost analysis from 7% to 3% so that it could better account for the long-term benefits of nature-based solutions.

- The BRIC and Flood Mitigation Assistance programs are competitive non-disaster grants that allow SLTTs to address their hazard mitigation needs through various pathways that may include nature-based solutions:

  - The BRIC program incentivizes FEMA applicants to adopt nature-based solutions in their hazard mitigation grants. For Fiscal Year 2023 (FY 2023) applicants received up to 15 additional points in the evaluation criteria for inclusion of a nature-based solution.

  - In the FY 2023 National Competition selections for the BRIC program 61% included nature-based solutions. Of the 56 selections, 16 were landscape or coastal scale nature-based solutions and an additional 16 were neighborhood scale nature-based solutions. 84% of the nature-based solutions projects selected took place in Economically Disadvantaged Rural Communities, Community Disaster Resilience Zones (CDRZ), or disadvantaged communities.

  - FEMA's Flood Mitigation Assistance grants program also incentivizes applicants to utilize nature-based solutions. The FY 2023 final priority scoring criteria for localized flood risk reduction projects included the incentive of 100 points for incorporating nature-based solutions.

  - In FEMA's BRIC FY 2023 national competition selections, $50 million in funding was awarded for the East Elmhurst, New York Cloudburst Project that will use permeable concrete parking and bike lanes, as well as green infrastructure and on-site storage to manage 1.5 million gallons of stormwater. In addition to flooding vulnerability, the community of East Elmhurst is disadvantaged and has become highly urbanized. This project aims to safeguard lives and property, protect critical infrastructure, and provide a drainage solution for the community so that it can adapt to the expected increases in rainfall. In FY 2023, FEMA's BRIC national competition selections included a project in Goldsboro, North Carolina for $6 million to implement nature-based solutions and infrastructure improvements to enhance flood resilience and equity. This project will utilize a mix of green and grey infrastructure improvements to provide in-stream enhancements, three roadway modifications (e.g., updating culverts), and an expanded area of restored floodplain and recreational area within the Elmwood Terrace residential area. Some of the benefits this Justice40 community will experience are improved water quality, new wildlife habitat, and more equitable access to recreational areas.

- FEMA published *Financing Climate Resilience* which features case studies of how communities across the United States have creatively funded their resilience projects. Many of the cases include nature-based solutions, such as Delaware's South Wilmington Freshwater Tidal Wetland Park and Minot, North Dakota's post-flood recovery.

- In September of 2024, FEMA released the final policy for the Federal Flood Risk Management Standard (FFRMS). This policy and the revised regulations at Title 44 Code of Federal Regulations Part 9 put in place a new standard that considers current and future risk to strengthen community resilience against flooding for FEMA-funded projects. For projects that may affect a floodplain or wetland, when FEMA and applicants consider alternative actions in the 8-step decision-making process for floodplain management and wetlands protection, natural features and nature-based solutions will now be considered and used where possible.

- In September of 2024, FEMA released the Public Assistance Mitigation Cost-Share Incentives Policy. This new first of its kind policy, incentivizes communities recovering after disasters to incorporate hazard mitigation practices including nature-based solutions into their rebuilding proposals. In addition, applicants with hazard mitigation proposals constituting 20% or more of the total cost of their project will receive an additional 5% federal costs share.

Partnerships and Collaboration

- In September of 2024, FEMA joined the Sentinel Landscape Partnership (SLP) which is a collection of federal, state, local and non-government organizations who use their authorities and programs to preserve, enhance, and protect habitat, working lands, and associated agricultural and forest production in the vicinity of military installations in designated sentinel landscapes.

Conclusion: Nature-based solutions as a Core FEMA Strategy

By integrating nature-based solutions into its operations, FEMA is advancing its resilience mission to help communities prepare for, adapt to, and withstand future hazards. Nature-based solutions not only mitigate immediate risks from extreme weather but also provide long-term environmental and economic benefits. These approaches enhance FEMA's ability to support communities in preparing for, responding to, and recovering from disasters. Through continued investment in nature-based solutions education, funding, and implementation, FEMA is building a more resilient nation capable of helping communities prepare for, adapt to, withstand and recovery more quickly from both current and future hazards.

---

[i] USGCRP, 2023: Fifth National Climate Assessment. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. https://doi.org/10.7930/NCA5.2023

[ii] NOAA National Centers for Environmental Information, "U.S. Billion-Dollar Weather and Climate Disasters," 2024, https://doi.org/10.25921/stkw-7w73.

[iii] T.N. Debo and A. Reese, *Municipal Stormwater Management*, 2nd ed. (CRC Press, n.d.), https://doi.org/10.1201/9781420032260.

[iv] J. H. Hartig et al., "Habitat Rehabilitation in the Detroit River Area of Concern," *Aquatic Ecosystem Health & Management* 21, no. 4 (October 2, 2018): 458–69, https://doi.org/10.1080/14634988.2018.1536437.

[v] FEMA, "Building Community Resilience with Nature-based solutions: A Guide for Local Communities," June 2022, https://www.fema.gov/sites/default/files/documents/fema_riskmap-nature-based-solutions-guide_2021.pdf

[vi] FEMA, "FEMA Allocates Millions to Restore Coral Reefs in the Coast of San Juan," June 12, 2023, https://www.fema.gov/press-release/20230613/fema-allocates-millions-restore-coral-reefs-coast-san-juan.

[vii] Erik E. Nordman et al., "Benefit-Cost Analysis of Stormwater Green Infrastructure Practices for Grand Rapids, Michigan, USA," *Journal of Cleaner Production* 200 (November 1, 2018): 501–10, https://doi.org/10.1016/j.jclepro.2018.07.152.

[viii] Congressional Budget Office, "Federal Spending for Flood Adaptations," September 2024, 59971-flood-damage.pdf

March 19, 2025, Public Workshop PowerPoint

City of St. Augustine

Resiliency and Building Techniques

Public Workshop

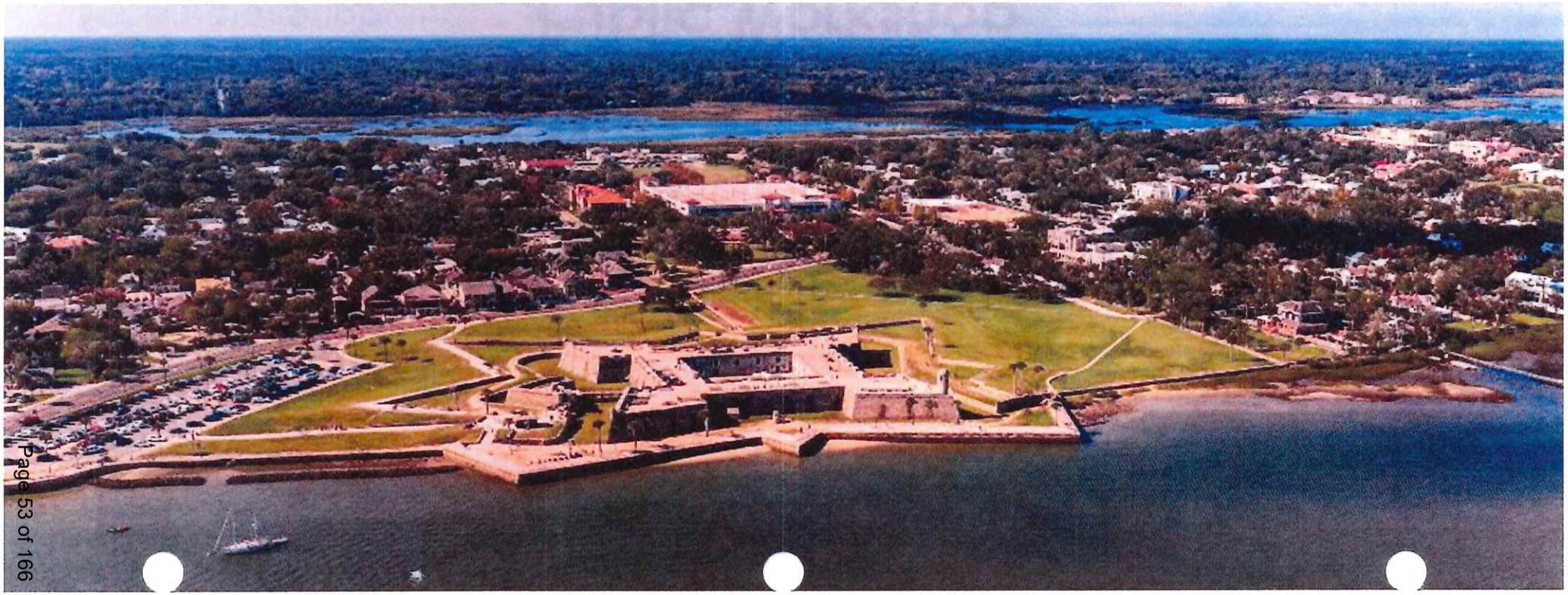
March 19, 2025

Planning and Building Department

CITY OF
ST AUGUSTINE
EST. 1565

Presentation Outline

- Why do we flood? A look at our challenges…
- Building Techniques
- Policy Options
- Design Techniques



CITY OF
ST AUGUSTINE
EST. 1565

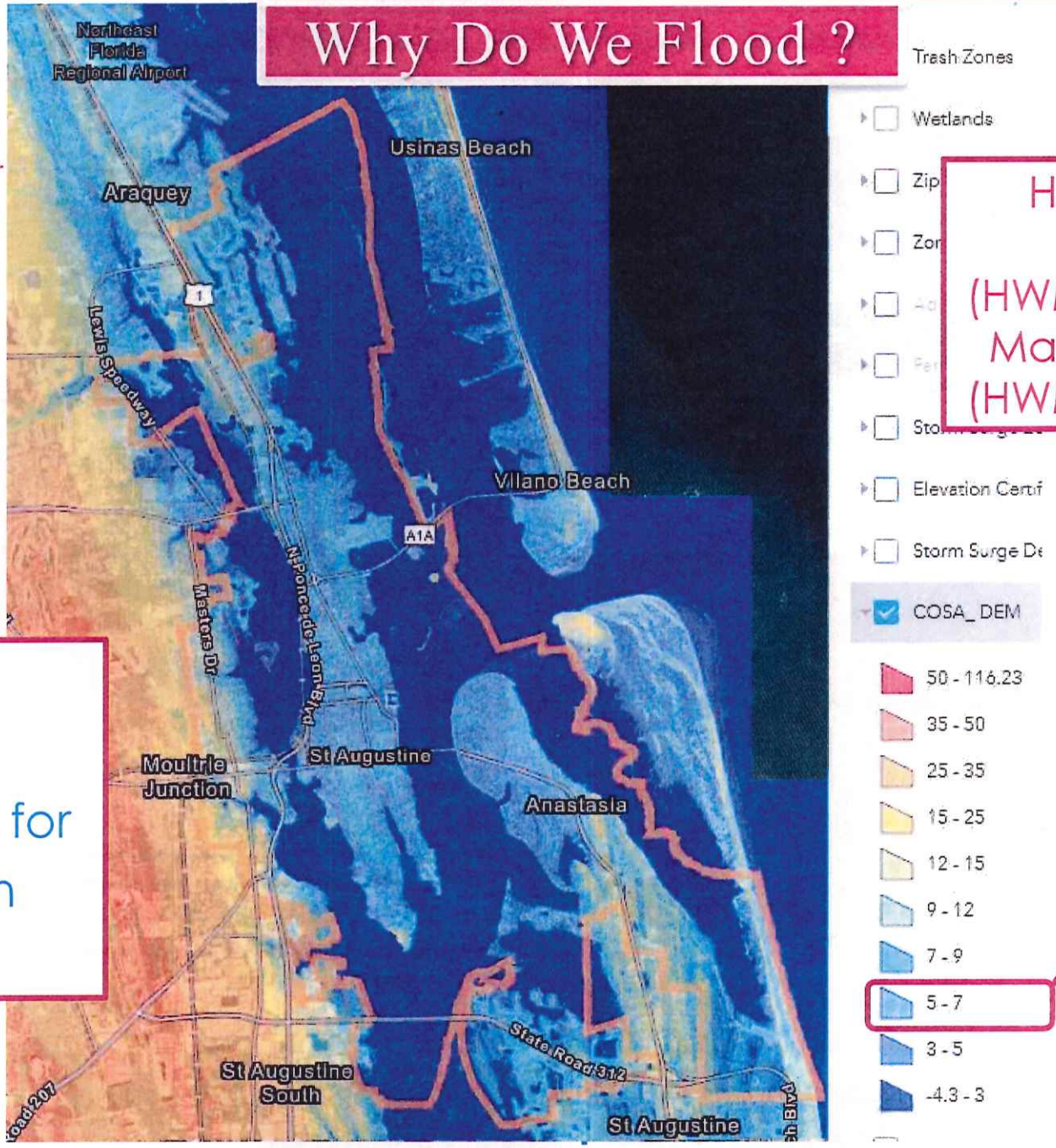
Why Do We Flood ?

Flooding is not new to the City

However, the frequency of "sunny day" flooding is on the rise

CITY OF ST AUGUSTINE EST. 1565

Why Do We Flood ?



Trash Zones
Wetlands
Zip
Zon
Elevation Certif
Storm Surge De
COSA_DEM
50 - 116.23
35 - 50
25 - 35
15 - 25
12 - 15
9 - 12
7 - 9
5 - 7
3 - 5
-4.3 - 3

Hurricane's Ian and Nicole (HWM ≈ 6.5 NAVD88)
Matthew and Irma (HWM ≈ 7.5 NAVD88)

Digital Elevation Mapping for the City in NAVD88

CITY OF ST AUGUSTINE EST. 1565

Why Do We Flood ?

Current City Challenges (Stormwater):

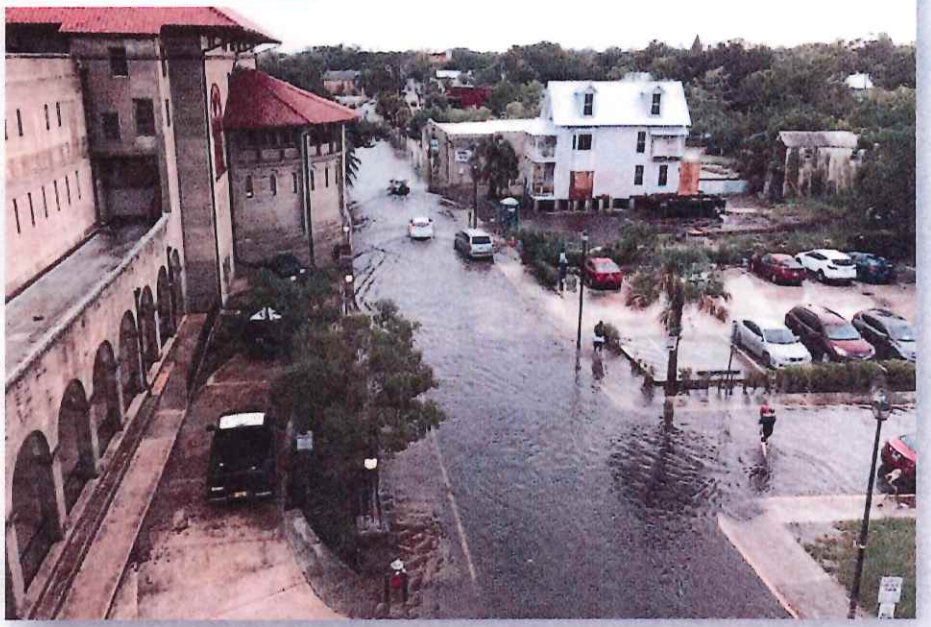
- Aging infrastructure
- Undersized collection system
- Low-lying and coastal location (90% of the City is within a flood zone)
- Highly developed (high impervious area)
- **Subject to flooding – both from rainfall and tidal/coastal influence (compound flooding)**

CITY OF ST AUGUSTINE EST. 1565

Why Do We Flood ?

Current City Challenges (impacts on the floodplain):

- Low-lying and coastal location (90% of the City is within a flood zone)
- Impacts of altering drainage patterns (filling and grading)
- Meeting FEMA required Finished Floor Elevations and Planning for Future Resilience
- Highly developed sites on small lots (high impervious area)



CITY OF ST AUGUSTINE EST. 1565

Types of Flooding

September 2020 - Flood Event (Compound Flooding)

"King Tides"

+

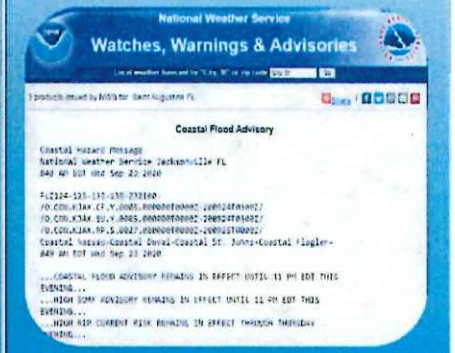
Nor'easter
> 20 mph (3 days)
10-15 mph (1 day)

+

Rainfall 2-3 inches

+

Multiple Flood Advisories Issued



= CITY WIDE FLOODING

FEMA Flood Zones

- Flood zones correlate to elevations
- Most of the city is in an AE flood zone
- Flood Zone AE is an area designated as a high-risk flood zone by FEMA because of its proximity to floodplains, rivers, lakes, and other bodies of water. AE flood zone areas have a 1% risk of flooding annually with a 26% risk of flooding over the course of a 30-year mortgage.

FEMA Flood Zones

In 2017 the city added required standards for building in the flood zone:

1. **Freeboard** - a one-foot freeboard for all residential structures which is now a state requirement in the Florida building code.
2. **Foundation protection** - requires construction documents to be prepared and sealed by a registered design professional that the design and methods of construction resist flood loads.
3. **Local drainage protection** – for new construction that is outside of the Special Flood Hazard Area (Zone X), the lowest habitable floor is elevated at least 12" above the crown of the road (predominantly Lighthouse Park and West City).

CITY OF ST AUGUSTINE EST. 1565

Community Rating System (CRS)

- The city participates in the Community Rating System (CRS).
- The purpose of the CRS is to lower the cost of flood insurance for property owners within that community.
- The CRS gives points to communities for different activities that they engage in that help with reducing flood claims.
- The points for our community reduces flood insurance rates.
- On a scale of 10-1 the city has gone from a 7 to a 4 in the last nine (9) years

The CRS actually gives points to communities that prohibit fill. Different points are given for the different ways of prohibiting fill, such as:

1. Prohibiting fill for all new construction,
2. Prohibiting fill for only residential structures,
3. Requiring compensatory storage,
4. Prohibiting fill but allowing for fill within stem walls.

CITY OF ST AUGUSTINE EST. 1565

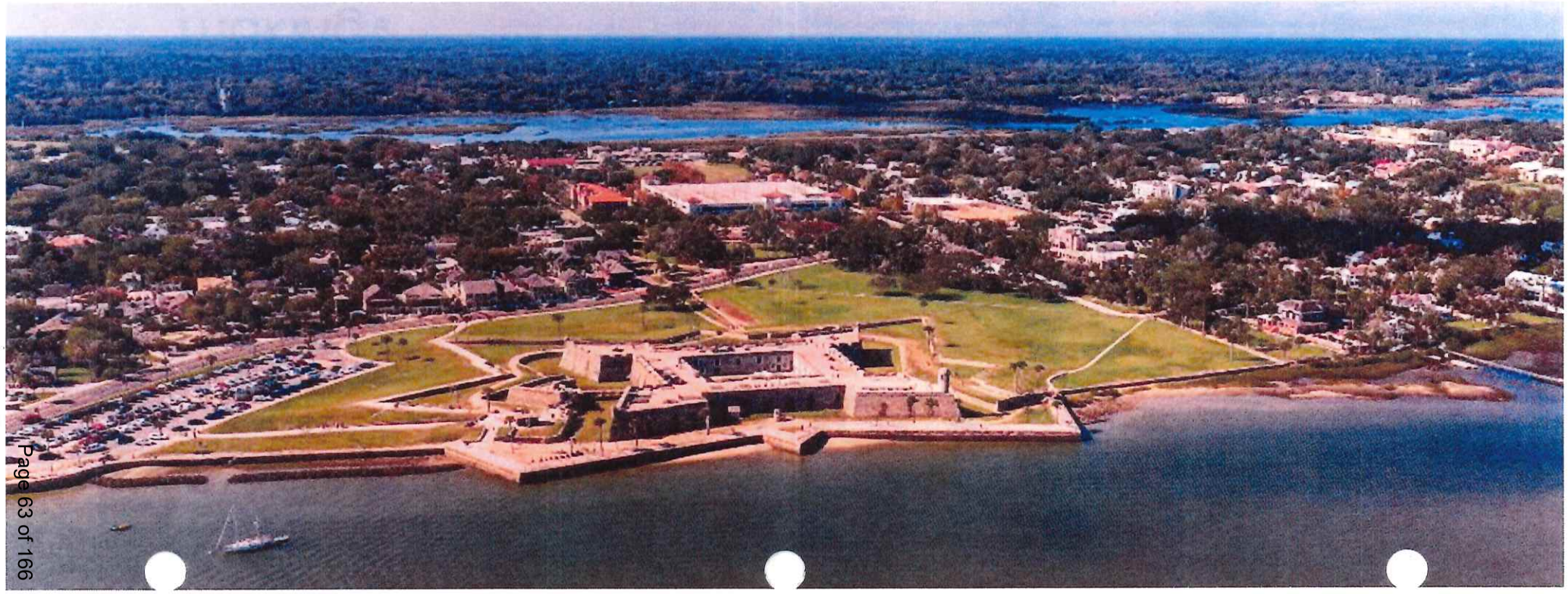
Feedback

- What do you see in your neighborhoods?
- Are you feeling impacts from new developments?
- What site development considerations are you making?
- Have you changed any site development recommendations for homeowners or clients?
- Should the city regulate fill? How much? Height?
- If so, how much is reasonable? How much is necessary to develop a site properly?

CITY OF ST AUGUSTINE EST. 1565

Presentation Outline

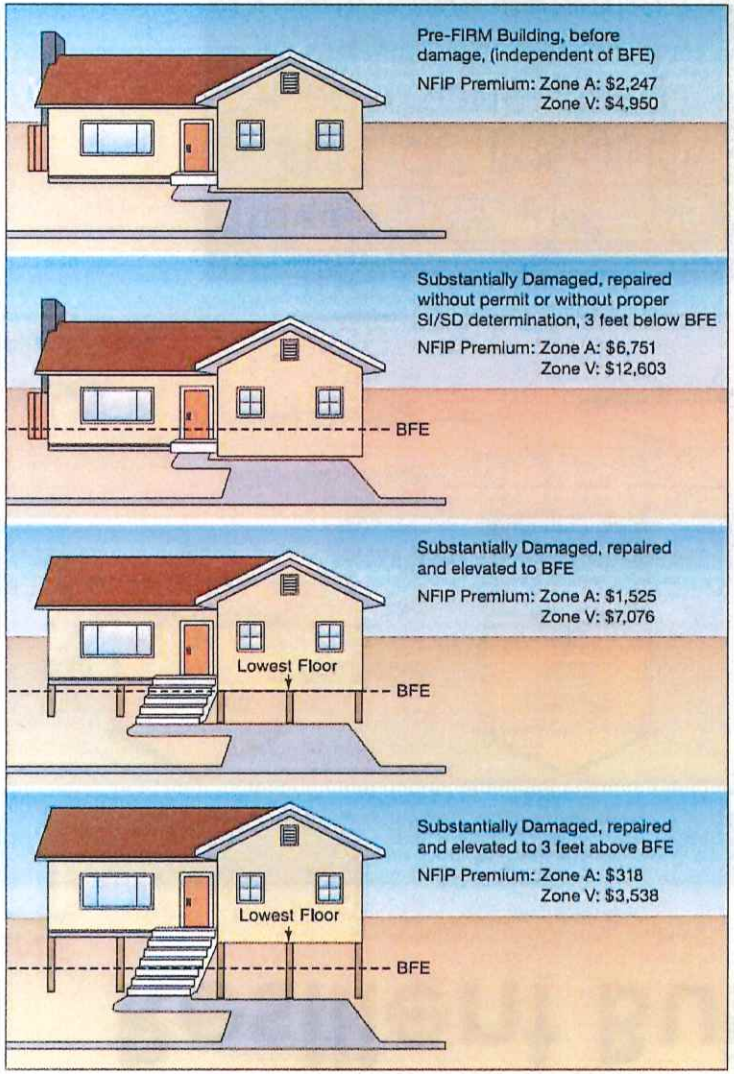
- ✓ Why do we flood? A look at our challenges…
- Building Techniques
- Policy Options
- Design Techniques

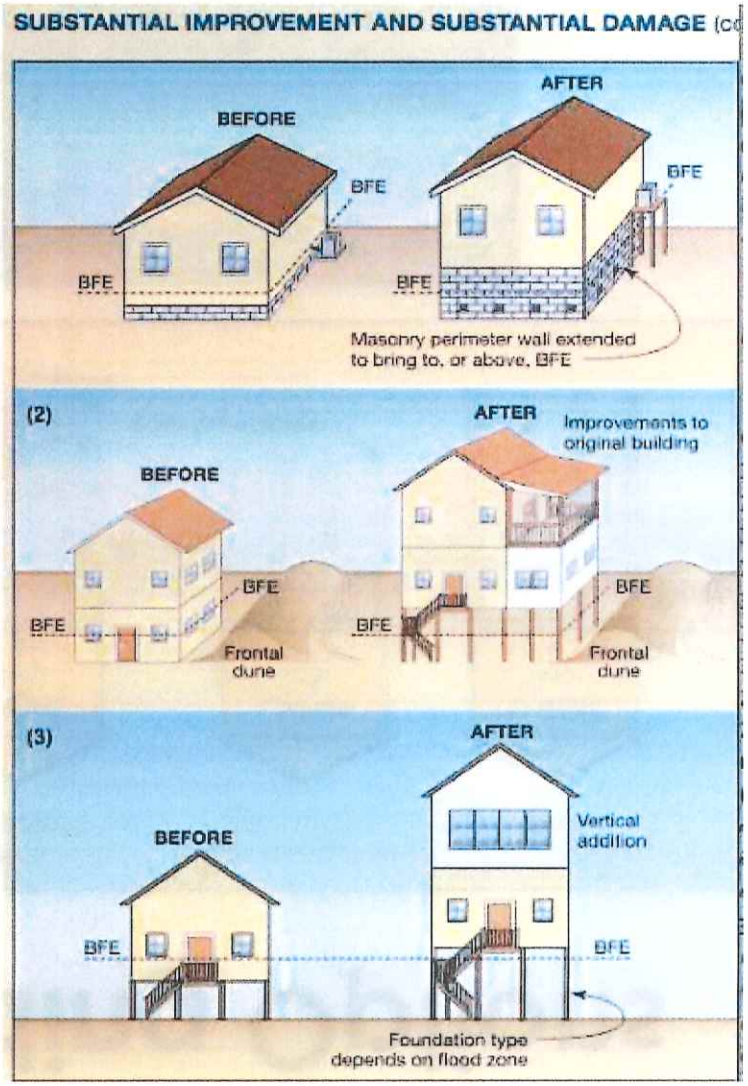


Resilient Building Options

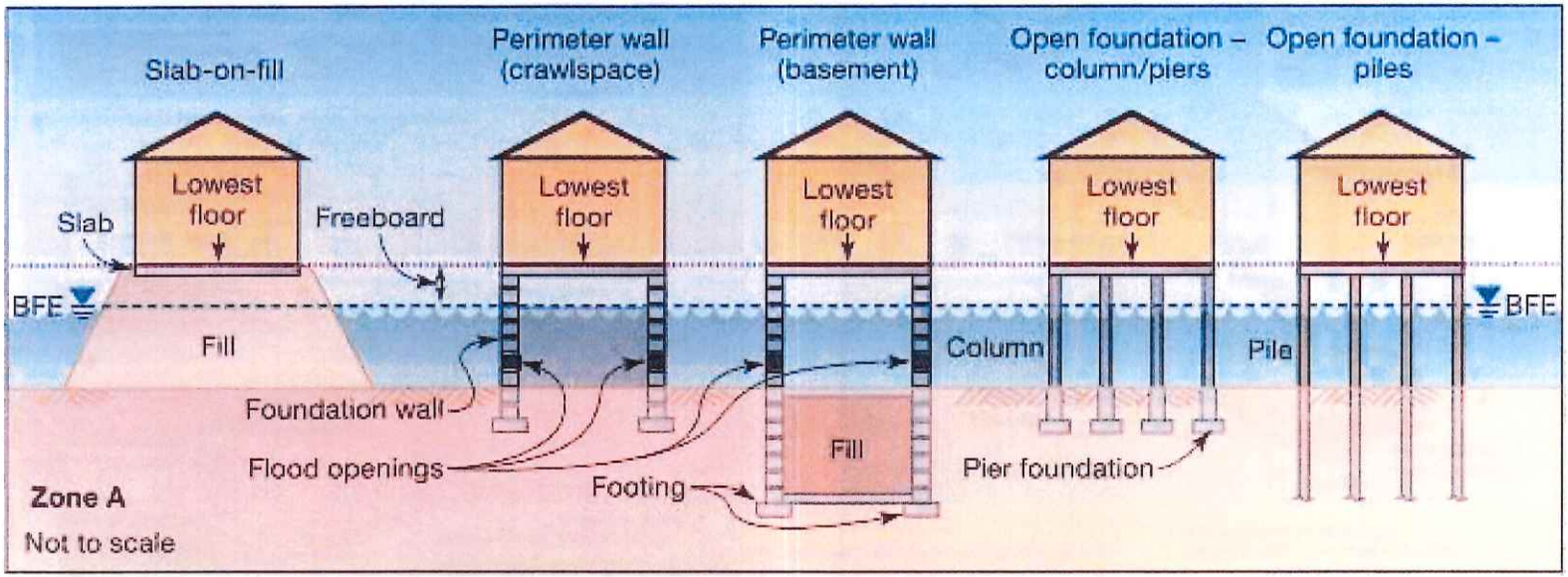
CITY OF ST AUGUSTINE EST. 1565

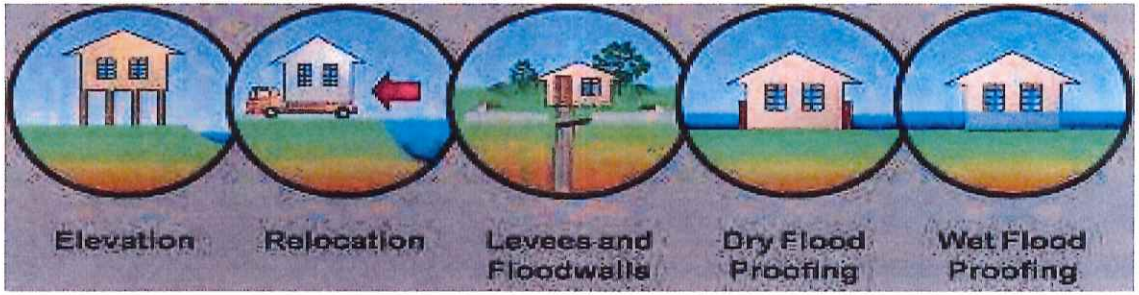
The cost of an NFIP flood insurance policy varies depending on how a substantially damaged building is repaired. The example illustrated is for a one-story, single-family home without basement or enclosure. Premiums shown are based on $250,000 building coverage with $2,000 deductible (rates as of April 2018), without fees and surcharges. This figure is for comparison purposes only.





Resilient Building Options

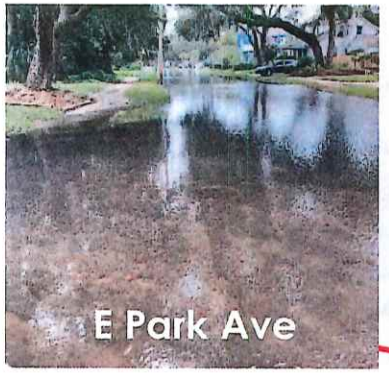


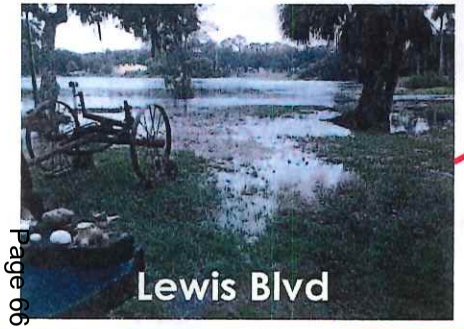


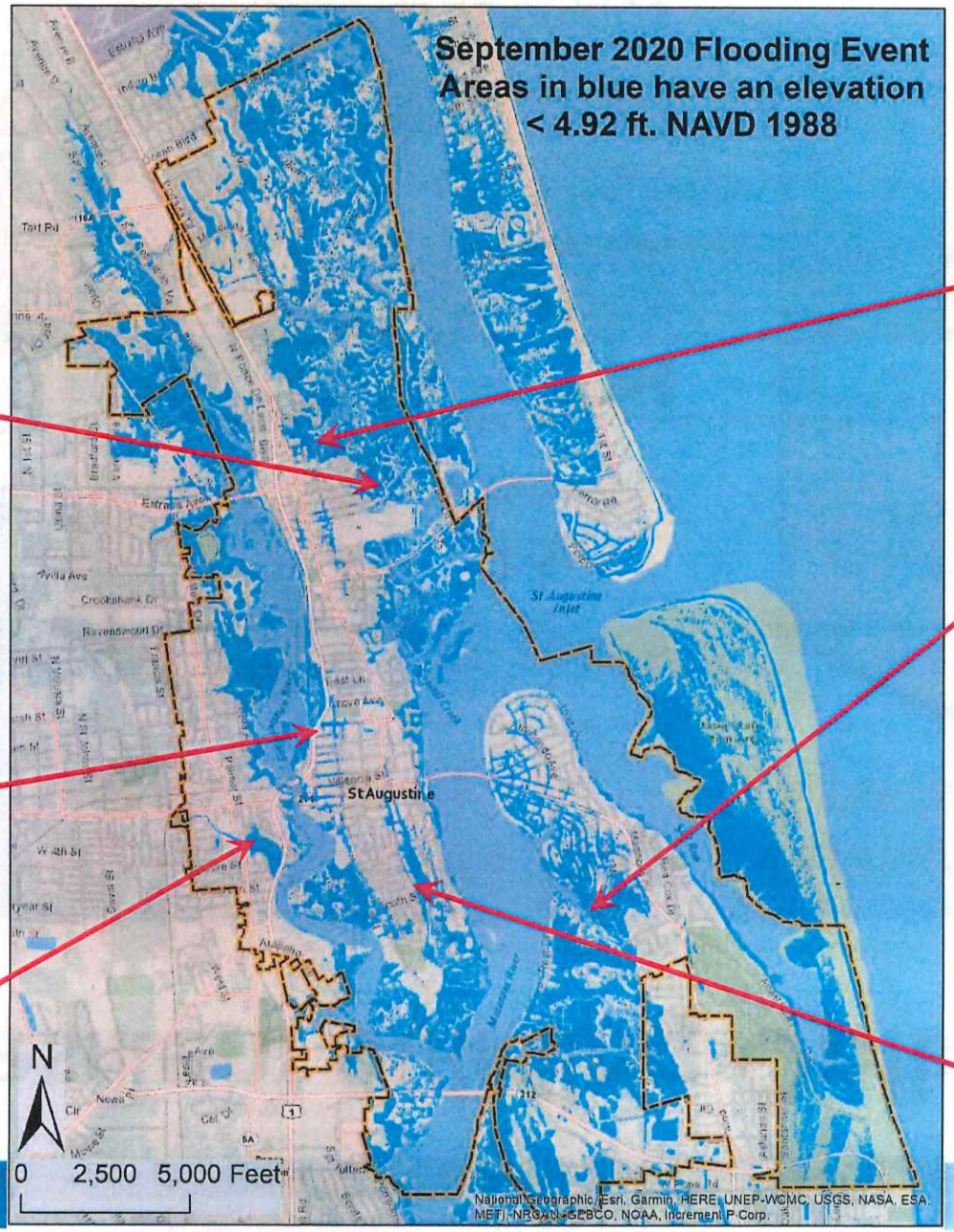
CITY OF ST AUGUSTINE EST. 1565

Where Do We Flood ?

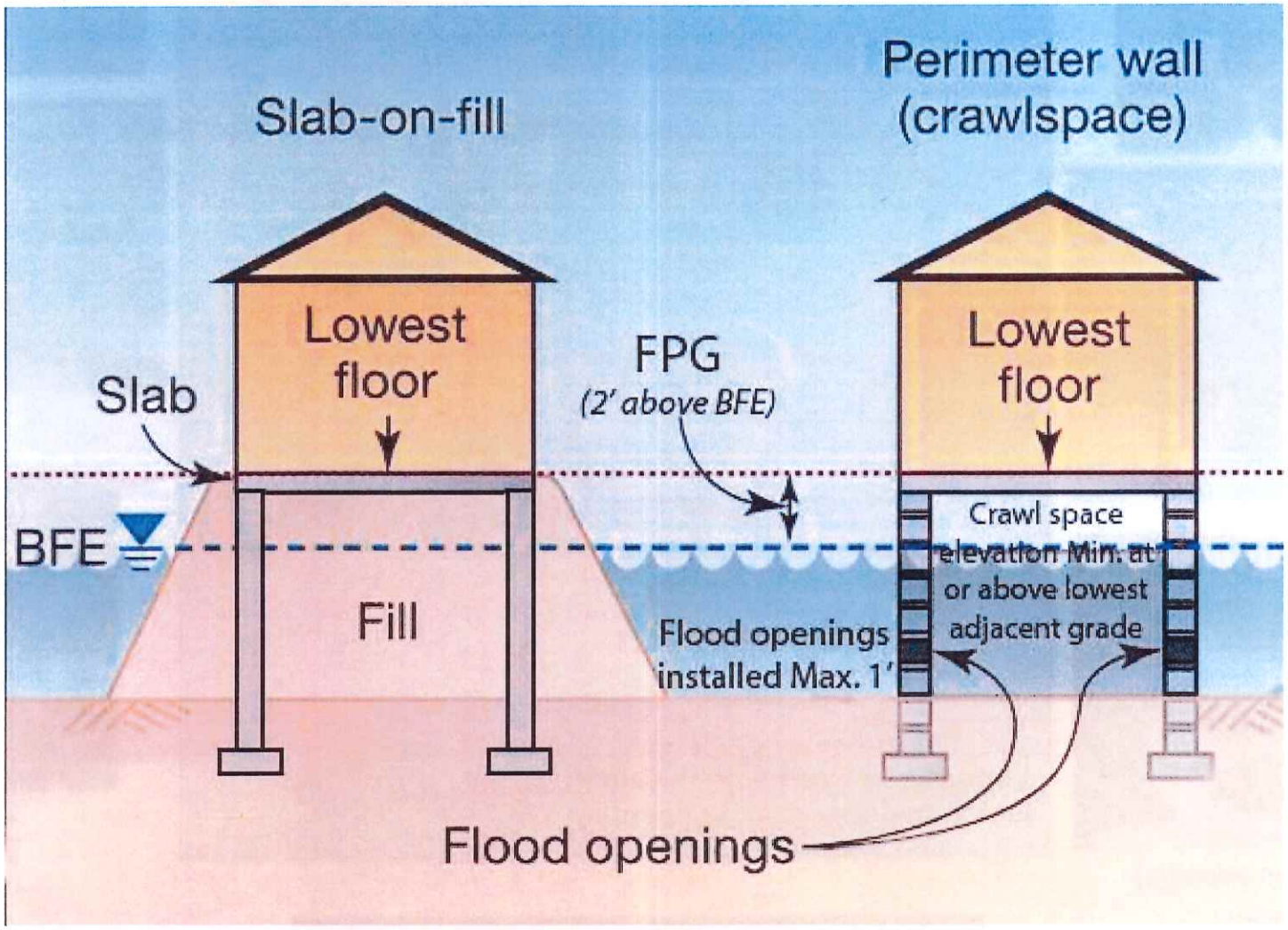
September 2020 - Flood Event (Compound Flooding)







Resilient Building Options



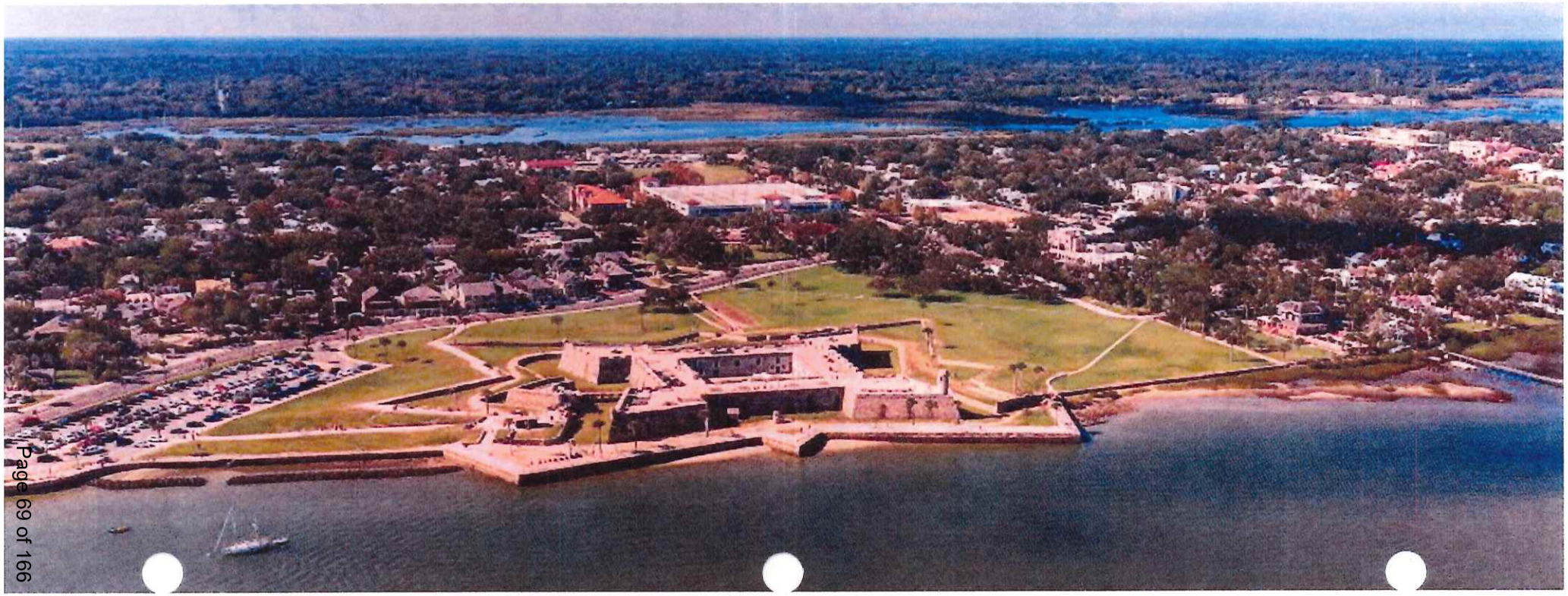
CITY OF ST AUGUSTINE EST. 1565

Feedback

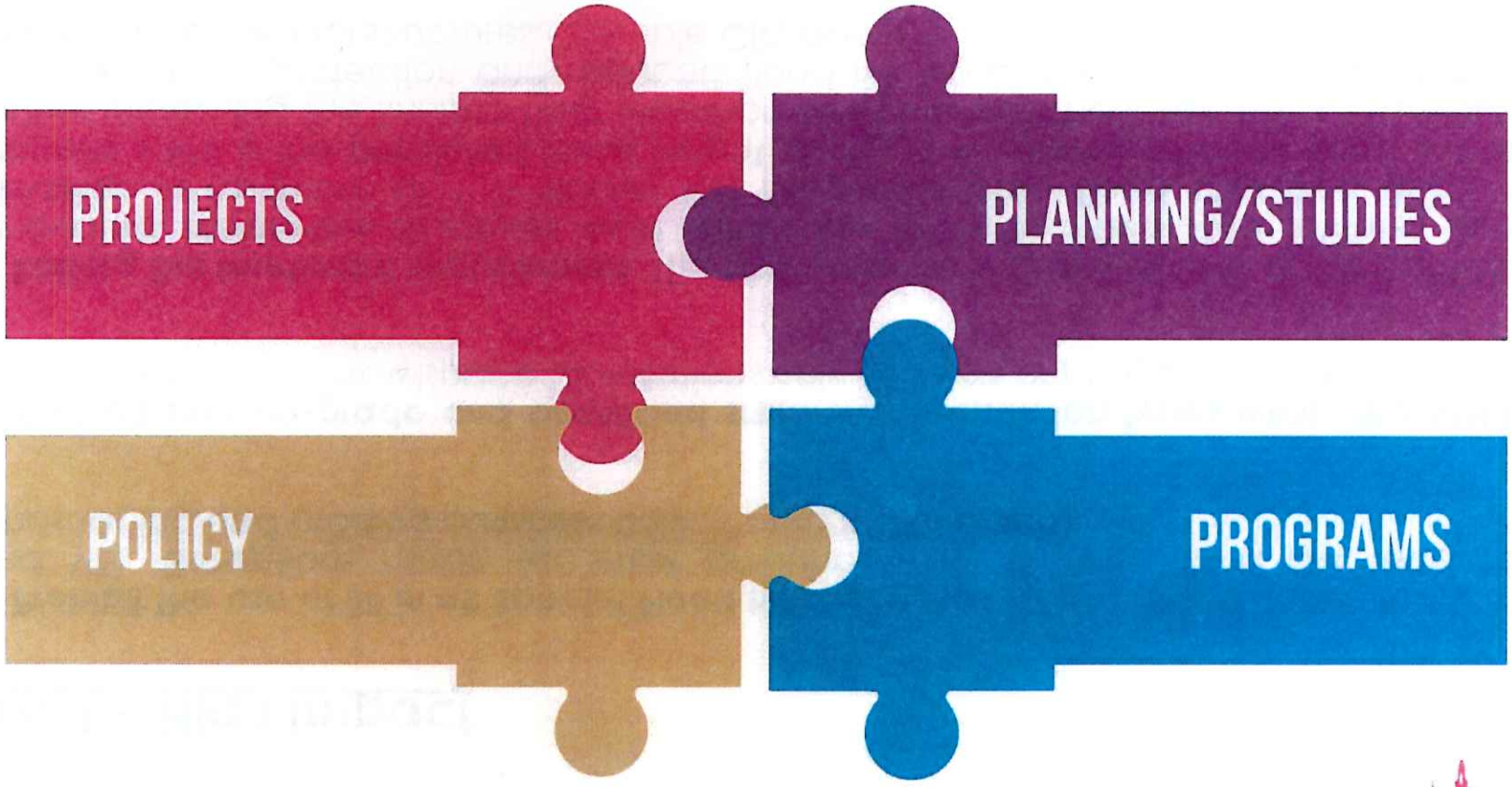
- Should the city establish specific building techniques in identified areas, such as low-lying areas?
- Are more resilient techniques a priority for new development and redevelopment?
- What are reasonable options or requirements? For builders? For you and your neighbors?
- If regulations are adopted, then they apply to everyone in the city or just in designated areas?

Presentation Outline

- ✓ Why do we flood? A look at our challenges…
- ✓ Building Techniques
- Policy Options
- Design Techniques



Overview of the Resilience Program and Strategy



www.citystaug.com/resiliency

CITY OF ST AUGUSTINE EST. 1565

Potential Policy Options

Tier 1 – High Impact

1. Prohibit the use of fill in all Special Flood Hazard Areas (SFHA) (Flood Zones A, AE, V, and VE). Exceptions made for small amounts (6 in. or less) of fill dirt used for landscaping and grading purposes only. (Possible CRS points)

2. Prohibit slab-on-grade and backfilled stem-wall foundation types within the SFHA. This would allow for crawlspace foundations only (ie. piers or pilings) within the SFHA.

3. Raising the freeboard requirement. The City currently requires all new or substantially renovated residential structures built within the SFHA to have their finished floor elevation a minimum of 1 ft above the property's base flood elevation (BFE). A property's BFE is the predicted flood height during a %1 annual-chance-flood event. Further increasing the finished floor elevation height requirement (ex. BFE + 2ft) would provide added protection and reduced flood risk for all newly built or substantially renovated residential structures. (Possible CRS points)

Potential Policy Options

Tier 2 – Moderate Impact

1. **Limiting the use of fill to a "reasonable" amount.** Instead of completely prohibiting the use of fill, another option is setting a maximum allowable amount.

- Example 1 - A maximum of 2 feet of fill above the existing grade is permitted around the perimeter of a proposed structure only. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches within the first 10 feet.

- Example 2 – The amount of fill will not exceed the BFE of the property around the perimeter of the proposed structure. *Lots* shall be graded to drain surface water away from foundation walls. The *grade* shall fall a minimum of 6 inches within the first 10 feet.

CITY OF ST AUGUSTINE EST. 1565

Potential Policy Options

Tier 2 – Moderate Impact

2. Require a "Certification of No Adverse Impact" signed by a licensed engineer stating that "*the proposed development will not adversely affect flood risks for other properties and communities as measured by increased flood stages, flood velocities, or increased potential for erosion and sedimentation. or any other impact deemed important or as specified by the city of St. Augustine, unless the impact is mitigated as provided for in a community or watershed-based plan. This certification shall employ industry standards for hydraulic and hydrological analysis to determine no adverse impact and all data shall be provided in hard copy and digitally for review and corroboration by the city's engineer or any governmental review agency acceptable to the city of St. Augustine*"

A *certification of no adverse impact* could be applied widely, to say to all development related permits involving the use fill within the SFHA, or more narrowly, for unique permit specific circumstances or specific areas.

Potential Policy Options

Tier 2 – Moderate Impact

3. Applying floodplain management regulations in the 0.2%-annual-flood-hazard area. This would mean flood zones "X", and "X – shaded" located within the City are treated as "A" zones in regard to floodplain regulations. In other words, the entire City would be treated as a part of the SFHA, and would be subject to all applicable higher regulatory standards and floodplain regulations. (Possible CRS points)

FEMA's classifies flood zones "X" and "X – shaded" as areas of minimal and moderate flood hazard, respectively. They are normally excluded from the SFHA, and unlike flood zones "A", "AE", and "V", are not subject to FEMA NFIP regulations.

Potential Policy Options

Tier 3 - Low Impact

1. **Limit Lot Coverage**. Consider reductions to allowed lot impervious coverage (e.g. 50%). Consider increasing allowed heights in exchange for smaller building footprints. Also consider prohibiting or limiting the footprint of accessory structures, such as storage structures or detached buildings.

2. **Low Impact Development / Green Infrastructure**. Consider requiring or incentivizing the installation of green infrastructure to store and infiltrate runoff onsite from new impervious surfaces.

Potential Policy Options

Tier 3 - Low Impact

3. Limit Impervious Surfaces (Private properties). Explore providing information and support to private property owners to reduce impervious services. Consider offering reductions to stormwater utility fees for reduction in impervious surfaces or other incentives. The previous Building Code Task Force recommended utilizing incentive programs to implement porous materials for driveways and patios, and to cap the maximum impervious surface ratio at 70%.

4. Enclosure Limitations. Consider prohibiting or limiting the size of enclosures below the lowest floor / lowest horizontal structure member. The construction method could also be limited to require breakaway walls in lieu of walls of enclosures with flood openings.

CITY OF ST AUGUSTINE EST. 1565

RESILIENT ST AUG

Please visit www.citystaug.com/FMA for more info

- **Flood Mitigation Assistance (FMA) Program**
- ✓ **Cost share program with FEMA to elevate and/or reconstruct flood prone, at-risk structures**
- ✓ FY 22 – Application Cycle:
  - Over 80 properties interested in the program, **61 properties had complete applications that met the program requirements**
  - Eligible applications have been submitted to FEMA for consideration
  - Total funding request of **$12,353,474** submitted that would be cost shared with FEMA if selected
- ✓ FY 23 – Application Cycle:
  - Over 40 properties were interested in the program
  - 10 applications submitted to the State for consideration and have been selected "for further review"
- ✓ FY 24 – Application Cycle:
  - Pending application with the State

CITY OF ST AUGUSTINE EST. 1565

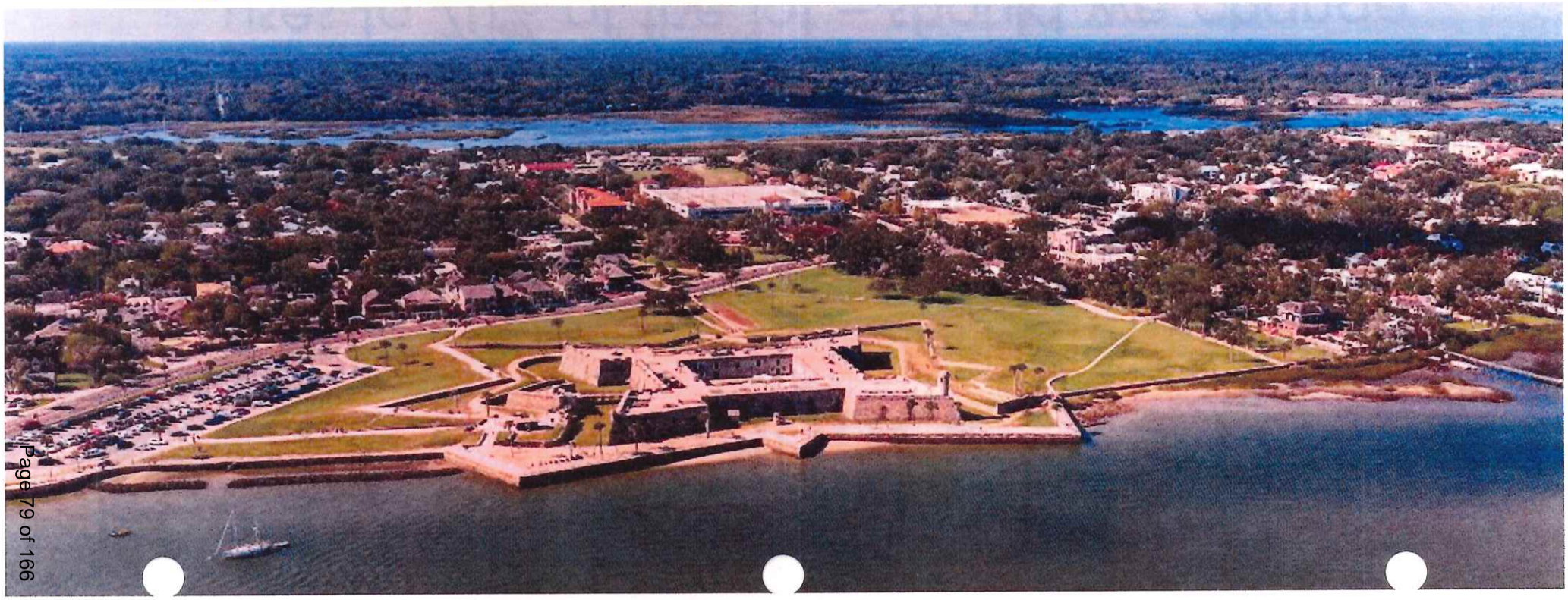
Feedback

- Do any of these policy options sound reasonable? Worth exploring?
- The city already requires a grading plan and limits impervious surface for residential uses to 70% of the lot – should we change these standards and require more site design?
- Again, should the city establish certain building techniques in certain areas, such as low-lying areas?

CITY OF ST AUGUSTINE EST. 1565

Presentation Outline

- ✓ Why do we flood? A look at our challenges…
- ✓ Building Techniques
- ✓ Policy Options
- Design Techniques



Low Impact Design (LID)

STORMWATER DESIGN OVERVIEW

- Stormwater is recommended to be incorporated into the overall design of the project as amenities.
- The goal of encouraging the use of these mechanisms is to reduce stormwater runoff, capture contaminants closer to the source and reduce the use of potable water for irrigation and grey water activities.

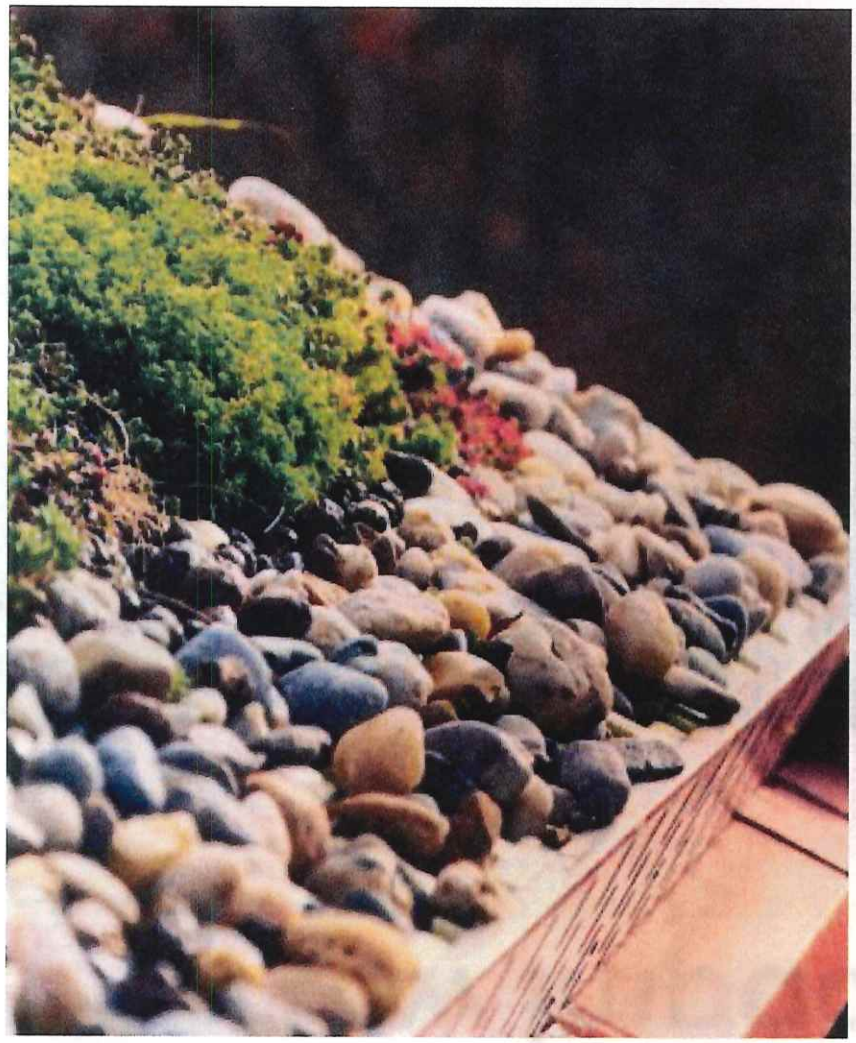
LOW IMPACT DEVELOPMENT (LID) STORMWATER TECHNIQUES

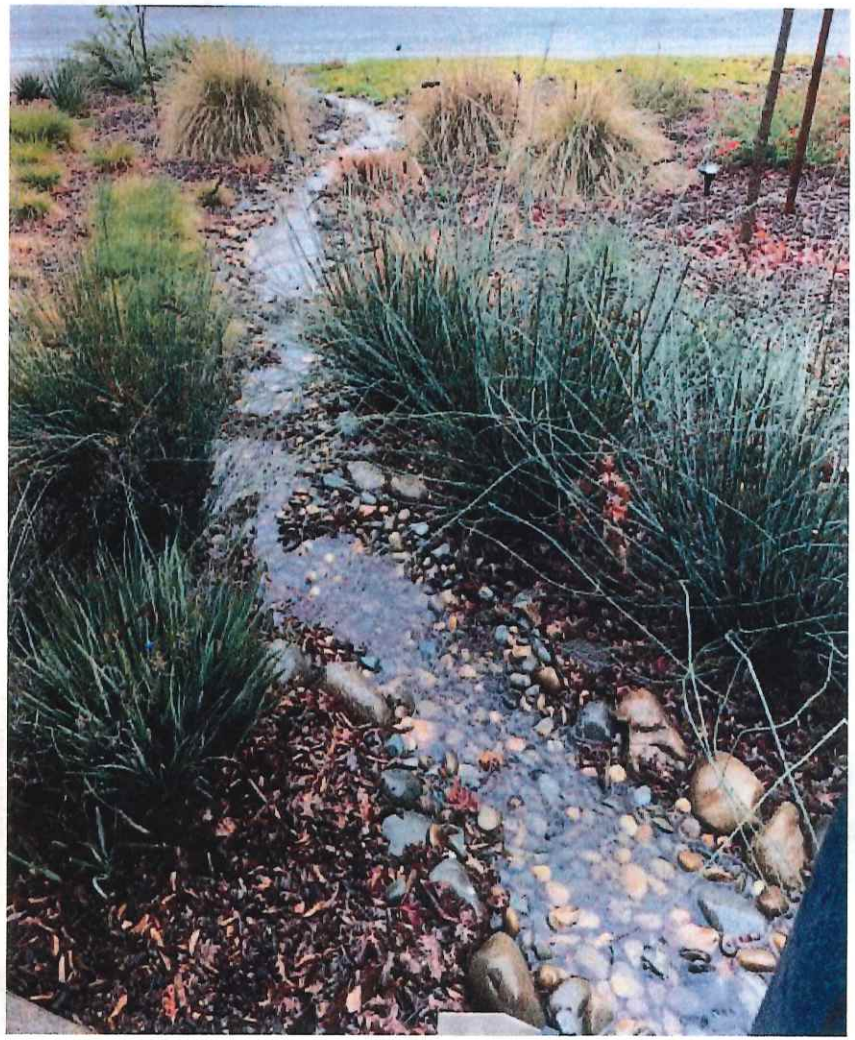
It is recommended that projects include at least two of the following low impact design concepts, which may be located anywhere on the project (including the front setback):

- Raised pier construction for homes (allowing for movement of stormwater and additional infiltration area)
- Rainwater harvesting (rain barrels, underground cisterns, and similar to assist in water conservation)
- Green roofs
- Bio-swales
- Rain gardens
- Pervious pavement (pervious concrete, pervious pavers, and/or other pervious pavements)

Low Impact Design (LID)

Low Impact Design (LID)





Low Impact Design (LID)

Storm Resilient Design

STREET WALL AS FLOOD PROTECTION

- It is recommended that the street wall be considered as part of flood protection to the site. When used in conjunction with neighboring walls and earthen berms, it is possible to create an initial barrier to storm surge and flooding.

- Openings in the wall for pedestrian walkways and driveways can be closed during storm events by using temporary barriers.

Storm Resilient Design

STREET WALLS

- Low block/masonry walls may be appropriate. Street walls are recommended to not exceed 36", but four (4) feet is the maximum per Code. Wall height should be measured from the lower elevation of the public sidewalk or final elevation of adjacent interior development.
- Portions of the wall above 3 feet should not be more than 50% solid.
- Street walls shall be constructed of brick or masonry. Fencing may be included.
- When landscaping is provided between the wall and the sidewalk, the landscaping strip is recommended to be a minimum of two (2) feet wide.

Storm Resilient Design

FOUNDATION

- The relationship of the building floor height to the surrounding context of the neighborhood is important to consider.
- **Raised Pier Foundations:** There are multiple advantages to raising the foundation, including (a) opportunities for stormwater infiltration, (b) movement of storm surge through a site in hurricane events, and (c) cross ventilation.
- Design recommendations should consider:
- Brick, tabby or concrete block (with texture) piers.
- Spaces between piers left open.
- Lattice infill between piers is common.

CITY OF ST AUGUSTINE EST. 1565

Storm Resilient Design

POTENTIAL FIRST FLOOR ELEVATIONS

- Homeowners may consider further elevating the first floor. General recommendations to keep the architectural context of the homes include:
- Take into consideration maximum heights of FEMA and City required minimum elevations of 35' (conforming lot) and 30' (nonconforming lot).
- Do not raise the home more than 4' from existing grade.
- When raising the home more than 4' from existing grade, consider bringing it up one floor by building a non-occupied space such as garages, storage, and similar under the structure. The inclusion of an exterior porch and first floor entry should be considered in lieu of open "stilt house" base.
- The City encourages sensitivity to the neighborhood character and sense of place created by the streetscape.

CITY OF ST AUGUSTINE EST. 1565

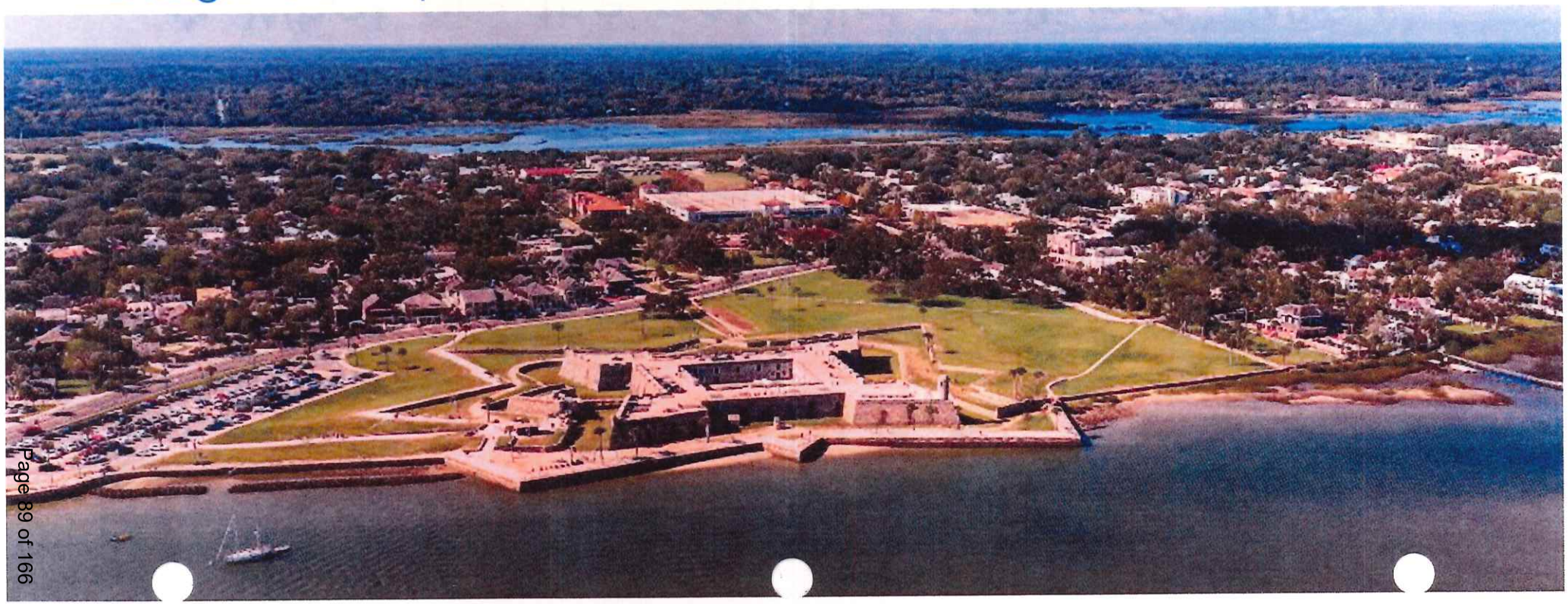
Feedback

- Should these design techniques be suggestions or requirements?
- What are the opportunities? What are the limitations of these techniques?
- What are the potential positives? What are the potential negatives?
- What are your thoughts from a neighborhood and property owner perspective and from a builder and developer perspective?

CITY OF ST AUGUSTINE EST. 1565

Presentation Outline

- ✓ Why do we flood? A look at our challenges…
- ✓ Building Techniques
- ✓ Policy Options
- ✓ Design Techniques



Thank you for your time!

We appreciate your input!

Ray Deschler, CFM, Floodplain Coordinator,
rdeschler@citystaug.com
Richard "Buddy" Schauland, CBO, CFM,
rschauland@citystaug.com

Draft Code Amendment Language

ORDINANCE NO. 2025-XX

AN ORDINANCE OF THE CITY OF ST. AUGUSTINE, FLORIDA, AMENDING SECTION 11-27 OF THE CODE OF THE CITY OF ST. AUGUSTINE PROVIDING DEFINITIONS; AMENDING SECTION 11-28 PROVIDING FOR; PROVIDING FOR INCLUSION IN THE CODE OF THE CITY OF ST. AUGUSTINE; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, § 166.041, Florida Statutes, provides for procedures for the adoption of ordinances and resolutions by municipalities; and

WHEREAS,; and

WHEREAS,; and

WHEREAS,; and

WHEREAS, the City Commission for the City of St. Augustine finds that it is in the best interest of public health, safety, and general welfare that the following amendments be adopted consistent with the requirements of Section 166.021(4), Florida Statutes.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COMMISSION OF ST. AUGUSTINE, FLORIDA, AS FOLLOWS:

Section 1. Amending Chapter 11, Article II, Section 11-27. Chapter 11, Article II, Section 11-27 is hereby amended, as follows:

"Sec. 11-27. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

(...)

Retaining wall means any wall or structure that holds back earth, stone, silt, soil or any other material.

Shoreline modification means a seawall, hybrid shoreline, living shoreline or other structure or action that permanently changes the physical configuration or quality of the shoreline, specifically at the point where upland areas and tidal waters meet.

(...)"

Section 2. Amending Chapter 11, Article II, Section 11-28. Chapter 11, Article II, Section 11-28 is hereby amended, as follows:

"Sec. 11-28. – Issuance of building permits.

(...)

(b) The planning and building division may issue permits for additions to existing structures, for construction of new secondary structures, such as fences, driveways, decks, patios, greenhouses, garages and sheds, and use permits for uses otherwise permitted to be conducted in these structures located in Conservation Overlay Zone 2 when no drainage into ~~the~~ a marsh is proposed, without a maintained or restored 25-foot buffer, no significant alteration of surface water hydrology will occur through the placement of fill, shoreline modification or otherwise and native plant materials are preserved or replaced. The planning and building division may issue permits for the construction of new primary structures located in Conservation Overlay Zone 2 when the above conditions are met and when the subject property already contains a seawall, bulkhead or rip rap shoreline, or is located within one hundred fifty (150) feet of existing development and the primary structure is located no closer to the marsh edge or to the mean high water line than are adjacent primary structures. In addition, such additions and new structures may not exceed the lesser of seventy-five (75) feet or seventy-five (75) percent of the lot width.

(...)"

Section 3. Amending Chapter 11, Article II, Section 11-29. Chapter 11, Article II, Section 11-29 is hereby amended, as follows:

"Sec. 11-29. – Standards for review.

(a) Permits for structures and uses located within Conservation Overlay Zone 1 shall be issued only for such structures and uses which have received permits under provisions of applicable federal and state regulations and will be issued only for those structures and related uses such as fishing piers and catwalks, boardwalks, boat docks, ~~boathouses,~~ boat ramps, marinas, and marine railways, as well as dredging and filling, which are determined to be to the benefit of the public as a whole and which are determined as having no significant negative impact on natural systems, by either individual or cumulative effect. The planning and zoning board is authorized to impose limitations in the nature and manner of construction and/or use so as to avoid damage to adjacent salt marshes and the vegetative communities contained therein, to avoid impacts to adjacent or nearby property owners, eliminate any harm to the animal, fish or shellfish contained therein, to avoid blocking or disrupting vistas and scenic opportunities, and to enhance those vistas and scenic opportunities which are determined to benefit the public as a whole.

(b) Permits for structures and uses located within Conservation Overlay Zone 2 shall be issued only for those structures and related uses which are determined

as having no significant negative impact on adjacent properties or natural systems by either individual or cumulative effect and consistent with the purpose of Conservation Overlay Zone 2 to protect the functional integrity of Zone 1 and to protect Zone 3 from extreme high-water conditions. At no time shall the impervious area in Conservation Overlay Zone 2 exceed twenty-five (25) percent without that area receiving treatment equivalent to the St. Johns River Water Management District water quality treatment provisions required when new development is proposed along an unaltered shoreline. The first (landward of the most restrictive jurisdictional line, which may be the mean high-water line or wetlands jurisdictional line) twenty-five (25) feet, measured in width perpendicular to the most restrictive jurisdictional line, in Conservation Overlay Zone 2 shall remain undeveloped except as provided in subsections (1)—(4) of this subsection. If the area is already disturbed, a restoration plan is required. The planning and zoning board is authorized to impose limitations in the following manner so as to avoid damage to adjacent properties, salt marshes and the vegetative communities contained therein, to eliminate any harm to any animal, fish or shellfish life contained therein, to avoid blocking Conservation Overlay Zone 1 vistas and scenic opportunities, and to enhance those vistas and scenic opportunities which are determined to benefit the public as a whole. Rear or side lot drainage from grassed or altered areas of new development along an altered shoreline not directed to a water management system may be discharged to an adjacent water body/wetland; however, the area not treated must be compensated elsewhere in the system. This may be accomplished by providing additional water quality treatment in the system equivalent to that which will be discharged untreated. Water discharged shall be at non-erosive velocities. Rear or side lot drainage from grassed or altered areas of new development along an unaltered shoreline not directed to a water management system may be discharged to an adjacent water body/wetland through the twenty-five (25) feet buffer (water discharged shall be at non-erosive velocities), with the following permitted activities:

(1) Pruning vegetation to retain or create a reasonable view. Ground cover and shrub vegetation to a height of thirty-six (36) inches should be retained.

(2) A maximum of fifty (50) percent of the basal area of trees, and a maximum of fifty (50) percent of the total number of saplings, may be removed for any purpose in a twenty-year period. A healthy, well-distributed strand of trees, saplings, shrubs and ground covers and their living, undamaged root systems shall be left in place. Replacement planting with native, low maintenance vegetation is permitted to maintain the fifty (50) percent level.

(3) Dead, diseased, unsafe, or fallen trees may be removed.

(4) Bridges, paths, walkways, gazebos, docks and decks, bulkheads, seawalls, and retaining walls, and accessways to such amenities are permitted across the buffer provided such activities have minimal impact to the wetlands and are scaled to preserve the integrity of the buffer (less

than ten (10) percent of the total area calculation of the buffer). These structures must demonstrate that they are of a reasonable, compatible scale to similar structures in the neighboring area. Structures in Conservation Overlay Zone 2 that are connected to adjacent structures in Zones 1 or 3 shall be sized relative to that adjacent structure and be designed so as to minimize off-site visual and environmental impacts. The applicant will present any mitigating design and environmental elements as part of the review of the structure in Conservation Overlay Zone 2.

(5) For commercial properties with an approved storm water management system, the buffer can be reduced to provide amenities to provide public access to vistas and scenic opportunities which are determined to benefit the public as a whole.

Restoration plan(s) shall be developed to achieve the fifty (50) percent criteria above for those sites already disturbed. If the altered shoreline is bulk-headed, softening of this hardened shoreline with riprap, environmentally engineered materials or other techniques to soften wave energies and promote vegetation is encouraged. Should a softening effort be employed, a reduction in the twenty-five (25) feet buffer may be permitted.

(c) The following information shall be provided and ~~Applications~~ applications for development in Conservation Overlay Zones shall be evaluated according to the following criteria:

(1) Site specific conditions.

(2) The site's relationship to adjacent properties including parcel and existing grade elevations, bodies of water and surrounding conservation zones.

(3) Natural and proposed drainage patterns.

(4) Effect of point and nonpoint discharge in the marine environment.

(5) Proposed soil stabilization and erosion control methods.

(6) Impact on floodplain including general impacts related to flood management or fill.

(...)

(18) Specific conditions applicable to fill and shoreline modifications . Fill and shoreline modification projects that meet the requirements of subsections (1) through (17) and this subsection may be administratively approved. In addition to the considerations in subsection (1) through (17) herein, fill or shoreline modifications, regardless of lot configuration or size, shall not cause significant harmful diversion of floodwater or wave runup and wave reflection would increase damage to adjacent properties, buildings or structures. Fill and shoreline modifications, regardless of lot configuration or size, shall also not allow the unmitigated trespass of tidal or flood waters onto adjacent property, public right-of-way or other public infrastructure. New or substantially improved armored shorelines shall include a minimum top elevation of 7.0 feet NAVD88 and maximum elevation not to

exceed the base flood elevation of the property or adjacent properties according to the most recent FEMA Flood Insurance Rate Map. New or substantially improved hybrid shorelines shall include a minimum top elevation of 7.0 feet NAVD88 and remain in place with the addition of native plants, as appropriate and maximum elevation not to exceed the base flood elevation of the property or adjacent properties according to the most recent FEMA Flood Insurance Rate Map. New or substantially improved natural shoreline treatments shall consist of a gradual slope no steeper than 4:1 with a minimum top elevation of 7.0 feet NAVD88 coupled with native plants and could include a sill to address wave energy dissipation if necessary and a maximum elevation not to exceed the base flood elevation of the property or adjacent properties according to the most recent FEMA Flood Insurance Rate Map . For fill, post development runoff shall not exceed predevelopment runoff on the parcel or onto adjacent properties or waterways as shown by calculations performed by a registered and qualified design professional. The maximum elevation of the fill on any lot shall not exceed 1 foot above the highest adjacent grade or the current base flood elevation of the property based upon the current FEMA Flood Insurance Rate Map, whichever is less. Additionally, the 1 foot of fill on the subject property shall not exceed the elevation of any adjoining lot. Any development that includes placement of fill shall provide flood routing calculations demonstrating that the Standards and Criteria in Sec. 29-26 can be met without encroaching on the floodplain as well as compliance with Sections 8-435 and 8-436 of this Code. No such fill may be placed until such calculations have been submitted in a report signed and sealed by a registered design professional engineer licensed in the State of Florida and have been reviewed and approved in writing by the Floodplain Manager. Applicants who do not meet the above criteria may submit an alternative design for consideration by the Planning and Zone Board. The City shall have the option of requiring the analysis of alternative designs must provide evidence that the criteria of this section cannot strictly be met due to extraordinary characteristics of the property and its surroundings. where such alternatives designs must clearly demonstrate that they have the potential to reduce environmental or navigational impacts in an alternative way. It shall be the burden of the applicant to prove that the proposed alternatives design does not result in lesser greater negative impacts than a design that adheres to the administrative requirements the proposed design. An analysis of alternatives may be submitted at the time of application at the option of the applicant. Alternative designs that do not meet the criteria in subsection (1) through (17) and the administrative approval standards of subsection (18)and this subsection shall require a PZB hearing.

(d) Permits for structures and uses located within Conservation Overlay Zone 3 shall be issued only for those structures and uses which do not significantly alter the surface water hydrology or tree canopy cover, ~~or~~ cause the removal of significant trees or impact adjacent parcels through the placement of fill or shoreline modifications. The planning and zoning board is authorized to impose

limitations on the nature and manner of construction and/or so as to avoid alteration of surface water hydrology which would increase the flood hazard potential and to minimize the impact on existing trees and native vegetation. Limitations may also be imposed to protect against impacts to adjacent or nearby parcels related to the placement of fill or shoreline modifications.

(...)

h. Consideration of the elevation of the applicant's property in relation to adjacent properties and the impact a proposed shoreline modification may have on adjacent or nearby properties.

(e) Issuance of tree removal permits. The planning and building division shall issue the removal permit for trees not identified as significant trees under section 11-27 unless, upon consideration of the criteria set forth above, it finds any of the following will result:

(1) That the property owner or agent will not be unreasonably affected in shifting the location of the proposed structure, building or improvement, which shift will maintain the existence of the subject trees and still permit construction of such building or improvement on the site.

(2) That the property owner or agent will not be unreasonably affected in modifying the design of the proposed structure, building or other improvement, which modification will maintain the existence of the trees proposed to be removed and still permit construction substantially similar to that originally proposed.

(3) That the removal of the subject trees will have a substantial adverse impact on the urban and natural environment.

(4) That the subject trees are significant trees and removal must be reviewed by the planning and zoning board.

(f) Issuance of permits for fill and shoreline modifications. The planning and building division shall issue permits for fill or shoreline modifications unless, pursuant to this section, it finds that the analysis prepared by a registered design professional licensed in the State of Florida demonstrates harmful diversion of floodwater or wave runup and wave reflection would increase damage to adjacent properties, buildings or structures. If such findings are made by the planning and building division, the application will be heard by the planning and zoning board that shall consider at a minimum the following special conditions to be placed upon the application to accomplish the purposes of the Comprehensive Plan and this Code, to prevent or minimize adverse effects upon the public, the environment, and neighborhoods, and, to ensure compatibility between fill and shoreline improvements if conventional standards are inadequate to protect the public interest and surrounding land uses or if additional improvements are needed to facilitate a transition between different fill and shoreline uses in a green to gray approach:

(1) Incorporating native seagrass and other native plants;

(2) Incorporating edging which holds the toe of existing or vegetative slopes in place;

(3) Incorporating oyster or clam shell bags;

(4) Establishing living structures such as benthic substrates;

(5) Incorporating other natural shoreline features;

(6) Incorporating breakwater structures offshore or wave attenuation devices to reduce wave action and encourage sediment accretion;

(7) Seawall enhancement projects may include the addition of rock or riprap in front of the wall in order to help dissipate wave energy and refraction, or the introduction of native plants;

(8) Constructing wing walls or returns at the end of the structure to tie back into the shoreline added at the initial time of construction or after assuming that the original structure hasn't been damaged;

(9) Seawalls with sloped (not vertical) faces and use of seawall pockets or grooves (similar to rock rip rap);

(10) Additional design elements to prevent erosion that can be considered: diverting surface runoff away from shorelines, limiting flow of ground or surface water toward shorelines, placing or relocating drain fields / septic systems at least 25 feet from shorelines, having minimal paved areas near shorelines and avoiding installation of pools, sheds, and other outbuildings at least 25 feet from shorelines.

(11) Special conditions may also include any item which can be reasonably expected to enhance the probability that the proposed fill activity will be conducted in compliance with the intent of this article. Special conditions may also be applied in order to assure consistency with the comprehensive plan. Those conditions may include, but are not limited to, field inspections by city staff; reports; monitoring; bonding; easements; guaranteed survival of nonaffected and/or replanted vegetation; protective barriers; setbacks; protective earthwork; replants; signage; restoration and/or mitigation. Other special conditions may include enhanced gutters directing stormwater runoff to onsite retention areas including, but not limited to, anchored rain barrels or cisterns, bioswales, raingardens, bioretention flow-through planters or cells, or rock swales; permeable pavement; retaining walls or berms or other accepted onsite or offsite drainage retention techniques that will prevent post development runoff to exceed predevelopment runoff as approved by the engineer of record. For detention areas: wet detention is storage of stormwater at or below the design mean high water table. Dry detention is storage of stormwater one foot above the design mean high water table. Examples of detention systems are excavated or natural depression storage areas, pervious pavement with subgrade, or above ground storage areas.

(g) Maintenance and operations of fill and shoreline modifications. All property owners must maintain their fill and shoreline modification in good repair to address general tidal flooding conditions from tidal impacts, understanding that storm events are not general conditions. Fill and shoreline modification are presumed to be in disrepair if they allow for upland erosion, transfer of material through the shoreline modification or onto adjacent properties or allow tidal waters to flow unimpeded over or through the modification beyond the intended design such that it adversely impacts adjacent properties, public infrastructure or the public right-of-way. Fill is presumed to be in disrepair if it is not contained onsite impacting adjacent properties or waterways.

Section 4. Inclusion in Code. The City Commission intends that the provisions of this ordinance shall become and shall be made part of the Code of the City of St. Augustine, that the sections of this ordinance may be renumbered or re-lettered and that the word ordinance may be changed to section, article or other such appropriate word or phrase in order to accomplish such intentions.

Section 5. Conflict with Other Ordinances. All ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 6. Severance of Invalid Provisions. If any section, subsection, sentence, clause, phrase, word, or provision of this ordinance is held to be invalid or unconstitutional by a court of competent jurisdiction, then said holding shall not be so construed as to render invalid or unconstitutional the remaining provisions of this ordinance.

Section 7. Effective Date. This ordinance shall become effective ten (10) days after passage, pursuant to § 166.041(5), Florida Statutes. Pending complete applications for new PUDs that have not received a final approval or disapproval of their rezoning ordinance or pending complete applications to amend existing PUDs that have not received a final approval or disapproval of their rezoning ordinance as of the effective date of this ordinance shall be vested from the supermajority requirements of this ordinance.

PASSED by the City Commission of the City of St. Augustine, Florida, this _____ day of _____, 2025.

_____

Nancy Sikes-Kline, Mayor-Commissioner

ATTEST:

_____

Darlene Galambos, City Clerk

(SEAL)

ORDINANCE NO. 2025-XX

AN ORDINANCE OF THE CITY OF ST. AUGUSTINE, FLORIDA, AMENDING SECTIONS 25-52 AND 28-2 OF THE CODE OF THE CITY OF ST. AUGUSTINE PROVIDING DEFINITIONS; AMENDING SECTION 25-53 PROVIDING FOR CRITERIA FOR DEVELOPMENT UTILIZING FILL; PROVIDING FOR INCLUSION IN THE CODE OF THE CITY OF ST. AUGUSTINE; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, § 166.041, Florida Statutes, provides for procedures for the adoption of ordinances and resolutions by municipalities; and

WHEREAS,; and

WHEREAS,; and

WHEREAS,; and

WHEREAS, the City Commission for the City of St. Augustine finds that it is in the best interest of public health, safety, and general welfare that the following amendments be adopted consistent with the requirements of Section 166.021(4), Florida Statutes.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COMMISSION OF ST. AUGUSTINE, FLORIDA, AS FOLLOWS:

Section 1. Amending Chapter 25, Article III, Section 25-53. Chapter 25, Article III, Section 25-52 is hereby amended, as follows:

"Sec. 25-52. - Definitions.

As used in this article, unless otherwise stated, the following words shall have a meaning as indicated herein:

(...)

Fill means sand, gravel, earth or other materials of any composition whatsoever.

(...)

Yard means a required open space other than a court unoccupied and unobstructed by any structure or portion of a structure from thirty (30) inches above the general ground level of the graded lot upward; provided, however, that fences, walls, poles, posts and other customary yard accessories, ornaments and furniture may be permitted in any yard subject to height limitations and requirements limiting obstruction of visibility. No fill may occur in any required yard setback more than thirty (30) inches above the general ground level measured at the Abutting property line."

Section 2. Amending Chapter 25, Article III, Section 25-53. Chapter 25, Article III, Section 25-53 is hereby amended, as follows:

"Sec. 25-53. - General landscape requirements.

(...)

(d) *Tree mitigation.*

(...)

(6) a. For development utilizing fill, peak post development storm drainage runoff shall not exceed peak pre-development storm drainage runoff for a twenty-five (25) year, twenty-four (24) hour storm event on the parcel or onto adjacent properties or waterways (for major developments) and storm drainage runoff for minor developments must be retained on-site using a ten (10) year, one (1) hour storm event as shown by calculations performed by a registered design professional. The maximum elevation of the fill on any lot shall not exceed 1 foot above highest adjacent grade or the current base flood elevation of the property based upon the current FEMA Flood Insurance Rate Map, whichever is less. Additionally, the 1 foot of fill on the subject property shall not exceed the elevation of any adjoining lot. Any major or minor development that includes placement of fill shall provide flood routing calculations demonstrating that the Standards and Criteria in Sec. 29-26 can be met without encroaching on the floodplain as well as compliance with Sections 8-435 and 8-436 of this Code. No such fill may be placed until such calculations have been submitted in a report signed and sealed by a registered design professional licensed in the State of Florida and have been reviewed and approved in writing by the Floodplain Manager.

b. All property owners must maintain their fill improvements in good repair. Fill is presumed to be in disrepair if it allows for upland erosion or the transfer of material through or onto adjacent properties beyond the intended design such that it adversely impacts adjacent properties, public infrastructure or the public right-of-way. Fill is presumed to be in disrepair if it is not contained onsite impacting adjacent properties or waterways.

c. Applicants who do not meet the above criteria for development utilizing fill may submit an alternative design for consideration by the Planning and Zoning Board. Alternative designs must provide evidence that the criteria of this section cannot strictly be met due to extraordinary characteristics of the property and its surroundings. Alternative designs must clearly demonstrate that they reduce environmental impacts in an alternative way. It shall be the burden of the applicant to prove that the proposed alternative design does not result in greater negative impacts than a design that adheres to the administrative requirements. An analysis of alternatives may be submitted at the time of application at the option of the applicant.

d. Alternative designs that do not meet the criteria in this section shall require a PZB hearing. If such findings are made by the planning and building division, the application will be heard by the planning and zoning board that shall consider at a minimum the following special conditions to be placed upon the application to accomplish the purposes of the Comprehensive Plan and this Code, to prevent or minimize adverse effects upon the public, the environment, and neighborhoods, and, to ensure compatibility of filling improvements if conventional standards are inadequate to protect the public interest and surrounding land uses or if additional improvements are needed to facilitate a transition between different filling improvements. Special conditions may include any item which can be reasonably expected to enhance the probability that the proposed fill activity will be conducted in compliance with the intent of this article. Special conditions may also be applied in order to assure consistency with the comprehensive plan. Those conditions may include, but are not limited to, field inspections by city staff; reports; monitoring; bonding; easements; guaranteed survival of nonaffected and/or replanted vegetation; protective barriers; setbacks; protective earthwork; replants; signage; restoration and/or mitigation. Other special conditions may include enhanced gutters directing stormwater runoff to onsite retention areas including, but not limited to, anchored rain barrels or cisterns, bioswales, raingardens, bioretention flow-through planters or cells, or rock swales; permeable pavement; retaining walls or berms or other accepted onsite or offsite drainage retention techniques that will prevent post development runoff to exceed predevelopment runoff as approved by the engineer of record. For detention areas: wet detention is storage of stormwater at or below the design mean high water table. Dry detention is storage of stormwater one foot above the design mean high water table. Examples of detention systems are excavated or natural depression storage areas, pervious pavement with subgrade, or above ground storage areas."

Section 3. Amending Chapter 28, Article I, Section 28-2. Chapter 28, Article I, Section 28-2 is hereby amended, as follows:

"Sec. 28-2. - Definitions.

For the purpose of this chapter, certain words and terms used herein shall be interpreted to have meanings as defined below. Where words or terms are not defined, they shall have their ordinarily accepted meanings or such as the context may imply. Words used in the present tense include the future; the singular number includes the plural and the plural includes the singular. The word "shall" is mandatory; the word "may" is permissive. The word "used" or "occupied" includes the words "intended, designed or arranged to be used or occupied." The word "lot" includes the word "plot" or "parcel." The word "structure" includes the word "building" as well as other things constructed or erected on the ground, attached to something having location on the ground, or requiring construction or erection on the ground. The word "land" includes the word "marsh," "water" or "swamp."

The word "map" shall mean the "Zoning Maps of the City of St. Augustine, Florida" and the "city" shall mean the City of St. Augustine, Florida, a corporation of the State of Florida.

(...)

Fill means sand, gravel, earth or other materials of any composition whatsoever.

(...)

Yard means a required open space other than a court unoccupied and unobstructed by any structure or portion of a structure from thirty (30) inches above the general ground level of the graded lot upward; provided, however, that fences, walls, poles, posts and other customary yard accessories, ornaments and furniture may be permitted in any yard subject to height limitations and requirements limiting obstruction of visibility. No fill may occur in any required yard setback more than thirty (30) inches above the general ground level measured at the Abutting property line."

Section 4. Inclusion in Code. The City Commission intends that the provisions of this ordinance shall become and shall be made part of the Code of the City of St. Augustine, that the sections of this ordinance may be renumbered or re-lettered and that the word ordinance may be changed to section, article or other such appropriate word or phrase in order to accomplish such intentions.

Section 5. Conflict with Other Ordinances. All ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 6. Severance of Invalid Provisions. If any section, subsection, sentence, clause, phrase, word, or provision of this ordinance is held to be invalid or unconstitutional by a court of competent jurisdiction, then said holding shall not be so construed as to render invalid or unconstitutional the remaining provisions of this ordinance.

Section 7. Effective Date. This ordinance shall become effective ten (10) days after passage, pursuant to § 166.041(5), Florida Statutes. Pending complete applications for new PUDs that have not received a final approval or disapproval of their rezoning ordinance or pending complete applications to amend existing PUDs that have not received a final approval or disapproval of their rezoning ordinance as of the effective date of this ordinance shall be vested from the supermajority requirements of this ordinance.

PASSED by the City Commission of the City of St. Augustine, Florida, this _____ day of _____, 2025.

_____
Nancy Sikes-Kline, Mayor-Commissioner

ATTEST:

_____
Darlene Galambos, City Clerk
(SEAL)

Draft Code Amendment Language from City Staff

ARTICLE X. - RESIDENTIAL LOT GRADING

Sec. XX- 1. - Introduction

The City of St. Augustine contains many platted lots that were recorded prior to local and state agencies requiring storm water management. In addition, the platting did not always take into consideration the natural geographic and drainage conditions affecting each lot. Typically, there was no master drainage infrastructure or master grading plan to guide the platting that occurred. As a result, applicants that wish to build homes now must deal with the existing topographic conditions on the lot and the drainage patterns, limitations or constraints that exist in the vicinity of the lot. The City of St. Augustine Lot Grading Guidelines document attempts to provide builders with guidance in dealing with lot grading challenges and issues. More contemporary subdivisions and lots that have been permitted in compliance with current governmental drainage and grading regulations should not be impacted by the conditions described below.

Sec. XX-2. - Residential Lot Grading Submittal Procedure

1. **Purpose and Intent**

   The residential lot grading requirements ensure stormwater impact from future residential development is respectful of existing development. This requirement is for single-family development excluded by Sec. 29-26. - Standards and criteria (a.).

2. **Residential Lot Grading Plan Requirements**

   To achieve these objectives, a residential lot grading plan shall be required to accompany any application for single-family or duplex residential structures constructed in subdivisions platted on or before July 22, 1991, containing impervious area in excess of five hundred (500) square feet. Lot Grading Plans should include the following information:

   A. The proposed grading plan shall be drawn to a legible conventional engineering scale (1-inch = 20 feet, smallest scale accepted) using the site plan and survey as a base map.

   B. The proposed grading plan shall include, at a minimum, the following features:

      a. North arrow and bar scale.

      b. Show proposed Lot Grading Type (A, B, C) as applicable.

      c. Spot elevations of the existing parcel in question—shown on a 25' grid.

      d. Spot elevations on all adjacent properties - 10-feet from the boundaries of the subject property at approximately 25-foot intervals.

      e. Spot elevations at thecrown of any roadway abutting the property. (

f. FEMA Flood Zones and BFE.
g. Limits of impervious surfaces (patios, pool decks, driveways, etc.).
h. Limits of fill.
i. Jurisdictional lines (wetlands or conservation easements) and 25-foot buffer.
j. Mean High Water
k. Proposed erosion and sediment control measures during construction and proposed weekly maintenance of silt fences and other erosion control measures during construction.
l. Necessary easements and rights of way,
m. Location and use of existing structure(s) and proposed structure(s) with Finish Floor Elevation (FFE) in NAVD88.
n. Swale locations with typical cross-sections of all proposed swales and of all significant slopes, including the continuation of such features on adjacent properties or right-of-way (exceeding 4:1).
o. Bulkhead/ retaining wall locations with T.O.W and B.O.W elevations in NAVD88 including cross-sections stamped and signed by an engineer.

C. A Right-of-Way Use Permit is required for any work on City right-of-way or property.. I copied Buddy's comment here, I couldn't figure out how to merge the comments into one:

c. An engineered lot grading plan will not be required if all applicable guidelines and codes are followed as described herein. Note that a Right-of-Way Use Permit is required for any work on City right-of-way or property. All construction in City right-of-way and on City property shall conform to the standards and requirements of the Public Works Director, City Public Works Department.

- General Lot Grading Conditions

ı lot located within the City will have existing conditions associated with it. There may be design and :tivities that would also have an impact on the lot. A drainage hierarchy exists which will determine the ch an applicant will be required to gather survey, drainage and design information for a lot. Each ıuld consider this hierarchy and the implications that result from the actual field and permitted r the lot. These guidelines and this hierarchy cannot cover all possible site conditions to be in the City.

ıt must determine the condition and situation that a lot is subject to, prior to submitting a lot grading 'his can be determined using the following chart:

Condition of Subdivision or Lot	Resulting Design Solution
Master planned with approved master drainage plan and master lot & block	Show compliance with approved master plan(s).

Sarah Daugherty
Maybe if the applicant does not meet code they go through the civil plan process instead of PZB?
April 16, 2025, 9:51 AM

Richard Schauland
I'm not sure if either PW or PZB would be much of a deterrent. The property owners are wanting fill to be brought in now, that probably won't change. If they have to go to PZB, it will just cause more application than they get now.

Sending them to PW may deter most, but someone will do it and bring in a lot of fill. It could have the same problem that we have now.
April 22, 2025, 11:46 AM

Reply

D.

Sec. XX-3. – General Lot Grading Conditions

Each lot located within the City will have existing conditions associated with it. There may be design and permitting activities that would also have an impact on the lot. A drainage hierarchy exists which will determine the extent to which an applicant will be required to gather survey, drainage and design information for a lot. Each applicant should consider this hierarchy and the implications that result from the actual field and permitted conditions for the lot. These guidelines and this hierarchy cannot cover all possible site conditions to be encountered in the City.

Each applicant must determine the condition and situation that a lot is subject to, prior to submitting a lot grading application. This can be determined using the following chart:

Category	Condition of Subdivision or Lot	Resulting Design Solution
1	Master planned with approved master drainage plan and master lot & block grading plan	Show compliance with approved master plan(s).
2	Part of a permitted drainage system	Show master drainage plan and compliance with permit conditions. Grading must conform to the drainage plan.
3	Not Category 1 or 2 (not part of a common plan of development with an approved master drainage and/or lot grading plan or permitted drainage system)	1. direct drainage to an existing outfall system or roadside swale via drainage swales along lot lines or through gutters. 2. If no roadside swale or outfall system exists, then direct drainage to the road via lot line swales or gutters. In either case, positive drainage and no impacts to adjacent lots must demonstrate. 3. For cases where drainage to the street is not feasible, ie. lots with no outfall access that partially or fully drain to the back of the lots (drainage types B and C), I think requiring retention swales and other LID techniques might be a more reasonable and defensible design requirement for those lot types. or other best practices as appropriate
3a	Some surface drainage with outfall system; paved roadway access	Grade lots based on guidelines, with positive outfall; identify receiving waters or outfall system.
4	Paved roadway access, swale and/or ditch system along roadways or surrounding lots with positive grades	Grade lots based on guidelines, factoring in condition for abutting lots and using positive lot grading; direct drainage via side lot lines and roadway swales or other best practices as appropriate; confirm no apparent downstream stormwater runoff impacts.
5	Lots that are adjacent to natural wetland systems, waterways, canals, or bulkheads	Grade lots based on guidelines, factoring in condition for abutting lots and using positive lot grading; direct drainage via side lot lines and roadway swales; confirm no apparent downstream stormwater runoff impacts. Lots within Conservation Overlay Zones will also be reviewed by the requirements found in Chapter 11.

Sec. XX-4. – Lot Grading and Drainage Guidelines

A. Types of Lot Drainage

The engineering guidelines provide illustrations of the standard FHA types A, B, and C drainage. A, B, and C drainage types should match approved stormwater plans in Categories 1 and 2. In Category 3 or 4, A, B, and C drainage types should match the historic or natural drainage pattern except for the below exemption.

(a) Type C drainage is discouraged on lots in Categories 3 and 4 when the rear of the lot does not have sufficient outfall points. This is because many of these lots trap water and exacerbate existing nuisance conditions. Type "C" lot with no drainage outfall will require stem wall, pier, pile, walkout or similar construction, and shall have grading and drainage plans prepared by a Florida Licensed Professional Engineer

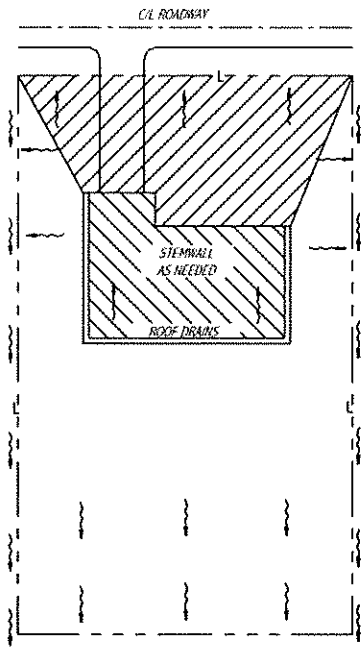
(b) A "A "Modified Type B" " drainage with gutters directing roof drainage to the front of the lot, and ultimately to the roadside swale, is the preferred method of dealing with lots that slope away from a street where a standard Type "B" lot is not practical. A modified Type "B" lot with no drainage outfall will require stem wall, pier, pile, walkout or similar construction.

a. The modified "B" grading shall have at least the impervious roof area of the house, driveway and immediate front yard brought forward to the public right-of-way.

b. The grading transitions by forming a wedge from the foundation of the home to the corners of the lot.

c. In order to ensure that the entire impervious portion of the house drains to the front, roof drains are required over the entire house, manifolded to collection pipes that drain forward with positive outfall to the public right-of-way.

DRAFT



MODIFIED "B"

BRINGS MOST IMPERVIOUS SURFACES FORWARD

B. Swales

(a) Conveyance Swales (those with a positive slope to an outfall for drainage) shall be the preferred method for conveying stormwater runoff from residential lots to an appropriate outfall such as public rights-of-way or a stormwater management area.

(b) Retention swales (those that are essentially flat and do not provide drainage, they percolate runoff water) are only allowed when onsite storage of water is required.

(c) Protective swales shall be installed on all lots where the drainage flow pattern is directed toward the proposed dwelling and should generally function as a "conveyance swale" although some "retention" may be acceptable in limited areas around the structure.

(d) Swales shall be constructed using the following guidelines:

1. The preferred side slopes should be at least 4:1 (horizontal: vertical), however under no circumstances be steeper than 3:1 and only with City approval
2. Minimum desired (when feasible) depth of 1 foot measured from the swale bottom to the minimum top of bank elevation.
3. Conveyance swales shall be placed alongside property lines.
4. Protective swales must be placed between structure and drainage flow pattern directed towards the structure.

5. Sod all swales from top of slope to top of slope. Maintain and water sod until root system is established.
6. When possible, the lot line will be the centerline of the protective side lot drainage swales.

C. Retaining walls/Bulkheads
   (a) Bulkheads are structural in nature and their primary purpose is to provide shoreline protection from waves while retaining upland soil.
   (b) Retaining walls are structural in nature and their primary purpose is to hold back earth that would otherwise be unstable and prone to failure. There may be a significant risk to public health, safety and welfare if a retaining wall is improperly constructed.
   (c) A landscape planter is decorative in nature and its primary purpose is to elevate a small amount of earth for a landscape planting bed. An elevated bed for a home vegetable garden (non-commercial) or a "tree well" is considered a Landscape Planter. A landscape planter cannot exceed 30 inches or will be considered a retaining wall.
   (d) All bulkheads and retaining walls shall be designed, signed and sealed by an engineer registered in the State of Florida. Retaining walls used for proposed lots shall be designed, signed and sealed by an engineer registered in the State of Florida.
   (e) All Bulkheads/ Retaining walls placed within Conservation Overlay Zones 1 and 2 shall be reviewed per Section 11-28. Issuance of building permits to determine if Planning and Zoning Board approval is required.
   (f) Retaining walls will be no closer than three (3) feet from any property line and cannot impede the proposed drainage flow pattern.

D. Driveways and other impervious materials must be a minimum of three (3) feet from any property line except for points of ingress/egress.

E. Erosion control associated with lot grading plans shall meet the minimum standards mandated by the State of Florida and the National Pollutant Discharge Elimination System within the City. Approved Best Management Practices shall be employed during construction. Please reference the Florida Department of Environmental Protection's Florida Development Manual, and Florida Erosion and Sediment Control Inspector's Manual. The Florida Erosion and Sediment Control Inspector's Manual is available online at http://www.dep.state.fl.us/water/stormwater/docs/erosion.htm

F. Low Impact Development (LID) Stormwater Techniques
   It is recommended that projects include at least two of the following low impact design concepts, which may be located anywhere on the project (including the front setback):
   (a) Raised pier construction for homes (allowing for movement of stormwater and additional infiltration area)

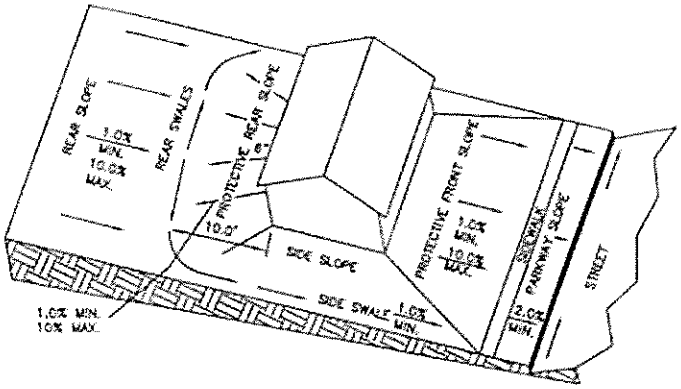
(b) Rainwater harvesting (rain barrels, underground cisterns, and similar to assist in water conservation)
(c) Green roofs
(d) Bio-swales
(e) Rain gardens
(f) Pervious pavement(pervious concrete, pervious pavers, and/or other pervious pavements)

G. Lots With an Approved Master Grading Plan
(a) The Proposed Lot Grading Plan shall be submitted for review. The builder shall propose lot grading and a finished floor elevation consistent with the approved Master Lot Grading Plan.

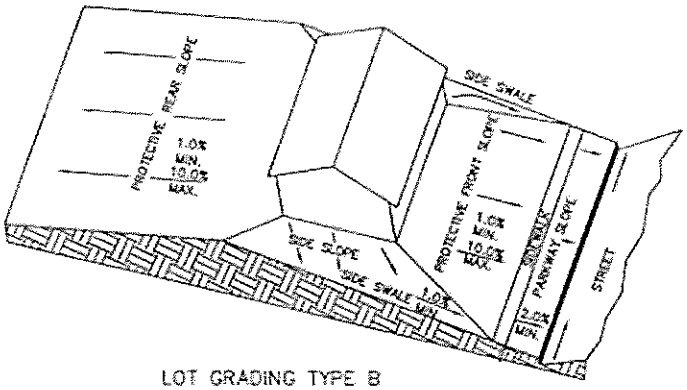
H. Lots Without an Approved Master Grading Plan
(a) The maximum elevation of the fill on any lot shall be the lesser of a maximum of 1 foot above the highest adjacent grade or .5 feet above the current base flood elevation of the property based on the current FEMA Flood Insurance Rate Map.
(b) Fill within stem-wall foundations shall be allowed to exceed the base flood elevation as necessary.
(c) The grade shall fall to a minimum of six (6) inches above existing or historic grade within the first 10 feet. The final grade along the property boundaries shall match that of the adjacent lot.
(d) Lots shall be graded with a minimum slope of 1% (1 ft/ 100ft) in accordance with Type A, B, or C grading pattern.
(e) Impervious Surface Ratio:
i. *Impervious surface* means those surfaces which do not absorb water. They consist of all buildings, parking areas, driveways, roads, sidewalks, any areas of concrete or asphalt and other surfaces not pervious to water. Including any hard surface that prevents or restricts the flow of water into the soil.
ii. *Impervious surface, on-lot,* means the total amount of impervious surface which is present on a lot.
iii. *Impervious surface ratio* means a measure of the intensity of land use which is determined by dividing the total area of all impervious surfaces on a site by means that portion of the lot landward of the mean high-water line.
iv. *There shall be a maximum impervious surface ratio (ISR) of seventy (70) percent of the lot size for all single-family residential dwelling and duplex development regardless of the zoning district, except as established within*

the historic preservation districts and not within any master planned communities.

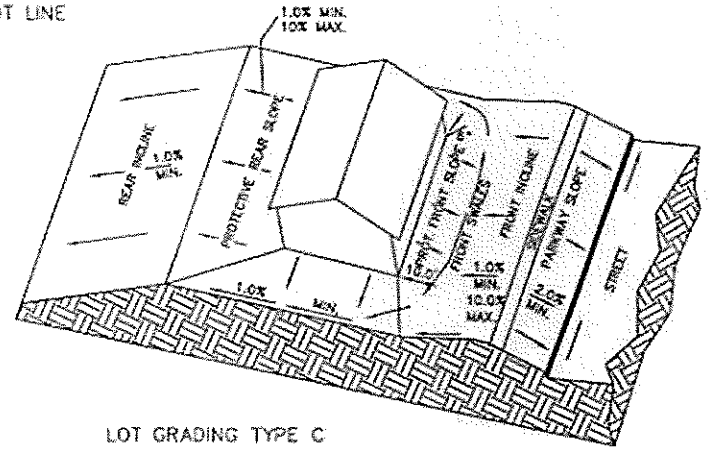
(f)



LOT GRADING TYPE A
ALL DRAINAGE TO STREET



LOT GRADING TYPE B
DRAINAGE TO FRONT & REAR LOT LINE



LOT GRADING TYPE C
ALL DRAINAGE TO REAR LOT LINE

Sec. 11-28. Issuance of building permits.

(a) The planning and zoning board shall review all applications for development in Conservation Overlay Zone 1; all applications for development in Conservation Overlay Zone 2, except as specified in subsection (b); and all applications for development in Conservation Overlay Zone 3, except as specified in subsection (c). Such approval by the planning and zoning board shall be after a public hearing as required by chapter 28.

(b) The planning and building division may issue permits for additions to existing structures, for construction of new secondary structures, such as fences, driveways, decks, patios, greenhouses, garages and sheds, and use permits for uses otherwise permitted to be conducted in these structures located in Conservation Overlay Zone 2 when no drainage into ~~the marsh~~ jurisdictional wetlands without a maintained or restored 25-buffer, no significant alteration of surface water hydrology will occur and native plant materials are preserved or replaced. The planning and building division may issue permits for the construction of new primary structures located in Conservation Overlay Zone 2 when the above conditions are met and when the subject property contains a seawall, bulkhead or rip rap shoreline, or is located within one hundred fifty (150) feet of existing development and the primary structure is located no closer to the marsh edge or to the mean high water line than are adjacent primary structures. In addition, such additions and new structures may not exceed the lesser of seventy-five (75) feet or seventy-five (75) percent of the lot width.

(c) The planning and building division may issue permits for structures and uses otherwise permitted and located within Conservation Overlay Zone 3 provided that all healthy significant trees are retained on the site.

(d) Removal of a significant tree shall be approved by the planning and zoning board. All significant trees removed shall be replaced in accordance with the requirements of chapter 25.

(Code 1964, § 7-114; Ord. No. 96-02, § 1, 2-26-96; Ord. No. 09-17, § 1, 5-11-09; Ord. No. 19-03, § 1, 1-28-19)

~~**Sec. 28-160. Maximum impervious surface ratio (ISR) for all single family residential dwelling development.**~~

~~There shall be a maximum impervious surface ratio (ISR) of seventy (70) percent of the lot size for all single family residential dwelling development regardless of the zoning district, except as established within the historic preservation districts and not within any master planned communities.~~

~~(Ord. No. 21-26, § 2, 10-11-21)~~

Update to Lot Grading Ordinance

Outstanding issues to be resolved:

1. Will we allow an appeal or variance process?
    a. If we do, does it go through civil plan review?
    b. Does it include everything in lot grading ordinance or just some categories?

        Ex. Fill vs. ISR vs. 3-foot setbacks to impervious surfaces.

    An option I would like to add is that we could allow additional fill to be placed if some set measure of stormwater is retained on site (e.g. 1:1 cf of capacity) if over some number of cubic feet it would trigger engineered plans though civil plan review.

2. Where should the Ordinance be placed, Chapter 29 Stormwater, Chapter 28 Article IV. Supplementary Regulations, other?
    a. If we go with no variance or appeal then Chapter 29 has advantages but would presumably need approval from Public Works?
    b. If we go with a variance process than Chapter 28 Article IV has advantages.

3. General Lot Grading Conditions Chart needs finalized and placed in the correct hierarchy and references that refer to it would need to be updated accordingly.
4. Do lots within an approved Master Grading Plan need to submit a lot grading plan?

Changes made in response to comments:

Changes were made according to all received comment or a response was added.

Sec. XX- 1. - Introduction

I changed "above" to "below".

Sec. XX-2. - Residential Lot Grading Submittal Procedure (2)

I removed the reference to Residential Lot Grading Permit and tweaked the language to reflect Residential Lot Grading Plan requirements.

Sec. XX-2. - Residential Lot Grading Submittal Procedure (3)(B)(e.)

Updated language to be consistent with CRS regulatory standards.

Sec. XX-2. - Residential Lot Grading Submittal Procedure (3)(C)

Deleted all language except for requirements for a ROW permit for work within the ROW.

Any additional requirements for engineered plans or a variance or appeal process should be placed with the requirement itself.

Sec. XX-3.- General Lot Grading Conditions. [chart]

Propose language to say," Lot adjacent to jurisdictional wetlands proposing retaining walls/ floodwalls/ or bulkheads."

Added language, "Lots within Conservation Overlay Zones will also be reviewed by the requirements found in Chapter 11."

Question: Is the revised Chart in a drainage hierarchy from least requirements to most?

Sec. XX-4.- Lot Grading and Drainage Guidelines.

Corrected Sec. XX-3. To XX-4.

Moved ISR language to Section Lots without a Master Drainage Plan

Moved Swale language from Lots without a Master Drainage Plan to Swale section for readability and context.

Sec. XX-4. – Lot Grading and Drainage Guidelines (F.)

Added Low Impact Development Stormwater Techniques

Would be nice to add incentives.

Maybe for category 1 in our chart should be for pier/piling construction with minimal fill no lot grading plan is necessary?

For the rest of them if an engineer supplies cf capacity they could add that amount of additional fill?

Sec. XX-4. – Lot Grading and Drainage Guidelines (H.)(b)

Deleted as it created more questions than answers

Sec. XX-4. – Lot Grading and Drainage Guidelines (I.)

Deleted max slope because its unnecessary.

ARTICLE X. - RESIDENTIAL LOT GRADING

Sec. XX- 1. - Introduction

The City of St. Augustine contains many platted lots that were recorded prior to ~~the~~ local and state agencies requiring storm water management. In addition, the platting did not always take into consideration the natural geographic and drainage conditions affecting each lot. Typically, there was no master drainage infrastructure or master grading plan to guide the platting that occurred. As a result, applicants that wish to build homes now must deal with the existing topographic conditions on the lot and the drainage patterns, limitations or constraints that exist in the vicinity of the lot. The City of St. Augustine Lot Grading Guidelines document attempts to provide builders with guidance in dealing with lot grading challenges and issues. More contemporary subdivisions and lots that have been permitted in compliance with current governmental drainage and grading regulations should not be impacted by the conditions described below. ~~above (should this be "below" referencing the following sections?~~ .

Sec. XX-2. - Residential Lot Grading Submittal Procedure

1. **Purpose and Intent**

   The residential lot grading requirements ensure stormwater impact from future residential development is respectful of existing development. This requirement is for single-family development excluded by Sec. 29-26. - Standards and criteria (a.).

2. ~~Issuance of Residential Lot Grading Permit~~ ~~Residential Lot Grading Permit~~ Residential Lot Grading Plan Requirements

   To achieve these objectives, a residential lot grading plan shall be required to accompany any application for single-family or duplex residential structures constructed in subdivisions platted on or before July 22, 1991, containing impervious area in excess of five hundred (500) square feet. Lot Grading Plans should include the following information:

~~3. Information Required~~

A. The proposed grading plan shall be drawn to a legible conventional engineering scale (1-inch = 20 feet, smallest scale accepted) using the site plan and survey as a base map.
B. The proposed grading plan shall include, at a minimum, the following features:
   a. North arrow and bar scale.
   b. Show proposed Lot Grading Type (A, B, C) as applicable.
   c. Spot elevations of the existing parcel in question—shown on a 25' grid.
   d. Spot elevations on all adjacent properties - 10-feet from the boundaries of the subject property at approximately 25-foot intervals.
   e. Spot elevations at the crown ~~centerline~~ ~~centerline~~ of any ~~adjacent~~ roadway abutting the property. (~~including the existing swale flow line)~~
   f. FEMA Flood Zones and BFE.
   g. Limits of impervious surfaces (patios, pool decks, driveways, etc.).
   h. Limits of fill.
   i. Jurisdictional lines (wetlands or conservation easements) and 25-foot buffer.
   j. Mean High Water

Commented [SD1]: Could be placed in Chapter 29 stormwater. No PZB approval, logical placement, no state oversite that I'm aware of.

Commented [JB2R1]: Under Section 29, there are 3 articles, 1 is for the stormwater management utility, 2 is for the development criteria (specific for commercial) and 3 is to address Illicit Discharge. If we were to consider moving this to Chapter 29, should we create a separate article to address residential lot grading?

Commented [SD3R1]: If we want no "variance" process we should place it in 29 unless Public Works or management disagrees.

Commented [RS4]: We do not have a Residential Lot Grading Permit

Commented [SD5R4]: Good catch I changed it.

Commented [RS6]: One of our higher regulatory standards for CRS references the crown of the street and defines it: The elevation of the highest surface of street pavement within the right-of-way abutting the property or the elevation approved by the city engineer.

Would it be better to be consistent?

Commented [SD7R6]: Good catch. Let me know if the revised language adequately addresses your comment.

DRAFT

k. Proposed erosion and sediment control measures during construction and proposed weekly maintenance of silt fences and other erosion control measures during construction.
l. Necessary easements and rights of way,
m. Location and use of existing structure(s) and proposed structure(s) with Finish Floor Elevation (FFE) in NAVD88.
n. Swale locations with typical cross-sections of all proposed swales and of all significant slopes, including the continuation of such features on adjacent properties or right-of-way (exceeding 4:1).
o. Bulkhead/ retaining wall locations with T.O.W and B.O.W elevations in NAVD88 including cross-sections stamped and signed by an engineer.

C. ~~An engineered lot grading plan will not be required if all applicable guidelines and codes are followed as described herein. Note that a~~ A Right-of-Way Use Permit is required for any work on City right-of-way or property. ~~All construction in City right-of-way and on City property shall conform to the standards and requirements of the Utilities and Public Works Director, City Utilities and Public Works Department~~. I copied Buddy's comment here, I couldn't figure out how to merge the comments into one:

c. An engineered lot grading plan will not be required if all applicable guidelines and codes are followed as described herein. Note that a Right-of-Way Use Permit is required for any work on City right-of-way or property. All construction in City right-of-way and on City property shall conform to the standards and requirements of the Public Works Director, City Public Works Department.

- General Lot Grading Conditions

ı lot located within the City will have existing conditions associated with it. There may be design and tivities that would also have an impact on the lot. A drainage hierarchy exists which will determine the ch an applicant will be required to gather survey, drainage and design information for a lot. Each uld consider this hierarchy and the implications that result from the actual field and permitted r the lot. These guidelines and this hierarchy cannot cover all possible site conditions to be in the City.

it must determine the condition and situation that a lot is subject to, prior to submitting a lot grading This can be determined using the following chart:

Condition of Subdivision or Lot	Resulting Design Solution
Master planned with approved master drainage plan and master lot & block	Show compliance with approved master plan(s).

Sarah Daugherty
Maybe if the applicant does not meet co go through the civil plan process instead
April 16, 2025, 9:51 AM

Richard Schauland
I'm not sure if either PW or PZB wou much of a deterrent. The property o wanting fill to be brought in now, th probably won't change. if they have PZB, it will just cause more applicatio they get now.

Sending them to PW may deter mos someone will do it and bring in a lot could have the same problem that w now.
April 22, 2025, 11:46 AM

Reply

C.D.

Commented [SD8]: Maybe if the applicant does not meet code they go through the civil plan process instead of PZB?

Commented [JB9R8]: That is certainly something that we could discuss between the departments. We had at one point initially set this up to have the Residential Lot Grading plans go through PW but that was before Ray's position was created. It may be worth discussing in the cases where the lots are more complex. That would be a discussion needed at the director level though.

Commented [SD10R8]: I deleted everything but the ROW permit comments. If we add flexibility to the lot grading requirements we should place it with the requirements.

Sec. XX-3. – General Lot Grading Conditions

Each lot located within the City will have existing conditions associated with it. There may be design and permitting activities that would also have an impact on the lot. A drainage hierarchy exists which will determine the extent to which an applicant will be required to gather survey, drainage and design information for a lot. Each applicant should consider this hierarchy and the implications that result from the actual field and permitted conditions for the lot. These guidelines and this hierarchy cannot cover all possible site conditions to be encountered in the City.

Each applicant must determine the condition and situation that a lot is subject to, prior to submitting a lot grading application. This can be determined using the following chart:

Category	Condition of Subdivision or Lot	Resulting Design Solution
1	Master planned with approved master drainage plan and master lot & block grading plan	Show compliance with approved master plan(s).

Commented [JB11]: As we discussed earlier, this would put a new requirement for Ray to review these. I can help him locate the "approved master drainage plans" that would come from SJRWMD and also the approved plans what Development Review has approved. They should be the same, in theory.

Commented [SD12R11]: This is a question I will defer to others.

2	Part of a permitted drainage system	Show master drainage plan and compliance with permit conditions. Grading must conform to the drainage plan.
3	Not Category 1 or 2 (not part of a common plan of development with an approved master drainage and/or lot grading plan or permitted drainage system)	1. direct drainage to an existing outfall system or roadside swale via drainage swales along lot lines or through gutters. 2. If no roadside swale or outfall system exists, then direct drainage to the road via lot line swales or gutters. In either case, positive drainage and no impacts to adjacent lots must demonstrated. 3. For cases where drainage to the street is not feasible, ie. lots with no outfall access that partially or fully drain to the back of the lots (drainage types B and C), I think requiring retention swales and other LID techniques might a more reasonable and defensible design requirement for those lot types. or other best practices as appropriate
~~3~~3a	Some surface drainage with outfall system; paved roadway access	Grade lots based on guidelines, with positive outfall; identify receiving waters or outfall system.
4	Paved roadway access, swale and/or ditch system along roadways or surrounding lots with positive grades	Grade lots based on guidelines, factoring in condition for abutting lots and using positive lot grading; direct drainage via side lot lines and roadway swales or other best practices as appropriate; confirm no apparent downstream stormwater runoff impacts.
X	Lots that are adjacent to natural wetland systems, waterways, canals, or bulkheads	Grade lots based on guidelines, factoring in condition for abutting lots and using positive lot grading; direct drainage via side lot lines and roadway swales; confirm no apparent downstream stormwater runoff impacts. Lots within Conservation Overlay Zones will also be reviewed by the requirements found in Chapter 11.
~~5~~	~~Paved roadway access, swale system along roadway, trapped drainage with no identified outfall (closed drainage basin, not in 100-year flood plain)~~	~~Gather additional survey information to confirm the severity of the drainage problem; locate nearest point to consider for release of drainage to a downstream system, confirm lot is not in 100-year flood plain.~~
~~6~~	~~Roadway access, swale system along roadway, trapped drainage with no identified outfall (closed drainage basin, within 100-year flood plain)~~	~~Gather additional survey information to confirm the severity of the drainage problem; locate nearest point to consider for release of drainage to a downstream system; confirm lot is in 100-year flood plain; homes proposed on lots in 100-year flood plain will not be considered for permit without additional studies as determined by the City Engineer.~~

Sec. XX-~~3~~4. – Lot Grading and Drainage Guidelines

A. Types of Lot Drainage

The engineering guidelines provide illustrations of the standard FHA types A, B, and C drainage. A, B, and C drainage types should match approved stormwater plans in Categories 1 and 2. In ~~Categories 3-6.~~ Category 3 or 4, A, B, and C drainage types should match the historic or natural drainage pattern except for the below exemption.

Commented [JB13]: We have several areas within the city that the lots may back up to a drainage feature, such as a drainage ditch. There are areas in Ravenswood, Fort Mose Neighborhood, and Oyster Creek that come to mind where they may have the ability to drain to a drainage ditch system at the rear of the property or it could be on other sides of the property.

Commented [JB14]: They could also incorporate best management practices, such as low impact development, rain gardens, cisterns, rain barrels, or piping the drainage to the front of the lot. Some of these best practices retain the rainfall and promote infiltration, whereas the swales direct it to the street (there is some infiltration). If they opt to retain, we may need to look a little closer at what/how they're proposing to do that so that it is sufficient to make a difference and not just an aesthetic feature. It is also something that we cannot really enforce practically, but more of an encouragement to promote more retaining of water as a best practice. It has a sustainability component to it. Just as an FYI, we currently include these options in the Lot Grading Packet.

Commented [SD15R14]: Should we add a section for green features?

Commented [SD16R14]: I added Low Development Technique section. Would be nice to add incentives for these.

Commented [JB17]: We may need to define how we would determine this.

Commented [SD18R17]: I think this is code that is there if we need it.

Commented [JB19]: We could probably combine 3 & 4 into one. I added Ray's suggestions to the table.

Commented [JB20]: We agreed to add a "bulkheaded lot" category

Commented [SD21]: Maybe say lots adjacent to jurisdictional wetlands to be consistent with CH11 and differentiate between bulkheads along stormwater retention ponds.

Commented [JB22]: Ray's comment related to this: I suggest removing the language related to closed drainage basins and most of the language linking drainage type to drainage guidelines (maybe remove just the stemwall/pier/piling requirement). Given the very fla ... [1]

Commented [SD23]: Unlike Deltona this is a large portion of the City and so reviewer should apply the most stringent standards but not require unnamed studies.

Commented [JB24R23]: I think we discussed that a "closed drainage basin" doesn't necessarily apply to the City. There are more for land locked drainage basin ... [2]

Commented [SD25]: Add language to chapter 11 to address water quality issues with directing storm w ... [3]

(a) Type C drainage is discouraged on lots in Categories ~~4-6~~3 and 4 when the rear of the lot does not have sufficient outfall points. This is because many of these lots trap water and exacerbate existing nuisance conditions. Type "C" lot with no drainage outfall will require stem wall, pier, pile, walkout or similar construction, and shall have grading and drainage plans prepared by a Florida Licensed Professional Engineer

(b) A "A "Modified Type B" ~~Modified Type B~~" drainage with gutters directing roof drainage to the front of the lot, and ultimately to the roadside swale, is the preferred method of dealing with lots that slope away from a street where a standard Type "B" lot is not practical. A modified Type "B" lot with no drainage outfall will require stem wall, pier, pile, walkout or similar construction.

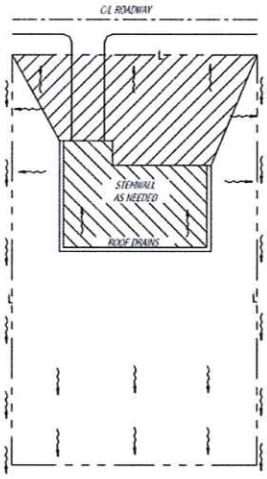
a. The modified "B" grading shall have at least the impervious roof area of the house, driveway and immediate front yard brought forward to the public right-of-way.

b. The grading transitions by forming a wedge from the foundation of the home to the corners of the lot.

c. In order to ensure that the entire impervious portion of the house drains to the front, roof drains are required over the entire house, manifolded to collection pipes that drain forward with positive outfall to the public right-of-way.

Commented [RS26]: Ray would have to make the determination that they will be required to do a modified type B. Is the information that we require them to put on the lot grading plan going to be enough to back up his decision? Some may want to fight the determination.

Commented [SD27R26]: I think this determination is self identifying. If they claim a Type A and they need more fill than code allows then theyy are really a B. If they claim a Type B but their breaking point it too close to the front than they are really a type C and the Modified Type B is triggered where appropriate.



MODIFIED "B"

BRINGS MOST IMPERVIOUS SURFACES FORWARD

~~B.A. Impervious Surface Ratio~~

~~(a) *Impervious surface* means those surfaces which do not absorb water. They consist of all buildings, parking areas, driveways, roads, sidewalks, any areas of concrete or asphalt and other surfaces not pervious to water. Including any hard surface that prevents or restricts the flow of water into the soil.~~

~~(b)(a) *Impervious surface, on-lot,* means the total amount of impervious surface which is present on a lot.~~

~~(c)(a) Impervious surface ratio means a measure of the intensity of land use which is determined by dividing the total area of all impervious surfaces on a site by means that portion of the lot landward of the mean high water line.~~

~~(d)(a) There shall be a maximum impervious surface ratio (ISR) of seventy (70) percent of the lot size for all single-family residential dwelling development regardless of the zoning district, except as established within the historic preservation districts and not within any master planned communities.~~

Commented [SD28]: I limited ISR to area landward of MHW to be consistent with lot coverage.

Commented [SD29]: Remove Sec. 28-160

Commented [JB30R29]: We may also want to flag this to be possibly revisited in the future if I can get funding to do a stormwater master plan update that could drill into what an appropriate ISR would be....

Commented [SD31]: I moved this to the Lots without a master stormwater plan section.

~~C.~~B. Swales

(a) Conveyance Swales (those with a positive slope to an outfall for drainage) shall be the preferred method for conveying stormwater runoff from residential lots to an appropriate outfall such as public rights-of-way or a stormwater management area.

(b) Retention swales (those that are essentially flat and do not provide drainage, they percolate runoff water) are only allowed when onsite storage of water is required.

(c) Protective swales shall be installed on all lots where the drainage flow pattern is directed toward the proposed dwelling and should generally function as a "conveyance swale" although some "retention" may be acceptable in limited areas around the structure.

(d) Swales shall be constructed using the following guidelines:

1. The preferred side slopes should be at least 4:1 (horizontal: vertical), however under no circumstances be steeper than 3:1 and only with City approval
2. Minimum desired (when feasible) depth of 1 foot measured from the swale bottom to the minimum top of bank elevation.
3. Conveyance swales shall be placed alongside property lines.
4. Protective swales must be placed between structure and drainage flow pattern directed towards the structure.
5. Sod all swales from top of slope to top of slope. Maintain and water sod until root system is established.
6. When possible, the lot line will be the centerline of the protective side lot drainage swales.

~~(c)~~

~~D.~~C. Retaining walls/Bulkheads

(a) Bulkheads are structural in nature and their primary purpose is to provide shoreline protection from waves while retaining upland soil.

(b) Retaining walls are structural in nature and their primary purpose is to hold back earth that would otherwise be unstable and prone to failure. There may be a significant risk to public health, safety and welfare if a retaining wall is improperly constructed.

(c) A landscape planter is decorative in nature and its primary purpose is to elevate a small amount of earth for a landscape planting bed. An elevated bed for a home vegetable garden (non-commercial) or a "tree well" is considered a Landscape Planter. A landscape planter cannot exceed 30 inches or will be considered a retaining wall.

(d) All bulkheads and retaining walls shall be designed, signed and sealed by an engineer registered in the State of Florida. Retaining walls used for proposed lots shall be designed, signed and sealed by an engineer registered in the State of Florida.

DRAFT

(e) All Bulkheads/ Retaining walls placed within Conservation Overlay Zones 1 and 2 shall be reviewed per Section 11-28. Issuance of building permits to determine if Planning and Zoning Board approval is required.

~~(f)~~ Retaining walls will be no closer than three feet from any property line and cannot impede the proposed drainage flow pattern.

Impervious

D. Driveways and other pervious materials must be a minimum of 3 feet from any property line except for points of ingress/egress.

E. Erosion control associated with lot grading plans shall meet the minimum standards mandated by the State of Florida and the National Pollutant Discharge Elimination System within the City. Approved Best Management Practices shall be employed during construction. Please reference the Florida Department of Environmental Protection's Florida Development Manual, and Florida Erosion and Sediment Control Inspector's Manual. The Florida Erosion and Sediment Control Inspector's Manual is available online ~~at~~ http://www.dep.state.fl.us/water/stormwater/docs/erosion.htm

F. Low Impact Development (LID) Stormwater Techniques

It is recommended that projects include at least two of the following low impact design concepts, which may be located anywhere on the project (including the front setback):

(a) Raised pier construction for homes (allowing for movement of stormwater and additional infiltration area)

(b) Rainwater harvesting (rain barrels, underground cisterns, and similar to assist in water conservation)

(c) Green roofs

(d) Bio-swales

(e) Rain gardens

(f) Pervious pavement(pervious concrete, pervious pavers, and/or other pervious pavements)

~~E.~~G.

~~F.~~H. Lots With an Approved Master Grading Plan

(a) The Proposed Lot Grading Plan shall be submitted for review. The builder shall propose lot grading and a finished floor elevation consistent with the approved Master Lot Grading Plan.

~~(b) If lot grading is proposed that is not consistent with the approved Master Lot Grading Plan, a revised lot grading plan shall be submitted for review that is signed and sealed by an engineer registered in the State of Florida.~~

~~G.~~I. Lots Without an Approved Master Grading Plan

(a) The maximum elevation of the fill on any lot shall be the lesser of a maximum of 1 foot above the highest adjacent grade or .5 feet above the current base flood elevation of the property based on the current FEMA Flood Insurance Rate Map.

(b) Fill within stem-wall foundations shall be allowed to exceed the base flood elevation as necessary.

(c) The grade shall fall to a minimum of 6 inches above existing or historic grade within the first 10 feet. The final grade along the property boundaries shall match that of the adjacent lot.

Commented [JB32]: We discussed the implications of property owners wanting to construct "flood walls" as a perimeter defense to flooding for their property. I'm not sure where we landed with that, but something to think about and/or discuss.

Commented [SD33R32]: I'm for 3 foot setback for any new construction of walls with the intent to hold back flood waters. We would have to define a flood wall and add it to the language in (f).

Commented [JB34]: I added this because the single family residential lots should be following best practices for erosion and sediment control to minimize the impacts to the City's stormwater system. We currently have been inspecting these for compliance with our NPDES permit, so I think it would be wise to add this to this section as well. But I'm open to input and discussion on this. I saw that Deltona had something similar included in their guidance. Most commonly, silt fence is used to prevent the sediment from running off the lot and into the street which typically ends up into the City's storm drain/system.

Commented [SD35R34]: This is a good add! Thanks Jessica!

Commented [SD36]: Could delete this one and add to chart as own category not requiring lot grading application

Commented [SD37]: For the rest if they supply engineered specs on cubic feet capacity they could add that amount of fill?

Commented [SD38]: Don't' know if we review these?

Commented [JB39R38]: I believe Development Review does look at the concept of the master drainage plan to make sure it meets requirements. There is typically lot grading plans identified for various lot types throughout the planned development. The SJRWMD definitely reviews these as well. But again its from the master planning perpsective to make sure the proposed development meets pre and post runoff requirements, water quality etc. The individual lots are NOT reviewed by our Department as that would be a single family residential lot. That I'm assuming is submitted to P&B? Also, they're supposed to be going through their CDD or HOA for approvals as well. The CDD and HOA has ... [4]

Commented [SD40]: Don't know if we would want to do this?

Commented [JB41R40]: I don't know that we can require this or not. That would be a question for Ray and Buddy. I think currently, these are not part of the Lot Grading Plan requirement because we exempted th ... [5]

Commented [SD42R40]: I think we have enough battles I just deleted it.

Commented [SD43]: New restrictions on fill

DRAFT

(d) Lots shall be graded with a minimum slope of 1% (1 ft/ 100ft) in accordance with Type A, B, or C grading pattern.

(e) Impervious Surface Ratio:

i. *Impervious surface* means those surfaces which do not absorb water. They consist of all buildings, parking areas, driveways, roads, sidewalks, any areas of concrete or asphalt and other surfaces not pervious to water. Including any hard surface that prevents or restricts the flow of water into the soil.

ii. *Impervious surface, on-lot,* means the total amount of impervious surface which is present on a lot.

iii. *Impervious surface ratio* means a measure of the intensity of land use which is determined by dividing the total area of all impervious surfaces on a site by means that portion of the lot landward of the mean high water line.

iv. *There shall be a maximum impervious surface ratio (ISR) of seventy (70) percent of the lot size for all single-family residential dwelling and duplex development regardless of the zoning district, except as established within the historic preservation districts and not within any master planned communities.*

~~(d)~~(f)

~~(e) Lots shall be graded with a maximum slope of 10% in accordance with Type A, B, or C grading pattern.~~

~~(f)(a) Swales shall be constructed using the following guidelines:~~

~~1. The preferred side slopes should be at least 4:1 (horizontal: vertical), however under no circumstances be steeper than 3:1 and only with City approval~~

~~2.1. Minimum desired (when feasible) depth of 1 foot measured from the swale bottom to the minimum top of bank elevation.~~

~~3.1. Conveyance swales shall be placed alongside property lines.~~

~~4.1. Protective swales must be placed between structure and drainage flow pattern directed towards the structure.~~

~~5.1. Sod all swales from top of slope to top of slope. Maintain and water sod until root system is established.~~

~~6. When possible, the lot line will be the centerline of the protective side lot drainage swales.~~

Commented [SD44]: I limited ISR to area landward of MHW to be consistent with lot coverage.

Commented [SD45]: Remove Sec. 28-160

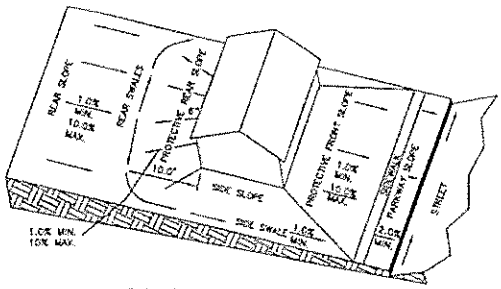
Commented [JB46R45]: We may also want to flag this to be possibly revisited in the future if I can get funding to do a stormwater master plan update that could drill into what an appropriate ISR would be....

Commented [JB47]: This may be pretty steep (10 ft/100 ft), not sure if we should set a maximum slope if we limit the fill that should resolve itself.

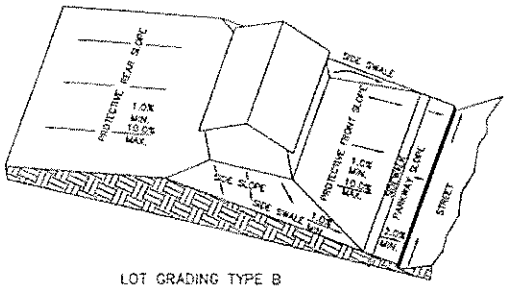
Commented [SD48R47]: I think this pertains more to Deltona than us so I deleted it.

Commented [SD49]: I moved this to the swale section above.

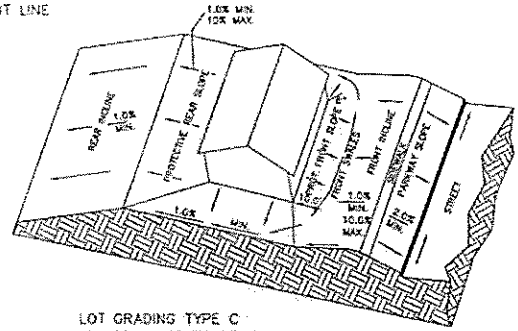
DRAFT



LOT GRADING TYPE A
ALL DRAINAGE TO STREET



LOT GRADING TYPE B
DRAINAGE TO FRONT & REAR LOT LINE



LOT GRADING TYPE C
ALL DRAINAGE TO REAR LOT LINE

Sec. 11-28. Issuance of building permits.

(a) The planning and zoning board shall review all applications for development in Conservation Overlay Zone 1; all applications for development in Conservation Overlay Zone 2, except as specified in subsection (b); and all applications for development in Conservation Overlay Zone 3, except as specified in subsection (c). Such approval by the planning and zoning board shall be after a public hearing as required by chapter 28.

(b) The planning and building division may issue permits for additions to existing structures, for construction of new secondary structures, such as fences, driveways, decks, patios, greenhouses, garages and sheds, and use permits for uses otherwise permitted to be conducted in these structures located in Conservation Overlay Zone 2 when no drainage into ~~the marsh~~ jurisdictional wetlands without a maintained or restored 25-buffer, no significant alteration of surface water hydrology will occur and native plant materials are preserved or replaced. The planning and building division may issue permits for the construction of new primary structures located in Conservation Overlay Zone 2 when the above conditions are met and when the subject property contains a seawall, bulkhead or rip rap shoreline, or is located within one hundred fifty (150) feet of existing development and the primary structure is located no closer to the marsh edge or to the mean high water line than are adjacent primary structures. In addition, such additions and new structures may not exceed the lesser of seventy-five (75) feet or seventy-five (75) percent of the lot width.

Commented [SD50]: Language added to protect water quality in response to keeping historic or natural drainage patterns into surface waters in **Sec. XX-3. – Lot Grading and Drainage Guidelines (A).**

(c) The planning and building division may issue permits for structures and uses otherwise permitted and located within Conservation Overlay Zone 3 provided that all healthy significant trees are retained on the site.

(d) Removal of a significant tree shall be approved by the planning and zoning board. All significant trees removed shall be replaced in accordance with the requirements of chapter 25.

(Code 1964, § 7-114; Ord. No. 96-02, § 1, 2-26-96; Ord. No. 09-17, § 1, 5-11-09; Ord. No. 19-03, § 1, 1-28-19)

~~**Sec. 28-160. Maximum impervious surface ratio (ISR) for all single family residential dwelling development.**~~

~~There shall be a maximum impervious surface ratio (ISR) of seventy (70) percent of the lot size for all single family residential dwelling development regardless of the zoning district, except as established within the historic preservation districts and not within any master planned communities.~~

~~(Ord. No. 21-26, § 2, 10-11-21)~~

Commented [SD51]: Replaced by **Sec. XX-3. – Lot Grading and Drainage Guidelines (B).**

DRAFT

Planning and Zoning Board

Planning Division Memorandum
Planning and Building Department

TO: Planning and Zoning Board

DATE: April 30, 2025

RE: Discussion and Recommendation Regarding the Required Update to the City's Water Supply Plan

The City of St. Augustine is required to update the adopted 2020 Water Supply Plan. The Water Supply Plan is part of the city's Infrastructure Element.

The requirement for a Water Supply Plan is embedded in Florida Statutes. All water management districts in the State of Florida have determined that portions of their districts will have insufficient supplies of water from traditional sources (typically groundwater) over the next years (20 years) to meet the demands of the growing population and the environment and agriculture needs. In order to ensure adequate water supplies, the Legislature has established a coordinated planning process between regional water supply plans prepared by the water management districts and required comprehensive plans prepared by local governments.

The city is within the St. Johns River Water Management District (SJRWMD) area. SJRWMD is made up of 18 counties. The water management districts are required to update their plans every five (5) years. The city is then required to update our plan within 18 months of the latest SJRWMD update. This update was completed in December of 2023.

The local government Water Supply Plan must incorporate the alternative water supply project or projects selected by the local government from those identified in the regional water supply plan and to adopt a work plan, covering at least a 10-year planning period, for building public, private, and regional water supply facilities, including the development of alternative water supply projects and conservation and reuse, which are necessary to serve existing and new development.

Attached you will find the city's adopted 2020 Infrastructure Goals, Objectives and Policies. Specific Water Supply Planning Goals, Objectives and Policies are found on pages 15-18. Also attached is the city's adopted Water Supply Plan Appendix of the Infrastructure Element. These documents are attached for your review and familiarity.

The city is in the process of working with SJRWMD staff to update our plan. The amended and updated city Water Supply Plan will be presented to the PZB at the June 3, 2025, regular meeting for your recommendation to the City Commission.

Thank you for your attention to this matter. If you have any questions or require additional information, please do not hesitate to call me at (904) 209-4320 or email at askinner@citystaug.com.

Amy McClure Skinner, AICP
Director
Planning and Building Department

City of St. Augustine, Comprehensive Plan 2040
Infrastructure Element, Goals, Objectives and Policies

City of St. Augustine Comprehensive Plan 2040

Infrastructure Element Goals, Objectives and Policies

Note: Unless indicated proposed Goals, Objectives and Policies replace previously adopted.

July 2020

Infrastructure Element

Goals, Objectives and Policies

Chapter 163.3177(6)(c) F.S.

Infrastructure Summary

The Infrastructure Element is a required comprehensive plan element under Florida's Local Government Community Planning Act (Chapter 163, Florida Statutes). The Infrastructure Element must evaluate the current status and the future ability of the city to provide essential facilities for the population of the city and those living in the city's service area. The essential services include sanitary sewer, solid waste collection, potable water, and stormwater management. Additionally, the element must look at the issues of water supply planning, perils of flood and sustainability, and aquifer recharge. To this end, the Infrastructure Element contains the water supply plan, perils of flood and sea level rise planning, and land use planning related to the provision of services and a set of Goals, Objectives and Policies.

The Infrastructure Element serves as a guide for the provision of essential services. This includes encouraging an efficient pattern and location of future land uses through the relationship between land use and the provision of facilities and services. This relationship should encourage compact, efficient, infill and redevelopment within the urban area.

Order of Issues and Page References

Sanitary Sewer	**1-5**
Solid Waste	**6-8**
Potable Water	**9-14**
Water Supply Planning	**15-18**
Stormwater Management	**19-22**
Perils of Flood and Sustainability	**23-24**
Natural Groundwater Aquifer Recharge	**25**
Appendix A Water Supply Work Plan	**27-34**

Infrastructure Element: Sanitary Sewer, Solid Waste, Potable Water, Water Supply Planning, Stormwater Management, Perils of Flood and Sustainability, and Natural Groundwater Aquifer Recharge Element

Goals, Objectives and Policies

Chapter 163.3177(6)(c) F.S.

INFRA Goal 1 Sanitary Sewer

To provide an effective system of wastewater collection, transmission, treatment and disposal to meet the needs of all City residents and non-residential establishments within the City of St. Augustine and its utility service area while protecting the environment and public health.

Maintain Level of Service

INFRA Objective 1.1

Based upon adopted level of service standards, the City shall annually adopt programs and activities to facilitate implementation of a wastewater utility to serve existing and new development.

INFRA Policy 1.1.1

The City's adopted level of service for sanitary sewer capacity shall be 220 gallons per day per dwelling unit.

INFRA Policy 1.1.2

All improvements and/or additions to sanitary sewer facilities shall be compatible and adequate to meet the adopted level of service standard.

INFRA Policy 1.1.3

All proposed large scale land use plan amendments shall require an analysis of the impacts to the adopted level of service standard and existing sanitary sewer facilities.

INFRA Policy 1.1.4

All expansions and other improvements of commercial and industrial uses that increase the demand on public infrastructure and require permitting shall comply with the adopted levels of service standard.

INFRA Policy 1.1.5

The City shall comply with bond covenants, if any, to ensure the maintenance and operations of facilities and to provide recommendations for system maintenance and improvements.

INFRA Policy 1.1.6

The City shall encourage continuing education of operating staff to optimize sanitary sewer maintenance and operation processes.

INFRA Policy 1.1.7

Sanitary sewer facilities shall be replaced, and existing deficiencies shall be corrected based upon the following priorities:

- Any project correcting an immediate threat to the health, safety or welfare of the City's residents will receive priority over the expansion of a facility or the correction or replacement of a non-threatening facility.
- Any project that will correct an existing deficiency will receive priority over a project to expand the system.

Future Sanitary Sewer System

INFRA Objective 1.2

The City shall ensure that the City's sanitary sewer collection, transmission, treatment and disposal system is adequate to service the future land uses within the City's utility service area.

INFRA Policy 1.2.1

The City will inform St. Johns County of all changes in its utility service area for utilities and will request that the county inform the City of all proposed development within the utility service area.

INFRA Policy 1.2.2

New residences, residential subdivisions and commercial developments shall be required to connect to the City's central sewer system, where available.

INFRA Policy 1.2.3

The City shall implement the Five-Year Schedule of Capital Improvements to address existing deficiencies and prepare for future development and shall update the schedule annually during the City's annual budget process.

INFRA Policy 1.2.4

The City shall coordinate utility and transportation planning efforts to take advantage of the most economical construction and maintenance costs possible when installing, repairing and/or replacing sewer facilities and roads.

INFRA Policy 1.2.5

The City shall continue to track available capacities and determine compliance with minimum sanitary sewer level of service standards.

INFRA Policy 1.2.6

The City shall review and update the system data with each new development to indicate the most current capacity conditions.

INFRA Policy 1.2.7

The City shall not extend sanitary sewer facilities beyond its utility service area unless:

- It is determined that there is adequate capacity for servicing the areas of projected growth within the City's utility service area while still maintaining adequate excess capacity; and
- The developer or the residents requesting service pay for all utility extensions.

Maximize Existing Facilities

INFRA Objective 1.3

The City shall maximize the use of existing sanitary sewer facilities within its utility service area and shall promote compact, efficient growth patterns.

INFRA Policy 1.3.1

The City shall seek to maximize the use of existing sanitary sewer infrastructure to minimize urban sprawl and shall require new development to pay for the placement of infrastructure necessary to service the development, thus making infill development more cost effective.

INFRA Policy 1.3.2

The City's land development regulations shall incorporate regulations to require connection to the City's sanitary sewer system, once it becomes available, for existing development within the utility service area currently using septic systems.

INFRA Policy 1.3.3

When existing central sanitary sewer service is determined to be unavailable to new development within the City's utility service area, the City shall require, if feasible the new development to extend the central sewer system at the developer's expense, coordinate with St. Johns County or to construct private wastewater treatment plants when feasible to serve the subject property.

INFRA Policy 1.3.4

The City shall maintain adequate sanitary sewer user rates and fees to ensure funding is available for expansion, repair and/or replacement of collection and transmission systems.

INFRA Policy 1.3.5

The City shall review sewer user rates to ensure that the fees charged cover the cost of supplying the service.

INFRA Policy 1.3.6

The City shall encourage continuing education of its utilities operating staff to optimize the sanitary sewer utility's maintenance and operation processes.

Septic Tanks

INFRA Objective 1.4

The City shall require that existing residences and non-residential establishments served by septic systems connect to the central sewer system at such time that repair or replacement of an existing septic tank and drain field system is needed, or at such time that the City determines a concentration of septic systems is causing a negative impact to natural environmental systems where service is available.

INFRA Policy 1.4.1

Within the planning timeframe, the City shall identify and map those areas within the City's utility service area served by septic systems, and it shall prioritize areas that may require central sewer service based on soil unsuitability, density and environmental concerns.

INFRA Policy 1.4.2

The City will routinely coordinate information between the City, the St. Johns County Health Department and the St. Johns County Building Department regarding failing septic tanks within the City.

INFRA Goal 2 Solid Waste

To provide efficient and safe solid waste disposal facilities and collection services on a regular basis for all City residents, commercial and industrial establishments within the City of St. Augustine while protecting the environment and public health.

Solid Waste Disposal

INFRA Objective 2.1

The City shall coordinate with St. Johns County and other resources to ensure implementation of an integrated solid waste management system that focuses on the proper management of solid waste, conservation of resources and responsible management of landfill capacity.

INFRA Policy 2.1.1

The City's minimum level of service for municipal solid waste shall be 6.75 pounds per person per day, which will be utilized to plan for future demand.

INFRA Policy 2.1.2

The City shall continue to utilize the transfer station in St. Johns County for final disposal of solid waste items not recycled or composted through the City system, unless other acceptable alternatives are mandated or necessitated.

INFRA Policy 2.1.3

The City shall continue to coordinate solid waste disposal efforts with St. Johns County to ensure:

- The City of St. Augustine is allocated a proportional share of capacity in the landfill-operated disposal facilities;
- Reduction of solid waste disposal levels will continue to occur through cooperative recycling programs;
- Assistance is continued in the management of hazardous waste according to mandated state regulations;
- Compliance with the Florida Solid Waste Management Act of 1988 will continue to be accomplished.

Collection

INFRA Objective2.2

The City shall continue to provide for solid waste collection services to City residents, commercial and industrial establishments throughout the planning timeframe.

INFRA Policy 2.2.1

Solid waste collection shall be mandatory for all residential and non-residential land uses within the City.

INFRA Policy 2.2.2

The City shall continue to evaluate cost-saving measures in providing solid waste collection services throughout the planning timeframe.

INFRA Policy 2.2.3

Throughout the planning timeframe, the City shall continue to monitor complaints regarding residential and non-residential solid waste collection to ensure that the most efficient, orderly, sanitary and environmentally sound service is being provided.

Recycling

INFRA Objective 2.3

The City shall require a reduction in municipal solid waste final disposal in landfill facilities by maintaining and promoting a recycling program.

INFRA Policy 2.3.1

The City shall continue to have a collection process in place for curbside pickup of acceptable recyclables.

INFRA Policy 2.3.2

The City shall continue to have a collection process in place for curbside pickup of yard waste.

INFRA Policy 2.3.3

The City shall continue to develop educational programs for the general public and solid waste professionals to encourage waste reduction.

INFRA Policy 2.3.4

The City shall coordinate with St. Johns County with respect to solid waste management and waste recycling programs.

Hazardous Waste

INFRA Objective 2.4

The City shall coordinate with St. Johns County and the Northeast Florida Regional Council to monitor and control the disposal of hazardous wastes in accordance with state law.

INFRA Policy 2.4.1

The City shall require that any hazardous waste generators within the City properly manage their hazardous wastes in conformance with mandates of the Federal Resource Conservation and Recovery Act and other applicable laws.

INFRA Policy 2.4.2

The City shall provide applicable employee training for inspection, identification and disposal of hazardous waste materials.

INFRA Goal 3 Potable Water

To plan for and assure an adequate supply of excellent quality potable water to meet the needs of all residents and non-residential establishments within the City of St. Augustine and within the City's utility service area throughout the planning timeframe.

Maintain Level of Service

INFRA Objective 3.1

Based upon the adopted level of service standard, the City shall adopt programs and work plans in an effort to maintain levels of service.

INFRA Policy 3.1.1

The City's level of service (LOS) standard for potable water supply shall be 156.9 gallons per day per dwelling unit at a minimum pressure of 20 psi.

INFRA Policy 3.1.2

The City shall repair potable water supply facilities as required to maintain the adopted LOS standard.

INFRA Policy 3.1.3

The City shall review water fee methodology and user rates to ensure adequate funding for treatment, storage and distribution facilities.

INFRA Policy 3.1.4

All improvements and/or additions to potable water facilities to correct deficiencies shall comply, at a minimum, with standards recognized and approved by the Florida Department of Environmental Protection (FDEP) and shall be adequate to meet the adopted LOS standard.

INFRA Policy 3.1.5

All proposed large scale land use amendments shall require an analysis of the impacts to the adopted LOS standard and the analysis of adequate planned water supply sources and facilities.

Future Potable Water Needs

INFRA Objective 3.2

Based on population projections and analysis in the City's Water Supply Facilities Work Plan, the City shall ensure the supply and treatment of safe potable water through the planning timeframe to meet the adopted LOS standard as well as the requirements of the Water Supply Facilities Work Plan and the SJRWMD Regional Water Supply Plan as updated.

INFRA Policy 3.2.1

Based on the adopted LOS standard, the City will develop capacity to meet future demands concurrent with new development.

INFRA Policy 3.2.2

The City's Public Works and/or Utilities Department(s) shall continue to pursue alternative funding sources and participate with adjacent jurisdictions to plan and construct efficient potable water systems. Specifically, the City shall pursue funding from the St. Johns River Water Management District (SJRWMD) water protection and sustainability program and the FDEP clean water state revolving fund.

Service Area Development

INFRA Objective 3.3

The City shall prioritize the extension of existing potable water facilities and the construction of new facilities within its utility service area in a manner that discourages leapfrog development and urban sprawl.

INFRA Policy 3.3.1

The City shall encourage and require, as needed, the interconnection and looping of existing and proposed segments of the potable water distribution system.

INFRA Policy 3.3.2

The City shall rehabilitate and reuse existing public water facilities as an alternative to new construction when rehabilitation and reuse is cost-effective.

INFRA Policy 3.3.3

The City shall continue to maximize the use of the existing public water treatment facilities connected to the central water system.

Potable Water Conservation

INFRA Objective 3.4

The City shall ensure that its potable water system conserves water and reduces the per capita demand to the minimum possible rate through the planning timeframe consistent with the Water Supply Facilities Work Plan. This shall be accomplished through the implementation of water conservation techniques and programs and through the establishment and use of non-potable water supplies for uses other than drinking water.

INFRA Policy 3.4.1

The City shall encourage continuing education of its utilities operating staff to optimize the potable water utility's maintenance and operation processes.

INFRA Policy 3.4.2

The City shall require the use of water-conserving plumbing fixtures in all new development and shall consider the use of incentive programs to encourage retrofits for existing buildings.

INFRA Policy 3.4.3

The City shall comply with conservation efforts outlined in the most recently issued consumptive use permit from the SJRWMD.

INFRA Policy 3.4.4

Within the planning timeframe the City shall implement an employee and customer water-conservation education program.

Landscape Irrigation and Florida-Friendly Design Standards

INFRA Objective 3.5

The City shall encourage or require, depending on standards established in the Land Development Code, low-impact landscape and irrigation system design to conserve the City's potable water resources.

INFRA Policy 3.5.1

Irrigation systems shall be designed in a manner that considers soil, slope and other site characteristics in order to minimize water waste, including overspray, the watering of impervious surfaces and other non-vegetated areas, and off-site runoff, and they shall be designed to provide the following where feasible:

- Use of the lowest water quality feasible;
- Matching precipitation rates for sprinklers and all other emitters in the same water-use zone, except that the design may specify micro-irrigation emitters to meet the requirements of individual plants;
- Controller systems shall be required, when feasible, to provide the following minimum capabilities;
    - o Ability to be programmed in minutes, by day of the week, season and time of day;
    - o Ability to accommodate multiple start-times and programs;
    - o Automatic shut-off after adequate rainfall;
    - o Ability to maintain operations during power outages for a minimum of three days;
    - o Operational flexibility to meet year-round water conservation requirements and temporary water shortages; and
    - o Ability to minimize free-flow conditions in case of damage or other mechanical failure.

Fire Protection Capabilities

INFRA Objective 3.6

The City shall provide adequate delivery and distribution of potable water to meet fire protection demand within the utility service area.

INFRA Policy 3.6.1

The City shall continue to monitor, evaluate, repair and replace the existing water delivery and distribution system to ensure the system can deliver needed gallon per minute flows to meet fire protection demands.

INFRA Policy 3.6.2

The City shall maintain an active water system and fire hydrant mapping and numbering program.

Protection of Groundwater from Contamination

INFRA Objective 3.7

The City shall perform specific actions during the planning timeframe to protect water quality by preserving groundwater from contamination.

INFRA Policy 3.7.1

The City shall meet or exceed all federal and state water facility regulations that provide for the protection of the environment.

INFRA Policy 3.7.2

The City shall coordinate with St. Johns County to maintain a comprehensive wellhead protection program to protect current and future public water supply needs from potential adverse effects from incompatible land uses and activities:

A. Wellfield protection areas shall be identified surrounding each public potable water supply well or wellfield in/for the City.
B. For each wellfield protection area, the land development regulations shall specify the size, location, and applicable restrictions of protection zones, including restrictions on activities associated with hazardous materials, septic tanks, and well construction, modification and closure.

INFRA Policy 3.7.3

Wellfield protection areas have been established, however, at a minimum, the following standards shall apply in the areas surrounding such wells:

A. Each public water supply well shall be protected by a 1000 foot zone of exclusion within which no new development approvals will be granted.
B. The following new uses or expansions of existing uses shall be prohibited in the vicinity of each public water supply well:
    1. Hazardous materials manufacturing, use or storage; and
    2. Septic systems.

Intergovernmental Coordination

INFRA Objective 3.8

The City shall coordinate with adjacent jurisdictions and applicable state and federal agencies to protect the quality and quantity of its water sources.

INFRA Policy 3.8.1

The City shall meet with adjacent governments, private utilities, and state and federal agencies to coordinate the provision of potable water services and service area boundaries.

INFRA Policy 3.8.2

The City shall coordinate with adjacent jurisdictions and applicable regional, state and federal agencies to educate the community about conservation, sustainable use and protection of the quality and quantity of its water sources.

Maximizing the Use of Existing Public Facilities

INFRA Objective 3.9

The City shall efficiently maximize the use of existing potable water facilities.

INFRA Policy 3.9.1

The City's Public Works and/or Utilities Department(s) shall identify, develop and implement a sustainable potable water production, treatment and distribution system by using best practices related to water quality standards.

INFRA Policy 3.9.2

The City shall maintain and update a GIS map of the entire potable water system to maintain the potable water system and to anticipate and facilitate system repair.

INFRA Policy 3.9.3

The City's Public Works and/or Utilities Department(s) shall maintain accurate records of well-water production flows, maintenance, chemical usage and other items related to efficient ongoing water service operation.

INFRA Goal 4 Water Supply Planning

To recognize that the water supply is a limited resource and protect the water supply to ensure that it is sustainable for all users in a manner that maintains sufficient quality and quantity for current and future demands.

INFRA Objective 4.1

The City shall cooperate and participate with the FDEO, SJRWMD, or any other local or regional entity in order to plan and develop available water supplies including alternative water supplies to meet future water needs.

INFRA Policy 4.1.1

The Water Supply Facilities Work Plan is adopted and included as Appendix A in this element of the City's Comprehensive Plan. The City shall make appropriate changes to the Comprehensive Plan, Land Development Code, and other policies and regulations in order to implement the Work Plan.

INFRA Policy 4.1.2

The City shall pursue the following water supply strategies consistent with its Water Supply Facilities Work Plan and with the goals, objectives and policies in this element and other elements of the comprehensive plan:

- Continue to safely maximize groundwater supplies consistent with the most recently approved SJRWMD consumptive use permit constraints.
- Explore the use of alternative water supply sources.
- Continue to implement the water conservation strategies in this element to reduce system-wide potable water demand through the 2040 planning timeframe.

INFRA Policy 4.1.3

The City will maintain a Water Supply Facilities Work Plan that is consistent with the SJRWMD Regional Water Supply Plan by updating the City's Work Plan within 18 months of an update to the District's Regional Water Supply Plan.

INFRA Policy 4.1.4

The City shall continue to explore the development of available water supplies including alternative water supplies to meet future water needs.

INFRA Policy 4.1.5

The City's land development regulations shall encourage all new development to be designed in accordance with the limitations of the natural environment and the conservation of water resources including the use of infill and redevelopment, attached dwelling units and other innovative land development techniques to decrease water use.

These techniques shall include, but not be limited to the following:

- preservation of native vegetation on site;
- use of xeriscaping and/or drought resistant plant materials (including preservation of existing native vegetation) for new development and redevelopment;
- limitation of the amount of impervious surface (such as parking areas);
- water reuse for irrigation purposes;
- use of water saving devices and plumbing fixtures and encourage retrofitting of water saving devices and ultra-low flow fixtures;
- implementation of water loss prevention programs;
- encourage the use of lower quality sources of water first including stormwater, and other reuse options; and
- maintain a base rate for water usage, as well as, a conservation billing rate structure.

INFRA Policy 4.1.6

The City shall develop and adopt a water conservation program consistent with any Consumptive Use Permit (CUP) stipulations and requirements to decrease demand placed on groundwater resources within the city limits.

INFRA Policy 4.1.7

The City shall encourage low water use landscape for both residential and commercial development.

INFRA Policy 4.1.8

The City shall enforce regulations within the Land Development Code to protect environmentally sensitive waterways and wetlands through the establishment of policies limiting development and encouraging enhancement of these areas.

INFRA Policy 4.1.9

The City shall coordinate with the FDEO, SJRWMD, and any other regional or local entities to evaluate additional water supply sources or alternative water recovery techniques when determining new or expanded facility needs within the City's potable water service area. These additional sources may include, but shall not be limited to: reuse, surface water, stormwater recovery, reverse osmosis, membrane softening, and desalinization.

INFRA Objective 4.2

Through appropriate regulation by and coordinated with the SJRWMD, the Department of Environmental Protection (FDEP), outlined in the City of St. Augustine Water Supply Facilities Work Plan, and land development regulations the City shall protect the function of natural groundwater including the Floridan and Surficial Aquifer Recharge Areas, to prevent the contamination of groundwater, and to extend the life span of the City's aquifers through water conservation.

INFRA Policy 4.2.1

The City shall continue to expand and explore water conservation efforts in conjunction with the FDEO, SJRWMD, and any other regional or local entities to continue to maintain a low per capita consumption of potable water.

INFRA Policy 4.2.2

The City shall evaluate the feasibility and/or opportunities to increase treatment for better quality effluent that may be reused.

INFRA Policy 4.2.4

The City shall coordinate with the SJRWMD to ensure that any aquifer recharge areas are protected and managed to preserve the quantity and quality of groundwater. Such groundwater sources shall be managed to the extent possible to support the present and future City population and proposed economic development opportunities while protecting the City's natural systems.

INFRA Policy 4.2.5

The City shall require monitoring of saltwater intrusion, chloride levels and water quality parameters as withdrawals and discharges are monitored.

INFRA Policy 4.2.5

The City shall map both the public and private wells in the City utilizing FDEP's, SJRWMD's and the Health Departments data files.

INFRA Policy 4.2.6

The City shall work with the SJRWMD to develop a Wellfield Protection Area (WPA) map. This map shall include, but shall not be limited to, thefollowing:

- The location of existing public wells;
- The proposed location of future public wells; and
- Potential conflicts between existing and future land uses and public wellfield protection areas.

INFRA Policy 4.2.7

Free-flowing wells in the City shall be identified and plugged by the following measures:

- The City will coordinate with the St. Johns County Health Department in an effort to work with the SJRWMD to identify free-flowing wells and to recommend measures to plug the wells.
- Through land development regulations, the City shall require new developments to repair or plug all free-flowing wells located within the boundaries of a proposed development as a condition to the development approval.
- The City will coordinate with the St. Johns County Health Department in an effort to continue the SJRWMD's free flowing well abandonment program.

INFRA Policy 4.2.8

The City shall establish a mechanism to preserve and protect the SJRWMD's designated Surficial and Floridan Aquifer Recharge Areas. Such mechanisms shall, include, but not be limited to, identifying appropriate measures and land uses which protect the function of the City's recharge areas and limit the amount of impervious surface area. The City will work with the SJRWMD and St. Johns County to educate the public on major groundwater issues of concern in the City.

INFRA Objective 4.3

As part of the annual update of the Capital Improvements Element the projects and associated funding sources and estimated costs related to the Work Plan will be further evaluated and considered during the budget/capital planning process and development of the Five-year Capital Improvements Plan.

INFRA Policy 4.3.1

As part of the fee structure review process the City should consider the necessary conservation efforts related to water supply in revising any water and sewer rates, impact fees and other charges.

INFRA Policy 4.3.2

The City shall develop a billing rate structure which benefits users whose demand on the groundwater resources is below the per capita average.

INFRA Goal 5 Stormwater Management

Assure the provision of stormwater management facilities that maximize capacity and use of existing facilities: protect public health and safety; promote aquifer recharge; fulfill requirements of the National Pollutant Discharge Elimination System (NPDES) and Total Maximum Daily Loads (TMDL) mandates to ensure environmental quality; and provide the adopted level of service.

Correct Existing Deficiencies

INFRA Objective 5.1

Within the planning timeframe, the City shall work towards correcting any facility deficiencies to meet future facility needs.

INFRA Policy 5.1.1

Within two (2) years of the adoption of the updated Comprehensive Plan, the City shall update the stormwater master plan that includes an inventory of existing facilities and establishes priorities for stormwater system replacements, ensuring correction of existing drainage facility deficiencies and providing for future facility needs.

INFRA Policy 5.1.2

The City shall utilize the stormwater master plan in the preparation of the annual budget to correct existing deficiencies.

INFRA Policy 5.1.3

The City shall implement improvements adopted in the Five-Year Schedule of Capital Improvements to correct existing stormwater management facilities deficiencies.

Stormwater Facilities Capacity

INFRA Objective 5.2

The City shall maximize the use of existing stormwater management facilities and require new development to construct facilities to achieve and maintain adopted stormwater management level of service standards that fulfill NPDES and TMDL mandates for stormwater quality and quantity.

INFRA Policy 5.2.1

The City shall require new development to provide adequate legal mechanisms for stormwater system maintenance and conveyance.

INFRA Policy 5.2.2

Based on the 2013 Master Stormwater Plan, the Stormwater LOS includes:

- Local roads shall be passable for the 5-year/24-hour design storm (6.3 inches). This means that proposed future projects should aim to have at most 0.5 feet of flooding for this scenario. This depth is considered a safe depth for travel by small size cars.
- Arterial and collector roads shall be passable for the 50-year/24-hour design storm (11 inches). This is particularly relevant to emergency vehicles that need to be able to reach residents in the event of a major flood or evacuation scenario. The maximum depth of flooding for safe transit of vehicles is 0.5 feet also, as stated for local roads.
- Structures shall not flood up to the 100-year/24-hour design storm (12.8 inches).
- Design tidal condition set at 2.2 feet NAVD, which is equivalent to the 1-year Stillwater condition.

This may be revised based on the next update of the Stormwater Master Plan.

INFRA Policy 5.2.3

New developments shall design stormwater management systems to meet the rules and criteria established by the City of St. Augustine, the St. Johns River Water Management District (SJRWMD), the Florida Department of Transportation (FDOT) and St. Johns County, as applicable.

INFRA Policy 5.2.4

The City shall coordinate with St. Johns County and SJRWMD to encourage maintenance of conveyance and treatment features.

INFRA Policy 5.2.5

At a minimum, the existing stormwater management systems and current levels of service shall be maintained. The City shall achieve and maintain adopted stormwater management level of service as identified in the Stormwater Master Plan, as amended.

Development Impacts

INFRA Objective 5.3

The City shall maintain high water quality by protecting the functions of aquifer recharge and natural drainage features from impacts of new development and redevelopment activities.

INFRA Policy 5.3.1

All new development and redevelopment shall provide stormwater retention, infiltration and/or wet or dry detention systems.

INFRA Policy 5.3.2

To the maximum extent feasible, development and redevelopment in the City shall reduce adverse impacts of stormwater on natural drainage features by mimicking the natural hydrology of the project site and its surroundings. The land development code shall require that, to the largest extent possible, natural systems are utilized in lieu of structural alternatives.

INFRA Policy 5.3.3

The City shall review detailed calculations for new projects prepared by a registered professional engineer which show that retention and detention will be accomplished to meet the adopted level of service, that drainage from new development will not adversely affect the City's natural drainage features, and that there will be no negative impacts to downstream water quality or quantity.

INFRA Policy 5.3.4

The City's land development regulations shall require that proposed stormwater systems have a negligible impact on adjacent native vegetation and/or wetlands and require mitigation where applicable.

INFRA Policy 5.3.5

Stormwater treatment shall be required to serve the development through a system that is site-specific. Regardless of the area served, the stormwater treatment system must provide a level of treatment that meets the requirements of the state, the City of St. Augustine and the SJRWMD.

INFRA Policy 5.3.6

The City shall require erosion and sediment control practices that protect water bodies, wetlands and watercourses from siltation during stormwater facilities construction activities.

INFRA Policy 5.3.7

To improve the aesthetics of detention and retention facilities, where possible, the City shall discourage designs that require fencing while encouraging the following:

- Use of littoral zones within wet ponds to improve the aesthetics of the pond.
- Use of curvilinear ponds in lieu of rectilinear ponds.
- Use of water-tolerant plant species within dry ponds.
- Any SJRWMD or other applicable requirements will be taken into consideration.

Intergovernmental Coordination

INFRA Objective 5.4

The City of St. Augustine shall educate citizens and coordinate with all applicable jurisdictions to address stormwater issues of mutual concern and to provide adequate levels of service.

INFRA Policy 5.4.1

The stormwater master plan process will include review of the plan by affected citizens and City advisory committees.

INFRA Policy 5.4.2

The City shall maintain a complaint monitoring system to log complaints and initiate work orders for corrective actions.

INFRA Policy 5.4.3

The City will support the SJRWMD's programs and stormwater regulations.

INFRA Policy 5.4.4

The City shall coordinate with St. Johns County and SJRWMD to encourage maintenance of conveyance and treatment features.

INFRA Policy 5.4.5

The City shall educate and inform citizens of their responsibility regarding maintenance and protection of stormwater collection systems.

INFRA Goal 6 Perils of Flood and Sustainability

Recognize the potential impacts of sea level rise and associated environmental changes that have the potential to affect the quality of life, sense of place, and ability to sustain an expectation of a lifestyle familiar to the citizens of St. Augustine, visitors, and future development within the coastal region.

INFRA Objective 6.1

The city must coordinate with local, state, and federal agencies related to addressing the potential impacts of sea level rise.

INFRA Policy 6.1.1

It is recommended that the city continue to pursue funding support from the United States Army Corps of Engineers (USACOE) for the Back Bay Feasibility Study.

INFRA Policy 6.1.2

It is recommended that the City continue to pursue cost-share funding to protect the Wastewater Treatment Plant during tropical events in excess of the 1% or 100-year annual chance event.

INFRA Objective 6.2

The city must establish feasible parameters that address the impacts of sea level rise.

INFRA Policy 6.2.1

It is recommended that protection for nuisance flooding be for current conditions plus 1.5 feet of sea level rise.

INFRA Policy 6.2.2

It is recommended that the tide check valve capital improvement programs continue to be funded at least at the current level.

INFRA Policy 6.2.3

It is recommended that protection for the 1% or 100-year annual flood be a two-step process, with the first step being protection to an elevation of 7.0 feet, with adaptable designs capable of raising the structures for higher levels of protection when complete protection at the 7.0 feet elevation is achieved.

INFRA Policy 6.2.4

It is recommended that the City continue to fund Stormwater, Utility and Paving capital improvement programs.

Sustainable Stormwater Management Strategies

INFRA Objective 6.3

The City shall encourage the use of sustainable, low impact development (LID) strategies to address stormwater management for developments ranging from individual building sites, to subdivisions to large planned developments.

INFRA Policy 6.3.1

The City shall coordinate with local, regional, state and federal agencies to provide educational materials and forums to the public and the development community on the value and benefits of sustainable stormwater management facilities design.

INFRA Policy 6.3.2

For new construction or redevelopment of City buildings and facilities, the City shall utilize LID principles to the extent practicable to address stormwater management needs and to model innovative techniques:

- Manage stormwater as close to its origin as possible by using many small-scale LID techniques.
- Create a site design that slows surface flows and increases the amount of time stormwater flows over the site.
- Increase the reliability of the stormwater system by using multiple, redundant stormwater controls.
- Integrate stormwater controls into the design of the site and use the controls as site amenities.
- Reduce the reliance on traditional collection and conveyance stormwater practices.

INFRA Policy 6.3.3

The City shall incorporate strategies, site development techniques, engineering solutions, and best practices when updating land development regulations to permit innovative LID techniques in the design of stormwater management facilities for development and redevelopment sites including, but not limited to the following:

- Bioretention cells or swales (also known as rain gardens);
- Cisterns and rooftop rainwater harvesting;
- Permeable concrete pavers or pavement.

INFRA Goal 7 Natural Groundwater Aquifer Recharge

To provide, maintain and protect the Floridan Aquifer to ensure that recharge of the natural groundwater aquifer occurs in a manner that maintains sufficient quality and quantity of the public water supply to meet current and future demands.

Natural Recharge Protection and Conservation

INFRA Objective 7.1

The City of St. Augustine shall coordinate with other agencies and continue to encourage the preservation of natural recharge to the City's groundwater resource and conservation of its potable water sources.

INFRA Policy 7.1.1

The City shall coordinate with St. Johns County, the SJRWMD and other state and federal agencies in the education of residents and business owners on water conservation and the protection of groundwater.

INFRA Policy 7.1.2

At a minimum, the City shall adhere to regulations, and encourage other jurisdictions to adhere to the adopted regulations by the SJRWMD and the state to protect areas of high aquifer recharge.

Appendix A

City of St. Augustine statutory Water Supply Facilities Work Plan adopted as part of the July 2020 update of the City's Comprehensive Plan.

Infrastructure Element
Appendix A, Water Supply Facilities Work Plan

Infrastructure Element

Appendix A

City of St. Augustine Water Supply Facilities Work Plan

(2020-2030)

Prepared By:

City of St. Augustine
Planning and Building Department

July2020

Note: Unless indicated proposed Goals, Objectives and Policies replace previously adopted.

Introduction

The purpose of the City of St. Augustine Water Supply Facilities Work Plan (Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within the City's jurisdiction and water service area. The Work Plan planning period of 2020-2030 was determined after a review of the following factors: (a) the existing consumptive use permit will expire in 2028; and (b) the comprehensive plan's planning period goes until 2040. At a minimum, it will be necessary to update this document prior to the end of the planning period, and/or within 18 months after the St. Johns River Water Management District (SJRWMD) Regional Plan is updated.

In addition, in accordance with Section 163.3177(6)(c), and Section 163.3177(4)(a), F.S., the City must ensure coordination of its comprehensive plan with the plans of SJRWMD and St. Johns County. Therefore, if SJRWMD updates the North Florida Regional Water Supply Plan (NFRWSP) and actually impacts the City, it will be necessary to update the City's Work Plan. The City's Infrastructure Element (INFRA Policy 4.1.3) contains enabling language to ensure coordination with SJRWMD's plans.

Potable Water Supplier(s) and Service Agreements

Potable and Non-potable Water Supplier(s) Information

The City of St. Augustine is the only entity that provides potable water service within the City limits. In addition, the City does provide potable water service to a portion of unincorporated St. Johns County adjacent to the city limits. The City is financially responsible for capital improvements related to the provision of services within its service area.

There are no non-potable water service providers within City limits. The City does not currently provide non-potable water service. The City researched the feasibility of providing reclaim water, but the City determined that it is not feasible at this time.

The attached figure, Figure 1, contains a map illustrating the City limits and the potable water service area.

Domestic Self-Supply (DSS)

Because of the urban and fairly, compact development pattern of the City of St. Augustine there are very few properties not on the city sewer utility. Most all of the residential and commercial properties are on city water and sewer service.

Only a small portion of the City is not serviced by sanitary sewer. This relatively small area, much like the entire City of St. Augustine, is fairly built-out. According to the St. Johns County Health Department, no new septic tank permits have been issued in almost three (3) years in St. Augustine. According to the City's Planning and Building Department, no building permits have been issued

in almost three (3) years for properties that cannot be serviced by sanitary sewer. Additionally, the small portion of the City not serviced by sanitary sewer is within the Astatula soil classification, which is relatively suitable for septic systems.

The City would like to reduce the number of properties on septic systems over the course of the planning timeframe. It is anticipated that as environmental circumstances change, and systems begin to fail properties will have to "hook-up" to the sanitary sewer system. But for planning purposes for this Water Supply Plan it is assumed that no notable changes to the number of properties on septic systems will occur. It is assumed that the same trend will continue over the planning period. No new development has required a septic system, any recent development has included city sanitary sewer service.

Water Supply Agreements

Pursuant to a longstanding interlocal agreement, the City is authorized to provide potable water and sanitary sewer to a portion of unincorporated St. Johns County, and within the City's service area. Based on the agreement(s), the City has the right to provide potable water and sanitary sewer to those properties where the utilities are available, and levels of service are sustainable.

ICE Policy 1.1 provides enabling language relative to the interlocal agreement and the provision of potable water, sanitary sewer, and other services to certain unincorporated areas of St. Johns County.

Because the City provides water services to some of the unincorporated areas of St. Johns County, it is important for the City to monitor and participate, as necessary, in the County's planning and development processes to ensure that the City can account for the water needs of the respective unincorporated area. ICE Policy 1.1 contains enabling language for this coordination.

Potable Water Sources, Demand, Supply, and Facilities

Water Sources

The City currently operates two (2) water treatment plants (WTP) that have a combined capacity of 6.5 mgd. The City's current Consumptive Use Permit (CUP #50299) expires in 2028. The CUP authorizes the use of 5.681 million gallons per day (mgd) average of groundwater from the upper Floridan aquifer for public supply and 0.882 mgd (maximum) of groundwater from the upper Floridan aquifer for reverse osmosis treatment process purposes, and 10.8 mgd of groundwater from the upper Floridan for essential use (fire protection).

The City's water treatment facilities are composed of the Low Pressure Reverse Osmosis (LPRO) Water Treatment Plant (WTP) and the Lime Softening WTP which together have a 6.5 mgd capacity, the wellfield, and the North and South Tank Facilities. The LPRO WTP was constructed in 2008 and has 2.0 mgd capacity. The permeate from the LRPO plant is blended with pretreated raw water from the wellfield. The Lime Softening WTP was placed in service in the 1920s; modifications were made in 1987, but according to an evaluation by the Public Works and Utilities

Department(s), it has essentially reached the end of its useful life and only certain components are used. The wellfield is composed of eight (8) wells, seven (7) deep and one (1) surficial (shallow). They are located nearly 10 miles from the plant. Although the Lime Softening WTP is scheduled for demolition, upgrades to the LPRO WTP will allow capacity to remain near 3.0 mgd. Based on a reevaluation of development projections, current LPRO WTP capacity is estimated to be sufficient through the 2025/2026 timeframe.

Potable Water Demand, Supply and Facility Capacity

The following Table contains projected population and water demand for the City's potable water service area from the NFRWSP. In addition, the table shows the City's CUP allocation and WTP facility data.

Table 1. City of St. Augustine Service Area Projections

	NFRWSP Population for COSA service area	**NFRWSP projected water demand (mgd)**	**CUP Allocation (mgd)**	**WTPs Combined Capacity (mgd)**
2020	37,506	4.22	6.028	6.5
2025	43,191	4.84	6.286	6.5
2030	48,379	5.42	6.564*	6.5

*The City of St. Augustine's CUP expires in 2028. WSFWP assumes 2028 allocation, at a minimum, to be extended to 2030.

Table 1 demonstrates that the City has adequate potable water supply and facility capacity to accommodate the existing population and projected growth within the City's service area up to the WSFWP's planning period.

Non-potable Water Suppliers, Sources, Services, and Facilities

The City's WWTP has a permitted capacity of 4.95 MGD and utilizes a complete mix activated sludge treatment process with a headworks system for removal of grit and debris, biological treatment units (BTUs) which provide aeration, clarifiers, disinfection chambers and post aeration. The annual average daily flow of the WWTP over the past year is 3.78 MGD (reported in 2018). The recently completed Capacity Analysis Report projects that available capacity is sufficient to address development in the service area through 2028 so long as the inflow and infiltration reduction program continues. It is important to note that there is a large difference in population served within the service area versus the population and projected population just within the city limits. Also, the city uses the SJRWMD suggested 2.43 persons per household to calculate projected water needs, but for general population projections and household sizes in the Future

Land Use and Housing Elements the city uses 2.30 persons per household based on the U.S. Census estimates. That is a 5% difference in population projections, which would reduce the projected population for 2030 by 2,419 people. By using the 2.43 persons per household this potential cushion for the projections is maintained.

A water reuse feasibility study was completed in 2002. Because of the Wastewater Treatment Plant (WWTP) location, and the built-out/historic attributes of the City of St. Augustine, the feasibility of supplying reclaimed water is very limited. There are no realistic opportunities for reuse in the historic center of the City.

The City has evaluated the feasibility of implementing a reclaim water system. It has been determined that it is not feasible at this time.

Residential developments on the mainland west of the San Sebastian River also have primarily small lots and a highwater table. The City completed a feasibility analysis to assess the feasibility of taking reclaimed water to golf courses on the outskirts of the City. The cost of upgrading the WWTP and installing a transmission system to deliver reclaimed water to the north portion of the City's service area where it could be utilized are estimated at $14,000,000.00 (Source: SJRWMD).

Water Supply and Facility Concurrency

Potable Water Level of Service

The City is responsible for authorizing development within its City limits. However, the City provides services to a portion of unincorporated St. Johns County. Therefore, it is important for the City's and County's water supply and facility concurrency system to be coordinated and consistent.

Infrastructure Element Policy 3.1.1 and Capital Improvements Element Policy 5.3 contains enabling language that establishes the City's potable water level of service.

Water Supply and Facility Concurrency

The current legislative requirements for concurrency [i.e., Section 163.3180(2)(a), F.S.] require that the City's comprehensive plan and land development regulations ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the City anticipates issuing a certificate of occupancy. In addition, the City must, prior to the approval of a building permit, determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy. CI Policy 3.3 provides enabling language for water supply and facility concurrency, and addresses the requirements of Section 163.3180(2), F.S.

Project Options Identified in the NFRWSP

The NFRWSP identified the following Project Options for the City of St. Augustine:

- St. Augustine Water Supply / LPRO Phase 2
- Conservation Rate Implementation

The LPRO Phase 2 project included an increase LPRO production from 2 mgd to 4 mgd. This project was completed in 2016.

For the Conservation Rate Implementation project, the City conducted a comprehensive conservation program that included a rate study, education program, block rate implementation, AMR pilot installation and results analysis. The NFRWSP indicated an estimated water supply benefit for the project of 0.58 mgd. This project was also completed in 2016.

Water Conservation Practices

The City has adopted a water conservation plan as part of the Consumptive Use Permit (CUP). Including the requiring of low flow plumbing fixtures, which have been incorporated into the City's Building Code. Utility meter readers notify customers immediately if a meter indicates a 10% or greater increase in water use from the previous meter reading. This notification system allows customers to quickly identify leaks or problems so they can be addressed immediately.

A citizen awareness and education program that emphasizes the importance and value of water resources is also in place. This program includes water conservation public service announcements and provides a water conservation exhibit in the utility customer service building. *Insight*, the utility newsletter, is mailed to customers, and displays of water conservation posters and literature is distributed at City Hall.

The City currently implements water conservation practices, including some that are enabled by comprehensive plan policies. In addition, because the City provides potable water service to a portion of unincorporated St. Johns County, it is important for the City to coordinate with the County on its water conservation practices:

- Encouraging continuing education for utilities staff to optimize processes (INFRA 3.4.1)
- Require use of water conserving plumbing fixtures (INFRA 3.4.2)
- Comply with conservation elements in City CUP (INFRA 3.4.3 and 4.1.6)
- Implement water conservation education program (INFRA 3.4.4)
- Encourage low impact landscape and irrigation system design (INFRA 3.5)
- Require certain standards for irrigation systems (INFRA 3.5.1)
- Implementation of certain land development techniques to conserve water (INFRA 4.1.5)
- Encourage low water use landscapes (INFRA 4.1.7)
- Plugging free flowing wells (INFRA 4.2.7)

Water Source Protection Practices

Water conservation is important to reduce potable water demand. The City's water conservation practices include the following:

- Maintain wellhead protection program (INFRA 3.7.3)
- Implement certain wellhead protection standards ((INFRA 3.7.3)
- Coordinate with regional, state and federal agencies on protection of water resources (INFRA 3.8.2)
- Monitoring for saltwater intrusion (INFRA 4.2.5)
- Maintain a wellfield protection map (INFRA 4.2.6)

Conclusion

Based on the Goals, Objectives and Policies in the City's Comprehensive Plan 2040, and this Work Plan the City is well aware of the need to project, monitor, and reduce the volumes of water supply from the source. The City will continue to update the Work Plan as needed, and coordinate with St. Johns County and the SJRWMD.

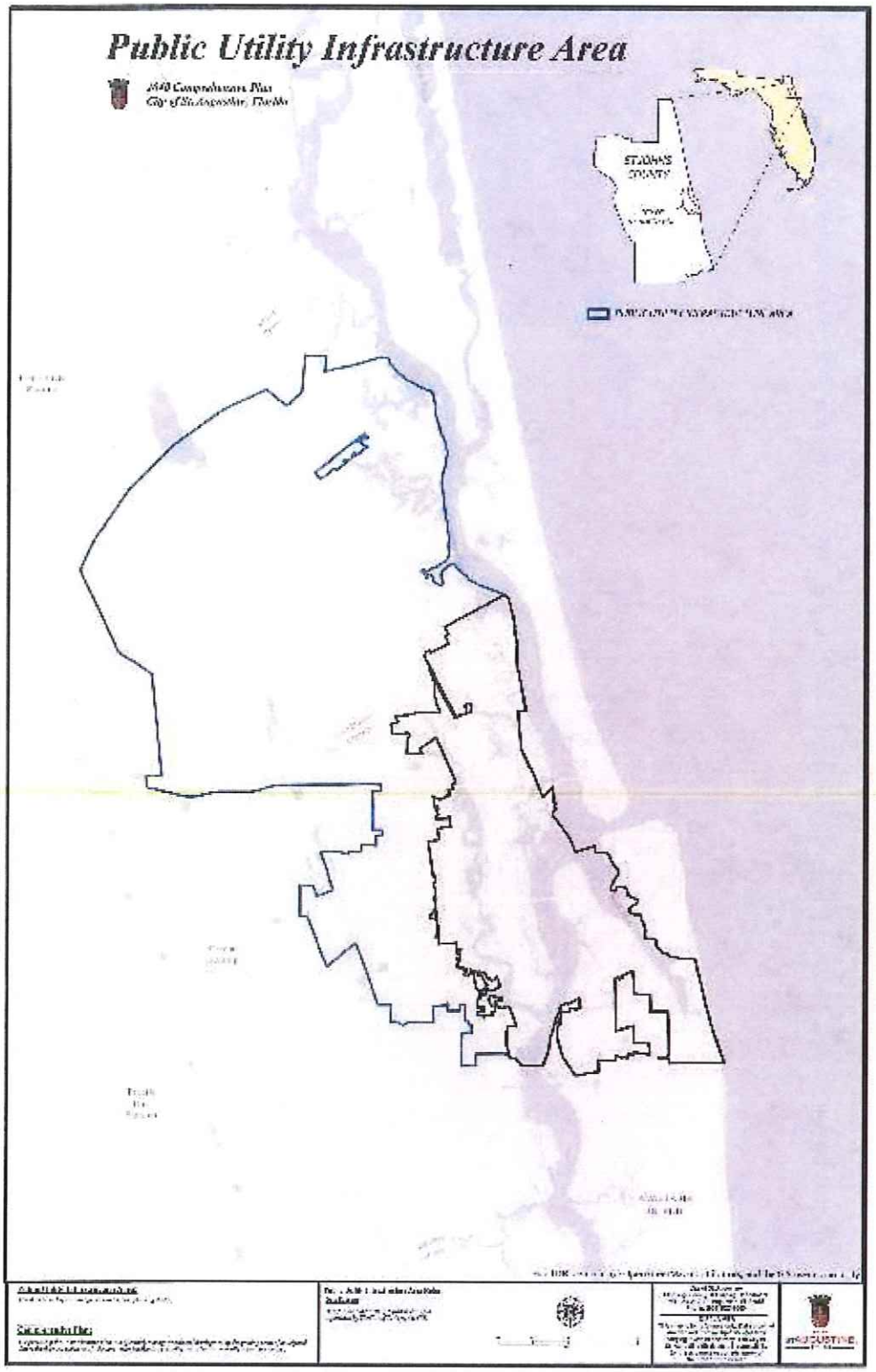



Figure 1. Public Utility Infrastructure Area