

**Federal Emergency Management Agency (FEMA)  
Recovery Guidance  
Advisory Base Flood Elevation (ABFE)**

of April 12, 2006

**Reconstruction Implications**

**Presentation to:  
City of New Orleans**

July 6<sup>th</sup>, 2006

**Lambert Advisory  
Bermello, Ajamil & Partners Inc.  
Hewitt- Washington**

# National Flood Insurance Program (NFIP)

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- *The NFIP is a Federal program*
  - *Established by U.S. Congress passage of National Flood Insurance Act of 1968.*
  - *Participation based on an agreement between communities and the Federal Government.*
    - *Participation is not automatic and participation criteria must be met by the community*
    - *Community must adopt standards as part of their process to issue building permits, manage coastal areas and flood plain management*
- *Two subsequent Congressional Acts required flood insurance for Federally supported construction projects:*
  - *Flood Disaster Protection Act of 1973.*
  - *National Flood Insurance Reform Act of 1994*

# 1984 Flood Insurance Rate Maps (FIRMs)



Source: Times Picayune

- Based on Flood Insurance Study (FIS)
  - Maps Special Flood Hazard Areas (SFHA)
- Requires lowest habitable floor elevation of buildings to be at the elevation indicated in the map
  - Given in NGVD 1929, an elevation reference above sea level
  - B and X Flood Zones do not indicate elevation
    - No Flood Insurance required



# Requirements for New Construction and Existing Construction



Protect Existing Construction



Protect New/Improved



Protect Substantially Damaged

- National Flood Insurance Program:
  - In exchange for availability of subsidized insurance for existing buildings, it requires communities protect through the establishment of minimum flood elevations:
    - New construction
    - Substantially improved structures
      - Ensures that a significant increase in investment in existing Pre-FIRM buildings will receive needed protection from flood risk.
- Requirement is irrespective of any changes that may be established by the NFIP to the FIRMs maps

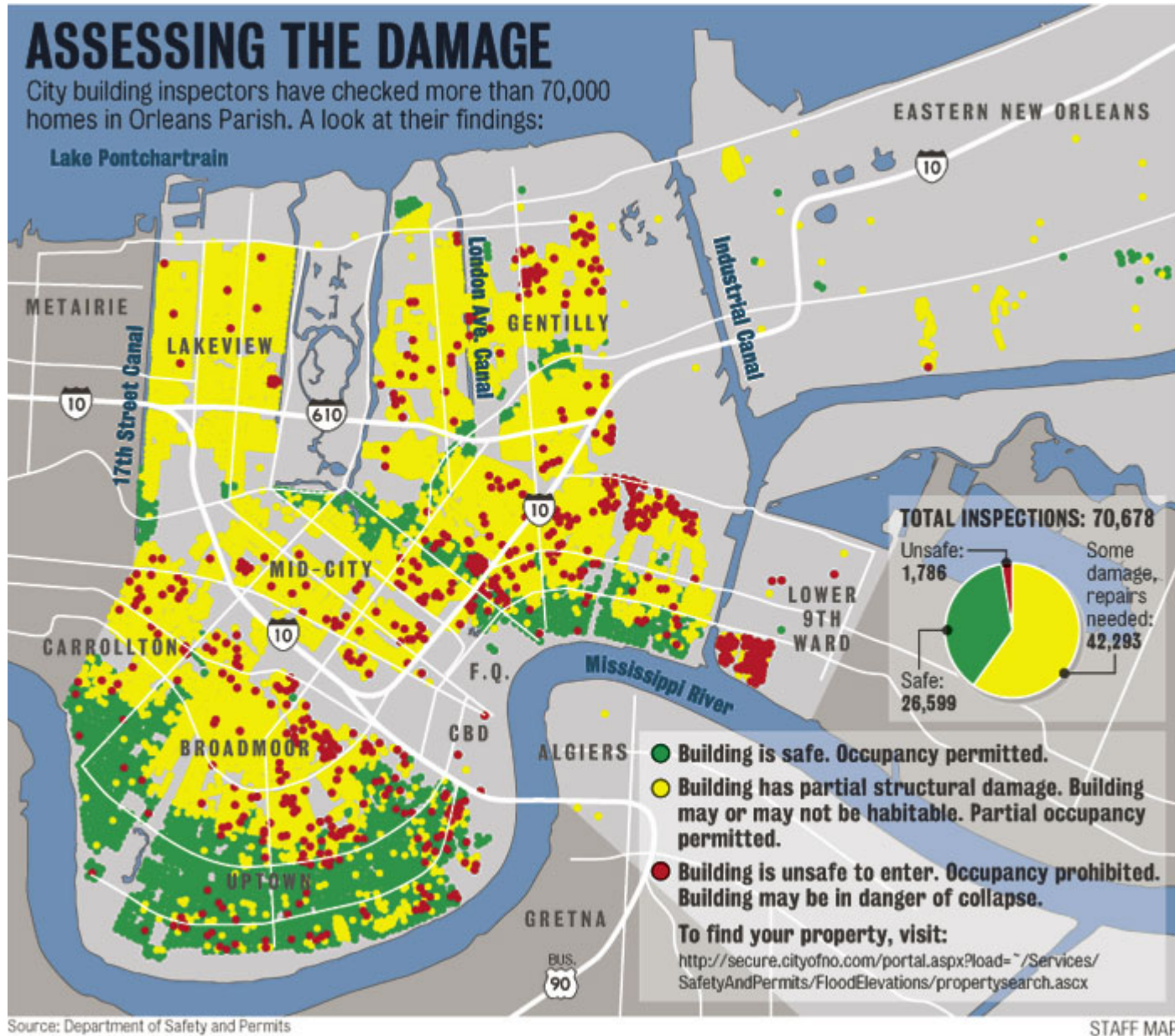
# Substantial Improvement & Substantial Damage Requirements

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- “Substantial Improvement”
  - **Cost of improvements to a home or business equals or exceeds 50% of the market value of the building**
- “Substantially Damaged”.
  - **Cost of restoring a home or business equals or exceeds 50% of the market value of the building before the damage from any origin occurred**
- Properties with **over 50%** damage assessment will have to be raised to the Advisory Base Flood Elevation (meet NFIP minimum requirements, and updated building code)
- Properties with **less than 50% damage**, to get a building permit and maintain flood insurance, no need to raise your home.
- It is the **community’s responsibility** to make substantial improvement or substantial damage determinations;



Slide added for clarity – not original



FEMA  
Recovery Guidance  
Advisory Base Flood Elevation  
(ABFE)

April 12, 2006

# Recovery Guidance - Advisory Base Flood Elevation, April 12, 2006

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- Structures located within designated FEMA floodplain:
  - Should be elevated to either the Base Flood Elevation (BFE) shown on the current effective Flood Insurance Rate Map (FIRMs 1984 for New Orleans)
  - Or at least 3 feet above the Highest Existing Adjacent Grade (ground) elevation at the building site, whichever is higher;
- Not located in a designated FEMA floodplain:
  - Should be elevated at least 3 feet above the Highest Existing Adjacent Grade (ground elevation) at the building site
- Highest Existing Adjacent Grade is:
  - The elevation of the ground, sidewalk, patio slab, or deck support immediately next to the building

# What Does this Mean for Residential Construction ?

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Every substantially damaged (residential) structure, substantially improved structure, and new construction, no matter where in the City of New Orleans, will have to be a minimum of 3 Feet above the Highest Existing Adjacent Grade (HEAG) at the edge of the property, whether this grade is natural or man-made.

# Are There Any Differences for Non-Residential Buildings?



- **Yes! Non Residential Buildings can be Dry Flood-Proofed:**
  - All new construction and substantial improvements must either have the lowest floor (including basement) elevated to or above the BFE or dry-flood-proofed to the BFE.
- **Dry Flood-proofing is where:**
  - **Building must be** designed and constructed **to be:**
    - **Watertight,**
    - **Substantially impermeable to floodwaters.**
- **Allows relationship of retail stores to sidewalk access**
  - Warehouses, industrial, etc.

# Two Basic Questions for Residential Reconstruction

1. What would the requirement for raising residential new construction and “substantially damaged structures” be under the 1984 Flood Zones and respective BFE?
2. How does this compare with the Flood Recovery Guidance’s Advisory Base Flood Elevation or ABFE?

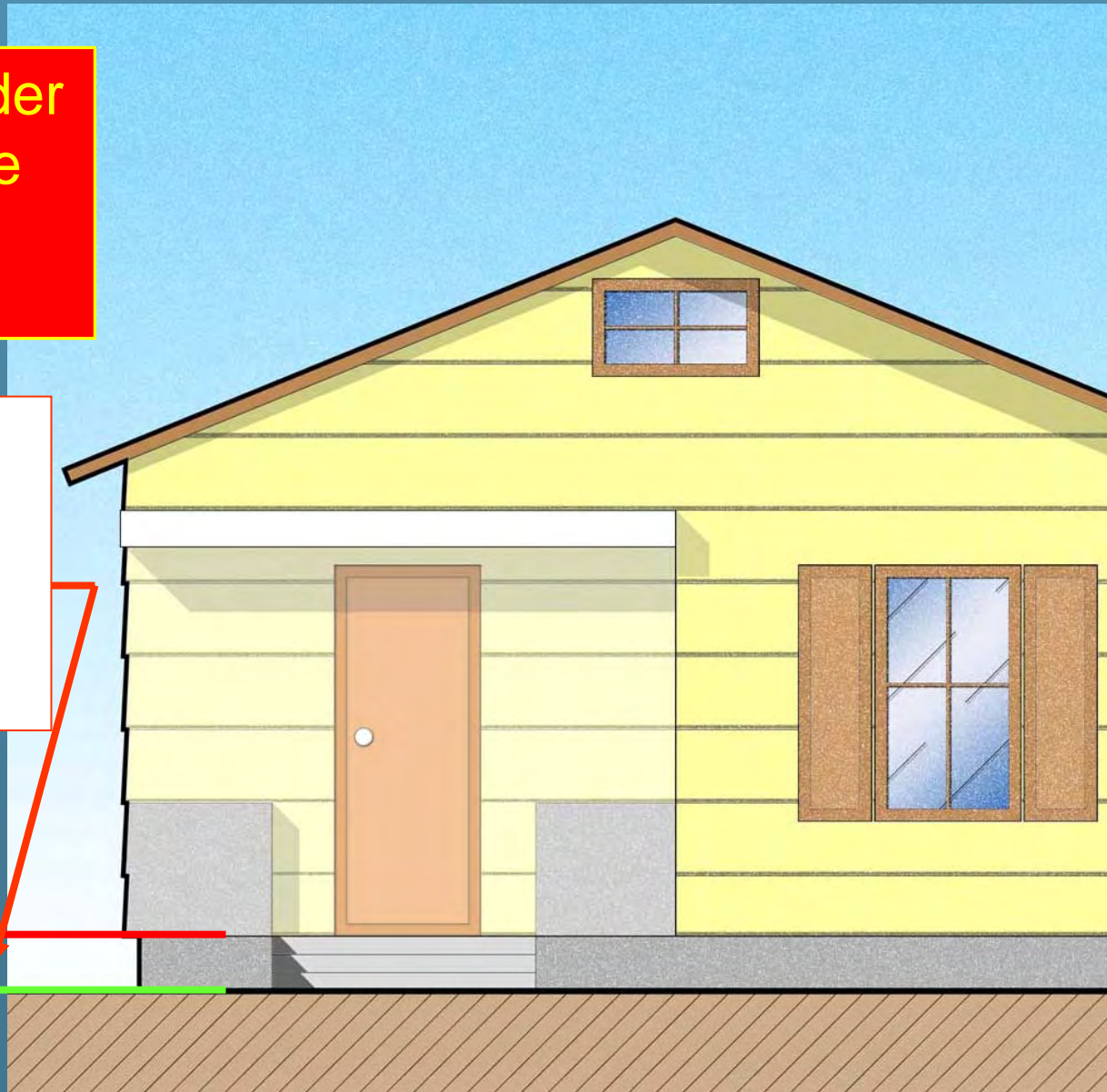
# 1984 BFE Flood Zone B or X

- Not acceptable under Recovery Guidance ABFE

Within Flood Zones X and B minimum first floor elevation required as per Building Code is 1' 4" above average crown of road

1' 4"

+ 10' Avg. Elev. Crown of Road .

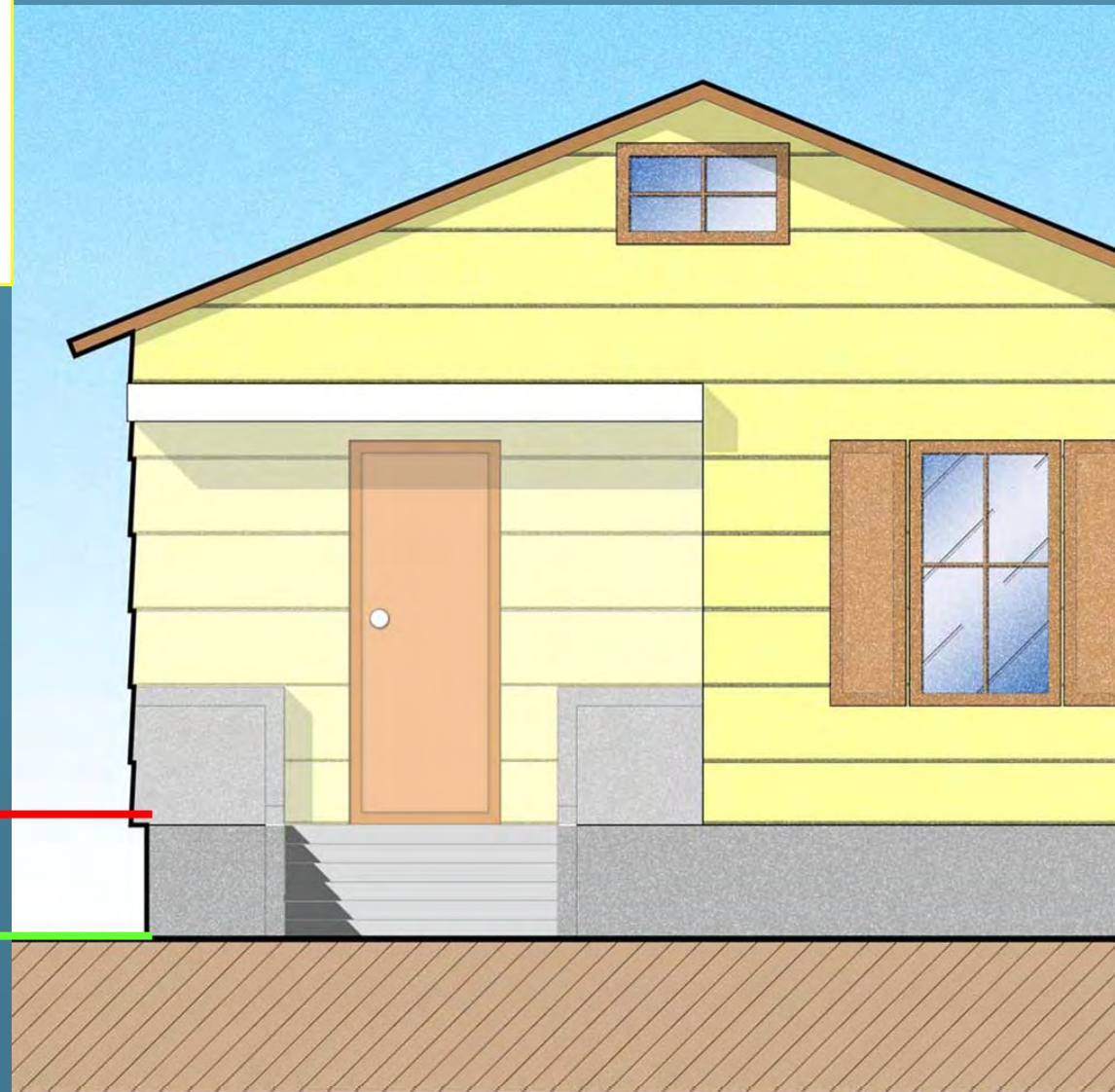
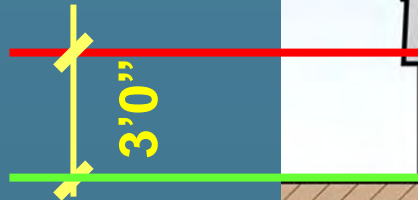


# Recovery Guidance Advisory Base Flood Elevation Flood Zone B or X

- **Raise home 3.0 feet, ABFE prevailing standard**

**Within Flood Zones X and B, under ABFE the minimum first floor elevation required is 3'0" above the Highest Existing Adjacent Grade**

**+ 10' Avg. Elev. Crown of Road .**



# Limited Number of Homes in Flood Zones X and B with Substantial Damage

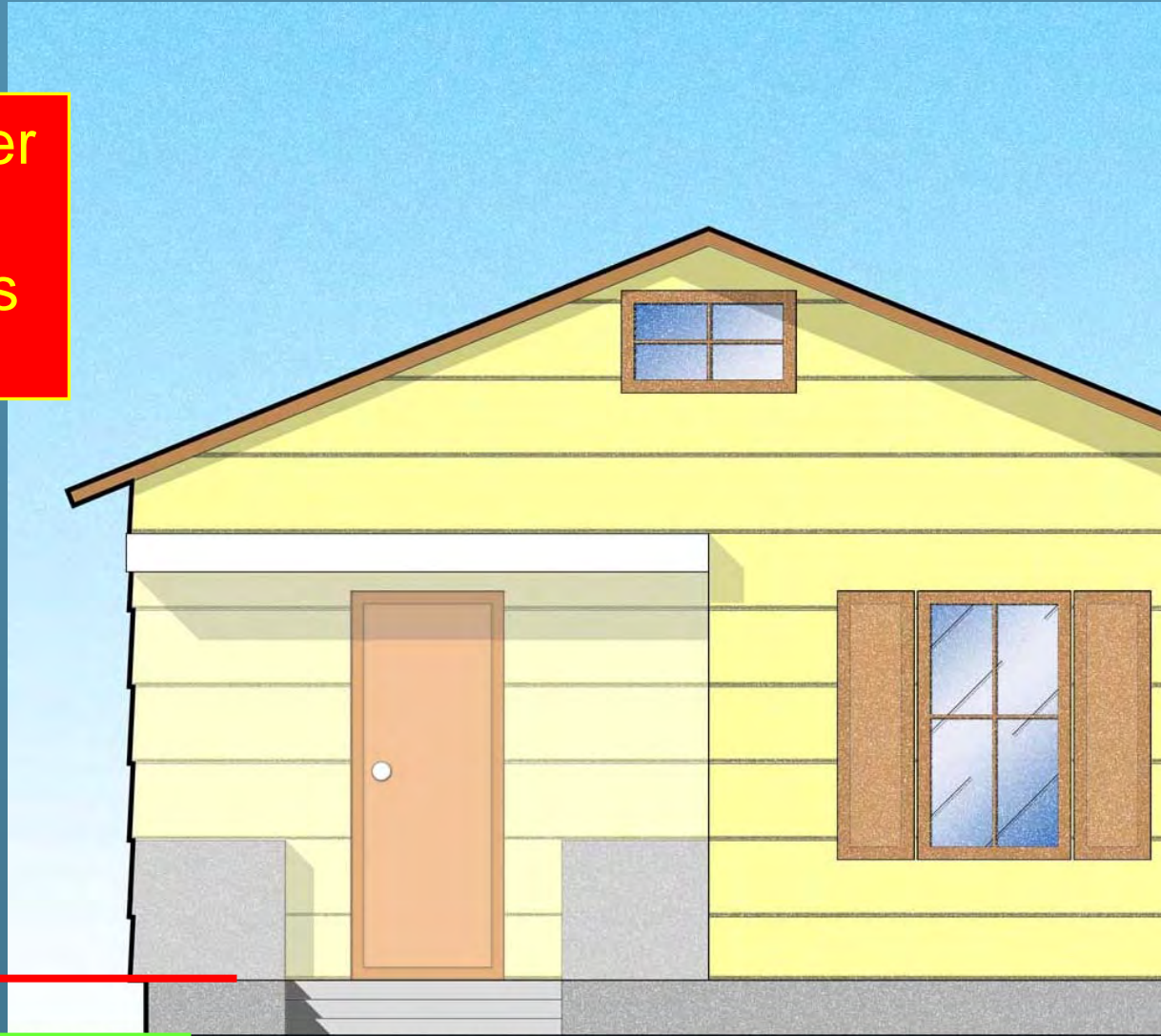


# 1984 BFE at Minus 4' Ground Elevation\* and BFE of Minus 2.5

- Not acceptable under Recovery Guidance ABFE; elevation less than 3' above grade

## Math

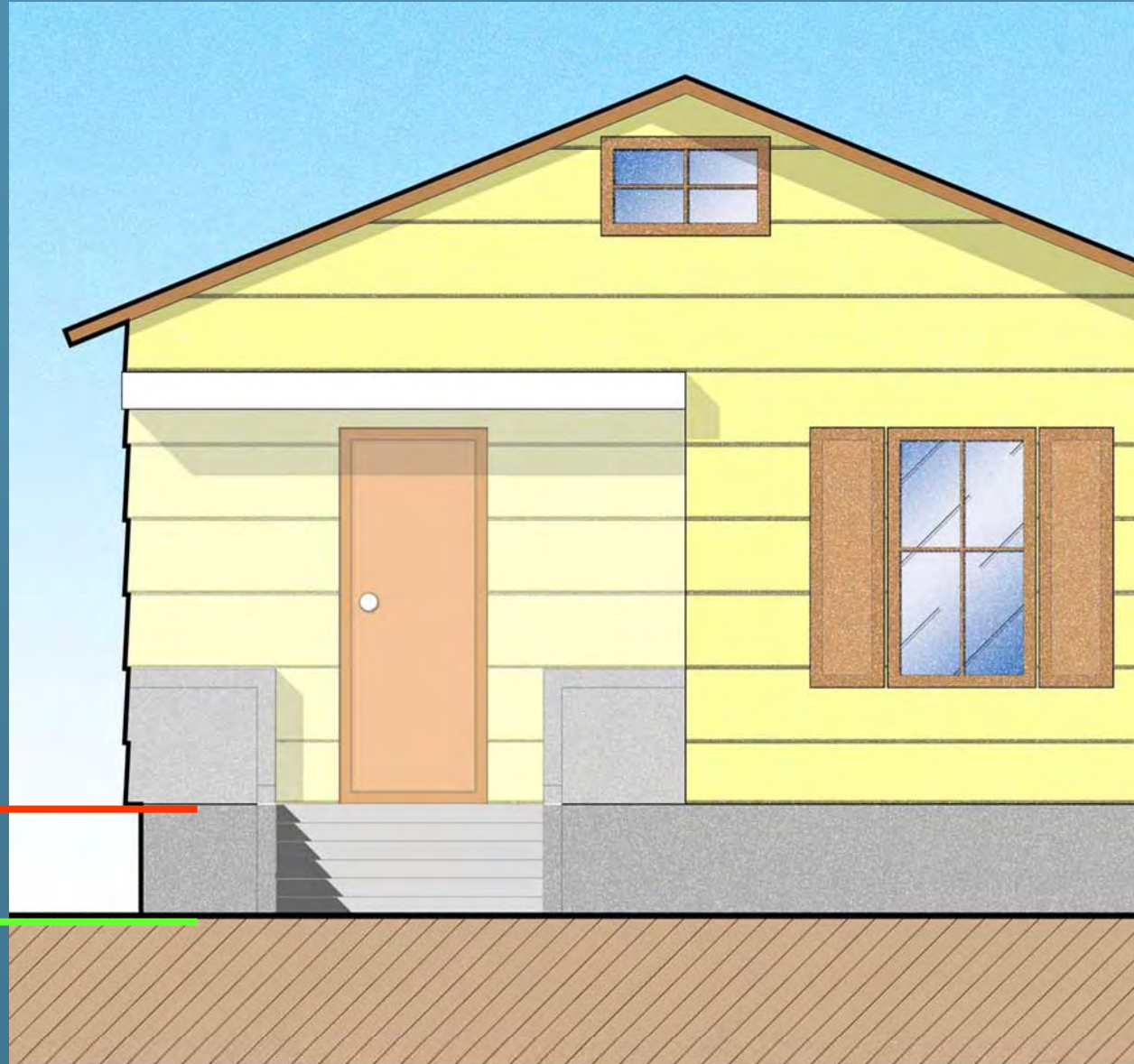
$$(-4) - (-2.5) = 1.5'$$



\*Flood Zone A3 taken as example, applies to any other flood zone)

# ABFE Prevailing Standard – - 4' Elevation and BFE of - 2.5 Case

- Raise home 3.0 feet, ABFE prevailing standard




- 1 Floor Elev.

- 2.5 (1984 BFE)

- 4 Ground Elev.

3.0'

# Case: House at +1.5 Feet Elevation Above Adjacent Grade - (“Slab Home”)

- 
- Not acceptable anywhere in City of New Orleans under Recovery Guidance ABFE; if substantially damaged, substantial improvement or new construction

# Case: House on Mound

**Needs to be raised 3' 0" above mound if substantially damaged, substantial improvement or new construction; As per Recovery Guidance ABFE**



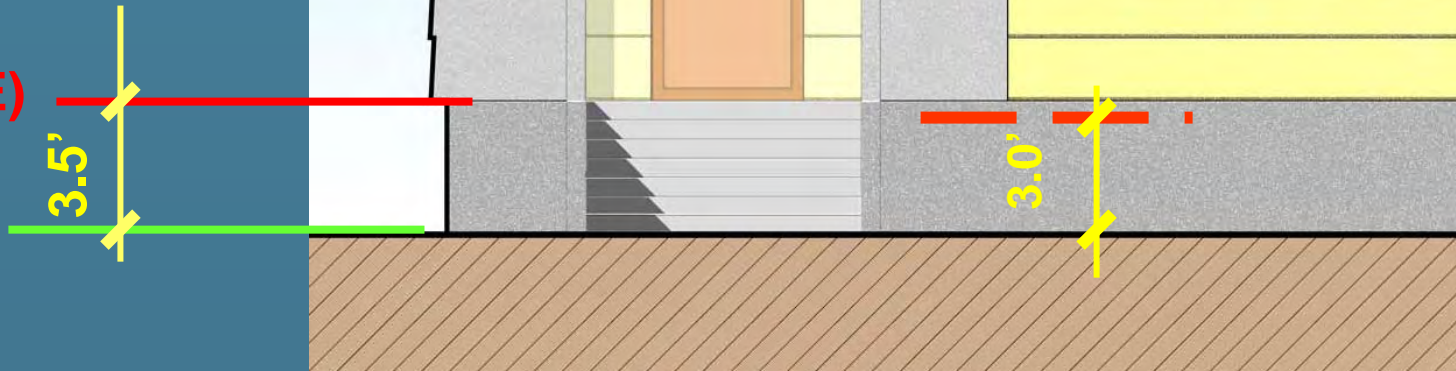
# 1984 BFE at Minus 6' Elevation and BFE of Minus 2.5

- Raise home 3.5 feet as per 1984 BFE prevailing standard

ABFE has no impact  
on 1984 BFE –  
1984 BFE Exceeds  
3' Rule

- 2.5 (1984 BFE)

- 6 Ground Elev.



# 1984 BFE at Minus 9' Elevation and BFE of Minus 2.5

- Raise home 6.5 feet as per 1984 BFE prevailing standard

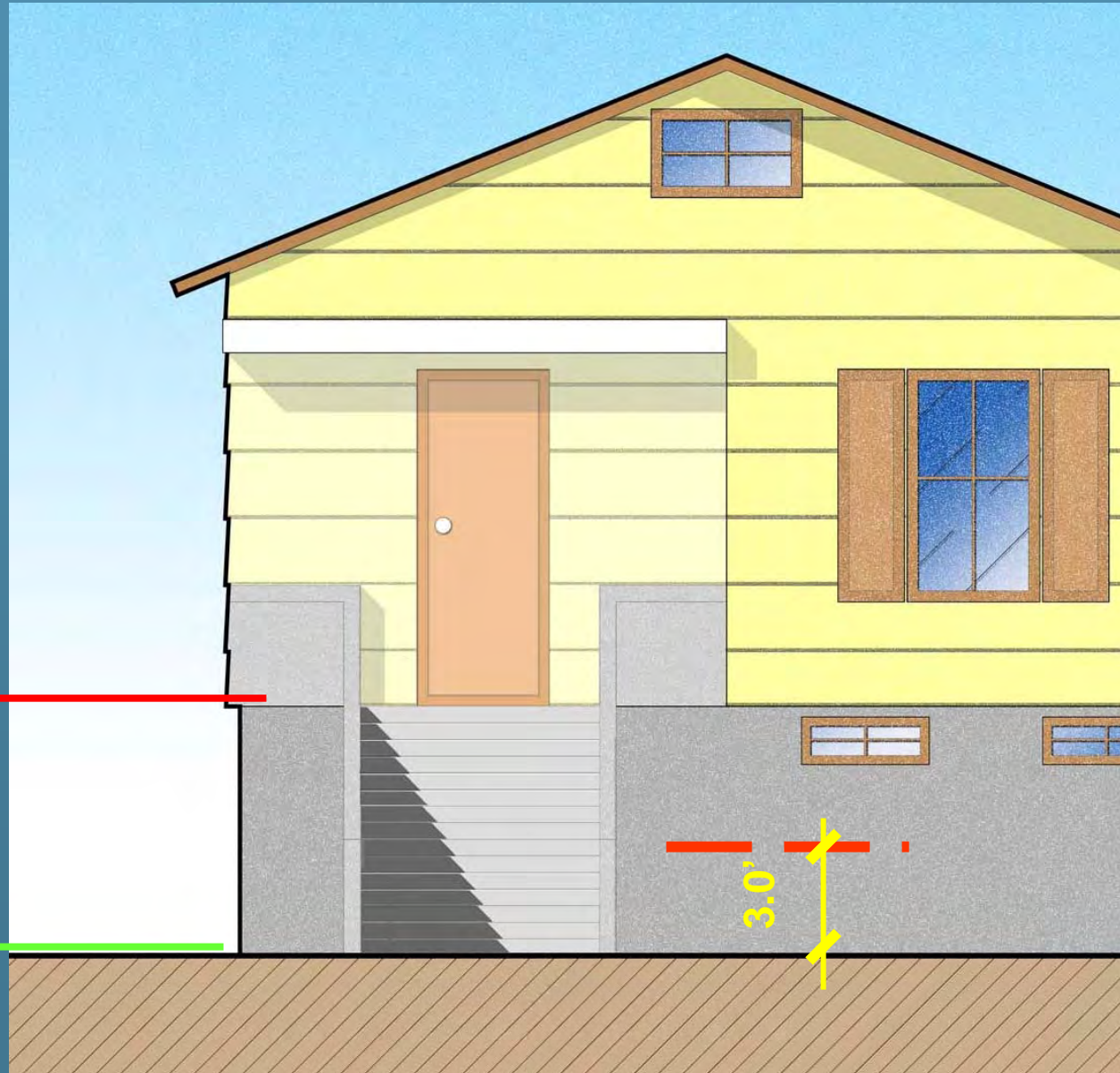
ABFE has no impact on 1984 BFE – 1984 BFE exceeds 3' Rule

- 2.5 (1984 BFE)

6.5'

- 9 Ground Elev.

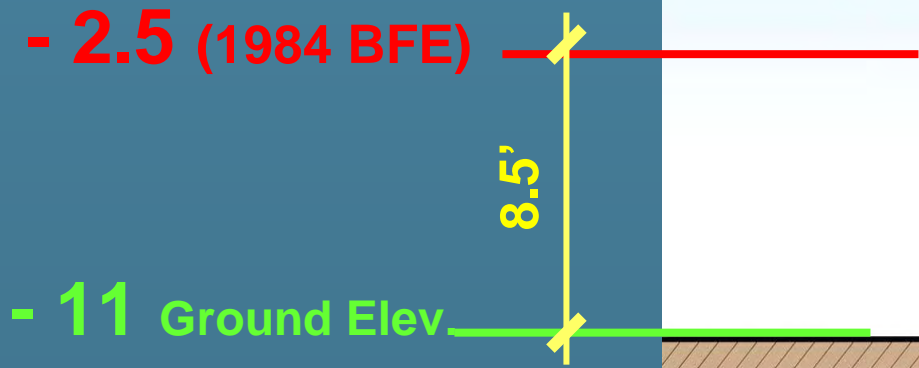
3.0'



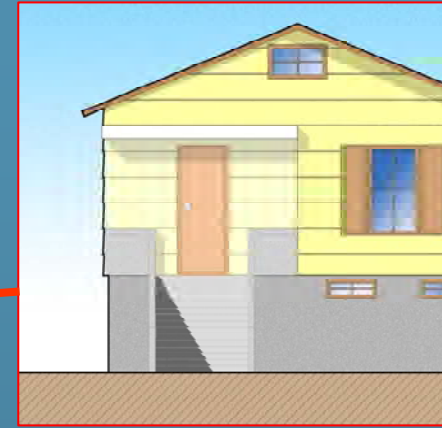
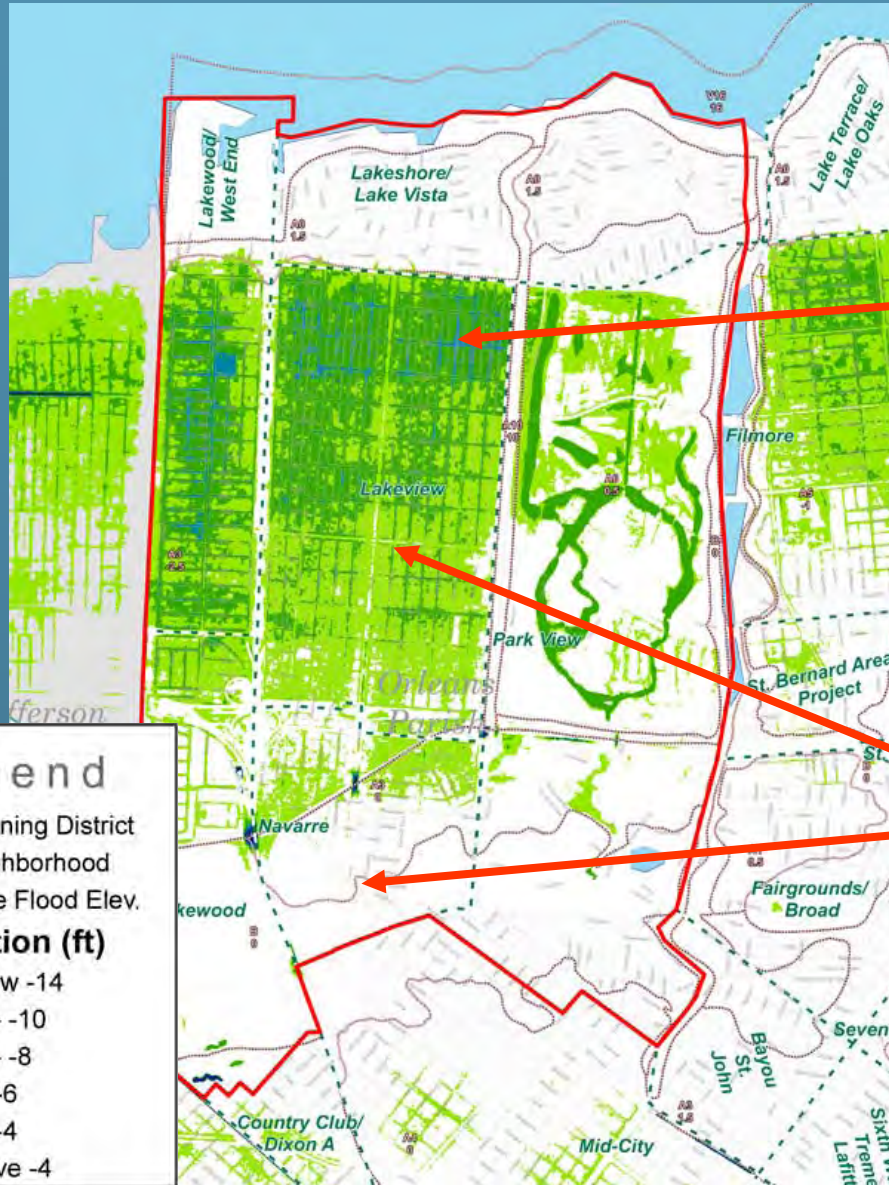
# 1984 BFE at Minus 11' Elevation and BFE of Minus 2.5

- Raise home 8.5 feet as per 1984 BFE prevailing standard

ABFE has no impact  
on 1984 BFE –  
1984 BFE Exceeds  
3' Rule



# Implications Planning District 5



Elevate 6.5 to 8.5 Feet



Elevate 3.0 to 3.5 Feet

# FEMA Drawing for Planning District 5



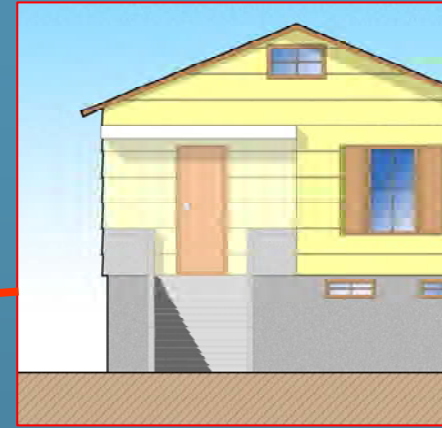
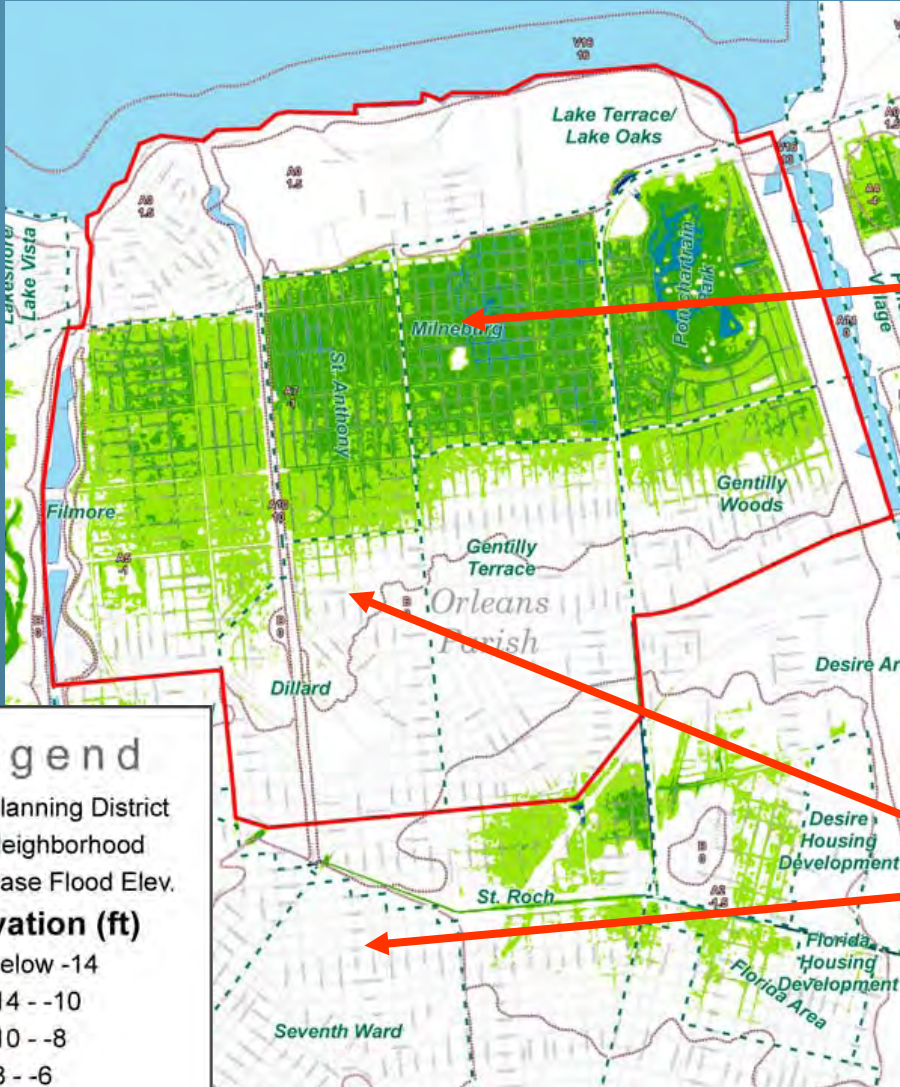
- Light green indicates areas where +3 above HEAG applies
- Grey areas are where 1984 BFE will be prevalent

**1984 FIRMs Maps and Base Flood Elevation have been adopted by the City of New Orleans and are in effect.**

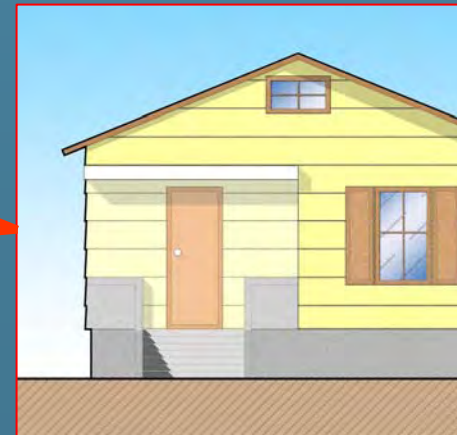
Recovery Guidance ABFE will only impact a limited number of areas and raise required elevations only a maximum of 1.5 feet on the average

It will eliminate construction of “slab homes”.

# Implications Planning District 6



Elevate Min. 6.5 to 8.5 Feet Depending on Elevation of Ground



Elevate 3.0 to 3.5 Feet

# First Habitable Floor Elevations Will be on an Individual Site Basis



- In all areas/sectors of City, elevations of homes will vary as per ground elevation and BFE:
  - Within a Planning District,
  - A neighborhood,
  - Even a single block.
- Only each individual property survey will ascertain the exact level of first habitable floor elevation requirement
- Substantial implications for neighborhood aesthetics and design

# Community Appearance and Compatibility Issues

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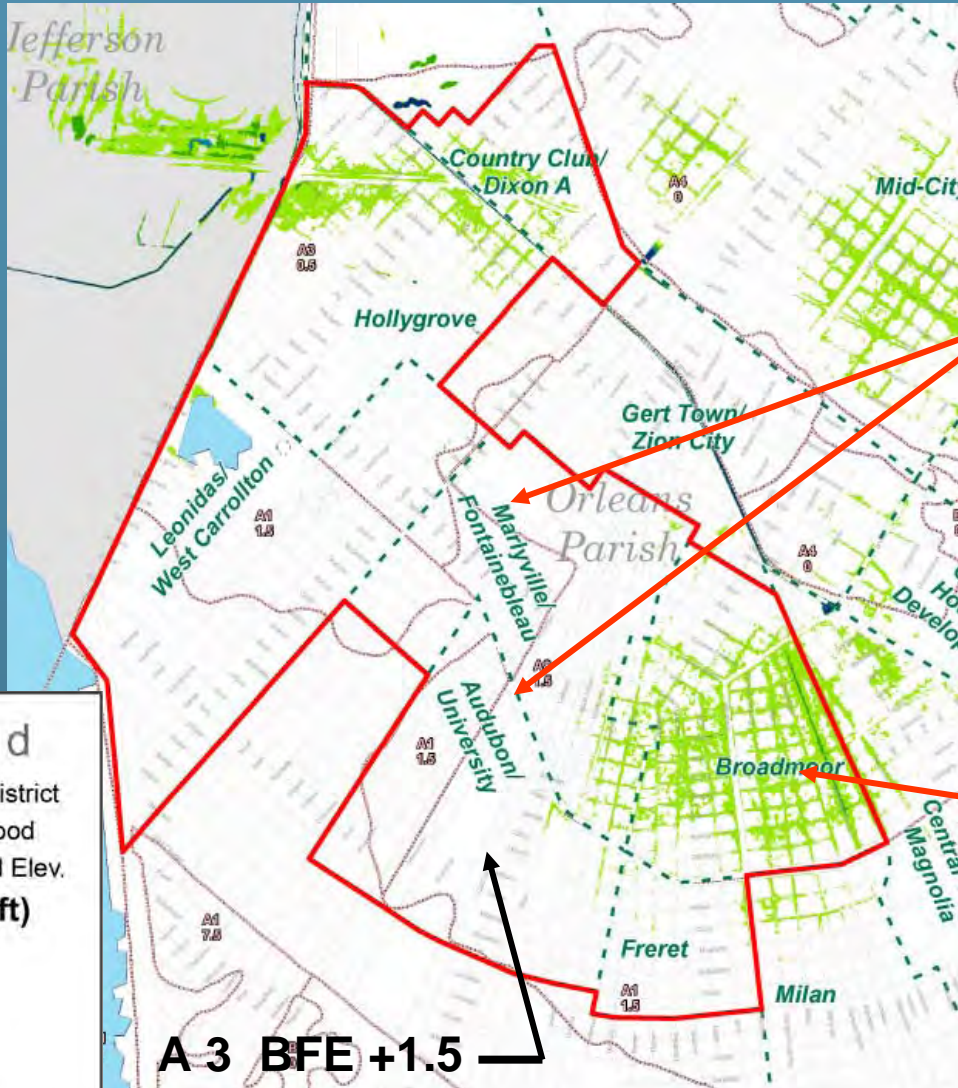
- Issues of the aesthetics of raising homes are critical to keep community
  - Appearance
  - Identity
  - Property values
- Implementation of design controls should be seriously evaluated

# 1984 BFE Impacts – Other Man Made Changes



- *Not only structures need to be raised:*
  - *“any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.”*
- New Subdivision will have to meet flood criteria in roadway design
- Golf fairways will have to meet 1984 BFE if substantially damaged, substantial improvement or new construction

# Planning District 3

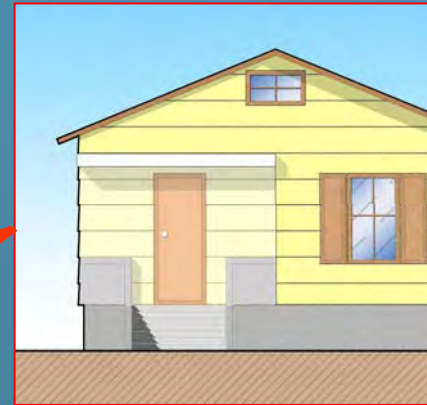


**Legend**

- Planning District
- Neighborhood
- Base Flood Elev.

**Elevation (ft)**

- Below -14
- 14 -- -10
- 10 -- -8
- 8 -- -6
- 6 -- -4
- Above -4

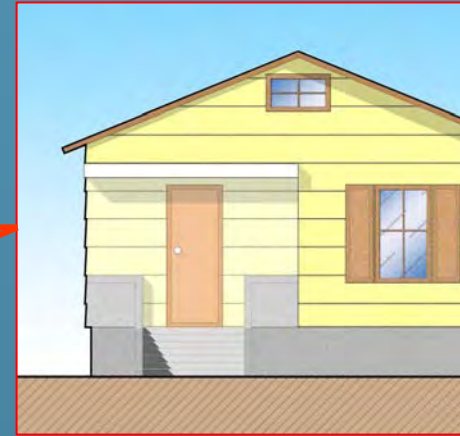
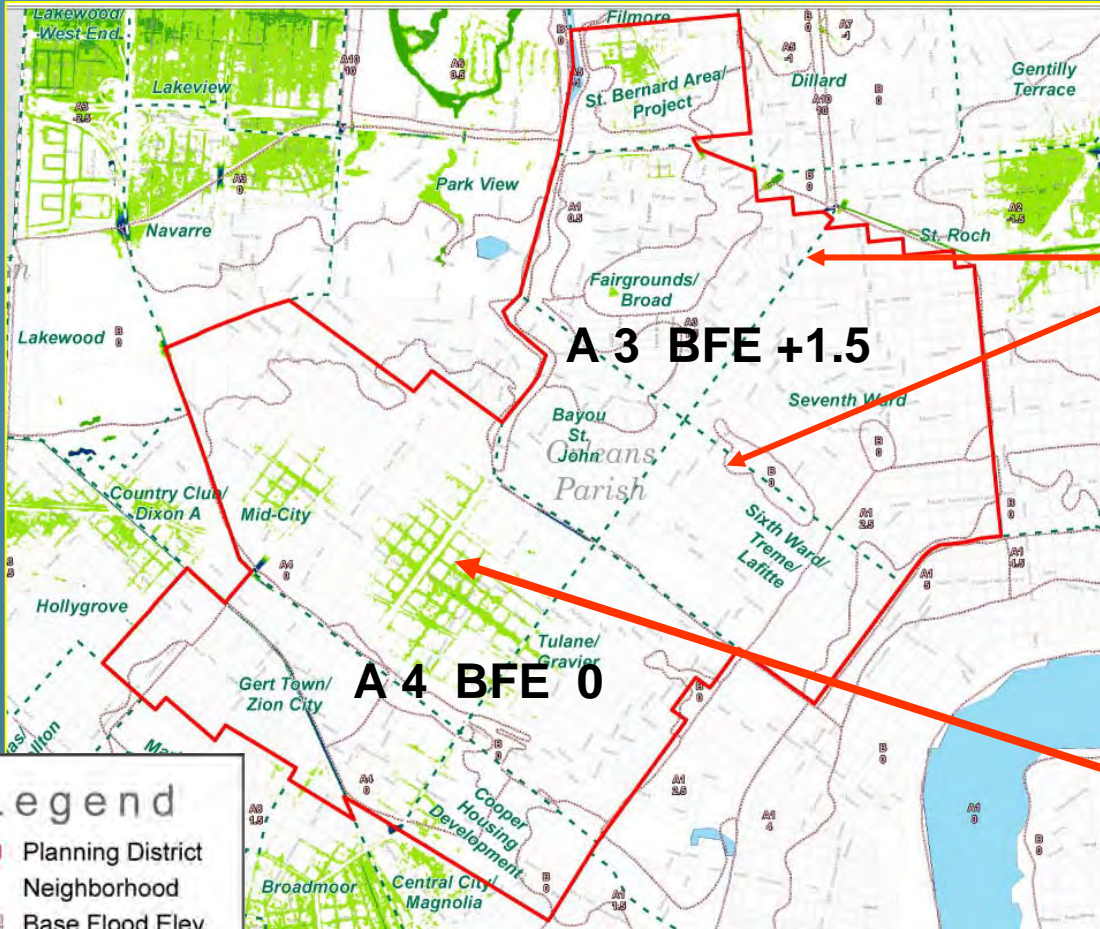


HEAG - Elevate 3.0'



Elevate from 5.5' to 6.5' or HEAG

# Planning District 4

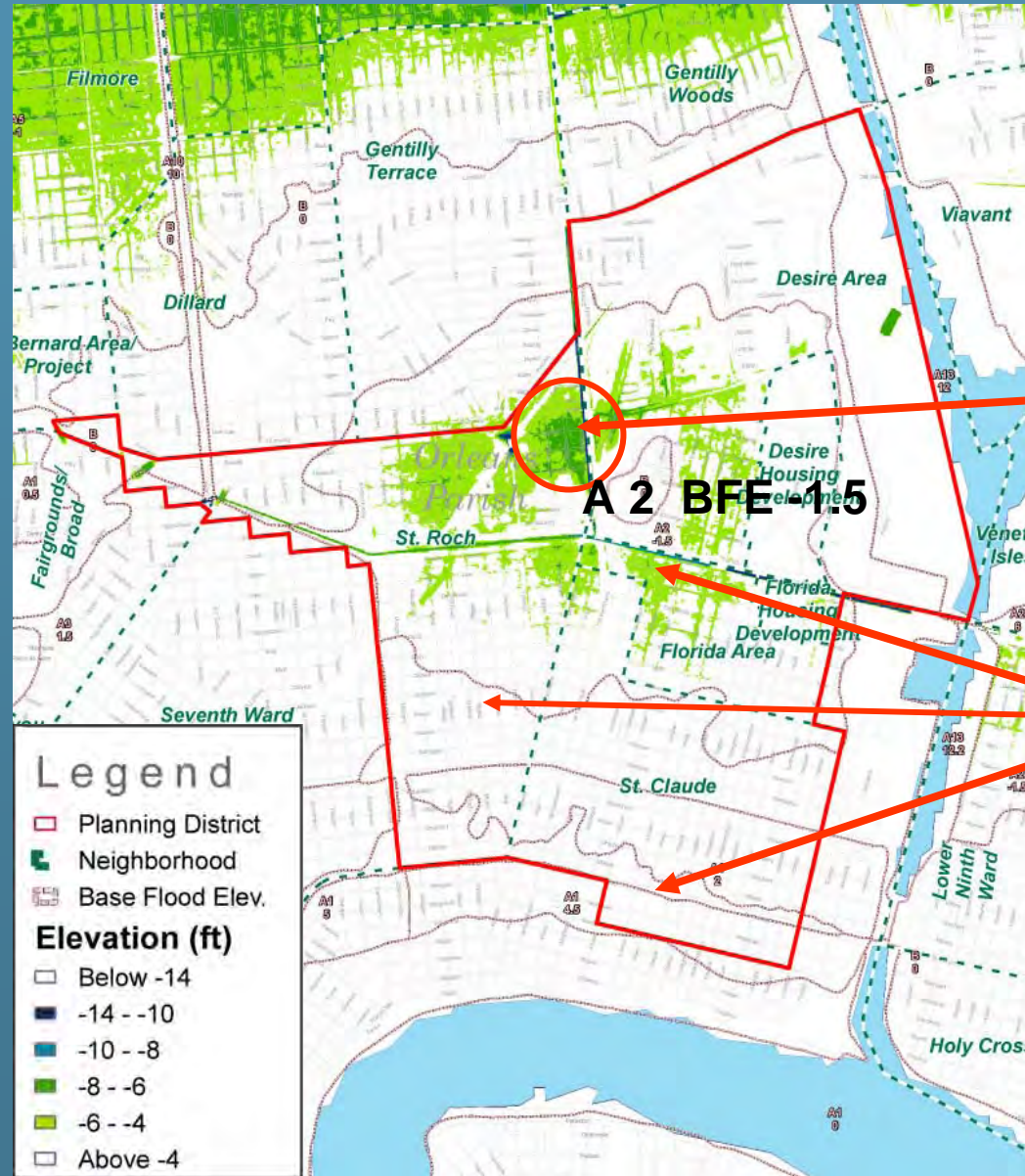


HEAG - Elevate 3.0'

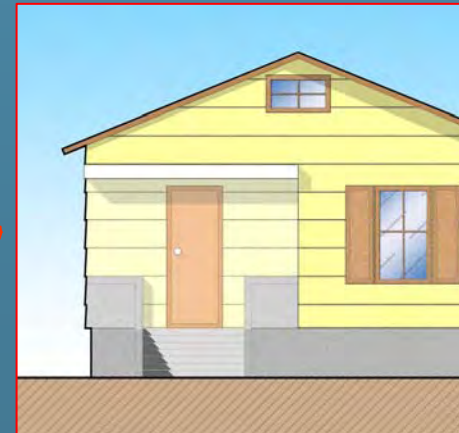


Elevate from 4' to 6' or HEAG

# Planning District 7

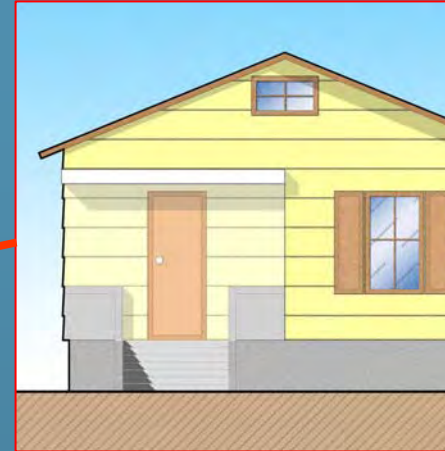
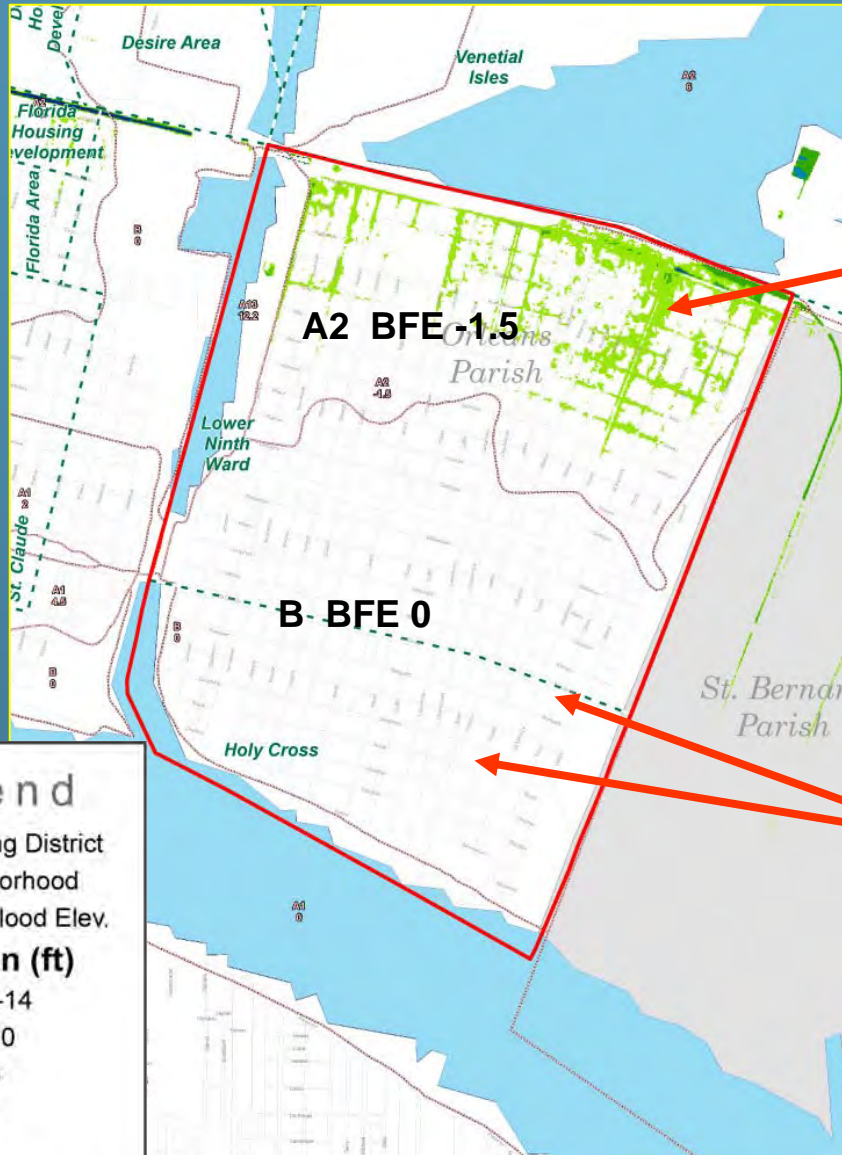


Small sector – Raise up to 6.5'

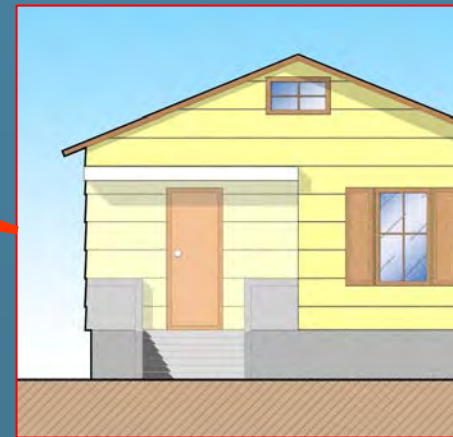


HEAG - Elevate 3.0'

# Planning District 8

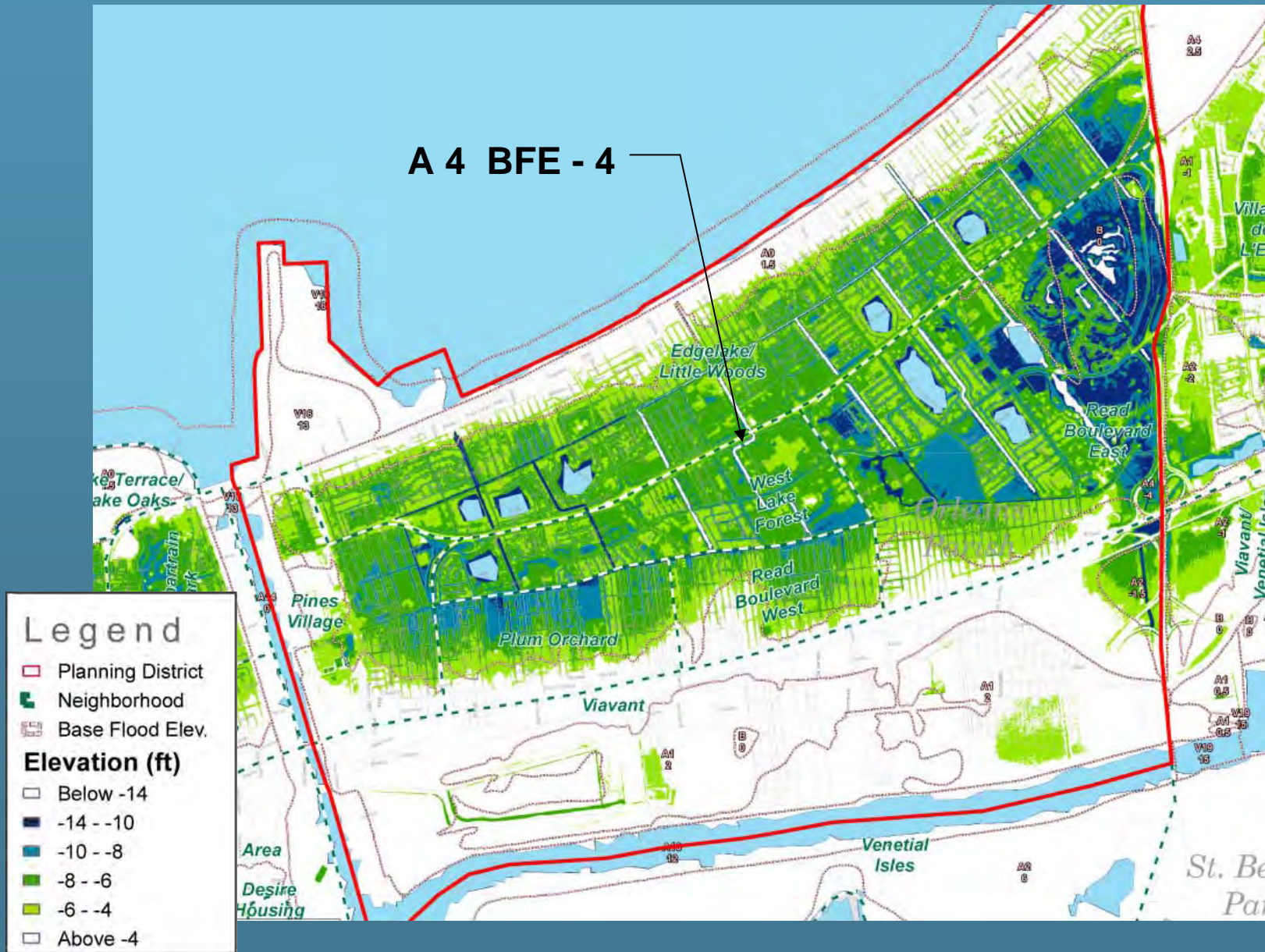


**BFE -1.5 or HEAG - Elevate Min. 3.0'**

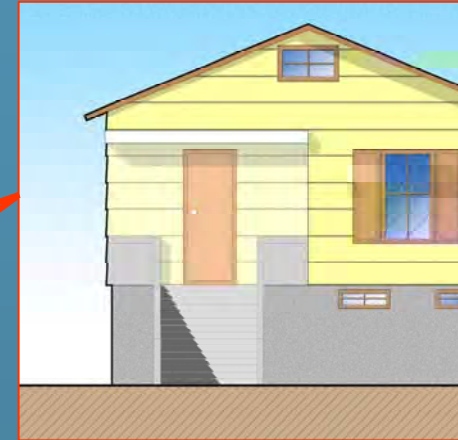
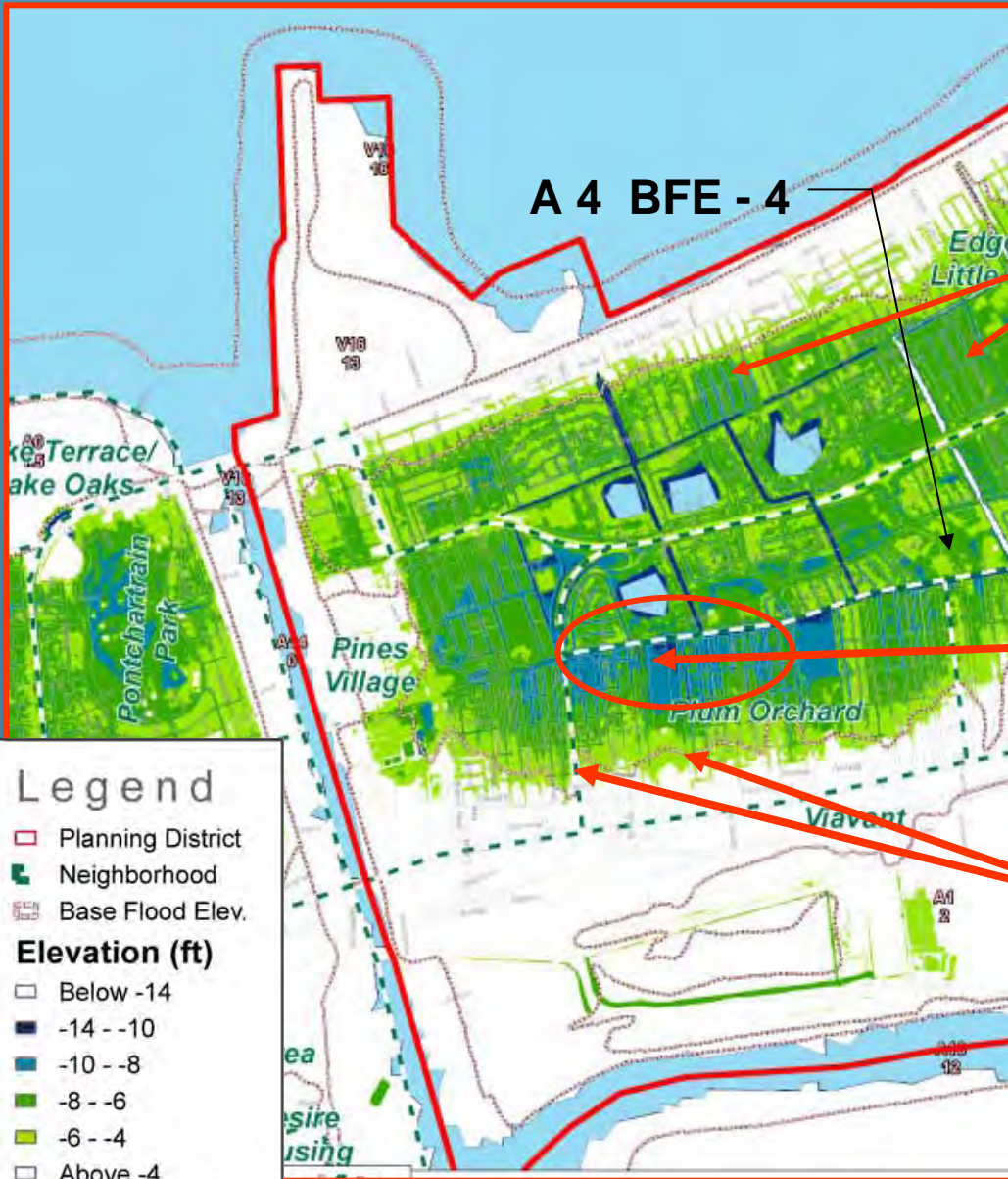


**HEAG - Elevate 3.0'**

# Planning District 9



# Planning District 9



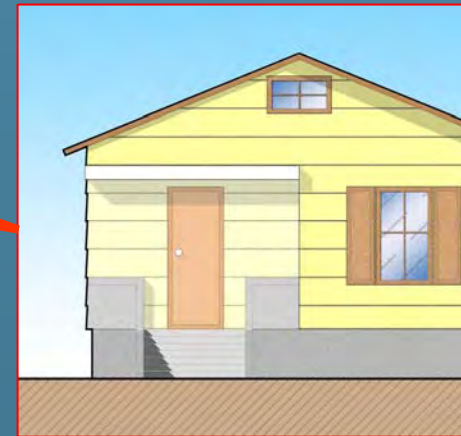
Elevate 4' to BFE or, HEAG

Elevate 6.5' to BFE



HEAG - Elevate 3.0'

# FEMA Flood Recovery Data Map – Planning District 9



HEAG - Elevate Min. 3.0'

<http://www.fema.gov/hazard/flood/recoverydata/katrina/>

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