

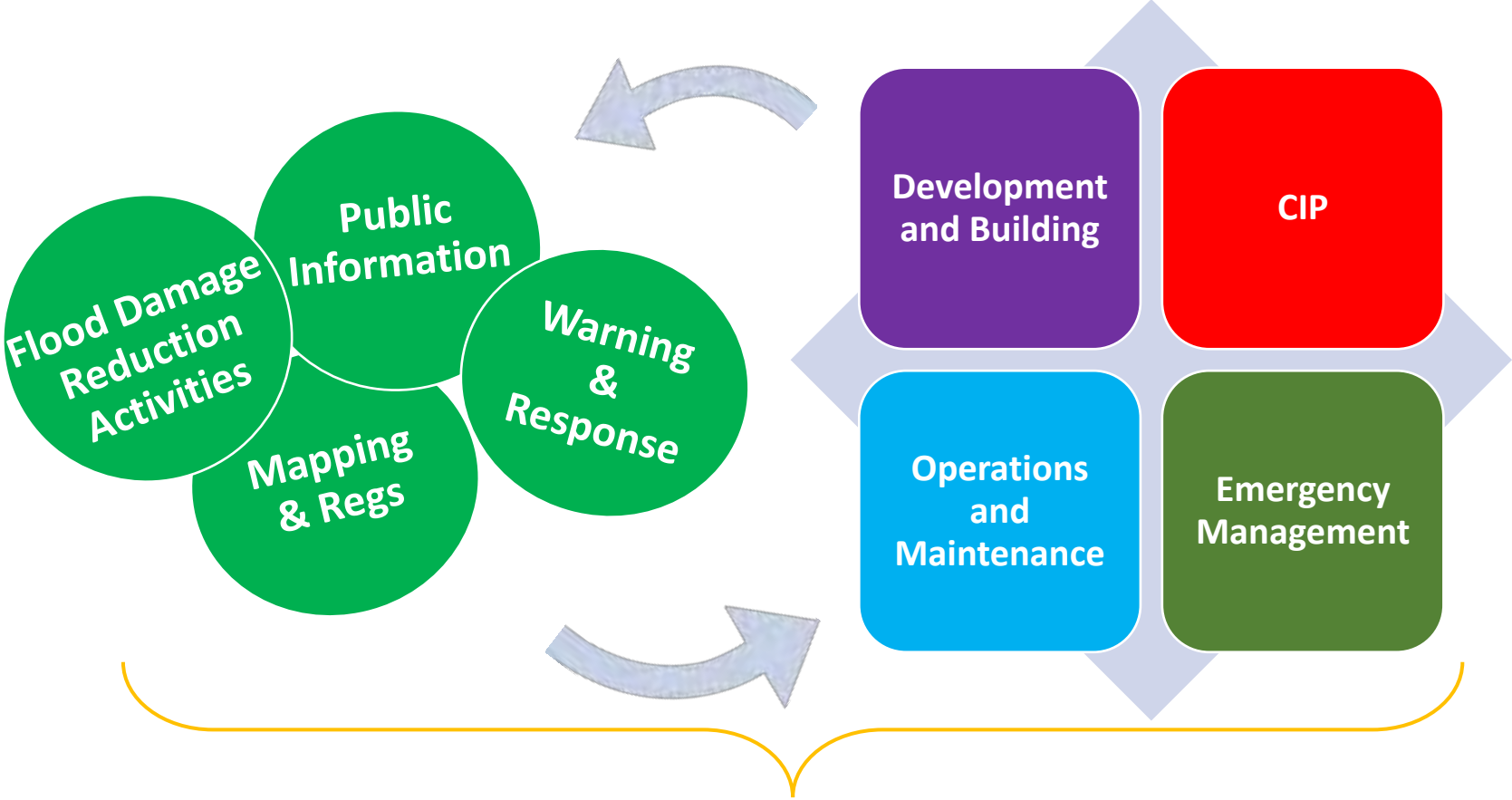


Seeking Opportunity in Challenge: Coastal Stormwater Management in 2019

June 20, 2019

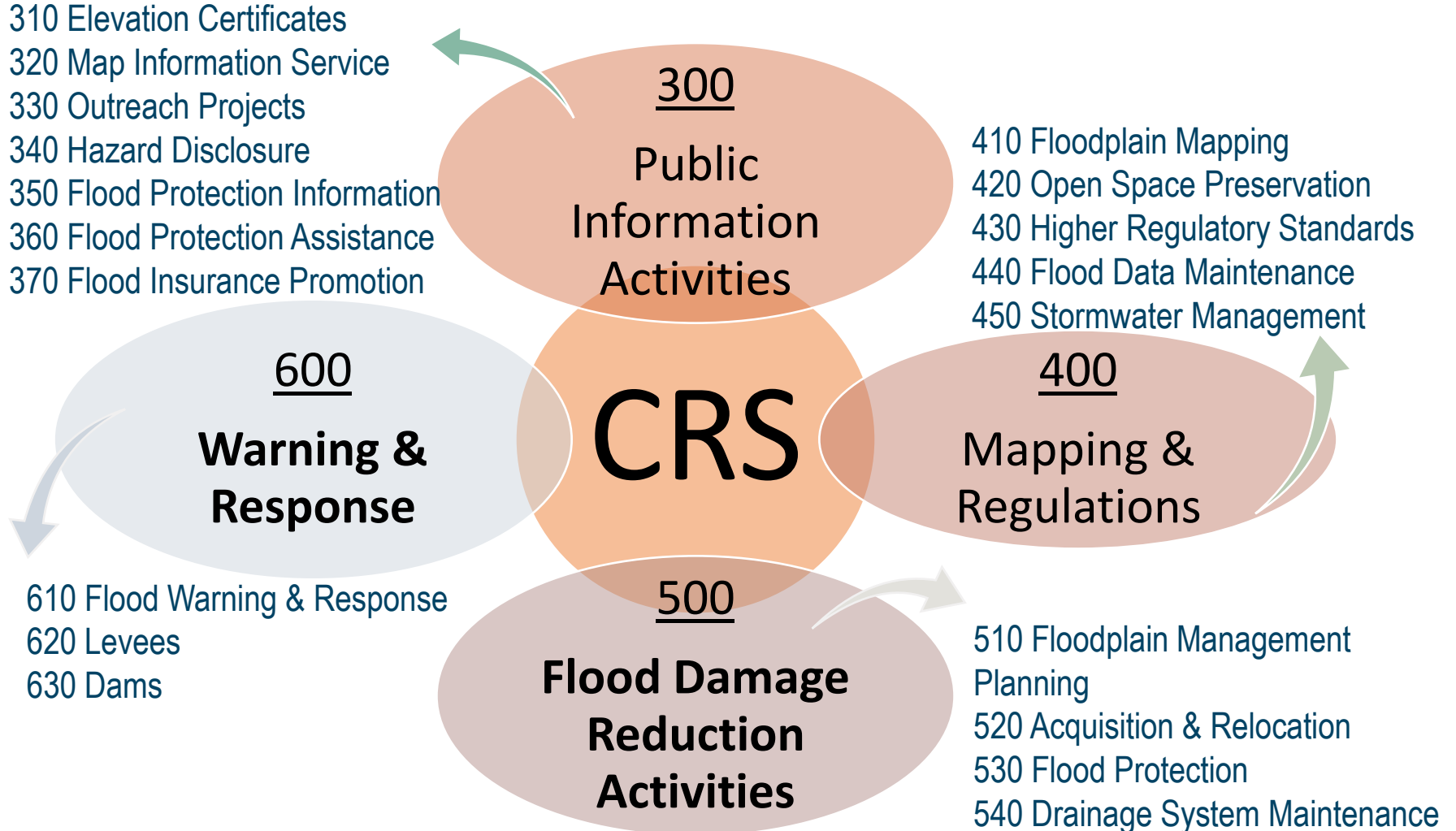
JonesEdmunds 

Comprehensive Focus



**COORDINATED, COMPREHENSIVE FLOODPLAIN
MANAGEMENT PROGRAM**

Community Rating System (CRS)



Community Rating System (CRS)

- 310 **Elevation Certificates**
- 320 **Map Information Service**
- 330 **Outreach Projects**
- 340 Hazard Disclosure
- 350 Flood Protection Information
- 360 Flood Protection Assistance
- 370 Flood Insurance Promotion



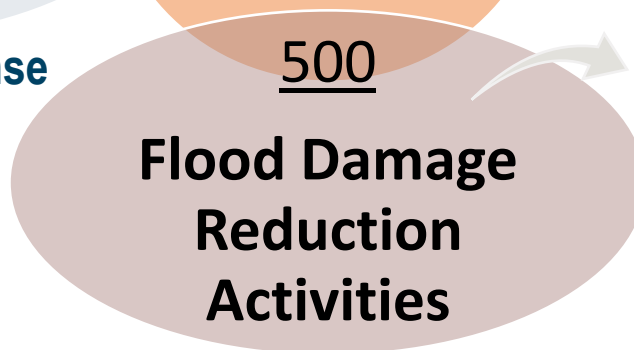
- 410 **Floodplain Mapping**
- 420 **Open Space Preservation**
- 430 **Higher Regulatory Standards**
- 440 **Flood Data Maintenance**
- 450 **Stormwater Management**



- 610 **Flood Warning & Response**
- 620 **Levees**
- 630 **Dams**



- 510 **Floodplain Management Planning**
- 520 **Acquisition & Relocation**
- 530 Flood Protection
- 540 **Drainage System Maintenance**



Watershed Management Planning in GIS

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- Layers
 - F:\Projects\08449_Hillsborough_Co\HillsboroughRiver20
 - Model
 - SWMM_NODE
 - SWMM_LINK
 - CHANNEL
 - ORIFICE
 - PIPE
 - WEIR
 - SWMM_SUBCATCHMENT
 - F:\Projects\08449_Hillsborough_Co\HCSWMM5\Final_D
 - Proposed_Floodplain_100yr
 - F:\LocalGIS\HillsboroughCounty\Hillsborough_2017_FD
 - Hillsborough_2017_FDOT.ecw
 - RGB
 - Red: Red
 - Green: Green
 - Blue: Blue

Floodplain Tools

- ICPR_SWMM5
 - 01 Extract ICPR3 Node Elevations
 - 01 Extract ICPR4 Node Elevations
 - 01 Extract SWMM5 Node Elevations
 - 02 Inundation - ICPR_SWMM5
 - 03 Flood Boundary XSections - ICPR_SWMM5
 - 04 InundationTS - ICPR3
 - 04 InundationTS - ICPR4
 - 04 InundationTS15min - ICPR4
 - Flood Boundary XSections
 - Inundation

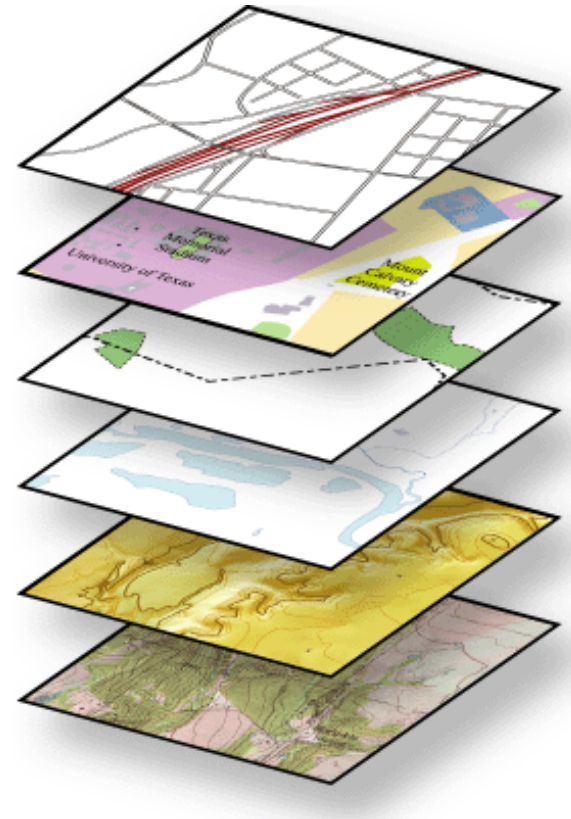
ArcToolbox

- ArcToolbox
 - 3D Analyst Tools
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 - Arc Hydro Tools
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 - Cartography Tools
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 - Geocoding Tools
 - Geostatistical Analyst Tools
 - GRAIP Lite
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 - Linear Referencing Tools
 - Multidimension Tools
 - NDNR Hydraulics
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 - Network Analyst Tools
 - Parcel Fabric Tools
 - RAPID
 - Schematics Tools
 - Server Tools
 - Space Time Pattern Mining Tools
 - Spatial Analyst Tools
 - Spatial Statistics Tools
 - tmp
 - Tracking Analyst Tools

531896.07 1317919.934 Feet

GIS Data for CRS

- FEMA flood data
- Local flood data
- Municipal boundaries
- Property boundaries
- Aerials
- Digital Elevation Models
- Land use
- Zoning
- Open space
- Wetlands
- Evacuation zones
- Stormwater inventory
 - Structures
 - Maintained ditches and other conveyance
- Future land use

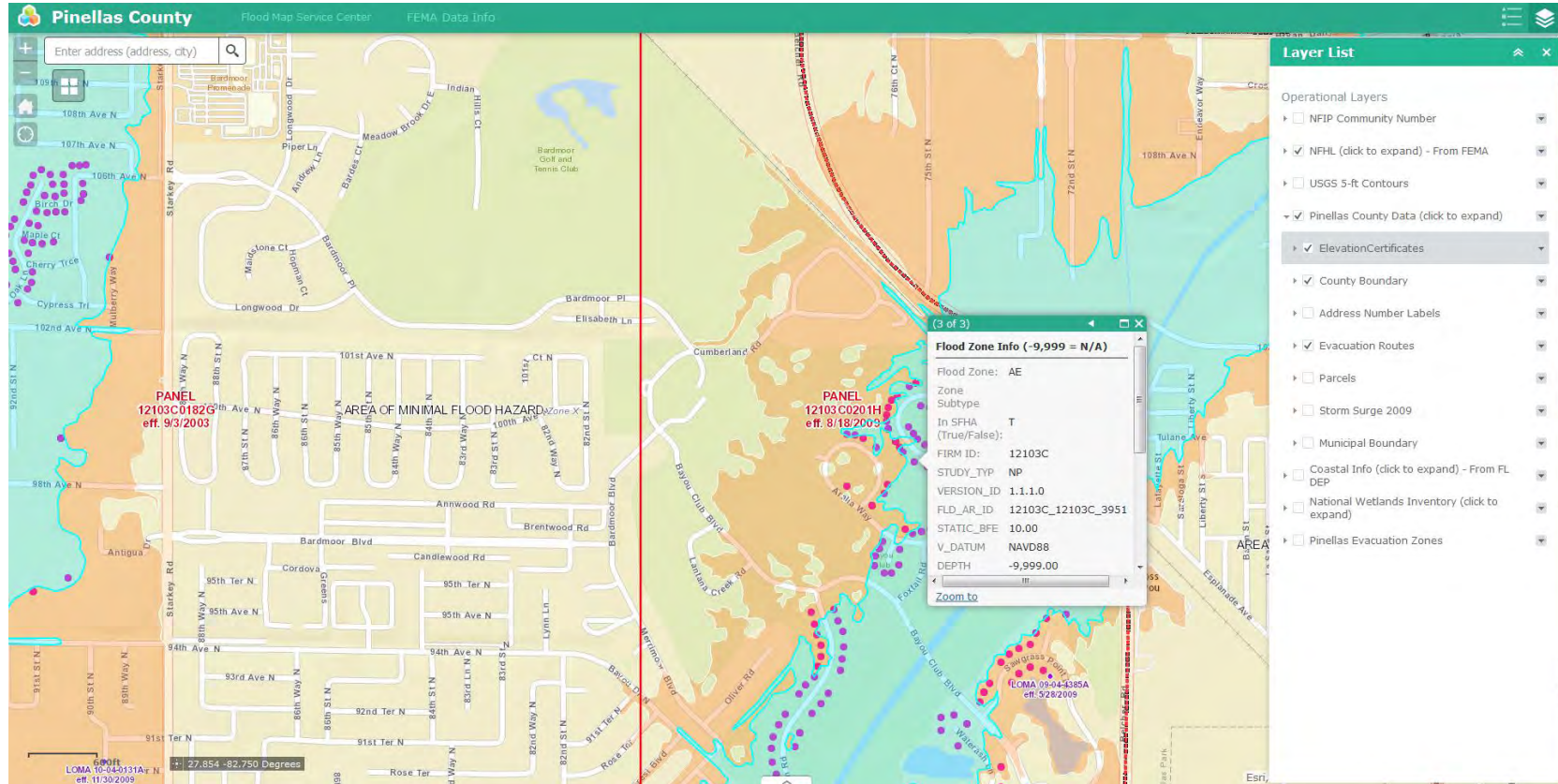


Elevation Certificates

- Community is responsible for maintaining elevation certificates
- Elevation certificates audited by ISO

U.S. DEPARTMENT OF HOMELAND SECURITY FEDERAL EMERGENCY MANAGEMENT AGENCY National Flood Insurance Program		ELEVATION CERTIFICATE IMPORTANT: Follow the instructions on pages 1-9.		OMB No. 1660-0008 Expiration Date: July 31, 2015	
SECTION A - PROPERTY INFORMATION				FOR INSURANCE COMPANY USE	
A1. Building Owner's Name				Policy Number:	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or R.O. Route and Box No.				Company NAIC Number:	
City		State		ZIP Code	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)					
A4. Building Use (e.g., Residential, Non Residential, Addition, Accessory, etc.)					
A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: <input type="checkbox"/> NAD 1927 <input type="checkbox"/> NAD 1983					
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.					
A7. Building Diagram Number _____					
A8. For a building with a crawlspace or enclosure(s):			A9. For a building with an attached garage:		
a) Square footage of crawlspace or enclosure(s) _____ sq ft			a) Square footage of attached garage _____ sq ft		
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____			b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____		
c) Total net area of flood openings in A8.b _____ sq in			c) Total net area of flood openings in A9.b _____ sq in		
d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No			d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No		
SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number			B2. County Name		B3. State
B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone A0, use base flood depth)
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in item B9: <input type="checkbox"/> FIS Profile <input type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in item B9: <input type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input type="checkbox"/> No Designation Date: ____/____/____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					
SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)					
C1. Building elevations are based on: <input type="checkbox"/> Construction Drawings* <input type="checkbox"/> Building Under Construction* <input type="checkbox"/> Finished Construction *A new Elevation Certificate will be required when construction of the building is complete.					
C2. Elevations - Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/A0. Complete items C2.a-h below according to the building diagram specified in item A7. In Puerto Rico only, enter meters. Benchmark Utilized: _____ Vertical Datum: _____ Indicate elevation datum used for the elevations in items a) through h) below. <input type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____ Datum used for building elevations must be the same as that used for the BFE. Check the measurement used.					
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
b) Top of the next higher floor		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
c) Bottom of the lowest horizontal structural member (V Zones only)		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
d) Attached garage (top of slab)		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
f) Lowest adjacent (finished) grade next to building (LAC)		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
g) Highest adjacent (finished) grade next to building (HAG)		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support		_____		<input type="checkbox"/> feet <input type="checkbox"/> meters	
SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION					
This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.					
<input type="checkbox"/> Check here if comments are provided on back of form. <input type="checkbox"/> Yes <input type="checkbox"/> No					
<input type="checkbox"/> Check here if attachments. <input type="checkbox"/> Yes <input type="checkbox"/> No					
Certifier's Name		License Number		PLACE SEAL HERE	
Title		Company Name			
Address		City State ZIP Code			
Signature		Date Telephone			
FEMA Form 086-0-33 (Revised 7/12) See reverse side for continuation. Replaces all previous editions.					

Map Information Service



Map Information Service

Pinellas County Flood Map Service Center FEMA Data Info

Enter address (address, city) [Search]

PANEL
121030201H
Eff. 3/18/2009

Zone AE
(EL 10 Feet)

0.2 POTENTIAL CH

(1 of 3)

PANEL NUMBER	0201
BASE FLOOD	11
ELEVATION	

Elevation Certificate

FEMA CERT-C8145508-7347 Sawgrass Point Dr-A10-11

Zoom to

27.857 -82.738 Degrees

Layer List

- Operational Layers
 - NFIP Community Number
 - NFHL (click to expand) - From FEMA
 - USGS 5-ft Contours
 - Pinellas County Data (click to expand)
 - ElevationCertificates
 - County Boundary
 - Address Number Labels
 - Evacuation Routes
 - Parcels
 - Storm Surge 2009
 - Municipal Boundary
 - Coastal Info (click to expand) - From FL DEP
 - National Wetlands Inventory (click to expand)
 - Pinellas Evacuation Zones

Open Space

- Activity 420 Objectives:
 - Prevent flood damage by keeping flood-prone lands free of development
 - Protect and enhance the natural functions of floodplains
- Up to 2,020 points!



Open Space

- Areas preserved as open space
- Preserve management plans
- Future land use
- Zoning

OSP ID	OSP NAME	OSP (ac TOTAL)	OSP (ac in SFHA)	NFOS1: Undeveloped/natural state (ac in SFHA)	NFOS2: Protection Plan (ac in SFHA)	aNFOS: Educational Materials (ac in SFHA)	aSHOS: Seaward CCCL (ac)
OSP01	BROOKER CREEK PRESERVE	6878.72	3333.08	3333.08	3333.08	3333.08	0
OSP02	FORT DE SOTO PARK	827.68	827.68	827.68	0	0	637
OSP03	County Parcel 342916001100000000 (RIGHT OF WAY)	624.26	525.43	0	0	0	0
OSP04	SAWGRASS LAKE PARK	274.51	271.84	0	0	0	0
OSP05	JOES CREEK MANAGEMENT AREA	230.06	227.76	227.76	0	0	0
OSP06	LAKE SEMINOLE MANAGEMENT AREA	164.89	164.89	164.89	0	0	0
OSP07	JOHN CHESTNUT SENIOR PARK	217.57	142.04	0	0	0	0
OSP08	WALL SPRINGS PARK	183.22	139.57	0	0	0	0
OSP09	SHELL KEY PRESERVE	125.63	125.63	125.63	125.63	125.63	0
OSP10	WAR VETERANS MEMORIAL PARK	97.29	97.29	0	0	0	0
OSP11	WEEDON ISLAND PRESERVE	91.36	91.36	91.36	91.36	91.36	0
OSP12	ANCLOTE KEY PRESERVE & PARK	78.83	78.83	78.83	0	0	0
OSP13	CABBAGE KEY MANAGEMENT AREA	60.11	60.11	60.11	0	0	0
OSP14	BOCA DIEGA MILLENIUM PARK	101.72	57.19	0	0	0	0

