



EAST BATON ROUGE STORMWATER MASTER PLAN

UNDERSTAND. PLAN. IMPLEMENT.

AUGUST 2022

STORMWATER
master plan



EBR STORMWATER MASTER PLAN BRIEFING BOOK

Recommended Design Solutions for Improving Flood Resilience for Future Development Projects in EBR.

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Proposing Policy Recommendations

East Baton Rouge Parish has made strides in improving its policies and development regulation to help reduce flood risk associated with new or redevelopment activities over the years. However, with the science, technology, and tools available today, there are opportunities to evaluate and improve regulations, as well as the ability to enforce them. The goal of the policy recommendations in the Stormwater Master Plan is that all development (public and private) will cause no adverse flooding impact within the developed property and to adjacent properties.

RECOMMENDATION GOALS:

More specifically, the policy recommendations encourage more flood-resilient development, including:

- » Where and how development should occur, so as to improve water quality and not increase flood risk;
- » Utilizing new science and technology to evaluate the potential impacts of proposed developments on flood risk; and
- » Adjusting regulations to better align with current and future flood risk.

METHODOLOGY:

To these ends, the Parish model and data were utilized to analyze flood hazard risk to better understand when, where, and why flooding occurs; and evaluate different recommendations to test their effectiveness in a variety of scenarios. The flood hazard analysis and Parish model allowed the SMP team to identify and address through policy three of the primary causes of flooding in East Baton Rouge Parish:

- » climate change,
- » development in the floodplain, and
- » urbanization.

The fourth identified primary cause of flooding is lack of maintenance, which will be addressed through other recommendations in the Stormwater Master Plan.



IMAGE CREDITS:
John Ballance,
Staff Photographer
at Advocate.com



1 Update Rainfall Depths In Design Criteria

DOCUMENT TO BE REVISED OR UPDATED:

Hydrology and Hydraulics Design Criteria

PROBLEM WE ARE TRYING TO ADDRESS:

Increases in the frequency and intensity of rainfall events result in more water, more often, leading to an increased risk of flooding.

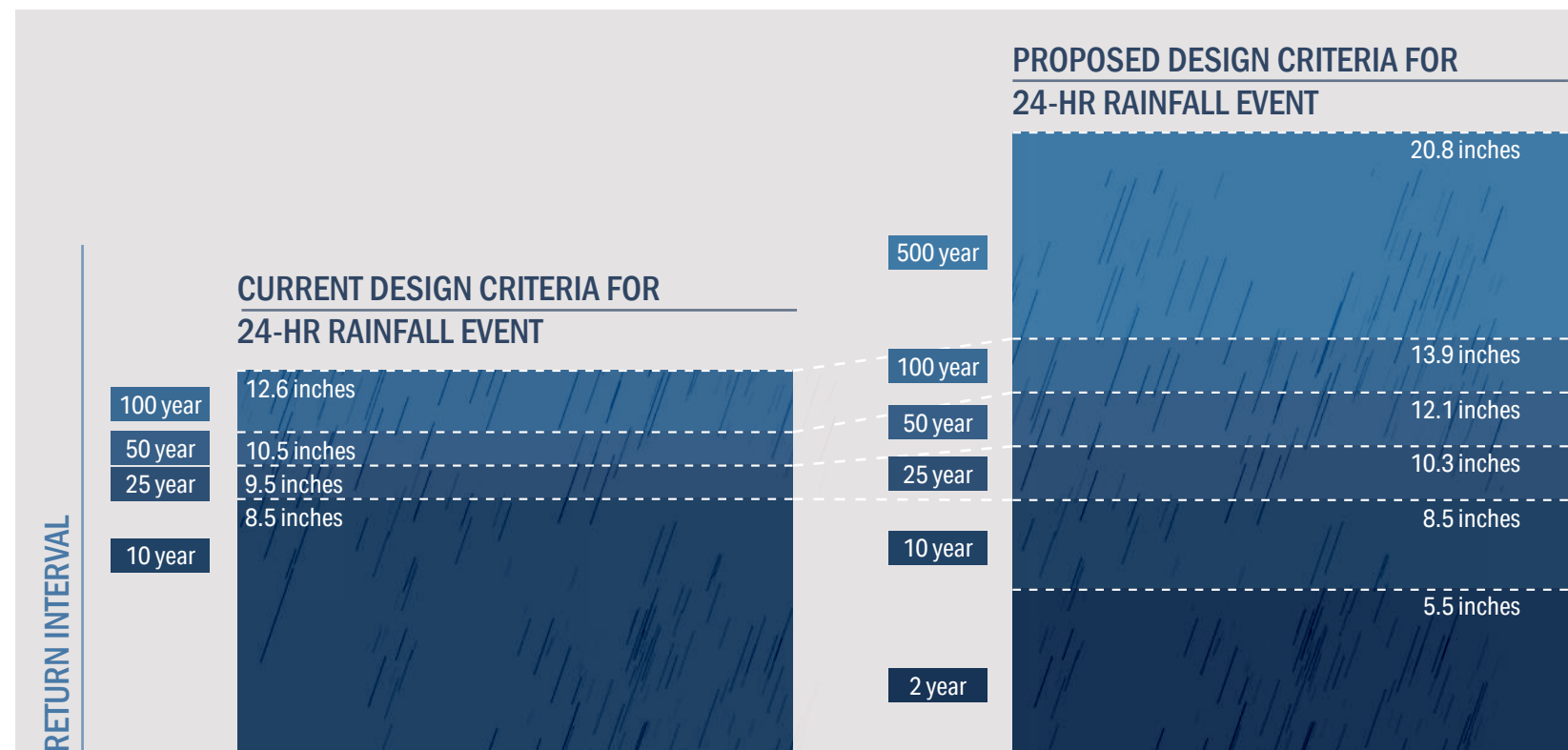
RECOMMENDED SOLUTION:

New tools are available to predict rainfall depths well into the future, factoring in climate change. With this data, new developments can design their drainage systems to handle stormwater today and for the next several decades. The Stormwater Master Plan recommends that EBR use **SERDP 2085 Rainfall Depth Estimates** for each return interval in the EBR Hydrology & Hydraulics Design Criteria Document. The tool can be viewed at the following website along with references to further documentation.

NCICS - Precipitation Frequency. <https://precipitationfrequency.ncics.org/>

TALKING POINTS:

- » Helps ensure new public and private developments are more flood resilient by requiring drainage systems be designed and sized appropriately for more water, more frequently.
- » Also includes updates to Discharge Calculations, elimination of Runoff Curve Categories, and expansion of multi-stage detention.
- » Because this is guidance and not code, it will be re-evaluated every five years for effectiveness and to include the latest available data.



2

Floodplain Conveyance Zones with Off-site Drainage Assessment

DOCUMENT TO BE REVISED OR UPDATED:

Unified Development Code, Chapter 15 (proposed 15.24)

PROBLEM WE ARE TRYING TO ADDRESS:

Public and Private development activities that block or reduce the ability of stormwater to flow where it naturally would and forces it elsewhere increasing flood risk for surrounding properties.

RECOMMENDED SOLUTION:

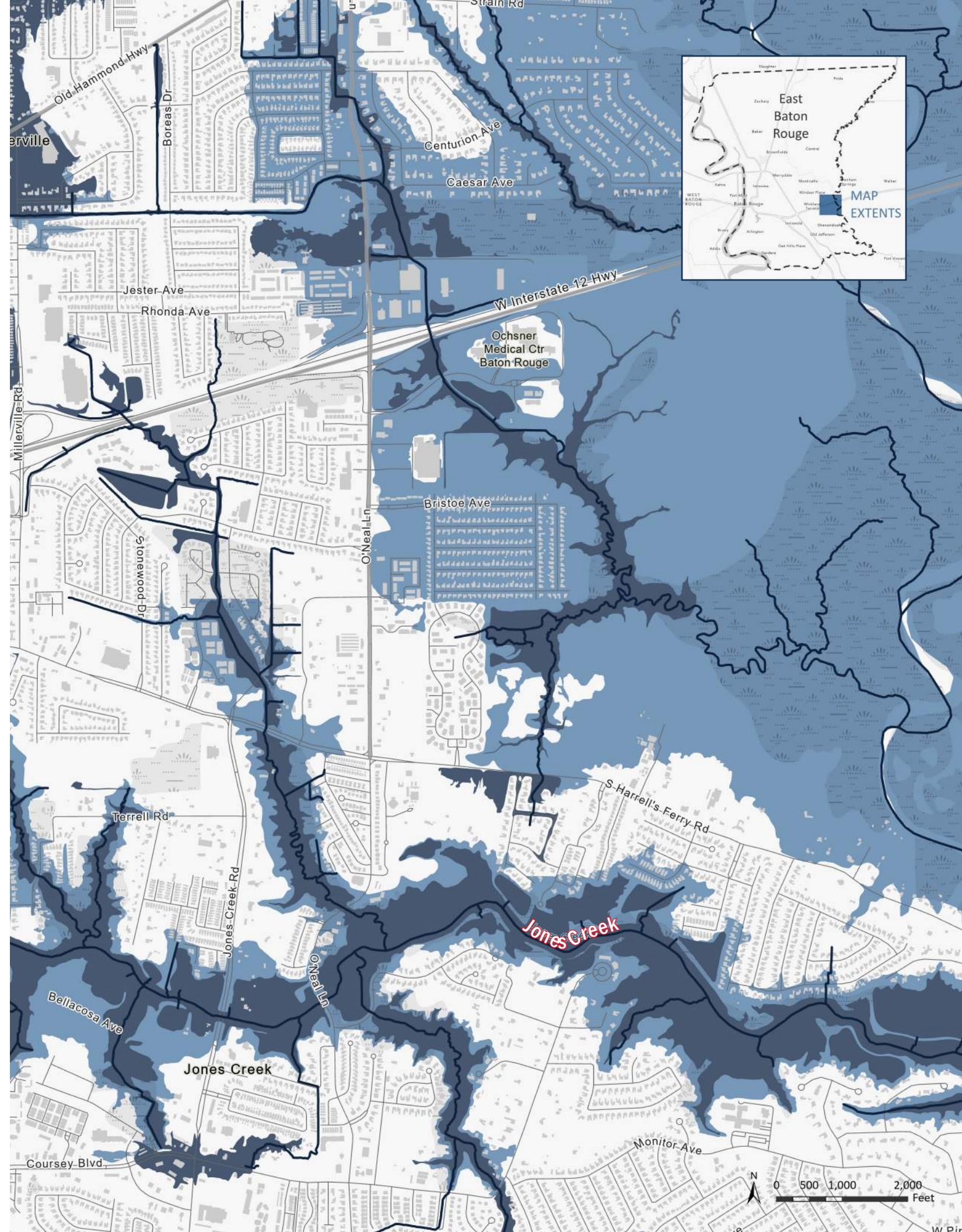
Utilize EBR's new, two-dimensional (2D) hydraulic model to identify and establish Floodplain Conveyance Zones in areas which are critical to the flow of floodwater. For any proposed development in a Floodplain Conveyance Zone, EBR will use the 2D model to assess the proposed development's flood impacts on other properties in the watershed (the "Off-site Drainage Assessment" or "ODA"). This will allow EBR to work with public and private developers to ensure new developments do not push water on surrounding properties during storm events. Developments will be required to show 0.0 feet of impact to the surrounding properties.

Floodplain Conveyance Zones will be established by the City-Parish and made available via the EBRGIS Open Data website. On the right is an image of the draft proposed Floodplain Conveyance Zone for Jones creek.

TALKING POINTS:

- » Recommended code update will not allow any impact (0.0 feet) from proposed land development.
- » The Off-site Drainage Assessment (ODA) process will be clear and efficient, with a quick turnaround.
- » Allows for discussion with developers to review results and alterations to that achieve no impact.
- » Promotes more resilient development by incorporating the natural functions of the floodplain into new developments.

- DRAFT Conveyance zone
- AE Flood zone
- Streams
- Major Roads
- Building Footprints



3

Community Defined Special Flood Hazard Areas + Flood Elevations

DOCUMENT TO BE REVISED OR UPDATED:

Unified Development Code, Chapter 15, Section 7.2.

PROBLEM WE ARE TRYING TO ADDRESS:

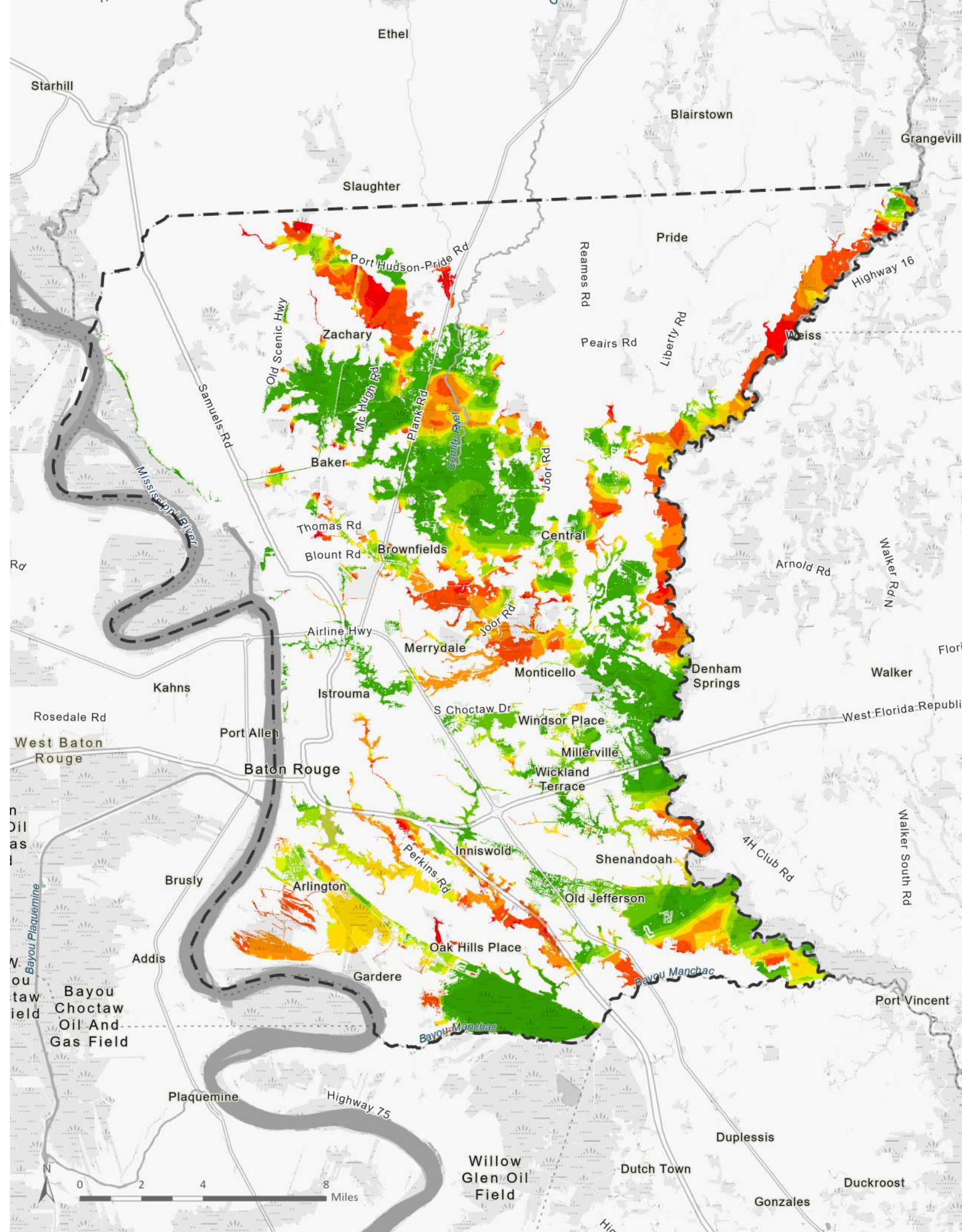
FEMA flood maps are, in some cases, inaccurate and out-of-date, which results in some structures being built too low with enhanced flood risk.

RECOMMENDED SOLUTION:

Use the Parish’s new 2D model to establish and maintain **Community Defined Special Flood Hazard Areas (CD SFHA)** as well as **Community Defined Flood Elevations (CD FE)**. These will be in addition to the existing **FEMA Special Flood Hazard Areas (FEMA SFHA)** and **Base Flood Elevations (FEMA BFE)**, and will be enforced similarly. These new Community Defined designations will encourage more resilient development, based on a more accurate estimate of current and future flood risk.

TALKING POINTS:

- » The CD SFHA will help ensure that new development is built to an elevation based on the most accurate data as well as based on future potential increases in rainfall.
- » To maintain CRS credits, where the CD FE is lower in elevation than the FEMA BFE, the Parish will need to continue to enforce the FEMA BFE elevation regulations.
- » The SMP recommends maintaining the current freeboard regulation of one foot above the future 100-year peak water surface elevation from the SMP model.



4 Fill Mitigation

DOCUMENT TO BE REVISED OR UPDATED:

Unified Development Code, Chapter 15, Section 21.F

PROBLEM WE ARE TRYING TO ADDRESS:

When fill placed in the floodplain is not properly mitigated, it reduces the storage volume capacity of the floodplain, thereby, pushing floodwater somewhere else. Further, it is difficult to analyze the effectiveness of using detention ponds for fill mitigation when filling in the floodplain. When not properly or accurately mitigated, it reduces the floodplain's capacity to store floodwater, thereby, increasing flood risk for surrounding areas.

RECOMMENDED SOLUTION:

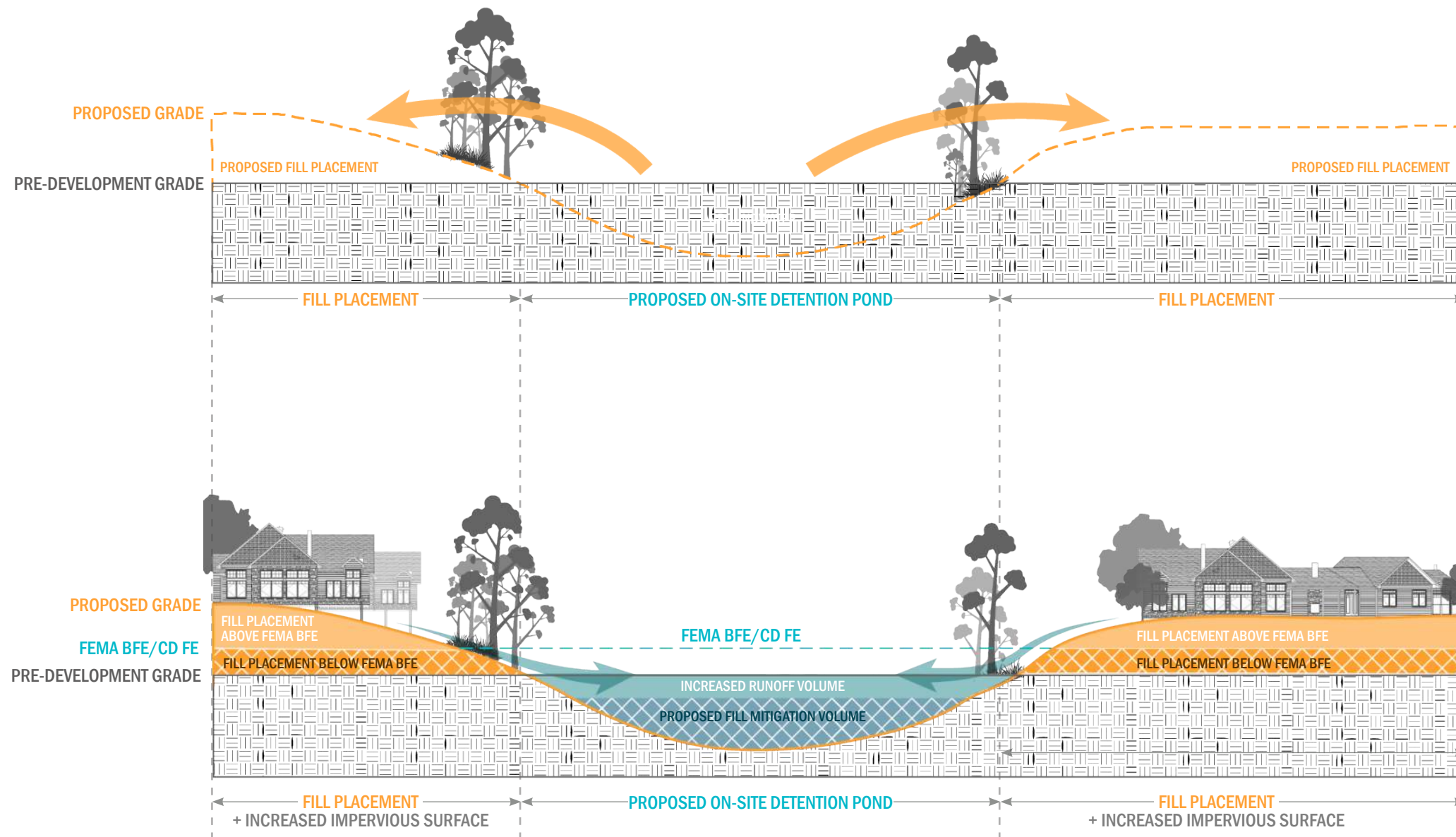
Revise the Use of Fill Material Restrictions in UDC 15.21.F to:

- » **For developments proposing on-site fill:** If a detention pond is to be used for fill mitigation, the pond must be sized to accommodate both the fill mitigation quantity and the increased runoff created by the development (figure).
- » **For developments proposing to use off-site fill:** fill mitigation credits may be approved by the Department of Development when an Off-site Drainage Assessment (UDC 15.24.B) has been performed to show no decrease in the existing flood volume storage capacity below the FEMA Base Flood Elevation (BFE) and/or the Community Defined Flood Elevation (CD FE), whichever is higher.

TALKING POINTS:

- » This (and all SMP policy recommendations) is aimed at improving the resilience of future developments.
- » The recommendations for fill mitigation were developed with significant input from community stakeholders and the development community.
- » These recommendations will help preserve the flood storage capacity of our floodplain, so that drainage systems aren't overwhelmed during rainfall events.

PROPOSED ON-SITE FILL MITIGATION REQUIREMENTS



FILL PLACEMENT BELOW FEMA BFE = PROPOSED FILL MITIGATION VOLUME

IMAGE CREDITS:
Bill Feig,
Staff Photographer
at Advocate.com

5 Through-Site Drainage Overland Flow Conveyance Check

DOCUMENT TO BE REVISED OR UPDATED:

Unified Development Code, Chapter 15, Section 15.E.
Hydrology and Hydraulics Design Criteria

PROBLEM WE ARE TRYING TO ADDRESS:

Developments that block or change the way stormwater from surrounding areas flows through the development site can increase flood risk for surrounding properties if not accounted for properly.

RECOMMENDED SOLUTION:

Perform hydraulic calculations at all inflow and outflow locations of proposed developments to ensure no increase over the existing conditions peak flow rate at multiple storm intervals.

TALKING POINTS:

- » If adopted, this recommendation will become a requirement of the Drainage Impact Study, already required by UDC Section 15.15.
- » The proposed Through-Site Overland Flow Conveyance Check will apply to all new developments.
- » This will help ensure that new public and private developments do not increase flood risk for surrounding properties.



6

Internal Drainage Overland Flow Conveyance Check

DOCUMENT TO BE REVISED OR UPDATED:

Unified Development Code, Chapter 15, Section 15.E

PROBLEM WE ARE TRYING TO ADDRESS:

In extreme rainfall events, improperly designed drainage systems don't allow water to get to the outfalls and/or detention pond, which results in flooding within a development (see figure on the right).

RECOMMENDED SOLUTION:

Require routing of rainfall runoff to the detention pond or outflow point for storms greater than the subsurface design storm, which is the 10-year storm. In addition, detention ponds shall have a designated weir to direct outflow from storms greater than the 100-year.

TALKING POINTS:

- » If adopted, this recommendation will become a requirement of the Drainage Impact Study, already required by UDC Section 15.15.
- » This will help ensure that excess rainfall has a path(s) to the downstream drainage system before it floods structures in extreme rain events.

Site with an on-site detention pond.

IMAGE CREDITS:
https://www.womans.org/-/media/images/womans/development/flood/flood_cdp.jpg

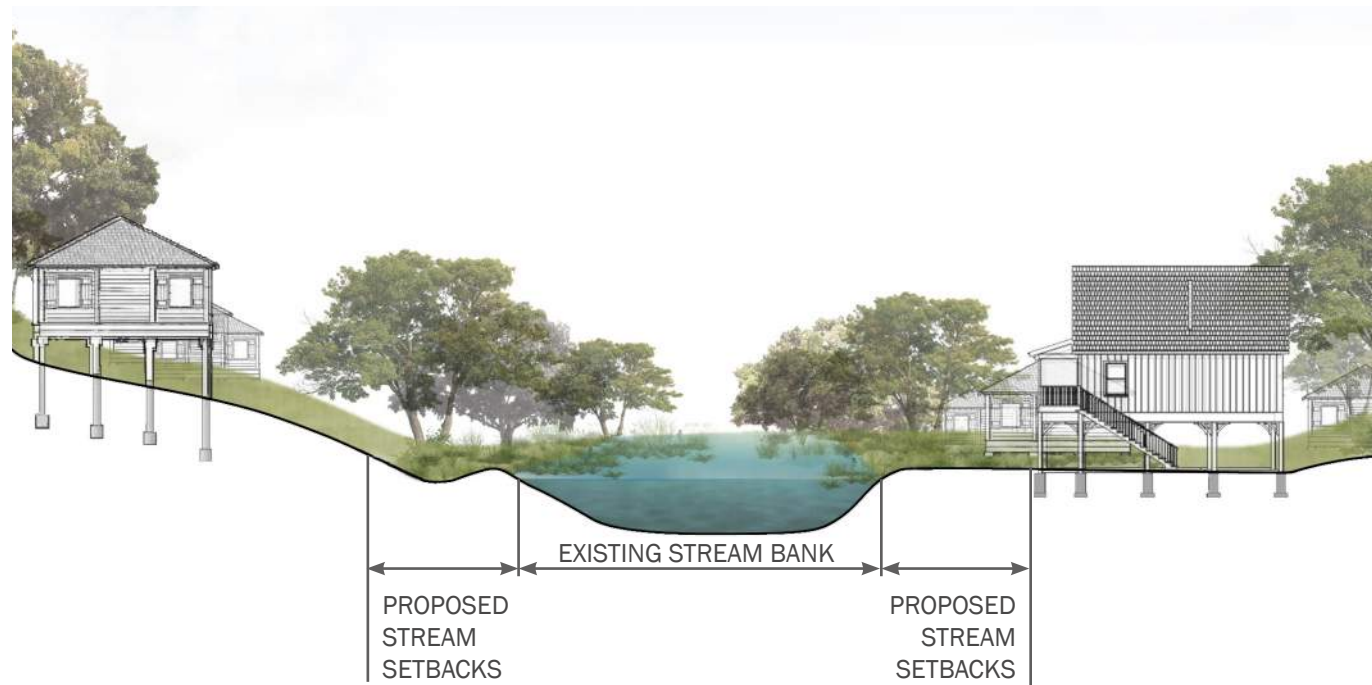


Rainfall runoff flowing into an on-site detention pond.

IMAGE CREDITS:
https://www.womans.org/-/media/images/womans/development/flood/flood_cdp.jpg







8 Stream Setback

DOCUMENT TO BE REVISED OR UPDATED:

Unified Development Code, Chapter 15, creates a new Section: 25.

PROBLEM WE ARE TRYING TO ADDRESS:

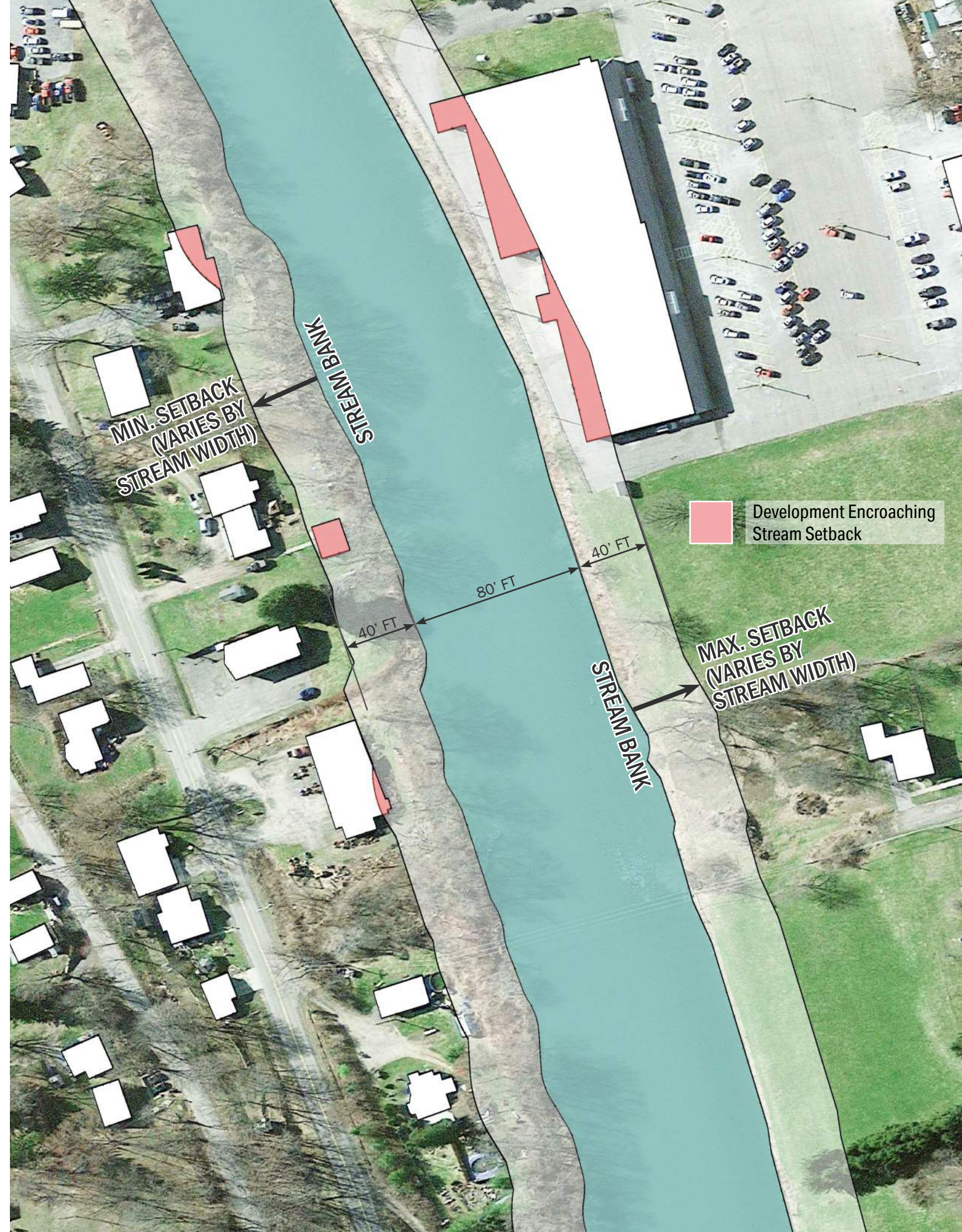
Building right up to channels can create problems that are difficult to reverse, such as complications due to erosion and runoff, habitat loss, and lack of access for future channel improvements.

RECOMMENDED SOLUTION:

Establish stream setbacks along major streams, which will restrict improvements within the setback to passive, low-impact improvements, as well as those that restore or enhance the stream corridor. The setback widths should vary with the size of the stream but have a minimum width of 35 feet from the top of the stream bank, and a maximum width of 100 feet. See figure on the right.

TALKING POINTS:

- » This recommendation supports the “Riparian Buffers” called for in the FUTUREBR Comprehensive Plan.
- » The proposed stream setbacks and the minimum width is based on national and regional best practices.
- » Stream setbacks will be allowed to count towards yard and open space requirements.
- » This recommendation does include a limited variance process.



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