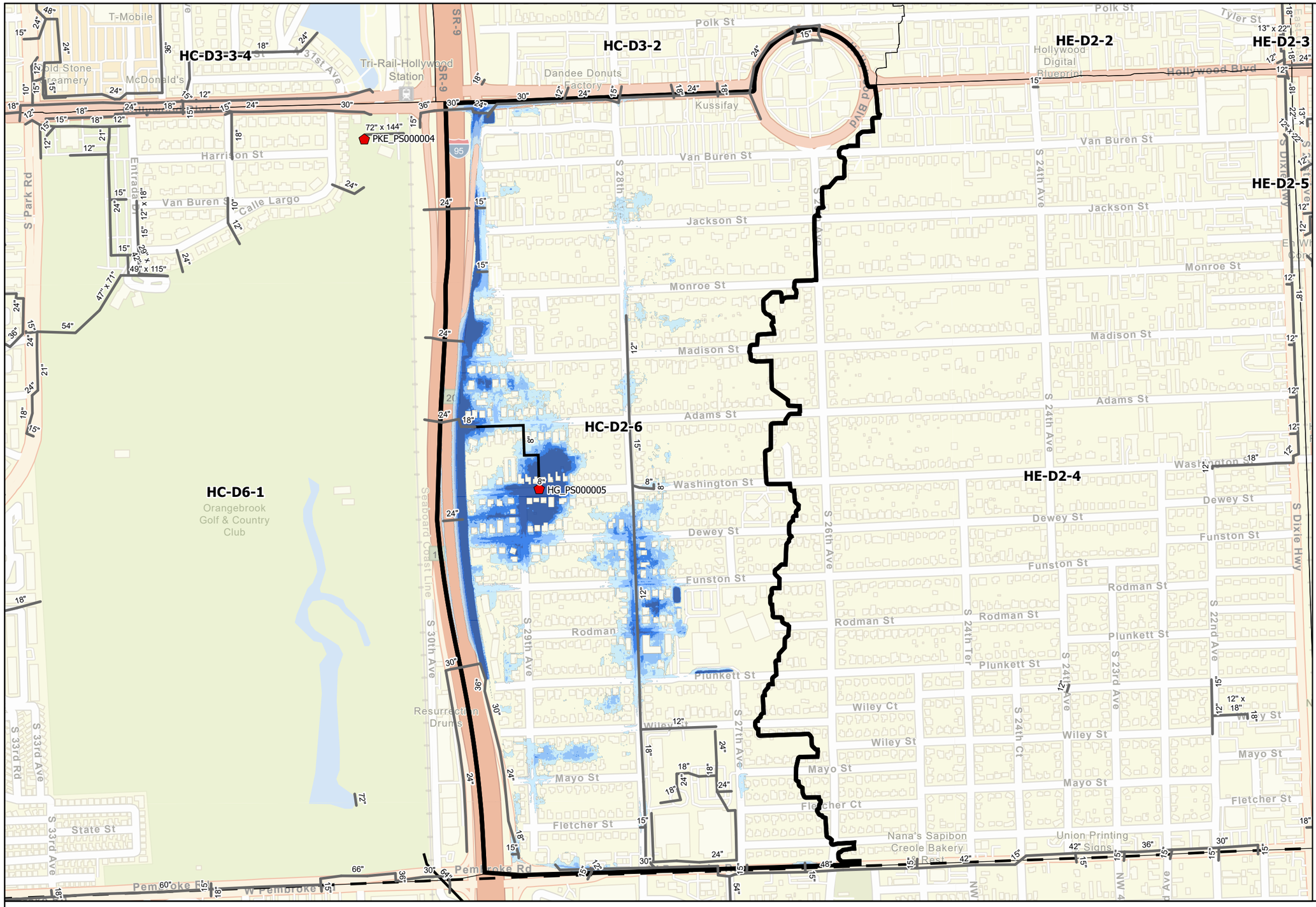

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Existing Gravity Pipes
- Existing Forcemains

10-Year 72-Hour Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Current Conditions Flooding in CIP Area
Highland Gardens
10-year Design Storm

0 337.5 675 1,350 Feet

1:8,000

City of Hollywood Stormwater Master Plan

HC-D2-6_EC-10

2/28/2023

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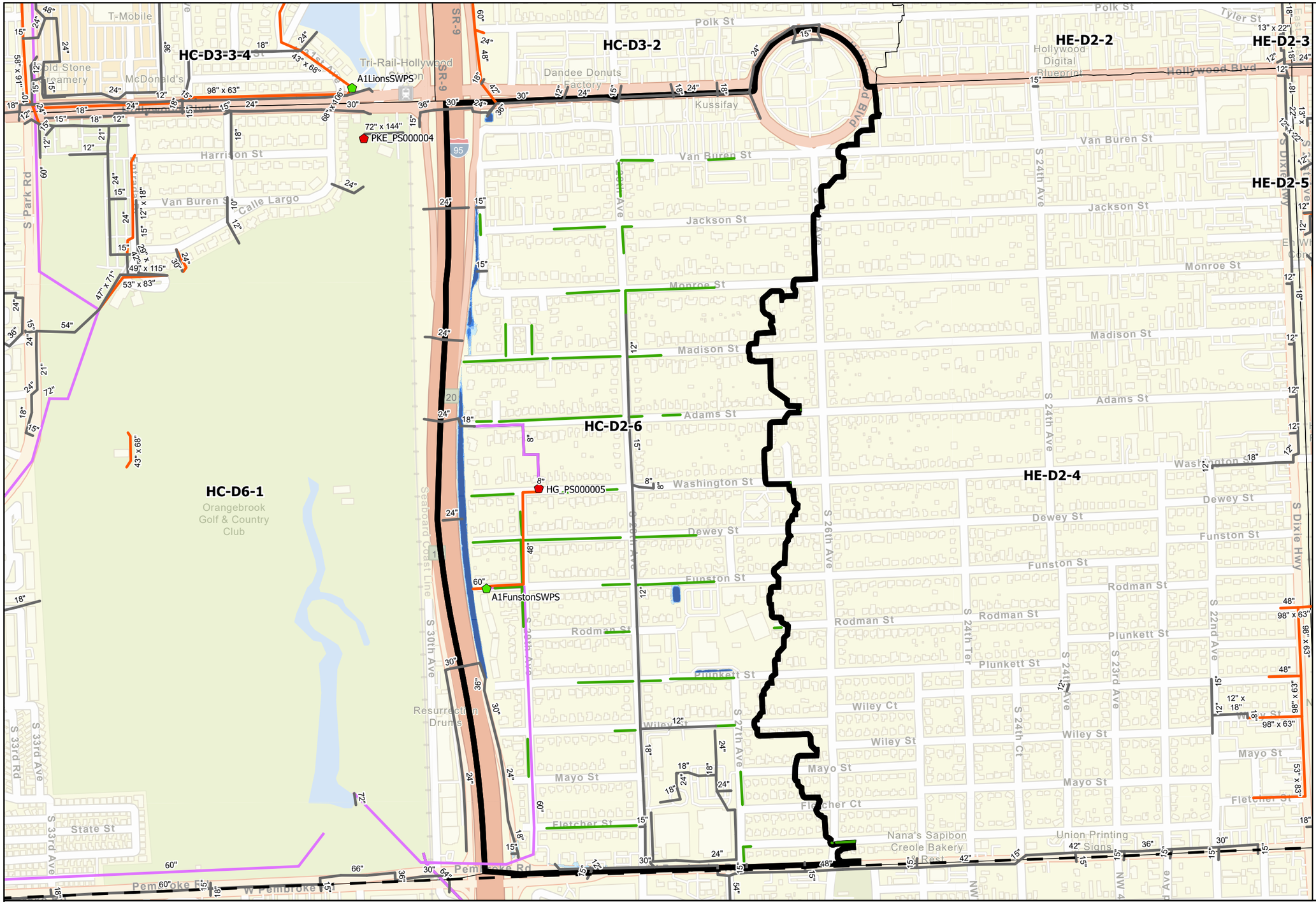

Predicted Flooding Reduction and Proposed ALT 1 CIP for 5-year Design Storm in CIP Area
Highland Gardens

City of Hollywood Stormwater Master Plan
HC-D2-6_ALT1-5
2/28/2023

0 337.5 675 1,350 Feet
1:8,000

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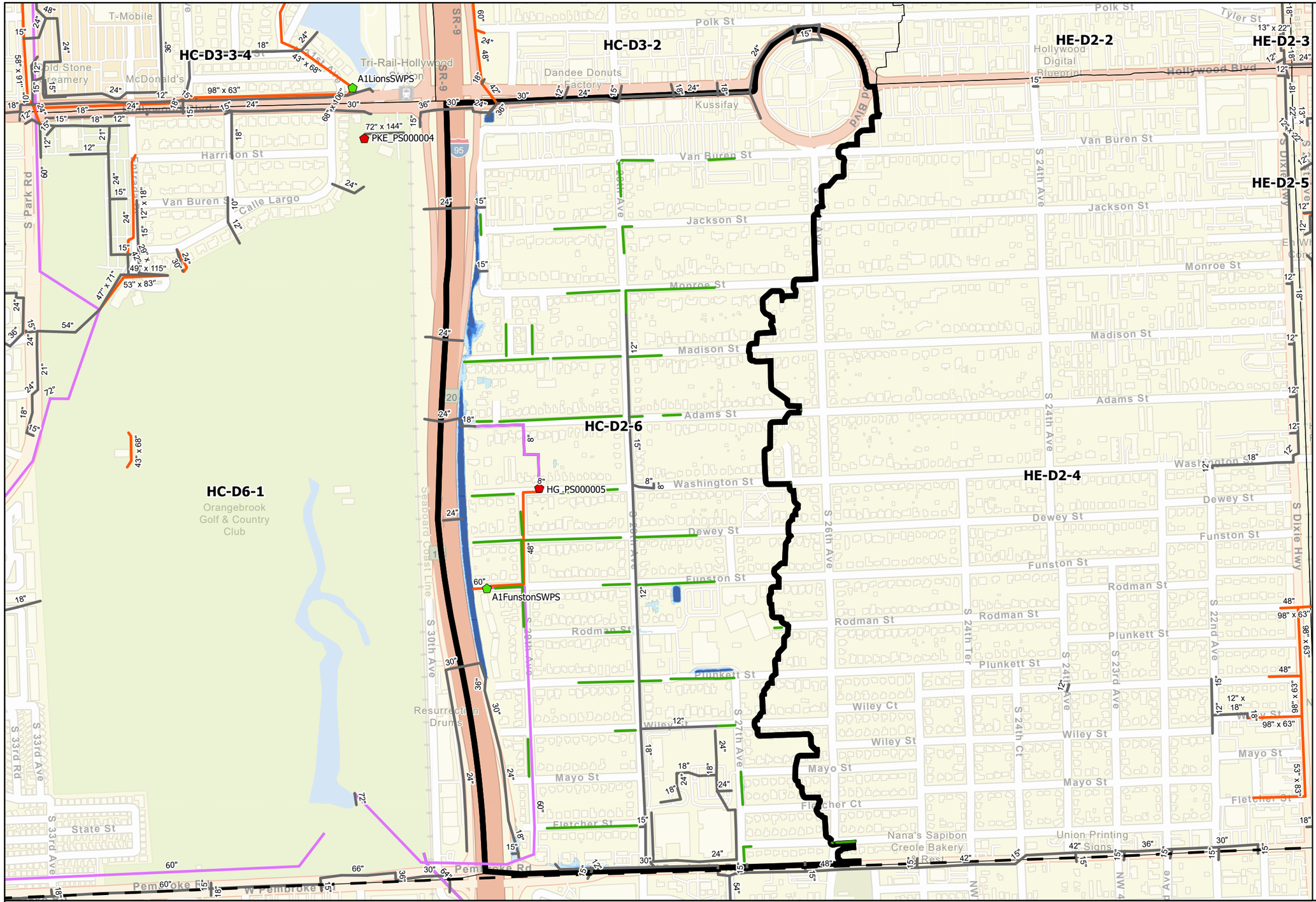

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 1 SWPS
- Alt 1 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 1 Exfiltration Pipes
- Alt 1 Gravity Pipes
- Alt 1 Forcemains
- Alt 1 Detention Pond

10-Year ALT 1 Storm Flood Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 1 CIP for 10-year Design Storm in CIP Area
Highland Gardens

0 337.5 675 1,350 Feet

1:8,000

City of Hollywood Stormwater Master Plan

HC-D2-6_ALT1-10

2/28/2023

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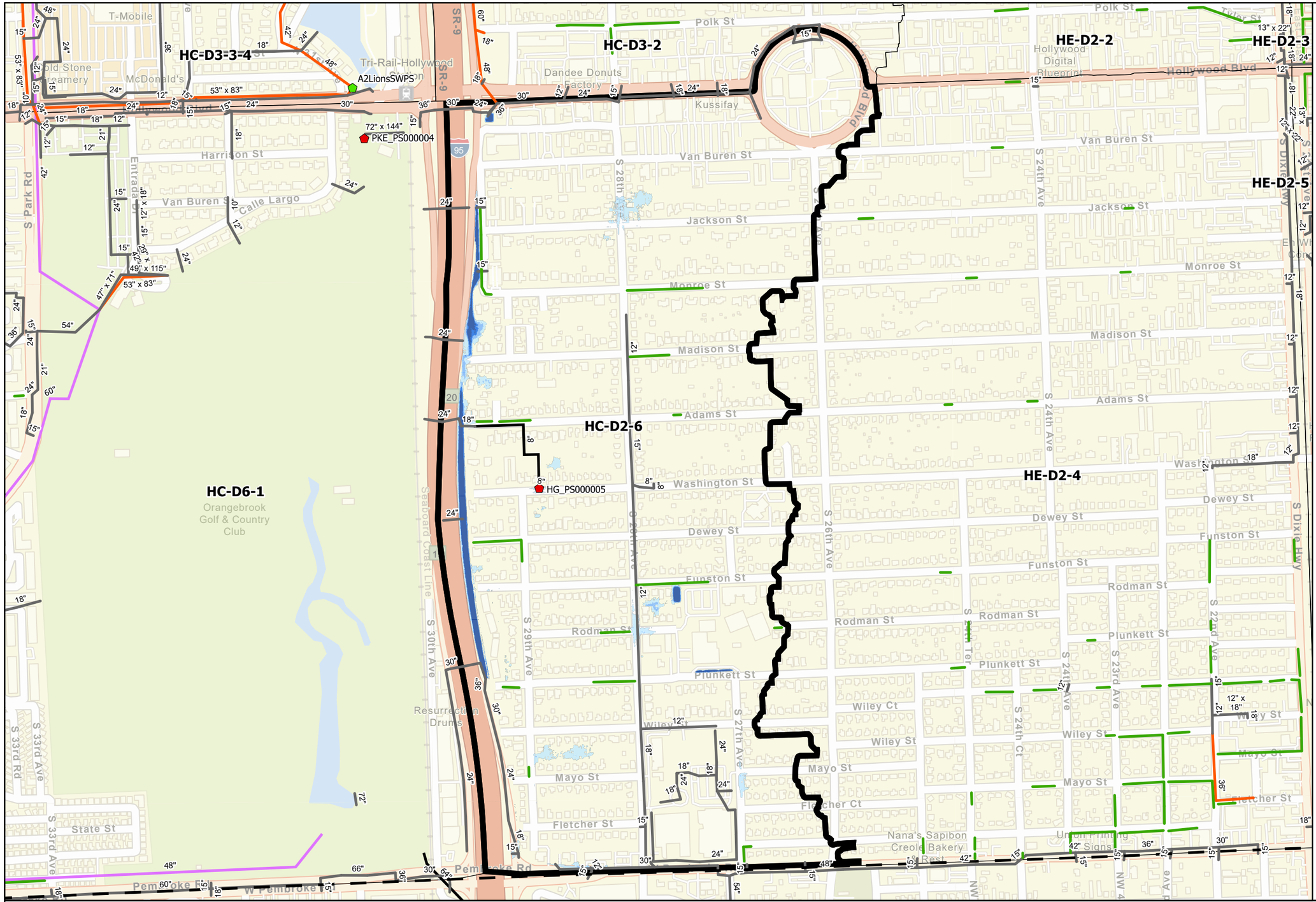

Predicted Flooding Reduction and Proposed ALT 2 CIP for 5-year Design Storm in CIP Area
Highland Gardens

CDM Smith
CITY OF Hollywood FLORIDA

0 337.5 675 1,350 Feet
1:8,000

City of Hollywood Stormwater Master Plan
HC-D2-6_ALT2-5
2/28/2023

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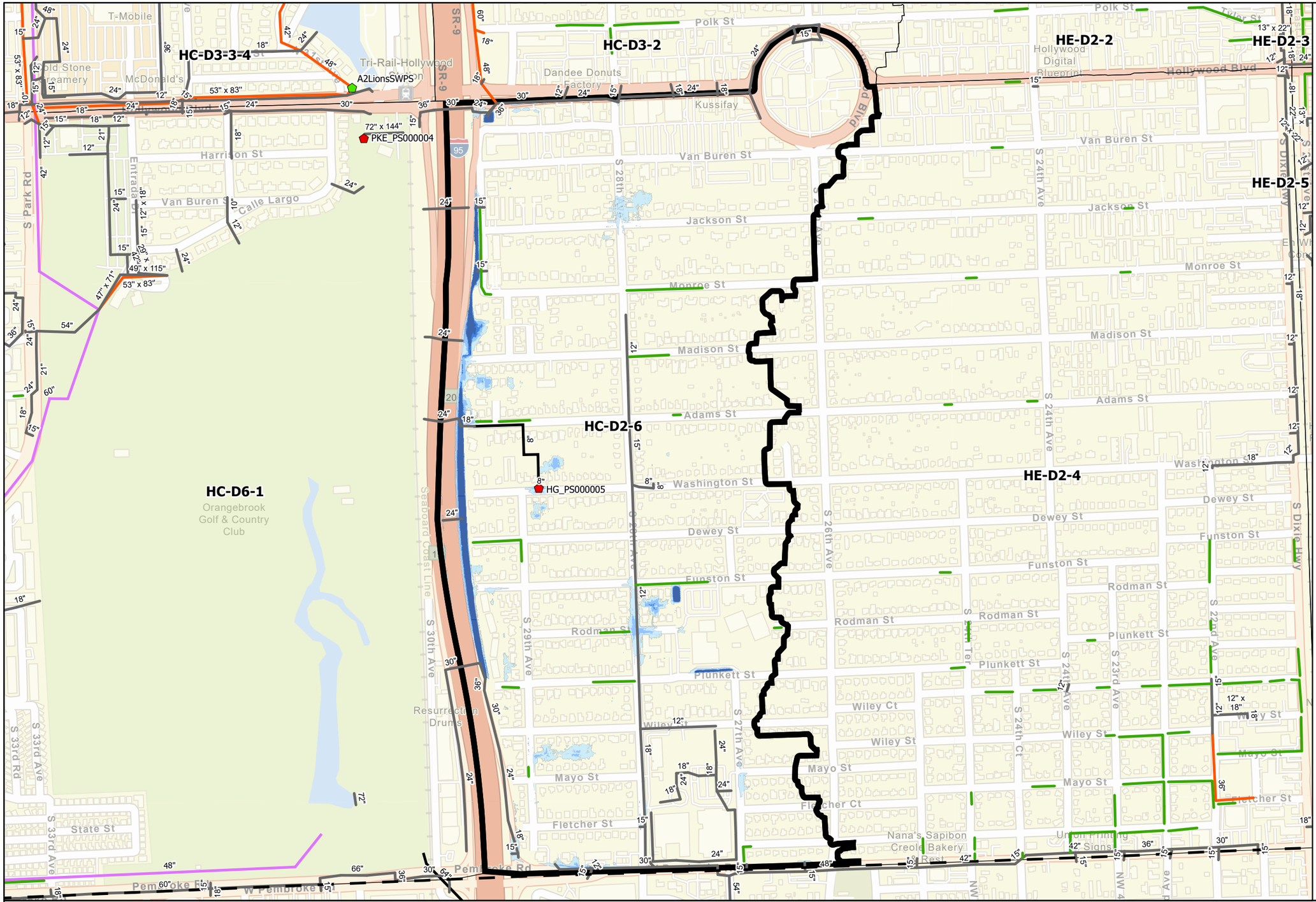

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 2 SWPS
- Alt 2 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 2 Exfiltration Pipe
- Alt 2 Gravity Pipes
- Alt 2 Forcemains
- Alt 2 Detention Pond

10-Year ALT 2 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 2 CIP for 10-year Design Storm in CIP Area Highland Gardens

0 337.5 675 1,350 Feet

1:8,000

City of Hollywood Stormwater Master Plan

HC-D2-6_ALT2-10

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		CONCEPTUAL CAPITAL COST ESTIMATE					Highland Gardens	
							Alternative 1	
PUMP STATIONS WITH FORCE MAINS								
ITEM #	Master Sheet Index	DIAMETER (INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24	FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36	FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42	FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48	FM- Force Main Collector	Circular	LF	$ 612.00	0	$ -
0005	17	54	FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60	FM- Force Main Collector	Circular	LF	$ 1,149.00	3,300	$ 3,791,700
0007	19	66	FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72	FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24	FMO- Force Main Offline	Circular	LF	$ 353.00	0	$ -
0010	11		IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12		IWO-Injection Wells -Offline		EA	$ 75,000.00	0	$ -
0012	6	PS-Storm Drainage Pump Stations < 166 cfs		I	EA	$ 2,400,000.00	1	$ 2,400,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs		II	EA	$ 3,500,000.00	0	$ -
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs		III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs		IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS			EA	$ 8,000,000.00	0	$ -
AIN SUBTOTAL								$ 6,191,700
EXFILTRATION WITH GRAVITY MAINS							Highland Gardens	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0020	21	15		GM-Gravity Main Collector	Circular	LF	$ 40.00	0	$ -
0021	22	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	0	$ -
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	0	$ -
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	0	$ -
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	0	$ -
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	1,100	$ 137,500
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	100	$ 22,000
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	0	$ -
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	0	$ -
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	0	$ -
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	0	$ -
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	0	$ -
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	84	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	11,791	$ 2,947,750
0056	50			Weir Box CS		EA	$ 7,500.00	0	$ -
0057	53			CS-22 Remod		EA	$ 200,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0055				Gravity Structures-Inlets		EA	$ 30,000.00	115	$ 3,445,750
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
	GRAVITY MAIN SUBTOTAL						#N/A		$ 6,553,000
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	16,291	$ 4,398,570
							CONSTRUCTION COST SUBTOTAL		**$ 17,143,270**
GENERAL CONDITIONS								Highland Gardens	
0061		Mobilization				LS	**4%**	$ 17,143,270	$ 685,731
0062		Insurance and General Conditions				LS	**2%**	$ 17,143,270	$ 342,865
0063		Permits/Fees				LS	**2%**	$ 17,143,270	$ 342,865
0064		Maintenance of Traffic				LS	**3%**	$ 17,143,270	$ 514,298
0065		Engineering Design & CA Oversight Costs				LS	**15%**	$ 17,143,270	$ 2,571,491
0066		Construction Engineering Inspection Costs				LS	**4%**	$ 17,143,270	$ 685,731
0067		OCI Management Cost				LS	**15%**	$ 17,143,270	$ 2,571,491
0068		Project Contingency Costs				LS	**30%**	$ 17,143,270	$ 5,142,981
		Land acquisition							
NS SUBTOTAL									$ 12,857,453
TOTAL									**$ 30,000,723**

		CONCEPTUAL CAPITAL COST ESTIMATE						Highland Gardens	
								Alternative 2	
PUMP STATIONS WITH FORCE MAINS									
ITEM #	Master Sheet Index	DIAMETER (INCHES)		DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24		FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36		FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42		FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48		FM- Force Main Collector	Circular	LF	$ 612.00	0	$ -
0005	17	54		FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60		FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66		FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72		FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24		FMO- Force Main Offline	Circular	LF	$ 353.00	0	$ -
0010	11			IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12			IWO-Injection Wells -Offline		EA	$ 75,000.00	0	$ -
0012	6	PS-Storm Drainage Pump Stations < 166 cfs			I	EA	$ 2,400,000.00	0	$ -
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs			II	EA	$ 3,500,000.00	0	$ -
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs			III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs			IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS				EA	$ 8,000,000.00	0	$ -
IN SUBTOTAL									$ -
EXFILTRATION WITH GRAVITY MAINS								Highland Gardens	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0022	22	21		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0021	21	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	0	$ -
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	0	$ -
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	0	$ -
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	0	$ -
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	0	$ -
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	0	$ -
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	0	$ -
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	0	$ -
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	0	$ -
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	0	$ -
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	72	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	3,620	$ 905,000
0055	50			Weir Box CS		EA	$ 30,000.00	0	$ -
0057	53			CS-22 Remod		EA	$ 525,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0056				Gravity Structures-Inlets		EA	$ 7,500.00	30	$ 226,250
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
	GRAVITY MAIN SUBTOTAL								$ 1,131,250
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	3,620	$ 977,400
							CONSTRUCTION COST SUBTOTAL		**$ 2,108,650**
GENERAL CONDITIONS								Highland Gardens	
0061		Mobilization				LS	**4%**	$ 2,108,650	$ 84,346
0062		Insurance and General Conditions				LS	**2%**	$ 2,108,650	$ 42,173
0063		Permits/Fees				LS	**2%**	$ 2,108,650	$ 42,173
0064		Maintenance of Traffic				LS	**3%**	$ 2,108,650	$ 63,260
0065		Engineering Design & CA Oversight Costs				LS	**15%**	$ 2,108,650	$ 316,298
0066		Construction Engineering Inspection Costs				LS	**4%**	$ 2,108,650	$ 84,346
0067		OCI Management Cost				LS	**15%**	$ 2,108,650	$ 316,298
0068		Project Contingency Costs				LS	**30%**	$ 2,108,650	$ 632,595
NS SUBTOTAL									$ 1,581,488
TOTAL									**$ 3,690,138**

HC-D2-6 Pre-Post CIP Flood Inundation Maps

The following figures provide the predicted existing conditions flooding for the 5- and 10-year storm in the CIP Area and the predicted flood reduction for these storms under the Alternatives 1 and 2 CIP:

- **Figure HC-D2-6-EC_5 - Current Conditions Flooding in CIP Area 5-year Design Storm**
- **Figure HC-D2-6-EC_10 - Current Conditions Flooding in CIP Area 10-year Design Storm**
- **Figure HC-D2-6-CIP_ALT1_5 - Predicted Flooding Reduction and Proposed ALT1 CIP for 5-year Design Storm**
- **Figure HC-D2-6-CIP_ALT1_10 - Predicted Flooding Reduction and Proposed ALT1 CIP for 10-year Design Storm**
- **Figure HC-D2-6-CIP_ALT2_5 - Predicted Flooding Reduction and Proposed ALT2 CIP for 5-year Design Storm**
- **Figure HC-D2-6-CIP_ALT2_10 - Predicted Flooding Reduction and Proposed ALT2 CIP for 10-year Design Storm**
- **Table HC-D2-6_ALT1 – Planning Budget for Alternative 1 Proposed CIP**
- **Table HC-D2-6_ALT2 – Planning Budget for Alternative 2 Proposed CIP**

3.2.2.14 CIP Area HC-D3-2 (North Central South)

Root Causes of Flooding

This CIP area is characterized residential land use. Pockets of low areas collect runoff and flood as water sheet flows from surrounding higher areas to the east and off of I-95 and there is an undersized positive system and SWPS serving the area. There is a plan to improve Sunset Park which currently serves as storage for the area and will no longer be available to the neighborhood for stormwater management. Additionally, the I-95 expansion project plans to add additional impervious area and storage along with new piping.

Alternative 1

Proposed CIP:

- Replacement of existing SWPS SW03 located in the NW corner of Sunset Park from the existing capacity of 29 cfs to upgrade to Type II at total of 170 cfs pumping into the existing channel to the C-10 canal.
- Channel cleaning, clearing, and maintenance.
- Improvements to the existing conveyance ditches along perimeter of Sunset Park outside of the park berm on the western edge adjacent to I-95 for 1,100 l.f. from an existing bottom EL of between 0 to +1.5 NAVD to approximately EL -3.5 NAVD and channel cleaning and maintenance and, improvements to the existing drainage ditch for 750 l.f adjacent to Arthur

St to -2 NAVD from approximately 0 ft NAVD. Note: and equivalent pipe can be used if contamination is found.

- New gravity collection systems and inlets in neighborhoods conveying to the upgraded SWPS SW03.
- New 26,275 l.f. of exfiltration systems in neighborhoods.

Summary of Locations Not Meeting ALT 1 LOS:

1. Structures Flooded pre-43, post seawall-48, post-4

Summary of Offsite Issues Affecting CIP Area:

1. The current historic I-95 overflows out of the FDOT drainage ditch and into the neighborhood at the Lincoln St street-ending (and others) is captured by this new system, approximately 40 cfs in the 10 yr storm.

Alternative 2

Proposed CIP:

- Replacement of existing SWPS SW03 from the existing capacity of 29 cfs to a Type I at total capacity of 100 cfs pumping into the existing channel to the C-10 canal with required channel cleaning, clearing, and maintenance.
- Improvements to the existing conveyance ditches along perimeter of Sunset Park outside of the park berm on the western edge adjacent to I-95 for 1,100 l.f. from an existing bottom EL of between 0 to +1.5 NAVD to approximately EL -3.5 NAVD and channel cleaning and maintenance and, improvement to the existing drainage ditch for 750 l.f adjacent to Arthur St to -2 NAVD from approximately 0 ft NAVD. Note: and equivalent pipe can be used if contamination.
- New gravity collection systems and inlets in the CIP area neighborhoods conveying to the upgraded SWPS SW03.
- New 10,473 l.f. of exfiltration systems in neighborhoods.

Summary of Locations Not Meeting ALT 2 LOS:

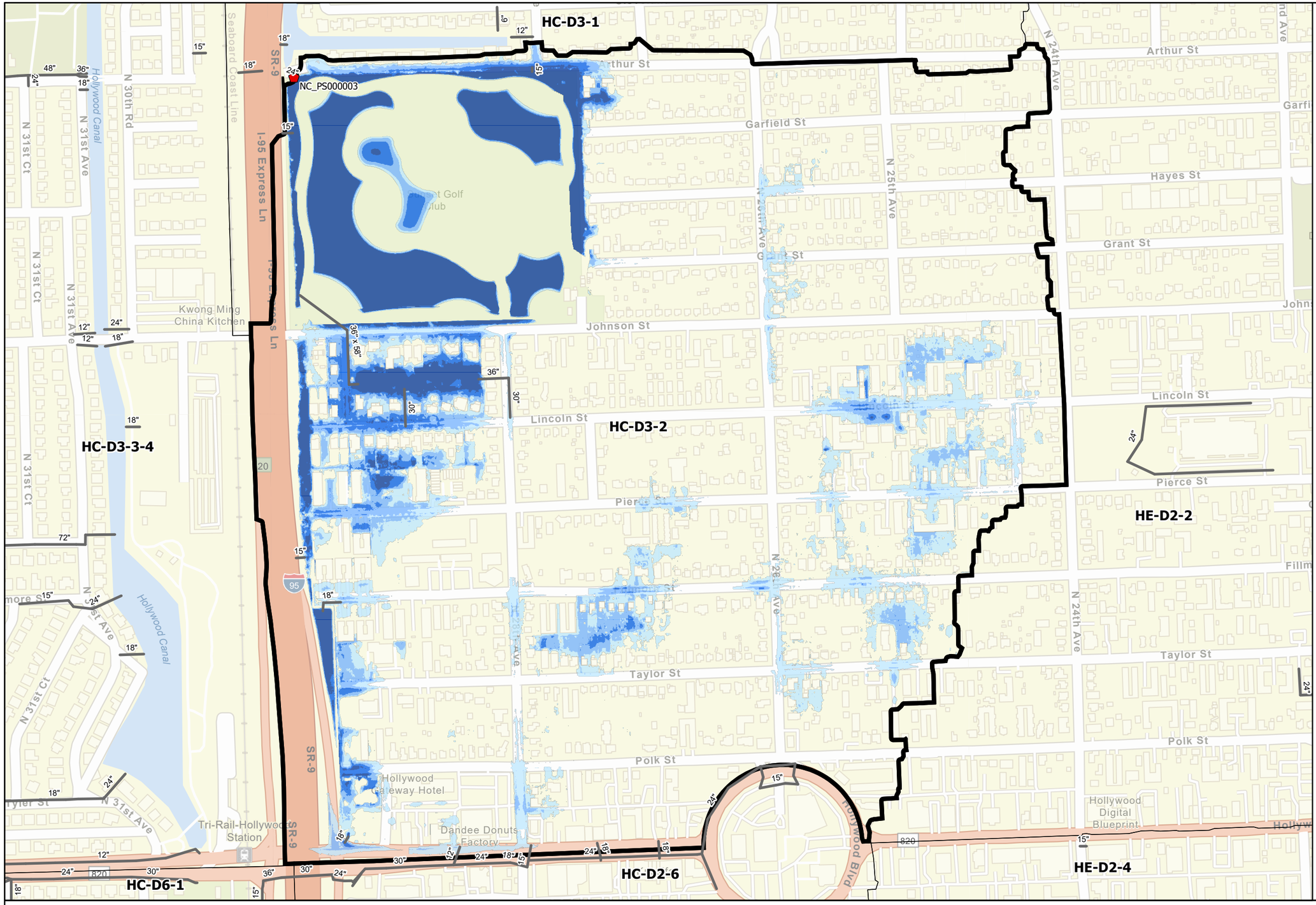
1. Structures Flooded pre-43, post seawall-48, post-25.

Summary of Offsite Issues Affecting CIP Area:

1. The current historic I-95 overflows out of the FDOT drainage ditch and into the neighborhood at the Lincoln St, street ending is captured by this new system, approximately 40 cfs in the 10 yr storm. FDOT is currently proposing a concept to share the Sunset Park for storage and resize shared stormwater piping for the joint future use of both systems.

HC-D3-2 Pre-Post CIP Flood Inundation Maps

The following figures provide the predicted existing conditions flooding for the 5- and 10-year storm in the CIP Area and the predicted flood reduction for these storms under the Alternatives 1 and 2 CIP:



Current Conditions Flooding in CIP Area
North Cental South
5-year Design Storm

City of Hollywood Stormwater Master Plan
HC-D3-2_EC-5
2/28/2023

0 255 510 1,020 Feet
1:6,000

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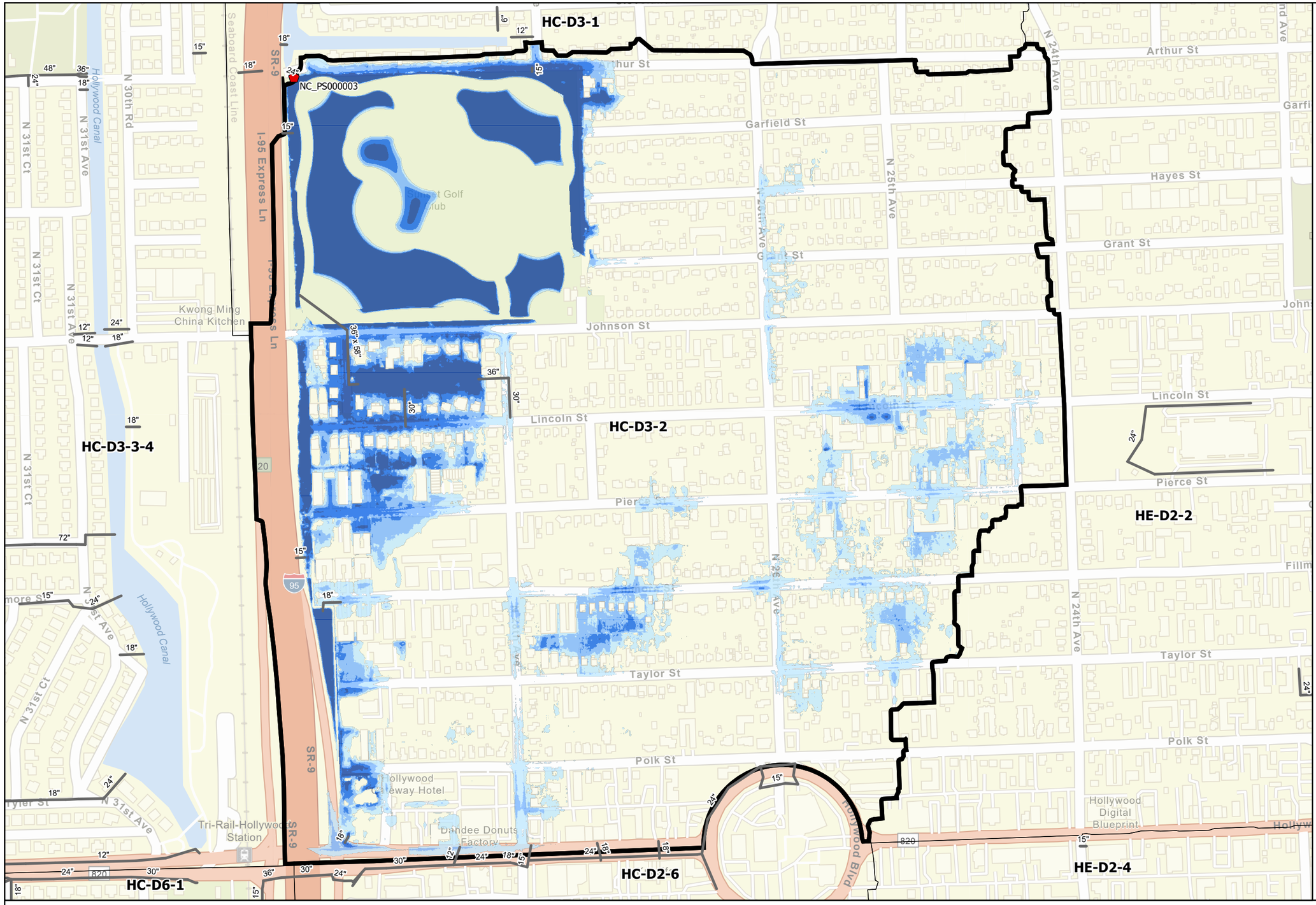

Current Conditions Flooding in CIP Area
North Cental South
10-year Design Storm

CDM Smith
CITY OF Hollywood FLORIDA

0 255 510 1,020 Feet
1:6,000

City of Hollywood Stormwater Master Plan
HC-D3-2_EC-10
2/28/2023

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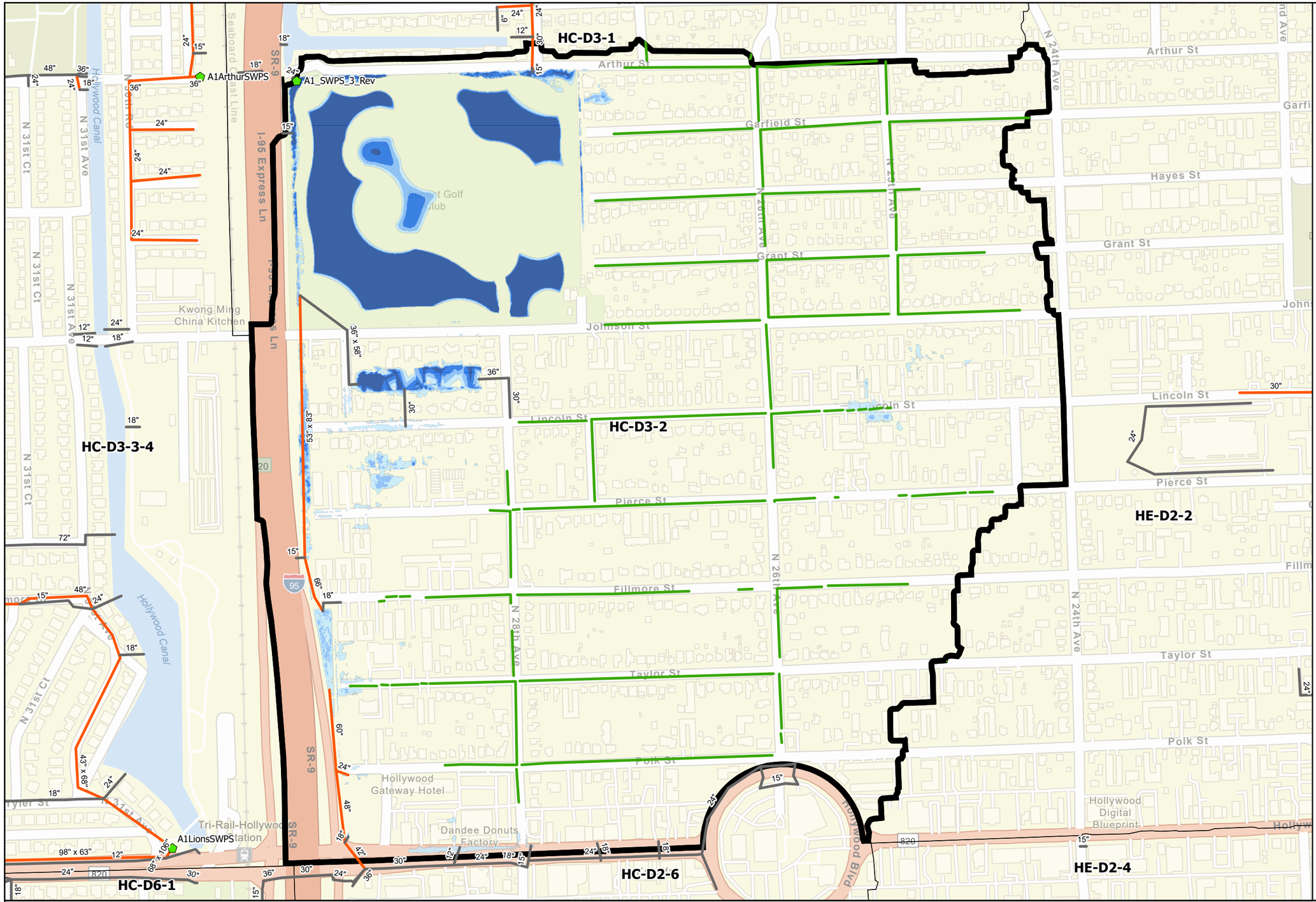

Predicted Flooding Reduction and Proposed ALT 1 CIP for 5-year Design Storm in CIP Area North Cental South

City of Hollywood Stormwater Master Plan

HC-D3-2_ALT1-5

2/28/2023

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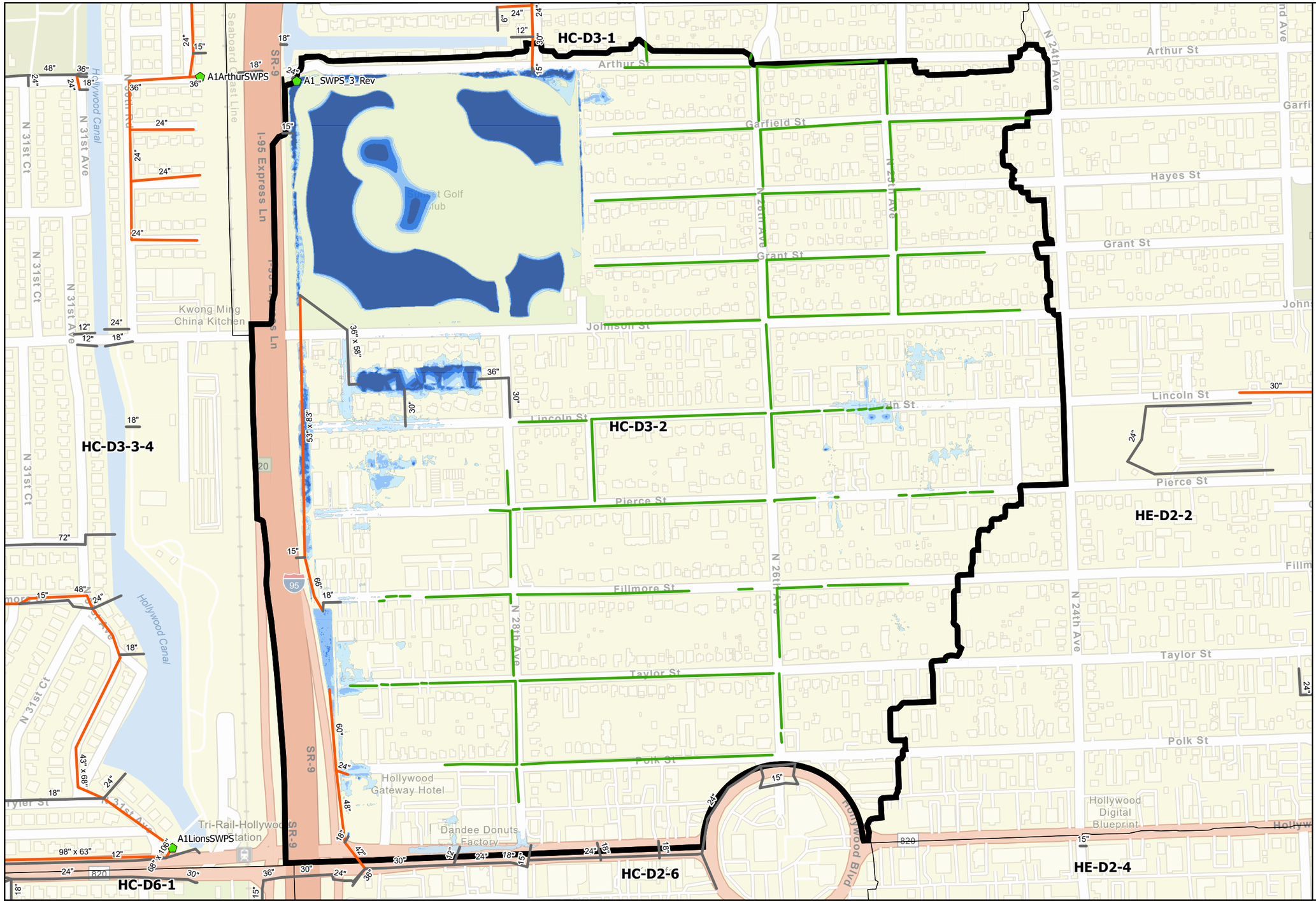

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 1 SWPS
- Alt 1 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 1 Exfiltration Pipes
- Alt 1 Gravity Pipes
- Alt 1 Forcemains
- Alt 1 Detention Pond

10-Year ALT 1 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 1 CIP for 10-year Design Storm in CIP Area North Central South

0 255 510 1,020 Feet

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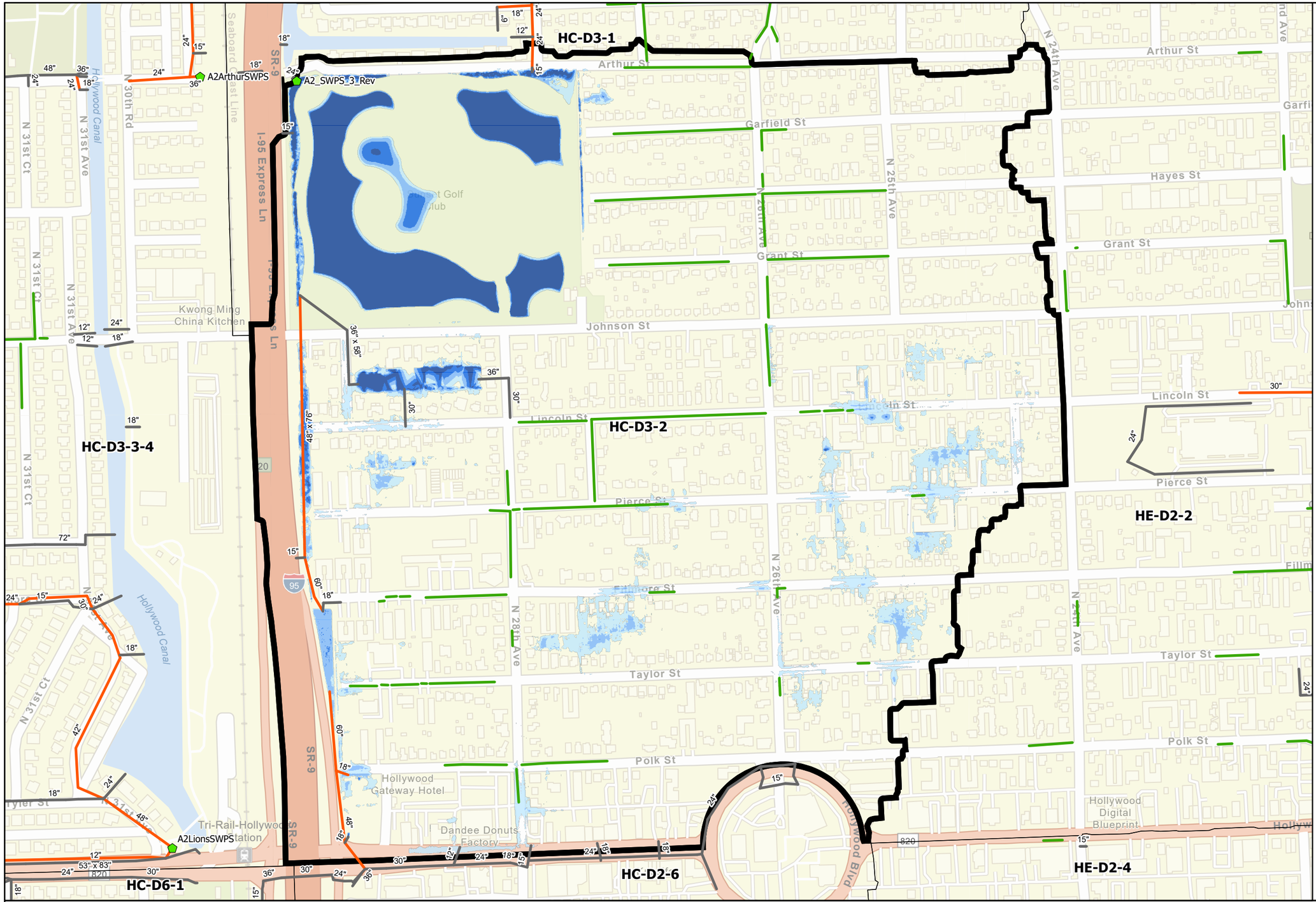
City of Hollywood Stormwater Master Plan

HC-D3-2_ALT1-10

2/28/2023



Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 2 SWPS
- Alt 2 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 2 Exfiltration Pipe
- Alt 2 Gravity Pipes
- Alt 2 Forcemains
- Alt 2 Detention Pond

5-Year ALT 2 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 2 CIP for 5-year Design Storm in CIP Area North Central South

0 255 510 1,020 Feet

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City of Hollywood Stormwater Master Plan

HC-D3-2_ALT2-5

2/28/2023

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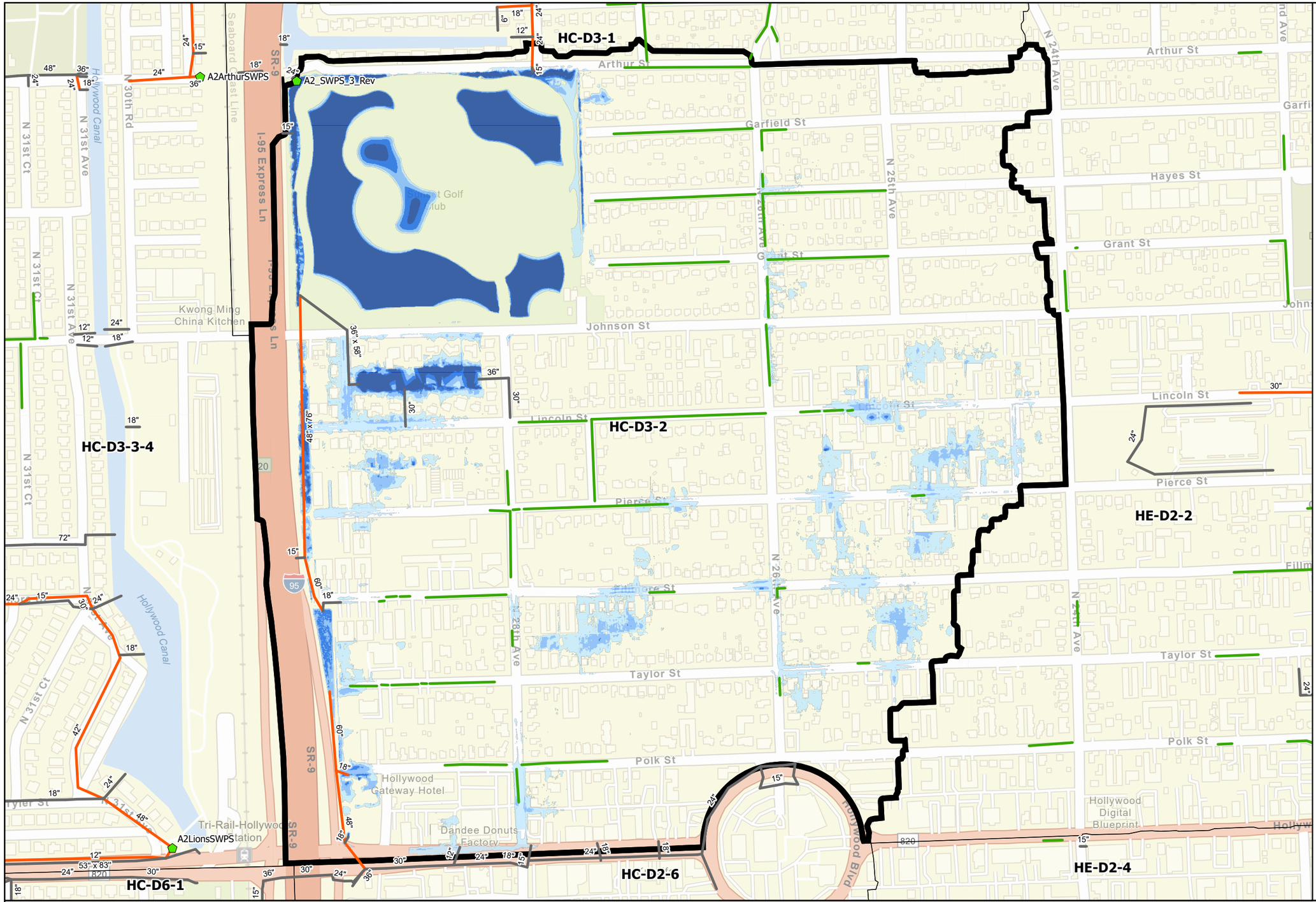

Predicted Flooding Reduction and Proposed ALT 2 CIP for 10-year Design Storm in CIP Area
North Cental South

City of Hollywood Stormwater Master Plan
HC-D3-2_ALT2-10
2/28/2023

0 255 510 1,020 Feet
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		CONCEPTUAL CAPITAL COST ESTIMATE					North Central	
							Alternative 1	
PUMP STATIONS WITH FORCE MAINS								
ITEM #	Master Sheet Index	DIAMETER (INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24	FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36	FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42	FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48	FM- Force Main Collector	Circular	LF	$ 612.00	0	$ -
0005	17	54	FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60	FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66	FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72	FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24	FMO- Force Main Offline	Circular	LF	$ 353.00	0	$ -
0010	11		IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12		IWO-Injection Wells -Offline		EA	$ 75,000.00	0	$ -
0012	6	PS-Storm Drainage Pump Stations < 166 cfs		I	EA	$ 2,400,000.00	0	$ -
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs		II	EA	$ 3,500,000.00	1	$ 3,500,000
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs		III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs		IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS			EA	$ 8,000,000.00	0	$ -
AIN SUBTOTAL								$ 3,500,000
EXFILTRATION WITH GRAVITY MAINS							North Central	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0020	21	15		GM-Gravity Main Collector	Circular	LF	$ 40.00	0	$ -
0021	22	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	200	$ 9,600
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	0	$ -
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	33	$ 2,640
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	172	$ 19,780
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	375	$ 46,875
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	830	$ 182,600
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	300	$ 128,400
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	0	$ -
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	0	$ -
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	1,400	$ 604,800
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	0	$ -
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	0	$ -
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	84	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	26,275	$ 6,568,750
0056	50			Weir Box CS		EA	$ 7,500.00	0	$ -
0057	53			CS-22 Remod		EA	$ 200,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0055				Gravity Structures-Inlets		EA	$ 30,000.00	247	$ 7,396,250
0059	56			Ditch Improvement		LF	$ 50.00	1,870	$ 93,500
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
GRAVITY MAIN SUBTOTAL							#N/A		$ 14,959,695
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	29,585	$ 7,987,950
								CONSTRUCTION COST SUBTOTAL	**$ 26,447,645**
GENERAL CONDITIONS								North Central	
0061		Mobilization				LS	**4%**	$ 26,447,645	$ 1,057,906
0062		Insurance and General Conditions				LS	**2%**	$ 26,447,645	$ 528,953
0063		Permits/Fees				LS	**2%**	$ 26,447,645	$ 528,953
0064		Maintenance of Traffic				LS	**3%**	$ 26,447,645	$ 793,429
0065		Engineering Design & CA Oversight Costs				LS	**15%**	$ 26,447,645	$ 3,967,147
0066		Construction Engineering Inspection Costs				LS	**4%**	$ 26,447,645	$ 1,057,906
0067		OCI Management Cost				LS	**15%**	$ 26,447,645	$ 3,967,147
0068		Project Contingency Costs				LS	**30%**	$ 26,447,645	$ 7,934,294
		Land acquisition							
NS SUBTOTAL									$ 19,835,734
TOTAL									**$ 46,283,379**

		CONCEPTUAL CAPITAL COST ESTIMATE						North Central	
								Alternative 2	
PUMP STATIONS WITH FORCE MAINS									
ITEM #	Master Sheet Index	DIAMETER (INCHES)		DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24		FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36		FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42		FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48		FM- Force Main Collector	Circular	LF	$ 612.00	0	$ -
0005	17	54		FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60		FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66		FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72		FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24		FMO- Force Main Offline	Circular	LF	$ 353.00	0	$ -
0010	11			IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12			IWO-Injection Wells -Offline		EA	$ 75,000.00	0	$ -
0012	6	PS-Storm Drainage Pump Stations < 166 cfs			I	EA	$ 2,400,000.00	1	$ 2,400,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs			II	EA	$ 3,500,000.00	0	$ -
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs			III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs			IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS				EA	$ 8,000,000.00	0	$ -
IN SUBTOTAL									$ 2,400,000
EXFILTRATION WITH GRAVITY MAINS								North Central	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0022	22	21		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0021	21	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	200	$ 9,000
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	0	$ -
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	0	$ -
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	33	$ 2,640
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	0	$ -
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	547	$ 68,375
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	1,130	$ 248,600
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	0	$ -
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	1,400	$ 560,000
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	0	$ -
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	0	$ -
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	0	$ -
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	72	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	10,473	$ 2,618,250
0055	50			Weir Box CS		EA	$ 30,000.00	0	$ -
0057	53			CS-22 Remod		EA	$ 525,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0056				Gravity Structures-Inlets		EA	$ 7,500.00	115	$ 861,438
0059	56			Ditch Improvement		LF	$ 50.00	1,870	$ 93,500
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
	GRAVITY MAIN SUBTOTAL								$ 4,368,303
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	13,783	$ 3,721,410
								CONSTRUCTION COST SUBTOTAL	$ 10,489,713
GENERAL CONDITIONS								North Central	
0061		Mobilization				LS	4%	$ 10,489,713	$ 419,589
0062		Insurance and General Conditions				LS	2%	$ 10,489,713	$ 209,794
0063		Permits/Fees				LS	2%	$ 10,489,713	$ 209,794
0064		Maintenance of Traffic				LS	3%	$ 10,489,713	$ 314,691
0065		Engineering Design & CA Oversight Costs				LS	15%	$ 10,489,713	$ 1,573,457
0066		Construction Engineering Inspection Costs				LS	4%	$ 10,489,713	$ 419,589
0067		OCI Management Cost				LS	15%	$ 10,489,713	$ 1,573,457
0068		Project Contingency Costs				LS	30%	$ 10,489,713	$ 3,146,914
NS SUBTOTAL									$ 7,867,284
TOTAL									$ 18,356,997

- **Figure HC-D3-2-EC_5 - Current Conditions Flooding in CIP Area 5-year Design Storm**
- **Figure HC-D3-2-EC_10 - Current Conditions Flooding in CIP Area 10-year Design Storm**
- **Figure HC-D3-2-CIP_ALT1_5 - Predicted Flooding Reduction and Proposed ALT1 CIP for 5-year Design Storm**
- **Figure HC-D3-2-CIP_ALT1_10 - Predicted Flooding Reduction and Proposed ALT1 CIP for 10-year Design Storm**
- **Figure HC-D3-2-CIP_ALT2_5 - Predicted Flooding Reduction and Proposed ALT2 CIP for 5-year Design Storm**
- **Figure HC-D3-2-CIP_ALT2_10 - Predicted Flooding Reduction and Proposed ALT2 CIP for 10-year Design Storm**
- **Table HC-D3-2_ALT1 – Planning Budget for Alternative 1 Proposed CIP**
- **Table HC-D3-2_ALT2 – Planning Budget for Alternative 2 Proposed CIP**

3.2.2.15 CIP Area HC-D3-1 (North Central North / Parkeast)

Root Causes of Flooding

This CIP area is characterized residential and commercial land use. There is a ridge to the east and low area to the west trapped by I-95. The low areas collect runoff and flood as water sheet flows from surrounding higher areas and there are limited positive systems serving the area to the finger canals that do not flow at high tide canal elevations resulting in flooding.

Alternative 1

Proposed CIP:

- Two new SWPSs for the CIP Area:
  1. New Watergate SWPS Type I at total capacity of 140 cfs pumping into the C-10 canal via 200 ft of 54-inch FM, located underground in the City R/O/W at the street ending of Harding at the canal.
  2. New Boggs SWPS Type II at total capacity of 290 cfs pumping into approximately 4 in-line IWs on the main FM and 26 off-line pumped recharge wells in the neighborhood and then to the C-10 Canal via twin 2,000 l.f. of 48-inch FM, located in NE corner of the City park (Boggs Field).
- New gravity collection systems and inlets in neighborhoods to the new SWPSs, and to the upgraded SWPS SW03 for the areas south of Taft Street in CIP Area HC-D3-2.
- New 22,460 l.f. of exfiltration systems in neighborhoods.
- Raise seawalls for all waterfront properties along the Hollywood Canal finger canals in the CIP Area to EL 5.25 NAVD (Note: this is 3" higher than the ordinance height) because of the

100-yr storm creating backflow at high tide/surge which can overwhelm the pumps and result in a significant number of houses to potentially be flooded.

Summary of Locations Not Meeting ALT 1 LOS:

1. Structures Flooded pre-104, post seawall-147, post-1

Summary of Offsite Issues Affecting CIP Area:

1. None.

Alternative 2

Proposed CIP:

- Two new SWPSs for the CIP Area:
    1. New Watergate SWPS Type I at total capacity of 82 cfs pumping into C-10 canal via 200 ft of 36-inch FM, located underground in the City R/O/W at the street end of Harding at the canal.
    2. New Boggs SWPS Type I at total of 90 cfs pumping into approximately 4 in-line on the FM and 16 off-line pumped recharge wells in the neighborhood and then to the C-10 Canal via 2,000 l.f. of 48-inch FM, located in NE corner of the City park (Boggs Field).
- New gravity collection systems and inlets in neighborhoods to the new SWPSs, and to the upgraded SWPS SW03 for areas south of Taft Street in CIP Area HC-D3-2.
- New 11,350 l.f. of exfiltration systems in neighborhoods.
- Raise seawalls for all waterfront properties along the Hollywood Canal finger canals in the CIP Area to EL 5.25 NAVD (Note: this is 3" higher than the ordinance) because of the 100-yr storm creating backflow at high tide/surge which can overwhelm the pumps and result in a significant number of houses to potentially be flooded.

Summary of Locations Not Meeting ALT 2 LOS:

1. Structures Flooded pre-104, post seawall-147, post-16

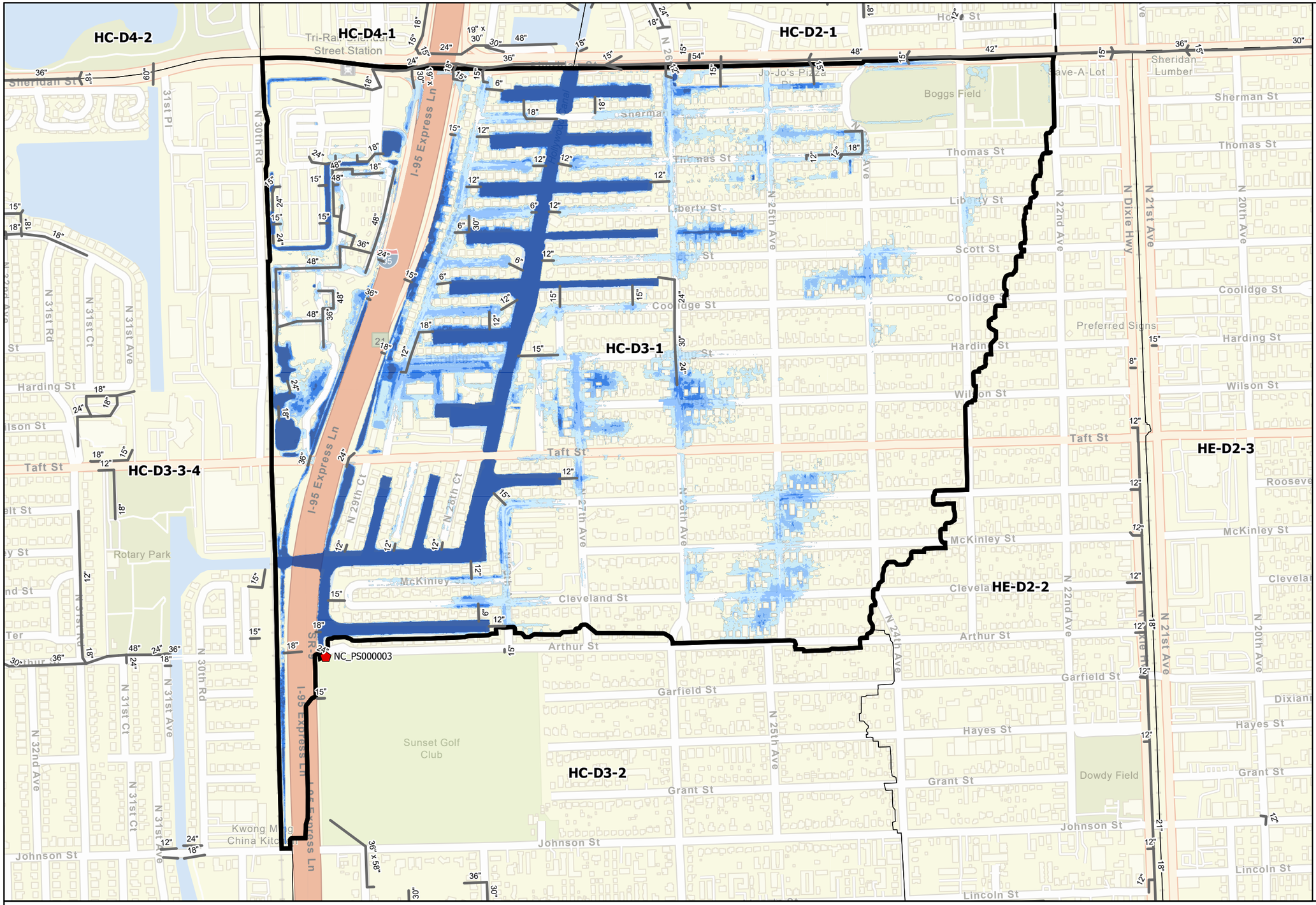
Summary of Offsite Issues Affecting CIP Area:

1. None.

HC-D3-1 Pre-Post CIP Flood Inundation Maps

The following figures provide the predicted existing conditions flooding for the 5- and 10-year storm in the CIP Area and the predicted flood reduction for these storms under the Alternatives 1 and 2 CIP:

- **Figure HC-D3-1-EC_5 - Current Conditions Flooding in CIP Area 5-year Design Storm**
- **Figure HC-D3-1-EC_10 - Current Conditions Flooding in CIP Area 10-year Design Storm**



CDM Smith

CITY OF Hollywood FLORIDA

Current Conditions Flooding in CIP Area
North Cental North / Parkeast
5-year Design Storm

0 337.5 675 1,350 Feet

1:8,000

City of Hollywood Stormwater Master Plan

HC-D3-1_EC-5

2/28/2023

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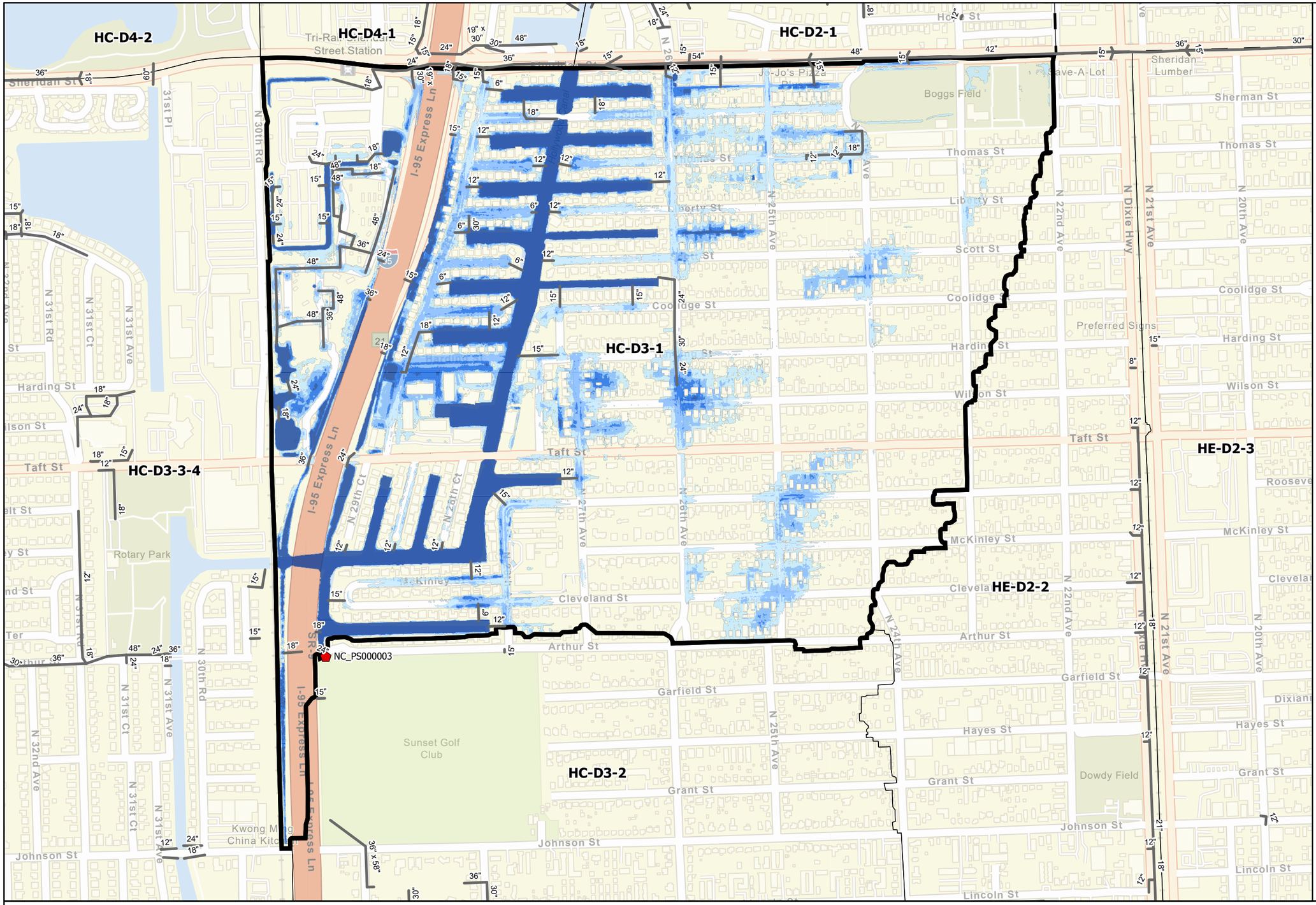

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Existing Gravity Pipes
- Existing Forcemains

10-Year 72-Hour Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Current Conditions Flooding in CIP Area
North Cental North / Parkeast
10-year Design Storm

0 337.5 675 1,350 Feet

1:8,000

City of Hollywood Stormwater Master Plan

HC-D3-1_EC-10

2/28/2023

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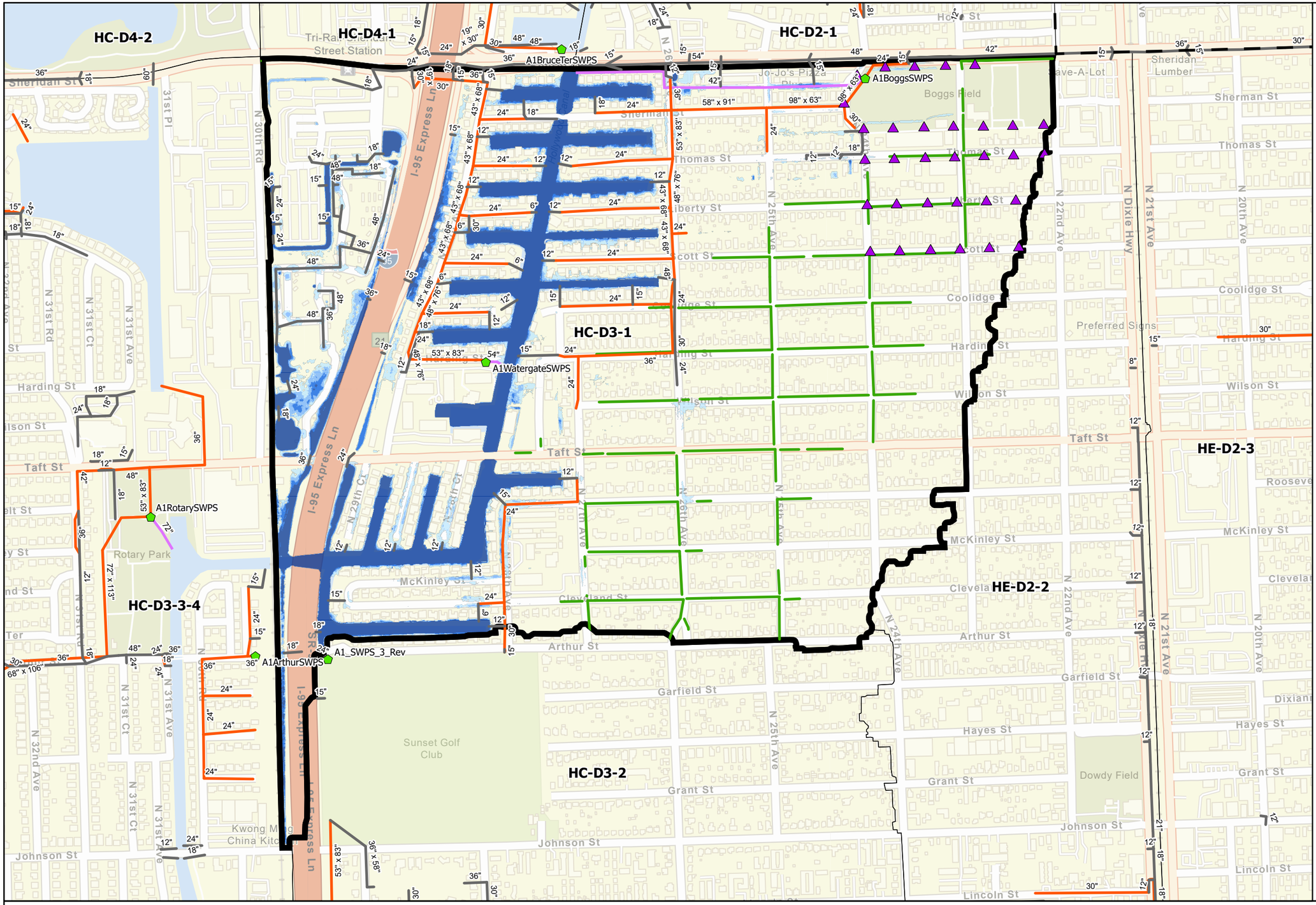

Predicted Flooding Reduction and Proposed ALT 1 CIP for 5-year Design Storm in CIP Area
North Cental North / Parkeast

City of Hollywood Stormwater Master Plan
HC-D3-1_ALT1-5
2/28/2023

0 337.5 675 1,350 Feet
1:8,000

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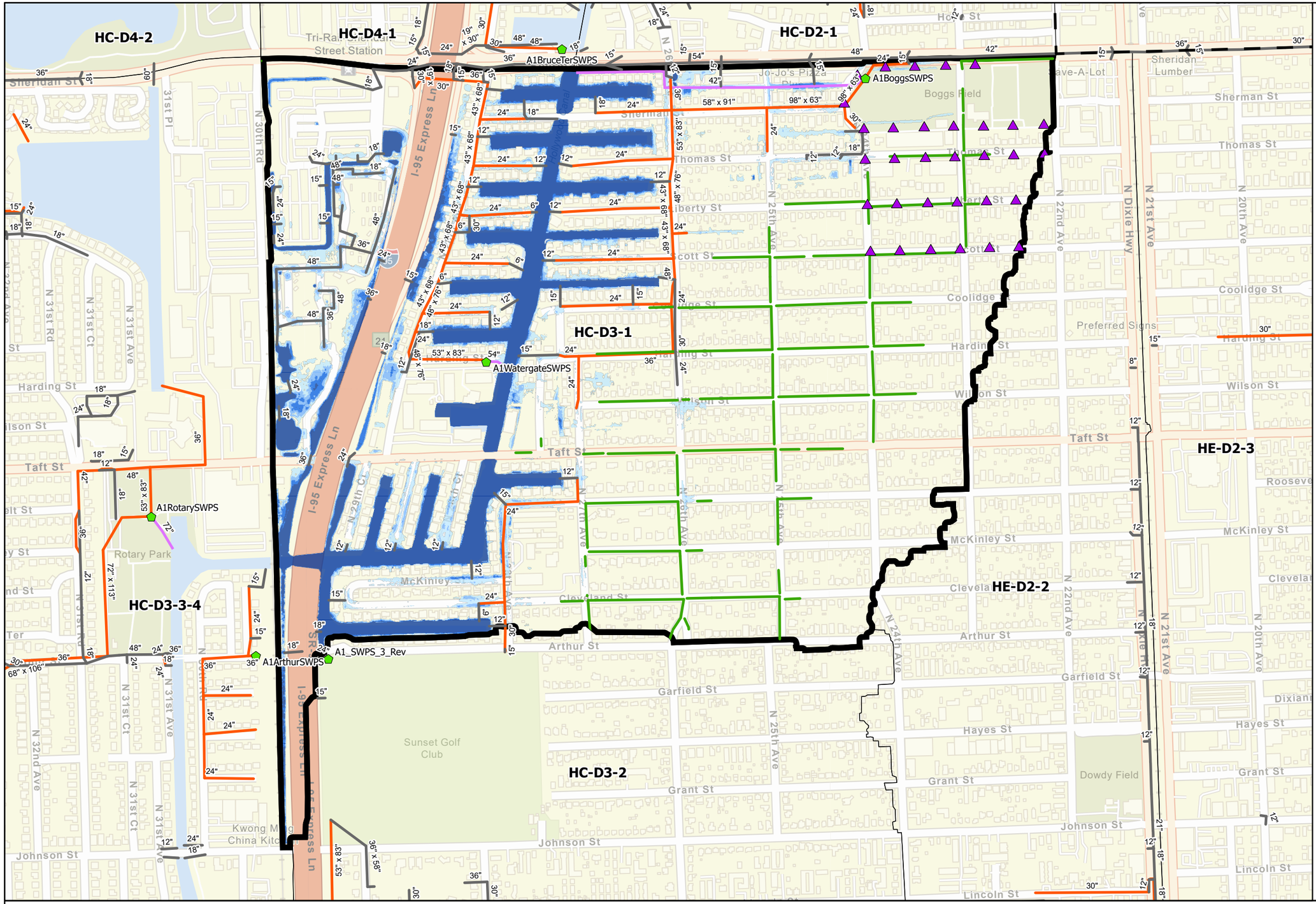

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 1 CIP for 10-year Design Storm in CIP Area
North Cental North / Parkeast

0 337.5 675 1,350 Feet

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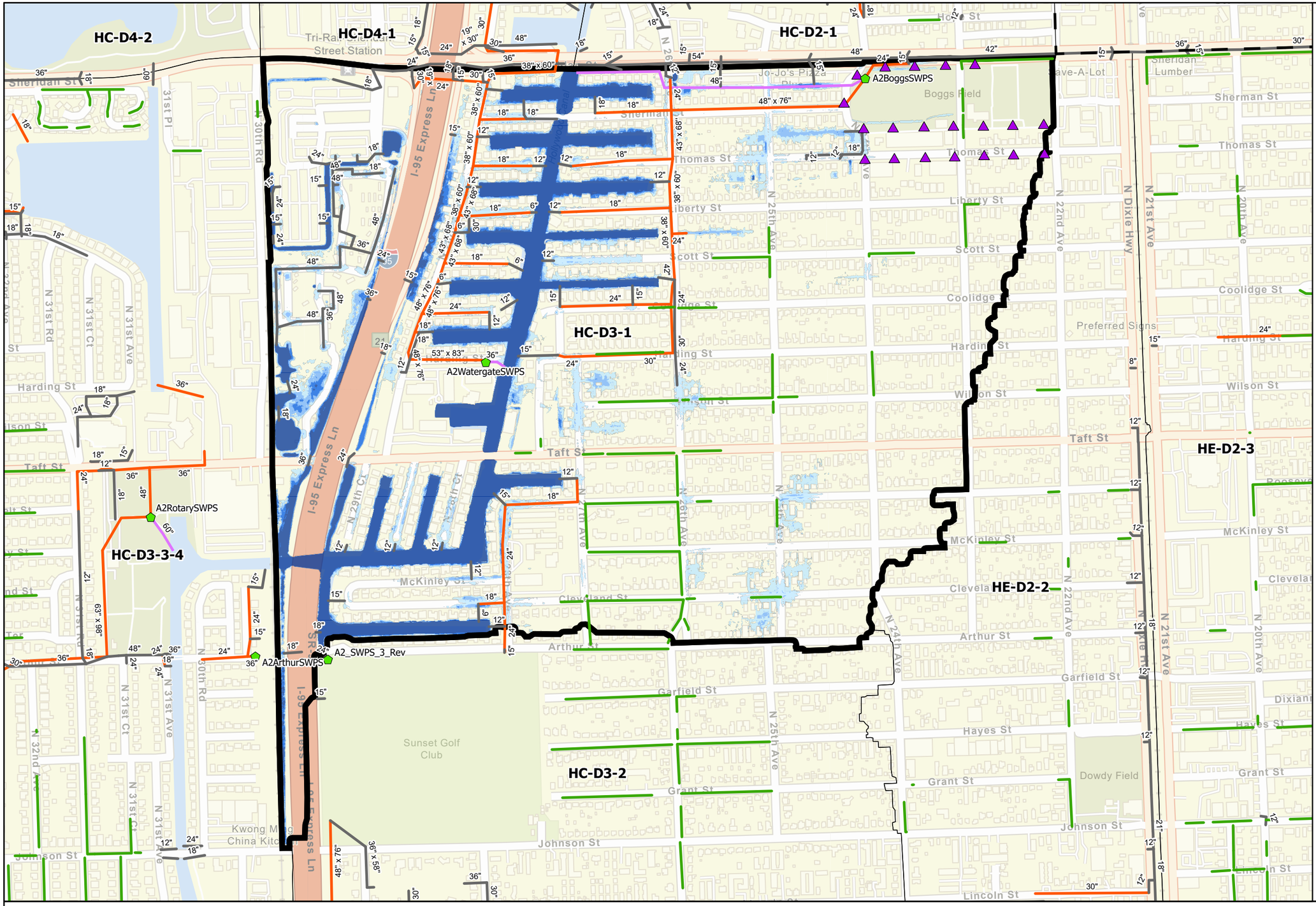
City of Hollywood Stormwater Master Plan

HC-D3-1_ALT1-10

2/28/2023



Predicted Flooding Reduction and Proposed ALT 2 CIP for 5-year Design Storm in CIP Area
North Cental North / Parkeast

City of Hollywood Stormwater Master Plan
HC-D3-1_ALT2-5
2/28/2023

0 337.5 675 1,350 Feet
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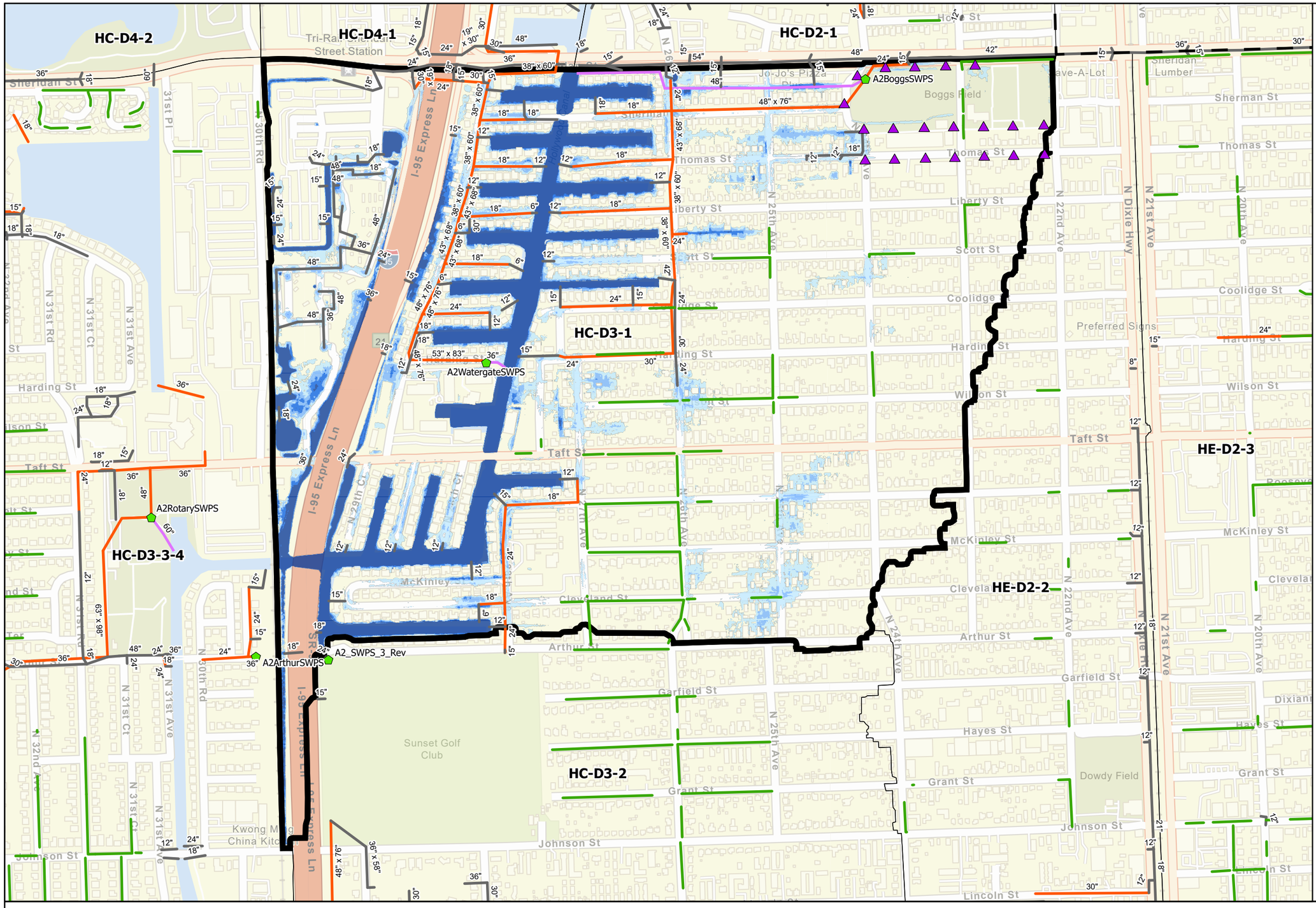

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 2 SWPS
- Alt 2 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 2 Exfiltration Pipe
- Alt 2 Gravity Pipes
- Alt 2 Forcemains
- Alt 2 Detention Pond

10-Year ALT 2 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 2 CIP for 10-year Design Storm in CIP Area North Cental North / Parkeast

0 337.5 675 1,350 Feet

1:8,000

City of Hollywood Stormwater Master Plan

HC-D3-1_ALT2-10

2/28/2023

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		CONCEPTUAL CAPITAL COST ESTIMATE						North Central North and Park East	
								Alternative 1	
PUMP STATIONS WITH FORCE MAINS									
ITEM #	Master Sheet Index	DIAMETER (INCHES)		DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24		FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36		FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42		FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48		FM- Force Main Collector	Circular	LF	$ 612.00	4,000	$ 2,448,000
0005	17	54		FM- Force Main Collector	Circular	LF	$ 982.00	200	$ 196,400
0006	18	60		FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66		FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72		FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24		FMO- Force Main Offline	Circular	LF	$ 353.00	6,750	$ 2,382,750
0010	11			IWI-Injection Wells-Inline		EA	$ 65,000.00	4	$ 260,000
0011	12			IWO-Injection Wells -Offline		EA	$ 75,000.00	30	$ 2,250,000
0012	6	PS-Storm Drainage Pump Stations < 166 cfs			I	EA	$ 2,400,000.00	1	$ 2,400,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs			II	EA	$ 3,500,000.00	1	$ 3,500,000
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs			III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs			IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS				EA	$ 8,000,000.00	0	$ -
AIN SUBTOTAL									$ 13,437,150
EXFILTRATION WITH GRAVITY MAINS								North Central North and Park East	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0020	21	15		GM-Gravity Main Collector	Circular	LF	$ 40.00	0	$ -
0021	22	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	8,640	$ 414,717
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	920	$ 47,840
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	1,370	$ 109,600
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	0	$ -
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	325	$ 40,625
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	2,045	$ 756,650
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	685	$ 274,000
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	890	$ 384,480
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	660	$ 211,200
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	840	$ 344,400
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	84	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	22,457	$ 5,614,250
0056	50			Weir Box CS		EA	$ 7,500.00	0	$ -
0057	53			CS-22 Remod		EA	$ 200,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0055				Gravity Structures-Inlets		EA	$ 30,000.00	345	$ 10,364,982
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	2	$ 10,000
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
GRAVITY MAIN SUBTOTAL							#N/A		$ 18,562,744
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	49,782	$ 13,441,140
								CONSTRUCTION COST SUBTOTAL	**$ 45,441,034**
GENERAL CONDITIONS								North Central North and Park East	
0061		Mobilization				LS	**4%**	$ 45,441,034	$ 1,817,641
0062		Insurance and General Conditions				LS	**2%**	$ 45,441,034	$ 908,821
0063		Permits/Fees				LS	**2%**	$ 45,441,034	$ 908,821
0064		Maintenance of Traffic				LS	**3%**	$ 45,441,034	$ 1,363,231
0065		Engineering Design & CA Oversight Costs				LS	**15%**	$ 45,441,034	$ 6,816,155
0066		Construction Engineering Inspection Costs				LS	**4%**	$ 45,441,034	$ 1,817,641
0067		OCI Management Cost				LS	**15%**	$ 45,441,034	$ 6,816,155
0068		Project Contingency Costs				LS	**30%**	$ 45,441,034	$ 13,632,310
		Land acquisition							
NS SUBTOTAL									$ 34,080,775
TOTAL									**$ 79,521,809**

		CONCEPTUAL CAPITAL COST ESTIMATE						North Central North and Park East	
								Alternative 2	
PUMP STATIONS WITH FORCE MAINS									
ITEM #	Master Sheet Index	DIAMETER (INCHES)		DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24		FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36		FM- Force Main Collector	Circular	LF	$ 242.00	200	$ 48,400
0003	15	42		FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48		FM- Force Main Collector	Circular	LF	$ 612.00	2,000	$ 1,224,000
0005	17	54		FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60		FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66		FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72		FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24		FMO- Force Main Offline	Circular	LF	$ 353.00	3,600	$ 1,270,800
0010	11			IWI-Injection Wells-Inline		EA	$ 65,000.00	4	$ 260,000
0011	12			IWO-Injection Wells -Offline		EA	$ 75,000.00	16	$ 1,200,000
0012	6	PS-Storm Drainage Pump Stations < 166 cfs			I	EA	$ 2,400,000.00	2	$ 4,800,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs			II	EA	$ 3,500,000.00	0	$ -
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs			III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs			IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS				EA	$ 8,000,000.00	0	$ -
IN SUBTOTAL									$ 8,803,200
EXFILTRATION WITH GRAVITY MAINS								North Central North and Park East	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0022	22	21		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0021	21	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	4,585	$ 206,325
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	3,520	$ 168,960
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	1,160	$ 60,320
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	0	$ -
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	500	$ 57,500
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	0	$ -
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	1,335	$ 313,725
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	990	$ 366,300
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	2,070	$ 828,000
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	550	$ 237,600
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	0	$ -
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	0	$ -
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	72	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	11,350	$ 2,837,500
0055	50			Weir Box CS		EA	$ 30,000.00	0	$ -
0057	53			CS-22 Remod		EA	$ 525,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0056				Gravity Structures-Inlets		EA	$ 7,500.00	229	$ 1,715,750
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	1	$ 5,000
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
	GRAVITY MAIN SUBTOTAL								$ 6,791,980
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	31,860	$ 8,602,200
							CONSTRUCTION COST SUBTOTAL		$ 24,197,380
GENERAL CONDITIONS								North Central North and Park East	
0061		Mobilization				LS	4%	$ 24,197,380	$ 967,895
0062		Insurance and General Conditions				LS	2%	$ 24,197,380	$ 483,948
0063		Permits/Fees				LS	2%	$ 24,197,380	$ 483,948
0064		Maintenance of Traffic				LS	3%	$ 24,197,380	$ 725,921
0065		Engineering Design & CA Oversight Costs				LS	15%	$ 24,197,380	$ 3,629,607
0066		Construction Engineering Inspection Costs				LS	4%	$ 24,197,380	$ 967,895
0067		OCI Management Cost				LS	15%	$ 24,197,380	$ 3,629,607
0068		Project Contingency Costs				LS	30%	$ 24,197,380	$ 7,259,214
NS SUBTOTAL									$ 18,148,035
TOTAL									$ 42,345,415

- **Figure HC-D3-1-CIP_ALT1_5 - Predicted Flooding Reduction and Proposed ALT1 CIP for 5-year Design Storm**
- **Figure HC-D3-1-CIP_ALT1_10 - Predicted Flooding Reduction and Proposed ALT1 CIP for 10-year Design Storm**
- **Figure HC-D3-1-CIP_ALT2_5 - Predicted Flooding Reduction and Proposed ALT2 CIP for 5-year Design Storm**
- **Figure HC-D3-1-CIP_ALT2_10 - Predicted Flooding Reduction and Proposed ALT2 CIP for 10-year Design Storm**
- **Table HC-D3-1_ALT1 – Planning Budget for Alternative 1 Proposed CIP**
- **Table HC-D3-1_ALT2 – Planning Budget for Alternative 2 Proposed CIP**

3.2.2.16 CIP Area HC-D2-1 (Liberia)

Root Causes of Flooding

This CIP area is characterized residential and commercial land use. There is a ridge to the east and low area to the west trapped by I-95. The low areas collect runoff and flood as water sheet flows from surrounding higher areas and there are limited positive systems serving the area to the lake and canal that do not flow at high tide canal elevations resulting in flooding.

Alternative 1

Proposed CIP:

- New MLKCC SWPS Type II located in the grass area at the NE corner of the property at total capacity of 240 cfs pumping into 30 new IWs and with an overflow to 400 lf of twin 48-inch FM from the SWPS to a new 6.5 acre wet detention area with a bottom EL 0 NAVD and top of berm at EL 8 NAVD in the vacant land at the corner of N 24th Ave and Charleston St, then outfalling through a short 200 ft section of 20-ft wide trapezoidal ditch spillway with a weir/berm at EL 6 out of the detention into the C-10 canal. (An alternate site for the SWPS would be on the City property at 2400 Charleston Street.)

  Notes:

  1. The vacant low-lying partially wet AG land use parcels on either side of the canal in this CIP Area (BCPA Folio: 5142040000120) are considered floodplain storage of the C-10 canal due to their existing elevations and any infill for proposed future development would likely be severely limited to remain permittable, or would need to provide compensating, connected, offsetting floodplain storage elsewhere, potentially making the development economically unfavorable. The City should inquire for the purchase of these potentially undevelopable land for needed, bermed, stormwater management storage for this area if the proposed 2022 "entitlement" for development is ultimately not economically feasible for the developer considering potential permitability constraints.

2. There is the potential for the purchase and use of two other parcels for needed stormwater management detention on the east side of the C-10 canal between Pershing and Charleston Streets. These currently vacant parcels can be used for bermed storage to reduce the number of pumped recharge wells necessary to meet the City's LOS and maintain the pre-post flows and stages in the C-10 canal required by the SFWMD.

- New gravity collection systems and inlets in neighborhoods to the new SWPSs.
- New 9,284 l.f. of exfiltration systems in neighborhoods.

Summary of Locations Not Meeting ALT 1 LOS:

1. Structures Flooded pre-17, post seawall-21, post-2

Summary of Offsite Issues Affecting CIP Area:

1. None.

Alternative 2

Proposed CIP:

- New MLKCC SWPS Type I in the grass area in the NE corner of the property at total capacity of 160 cfs pumping into 20 IWs and with an overflow to twin 400 l.f. of 48-inch FM to a new 6.5 acre wet detention area bottom EL 0 NAVD and top of berm at EL 8 NAVD in the vacant land at the corner of N 24th Ave and Charleston St, outfalling through a short 200 ft section of 20-ft wide trapezoidal ditch spillway with a weir/berm at EL 6 into the C-10 canal.
- Note: the note as stated in ALT1 for potential infill also applies to ALT2.
- There is the potential for the purchase and use of two other parcels for needed stormwater management detention on the east side of the C-10 canal between Pershing and Charleston Streets. These currently vacant parcels can be used for bermed storage to reduce the number of pumped recharge wells necessary to meet the City's LOS and maintain the pre-post flows and stages in the C-10 canal required by the SFWMD.
- New gravity collection systems and inlets in neighborhoods to the new SWPSs.
- New 7,590 l.f. of exfiltration systems in neighborhoods.

Summary of Locations Not Meeting ALT 2 LOS:

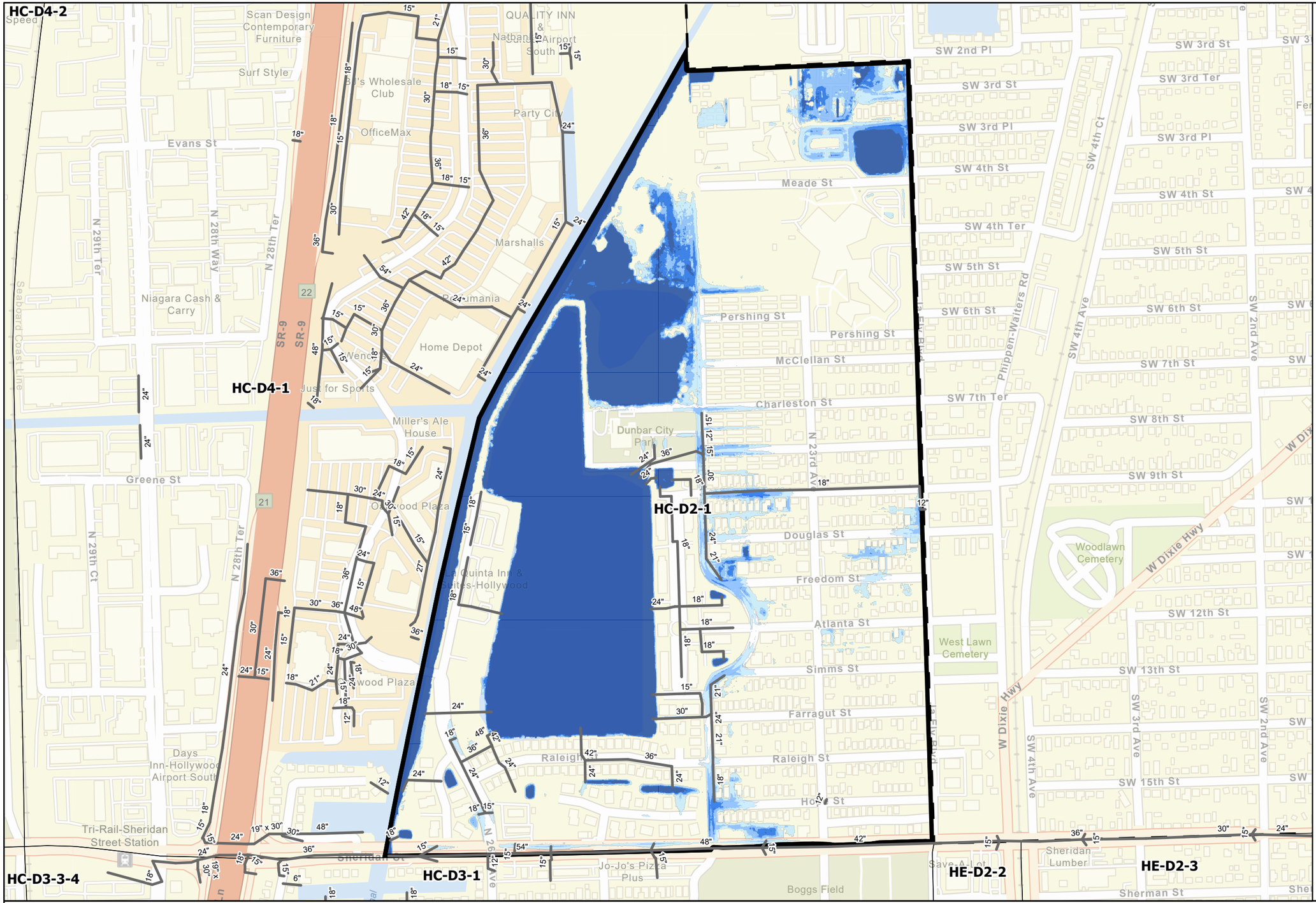
1. Structures Flooded pre-17, post seawall-21, post-10

Summary of Offsite Issues Affecting CIP Area:

1. None.

HC-D2-1 Pre-Post CIP Flood Inundation Maps

The following figures provide the predicted existing conditions flooding for the 5- and 10-year storm in the CIP Area and the predicted flood reduction for these storms under the Alternatives 1 and 2 CIP:

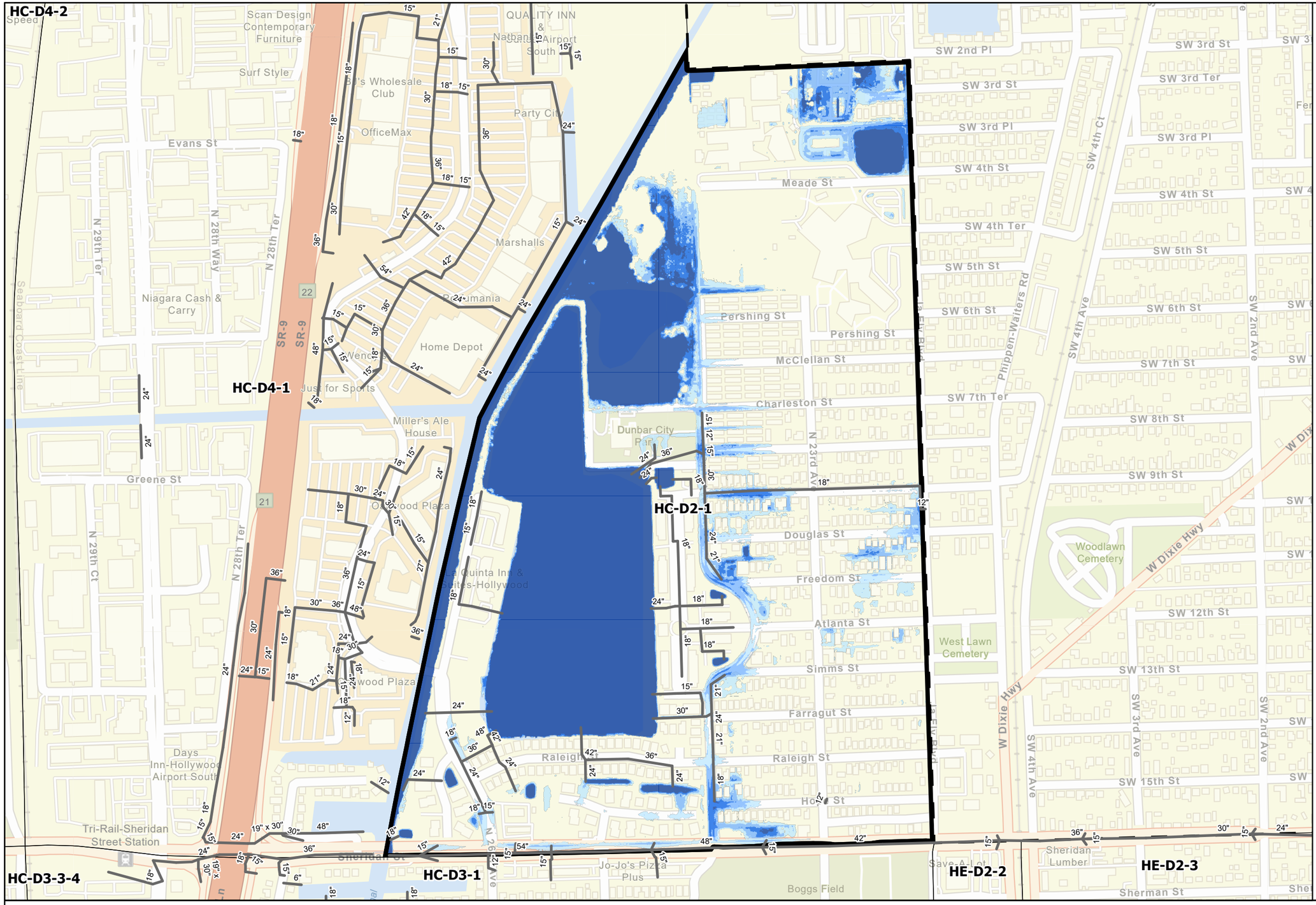


Current Conditions Flooding in CIP Area
Liberia
5-year Design Storm

City of Hollywood Stormwater Master Plan
HC-D2-1_EC-5
2/28/2023

0 295 590 1,180 Feet
1:7,000

SUSINOBM D:\Hollywood SWMP\Final Report Figures\Hollywood Final Report Figures - Map Series\Hollywood Final Report Figures - Map Series.aprx 2/28/2023



Current Conditions Flooding in CIP Area
Liberia
10-year Design Storm

0 295 590 1,180 Feet
1:7,000

City of Hollywood Stormwater Master Plan
HC-D2-1_EC-10
2/28/2023

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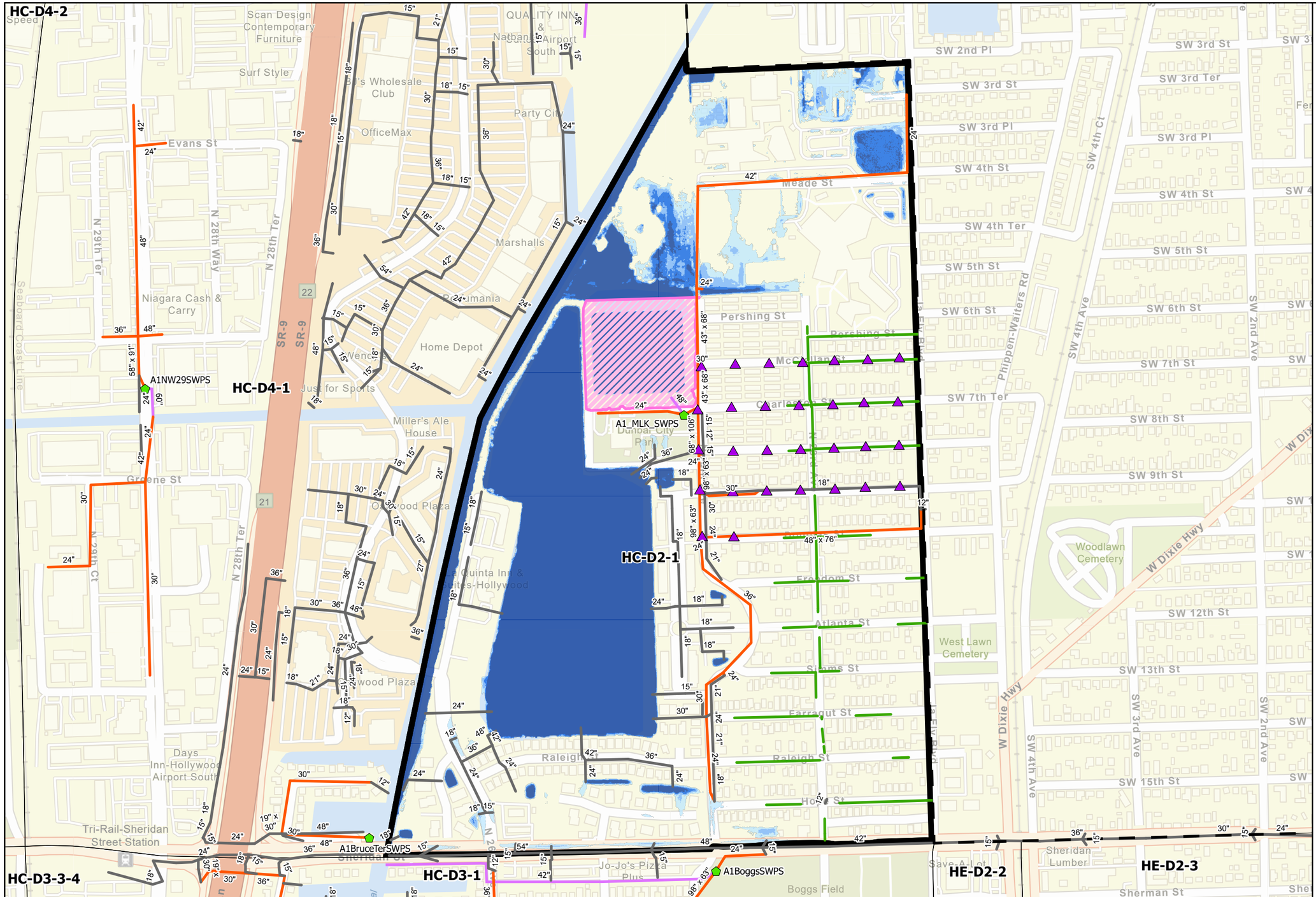

Predicted Flooding Reduction and Proposed ALT 1 CIP for 5-year Design Storm in CIP Area

Liberia

City of Hollywood Stormwater Master Plan

HC-D2-1_ALT1-5

2/28/2023

0 295 590 1,180 Feet

1:7,000

SUSINOBM D:\Hollywood SWMP\Final Report Figures\Hollywood Final Report Figures - Map Series\Hollywood Final Report Figures - Map Series.aprx 2/28/2023

HC-D4-2

HC-D4-1

HC-D2-1

HC-D3-3-4

HC-D3-1

HE-D2-2

HE-D2-3

A1NW29SWPS

A1_MLK_SWPS

A1BruceTerSWPS

A1BoggsSWPS

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 1 SWPS
- Alt 1 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 1 Exfiltration Pipes
- Alt 1 Gravity Pipes
- Alt 1 Forcemains
- Alt 1 Detention Pond

10-Year ALT 1 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

Predicted Flooding Reduction and Proposed ALT 1 CIP for 10-year Design Storm in CIP Area

Liberia

City of Hollywood Stormwater Master Plan

HC-D2-1_ALT1-10

2/28/2023

0 295 590 1,180 Feet

1:7,000

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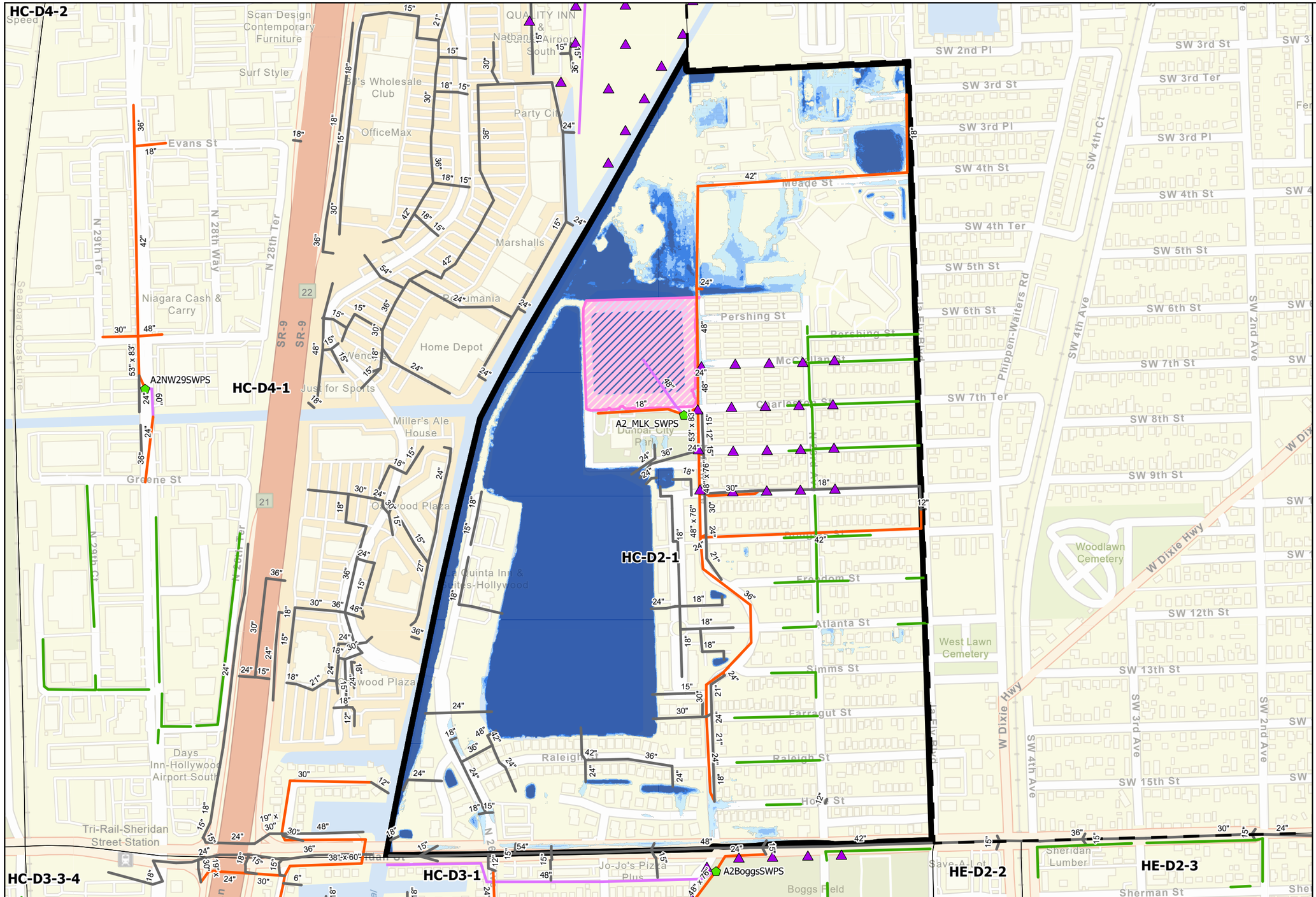

Predicted Flooding Reduction and Proposed ALT 2 CIP for 5-year Design Storm in CIP Area
Liberia

City of Hollywood Stormwater Master Plan
HC-D2-1_ALT2-5
2/28/2023

0 295 590 1,180 Feet
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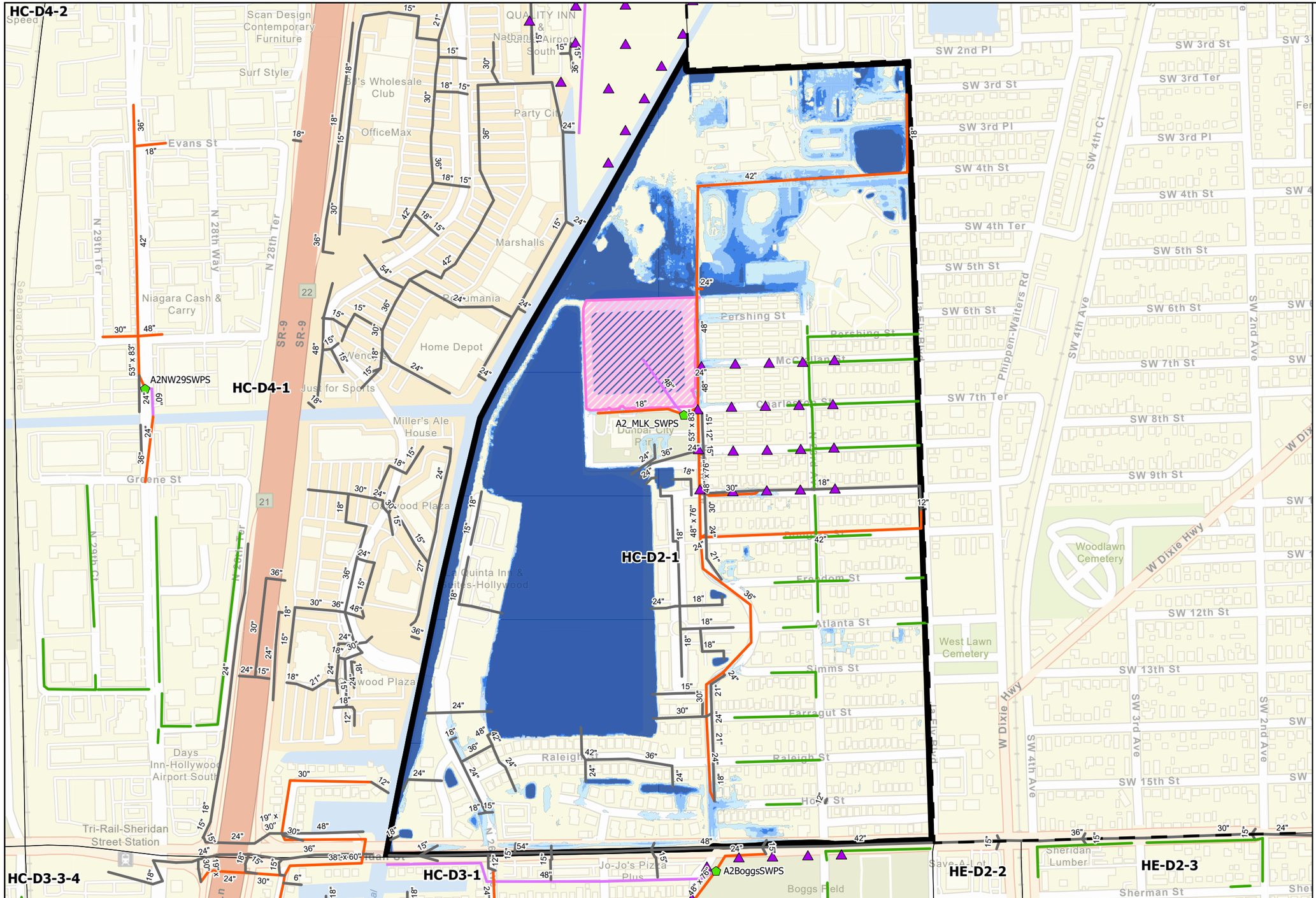

Predicted Flooding Reduction and Proposed ALT 2 CIP for 10-year Design Storm in CIP Area

Liberia

City of Hollywood Stormwater Master Plan

HC-D2-1_ALT2-10

2/28/2023

0 295 590 1,180 Feet

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		CONCEPTUAL CAPITAL COST ESTIMATE					Liberia	
							Alternative 1	
PUMP STATIONS WITH FORCE MAINS								
ITEM #	Master Sheet Index	DIAMETER (INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24	FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36	FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42	FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48	FM- Force Main Collector	Circular	LF	$ 612.00	400	$ 244,800
0005	17	54	FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60	FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66	FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72	FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24	FMO- Force Main Offline	Circular	LF	$ 353.00	6,750	$ 2,382,750
0010	11		IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12		IWO-Injection Wells -Offline		EA	$ 75,000.00	30	$ 2,250,000
0012	6	PS-Storm Drainage Pump Stations < 166 cfs		I	EA	$ 2,400,000.00	0	$ -
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs		II	EA	$ 3,500,000.00	1	$ 3,500,000
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs		III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs		IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS			EA	$ 8,000,000.00	0	$ -
AIN SUBTOTAL								$ 8,377,550
EXFILTRATION WITH GRAVITY MAINS							Liberia	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0020	21	15		GM-Gravity Main Collector	Circular	LF	$ 40.00	0	$ -
0021	22	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	1,670	$ 80,160
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	695	$ 36,140
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	1,085	$ 86,800
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	1,890	$ 217,350
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	0	$ -
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	720	$ 266,400
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	1,470	$ 588,000
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	0	$ -
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	0	$ -
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	505	$ 207,050
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	485	$ 223,100
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	84	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	9,284	$ 2,321,000
0056	50			Weir Box CS		EA	$ 7,500.00	0	$ -
0057	53			CS-22 Remod		EA	$ 200,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0055				Gravity Structures-Inlets		EA	$ 30,000.00	163	$ 4,880,000
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	8	$ 2,663
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
GRAVITY MAIN SUBTOTAL							#N/A		$ 8,906,000
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	24,954	$ 6,737,580
							CONSTRUCTION COST SUBTOTAL		**$ 24,021,130**
GENERAL CONDITIONS								Liberia	
0061		Mobilization				LS	**4%**	$ 24,021,130	$ 960,845
0062		Insurance and General Conditions				LS	**2%**	$ 24,021,130	$ 480,423
0063		Permits/Fees				LS	**2%**	$ 24,021,130	$ 480,423
0064		Maintenance of Traffic				LS	**3%**	$ 24,021,130	$ 720,634
0065		Engineering Design & CA Oversight Costs				LS	**15%**	$ 24,021,130	$ 3,603,170
0066		Construction Engineering Inspection Costs				LS	**4%**	$ 24,021,130	$ 960,845
0067		OCI Management Cost				LS	**15%**	$ 24,021,130	$ 3,603,170
0068		Project Contingency Costs				LS	**30%**	$ 24,021,130	$ 7,206,339
		Land acquisition							
NS SUBTOTAL									$ 18,015,848
TOTAL									**$ 42,036,978**

		CONCEPTUAL CAPITAL COST ESTIMATE						Liberia	
								Alternative 2	
PUMP STATIONS WITH FORCE MAINS									
ITEM #	Master Sheet Index	DIAMETER (INCHES)		DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24		FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36		FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42		FM- Force Main Collector	Circular	LF	$ 336.00	0	$ -
0004	16	48		FM- Force Main Collector	Circular	LF	$ 612.00	400	$ 244,800
0005	17	54		FM- Force Main Collector	Circular	LF	$ 982.00	0	$ -
0006	18	60		FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66		FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72		FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24		FMO- Force Main Offline	Circular	LF	$ 353.00	4,500	$ 1,588,500
0010	11			IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12			IWO-Injection Wells -Offline		EA	$ 75,000.00	20	$ 1,500,000
0012	6	PS-Storm Drainage Pump Stations < 166 cfs			I	EA	$ 2,400,000.00	1	$ 2,400,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs			II	EA	$ 3,500,000.00	0	$ -
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs			III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs			IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS				EA	$ 8,000,000.00	0	$ -
IN SUBTOTAL									$ 5,733,300
EXFILTRATION WITH GRAVITY MAINS								Liberia	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0022	22	21		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0021	21	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	1,025	$ 46,125
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	705	$ 33,840
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	665	$ 34,580
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	1,085	$ 86,800
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	3,360	$ 386,400
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	720	$ 90,000
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	0	$ -
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	0	$ -
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	0	$ -
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	0	$ -
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	505	$ 202,000
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	285	$ 123,120
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	200	$ 64,000
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	0	$ -
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	72	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	7,586	$ 1,896,500
0055	50			Weir Box CS		EA	$ 30,000.00	0	$ -
0057	53			CS-22 Remod		EA	$ 525,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0056				Gravity Structures-Inlets		EA	$ 7,500.00	144	$ 1,082,000
0059	56			Ditch Improvement		LF	$ 50.00	200	$ 10,000
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	8	$ 2,663
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
	GRAVITY MAIN SUBTOTAL								$ 4,045,365
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	21,036	$ 5,679,720
								CONSTRUCTION COST SUBTOTAL	$ 15,458,385
GENERAL CONDITIONS								Liberia	
0061		Mobilization				LS	4%	$ 15,458,385	$ 618,335
0062		Insurance and General Conditions				LS	2%	$ 15,458,385	$ 309,168
0063		Permits/Fees				LS	2%	$ 15,458,385	$ 309,168
0064		Maintenance of Traffic				LS	3%	$ 15,458,385	$ 463,752
0065		Engineering Design & CA Oversight Costs				LS	15%	$ 15,458,385	$ 2,318,758
0066		Construction Engineering Inspection Costs				LS	4%	$ 15,458,385	$ 618,335
0067		OCI Management Cost				LS	15%	$ 15,458,385	$ 2,318,758
0068		Project Contingency Costs				LS	30%	$ 15,458,385	$ 4,637,516
NS SUBTOTAL									$ 11,593,789
TOTAL									$ 27,052,174

- **Figure HC-D2-1-EC_5 - Current Conditions Flooding in CIP Area 5-year Design Storm**
- **Figure HC-D2-1-EC_10 - Current Conditions Flooding in CIP Area 10-year Design Storm**
- **Figure HC-D2-1-CIP_ALT1_5 - Predicted Flooding Reduction and Proposed ALT1 CIP for 5-year Design Storm**
- **Figure HC-D2-1-CIP_ALT1_10 - Predicted Flooding Reduction and Proposed ALT1 CIP for 10-year Design Storm**
- **Figure HC-D2-1-CIP_ALT2_5 - Predicted Flooding Reduction and Proposed ALT2 CIP for 5-year Design Storm**
- **Figure HC-D2-1-CIP_ALT2_10 - Predicted Flooding Reduction and Proposed ALT2 CIP for 10-year Design Storm**
- **Table HC-D2-1_ALT1 – Planning Budget for Alternative 1 Proposed CIP**
- **Table HC-D2-1_ALT2 – Planning Budget for Alternative 2 Proposed CIP**

3.2.4 Hollywood East Basin (HE) Proposed CIP

The HE basin consists of the barrier island and the coastal areas from the ICW west toward Dixie Highway ridge. The mainland area slopes from west to east and becomes very a very low elevation east of N 14th Ave., lower than current king tides. The existing SWPSs are currently not adequate to remove the volume of flooding experienced to the desired LOS, especially with the added tidal in-flow to the neighborhoods, thus the area is additionally susceptible to tidal flooding due to the low land elevations and lack of consistent shoreline armoring. Stormwater wells are permitted in these areas due to being east of the 10,000 TDS line. Exfiltration is feasible in the upper elevations above EL 6 ft NAVD toward the west edge of the basin but with continuing sea level rise their effectiveness in future may be compromised. There are inflows from both the bordering cities of Hallandale Beach and Dania into the City in the common basin drainage areas (and some minor outflows). The port area, while within the City limits, is a self-supporting Enterprise Fund of Broward County government operated by the Port Everglades Department which does not rely on local tax dollars for operations or capital improvements and has its own internal port area stormwater plan prepared and updated by the County as the port expansion program progresses, does not connect to the City's PSMS, and thus is not part of this analysis. Proposed stormwater management for the barrier island area of the City must be fully coordinated and approved by FDOT as they own and operate the PSMS and utility corridor rights-of-way which lies under SR-A1A. The City's Community Redevelopment Agency (CRA) is also working with FDOT for shared CIP on Hollywood Beach for near-term drainage improvements and road raising of dips that collect flood waters.

3.2.4.1 CIP Area HE-D1-1 (North Beach and South Central Beach)

Root Causes of Flooding

This CIP Area's drainage system is owned and managed by FDOT for their roadway SR-A1A (a.k.a., N and S Ocean Drive). The City's side streets and landuse are mostly built-out and consist of

primarily impervious buildings, roads, sidewalks, and parking, and are sloped toward the west from the eastern natural elevated dune ridge at the beach side, and significant stormwater runoff flows into the FDOT's PSMS both piped and by overland sheet flow depending on the location. This stretch of State roadway through Hollywood Beach has experienced historic flooding problems as the system is currently served only by gravity outfalls to the ICW which, due to the low roadway elevation, limits the hydraulic capacity able to flow out of the system during periods where rainfall events are coincident with high tides. Many of the City's side streets have dips at their intersections with SR A1A further exacerbating the flooding at several locations trapping the water at the side street turnouts.

FDOT has a long-term master drainage plan in place for this roadway that consists of the installation of a series of SWPSs with upgraded collection systems for each subbasin in its right of way which it intends to fund and implement over the next 20 years - the first four of which are in progress at the time of this SWMP analysis and potentially up to two more are proposed to be accelerated and jointly funded by the CRA. Additionally, FDOT has seawall improvements and backflow prevention systems planned to address the recurrent tidal flooding in their roadway.

It is important to note that the SWMP CIP area HE-D1-1 analysis herein is not intended to replace the FDOT's in-place, long-term drainage plan for its roadway, nor should the City likely take on this responsibility, as it is the only evacuation route for the barrier island and is maintained by the State. The significant cost of retrofitting the large stormwater infrastructure required for this area within the already tight underground utility corridor could be better applied to other areas of the City where this type of partnership is not available. The analysis does provide an understanding of the drainage patterns, the root causes of flooding, and will assist the City and CRA with design reviews and project guidance.

The barrier island future proposed SWMP CIP analysis thus assumes the in-progress CRA road raisings, streetscapes, and side street drainage improvements projects which were provided for the SWMP are all in place and operational, the four initially-proposed FDOT pilot SWPS are also installed at their provided design capacities, the seawalls are raised to a continuous EL of 5 ft NAVD along the ICW, BFPs are installed in the outfall pipes and are working properly at the outfalls, and lining has been performed for leaking pipes. The proposed CIP that would meet the City's LOS alternatives is provided below as independent, alternate plan to meet the City's LOS, to compare to the FDOT in progress program for their corridor.

To be useful, the alternatives proposed do not simply mirror the FDOT's recommendations, but rather provides fewer, larger SWPSs and associated infrastructure, which may not be feasible in all locations due to available land, right of way, construction logistics, or utility conflicts, which cannot be determined at this planning- level, until final design.

Alternative 1

Proposed CIP:

- Four new SWPSs along SR A1A working in conjunction with the proposed four pilot FDOT SWPSs serving the area from north of the Dania Beach Blvd on/off ramp south to Hollywood Beach Blvd:

1. Franklin SWPS – Type I 145 cfs, 150 l.f. of 54-inch FM into the ICW serving Dania Beach Blvd on/off ramp south to Greene Street. New collection systems and inlets in SR A1A to the new SWPS.

2. Taft SWPS – Type II 175 cfs, discharging into the ICW serving Sheridan St in the north south to Oklahoma Street. New collection systems and inlets in SR A1A to the new SWPS.

3. Michigan SWPS - Type II 200 cfs, discharging under SR A1A in twin 150 l.f. 42-inch FMs into the ICW serving Oklahoma St in the north south to Indiana Street. New collection systems and inlets in SR A1A to the new SWPS.

4. Arizona SWPS - Type I 120 cfs, discharging under SR A1A in a 150 l.f. 48-inch FM into the ICW serving Indiana St in the north and south to Hollywood Blvd. New collection systems and inlets in SR A1A to the new SWPS.

- There is the potential for installing exfiltration systems under N-S Surf Road and extending into the crossing intersections, where utility corridors allow, at EL 6 ft NAVD or higher, and connected with gravity wells to catch approximately 10% -15% additional stormwater runoff uphill before it sheet flows down to the SR-A1A system, potentially lowering the capacity of the pipes and pumps proposed and reducing flooding in the smaller more frequent storms.

  Notes:

  1. SR-A1A from Greene Street to Sheridan St - it is assumed that FDOT will be installing its own future infrastructure such as a SWPS, piping, outfalls, seawalls, or other road improvements to serve its section of SR-A1A and meet its FDOT design LOS for the roadway. This basin is (approximately 34 acres and produces approximately 35 cfs of runoff in the design storm). No further City-owned improvements are proposed for this stretch of FDOT roadway.

  2. FDOT has presented its Drainage Study for SR-A1A (Scalar report, 2020) which includes several additional SWPS in the future along SR-A1A to meet the FDOT roadway LOS for this study – i.e., no flooding above the grate elevation (not crown) in the roadway for a smaller FDOT design storm).

<u>Summary of Locations Not Meeting ALT 1 LOS:</u>

1. Structures Flooded pre-0, post seawall-21, post-0

<u>Summary of Offsite Issues Affecting CIP Area:</u>

1. None.

Alternative 2

Proposed CIP:

- Four new SWPSs along SR A1A working in conjunction with the proposed four FDOT SWPSs serving the area from north of the Dania Beach Blvd on/off ramp south to Hollywood Beach Blvd:

    1. Franklin SWPS – Type I 110 cfs, 150 ft of 54-inch FM into the ICW serving Dania Beach Blvd on/off ramp south to Greene Street. New collection systems and inlets in SR A1A to the new SWPS.

    2. Taft SWPS – Type I 145 cfs, discharging directly into the ICW serving Sheridan St in the north south to Oklahoma Street. New collection systems and inlets in SR A1A to the new SWPS.

    3. Michigan SWPS - Type I1 160 cfs, discharging under SR A1A in twin 150 l.f. 36-inch FMs into the ICW serving Oklahoma St in the north south to Indiana Street. New collection systems and inlets in SR A1A to the new SWPS.

    4. Arizona SWPS - Type I 100 cfs, discharging under SR A1A in a 150 l.f. 42-inch FMs into the ICW serving Indiana St in the north and south to Hollywood Blvd. New collection systems and inlets in SR A1A to the new SWPS.

- There is the potential for installing exfiltration systems under N-S Surf Road and extending into the crossing intersections, where utility corridors allow, at EL 6 ft NAVD or higher, and connected with gravity wells to catch approximately 10% -15% additional stormwater runoff uphill before it sheet flows down to the SR-A1A system, potentially lowering the capacity of the pipes and pumps proposed and reducing flooding in the smaller more frequent storms.

  Notes:

    1. It is assumed that FDOT will be installing its own future SWPS or other roadway drainage improvements to serve its SR-A1A from Greene Street to Sheridan Street.

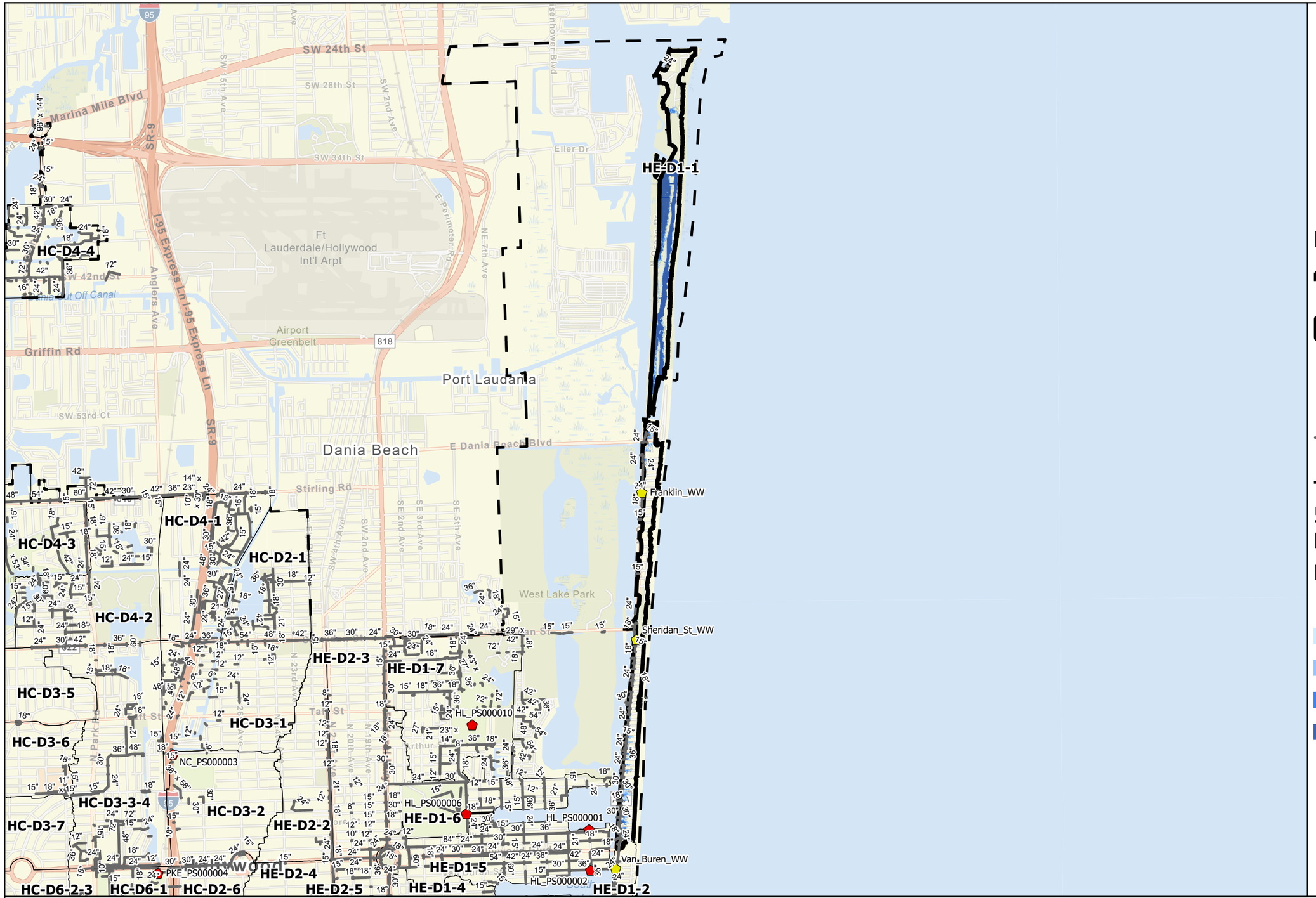
    2. FDOT has presented its Drainage Study for SR-A1A (Scalar report, 2020) which includes several additional SWPS in the future along SR-A1A to meet the FDOT roadway LOS for this study – (i.e., no flooding above the grate elevation (not crown) in the roadway for a smaller FDOT design storm).

Summary of Locations Not Meeting ALT 2 LOS:

1. Structures Flooded pre-0, post seawall-21, post-0

Summary of Offsite Issues Affecting CIP Area:

1. None.



Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Existing Gravity Pipes
- Existing Forcemains

5-Year 24-Hour Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

Current Conditions Flooding in CIP Area
North Beach and South Central Beach
5-year Design Storm

0 1,500 3,000 6,000 Feet

1:42,000

City of Hollywood Stormwater Master Plan
HE-D1-1_EC-5
2/28/2023

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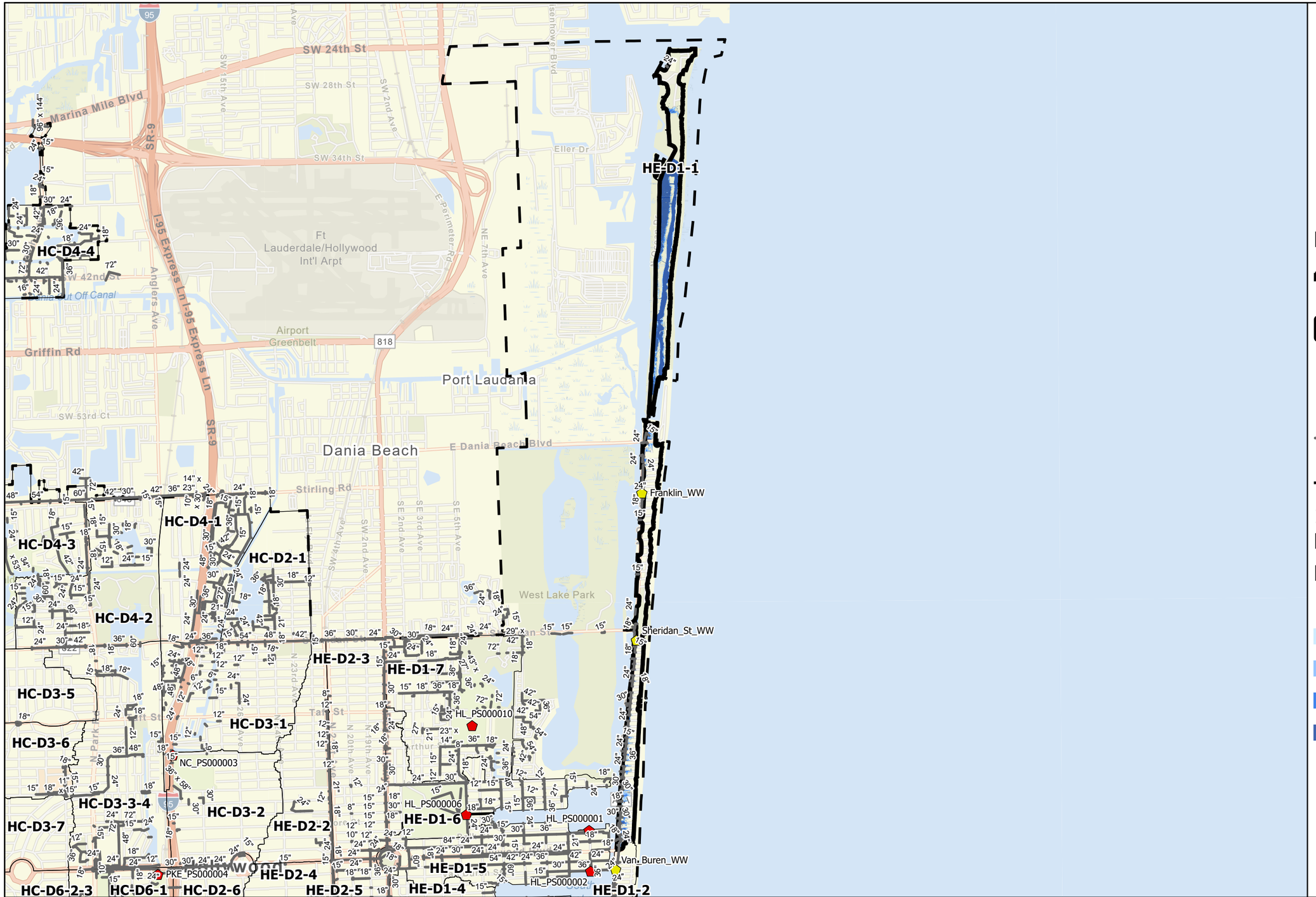

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Existing Gravity Pipes
- Existing Forcemains

10-Year 72-Hour Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

Current Conditions Flooding in CIP Area
North Beach and South Central Beach
10-year Design Storm

0 1,500 3,000 6,000 Feet

1:42,000

City of Hollywood Stormwater Master Plan

HE-D1-1_EC-10

2/28/2023

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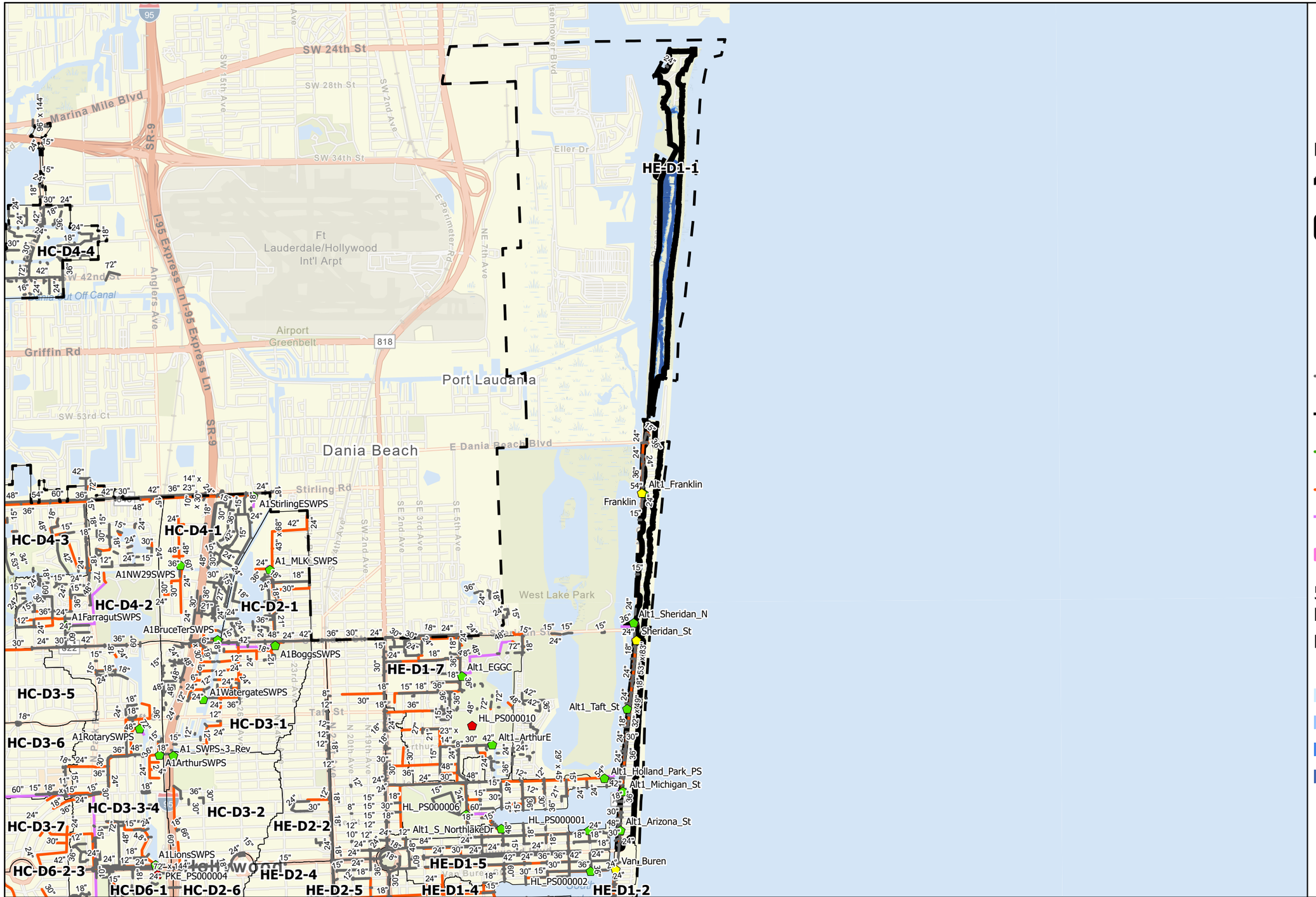

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 1 SWPS
- Alt 1 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 1 Exfiltration Pipes
- Alt 1 Gravity Pipes
- Alt 1 Forcemains
- Alt 1 Detention Pond

5-Year ALT 1 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 1 CIP for 5-year Design Storm in CIP Area North Beach and South Central Beach

0 1,500 3,000 6,000 Feet

1:42,000

City of Hollywood Stormwater Master Plan

HE-D1-1_ALT1-5

2/28/2023

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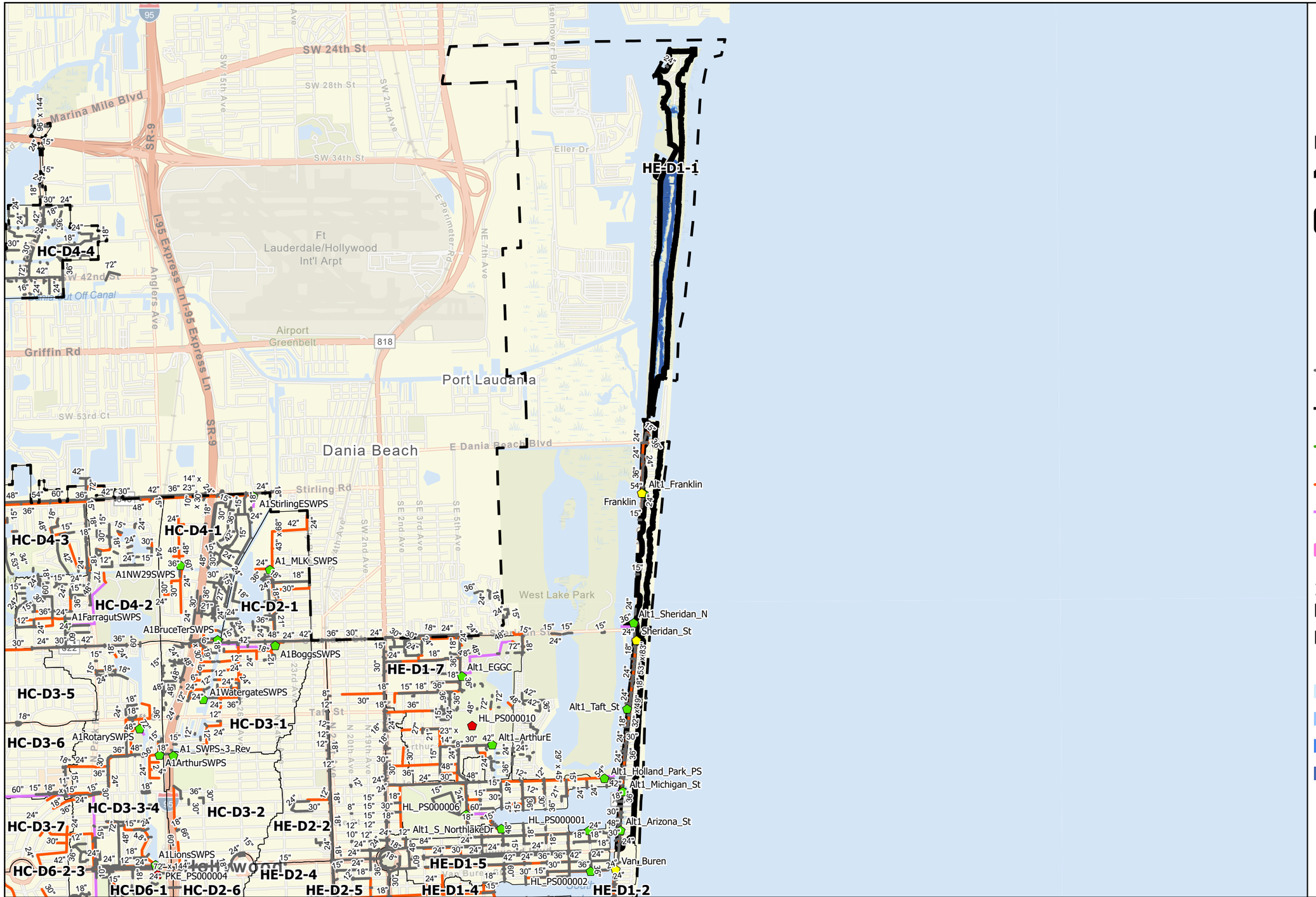

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 1 SWPS
- Alt 1 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 1 Exfiltration Pipes
- Alt 1 Gravity Pipes
- Alt 1 Forcemains
- Alt 1 Detention Pond

10-Year ALT 1 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 1 CIP for 10-year Design Storm in CIP Area North Beach and South Central Beach

0 1,500 3,000 6,000 Feet

1:42,000

City of Hollywood Stormwater Master Plan

HE-D1-1_ALT1-10

2/28/2023

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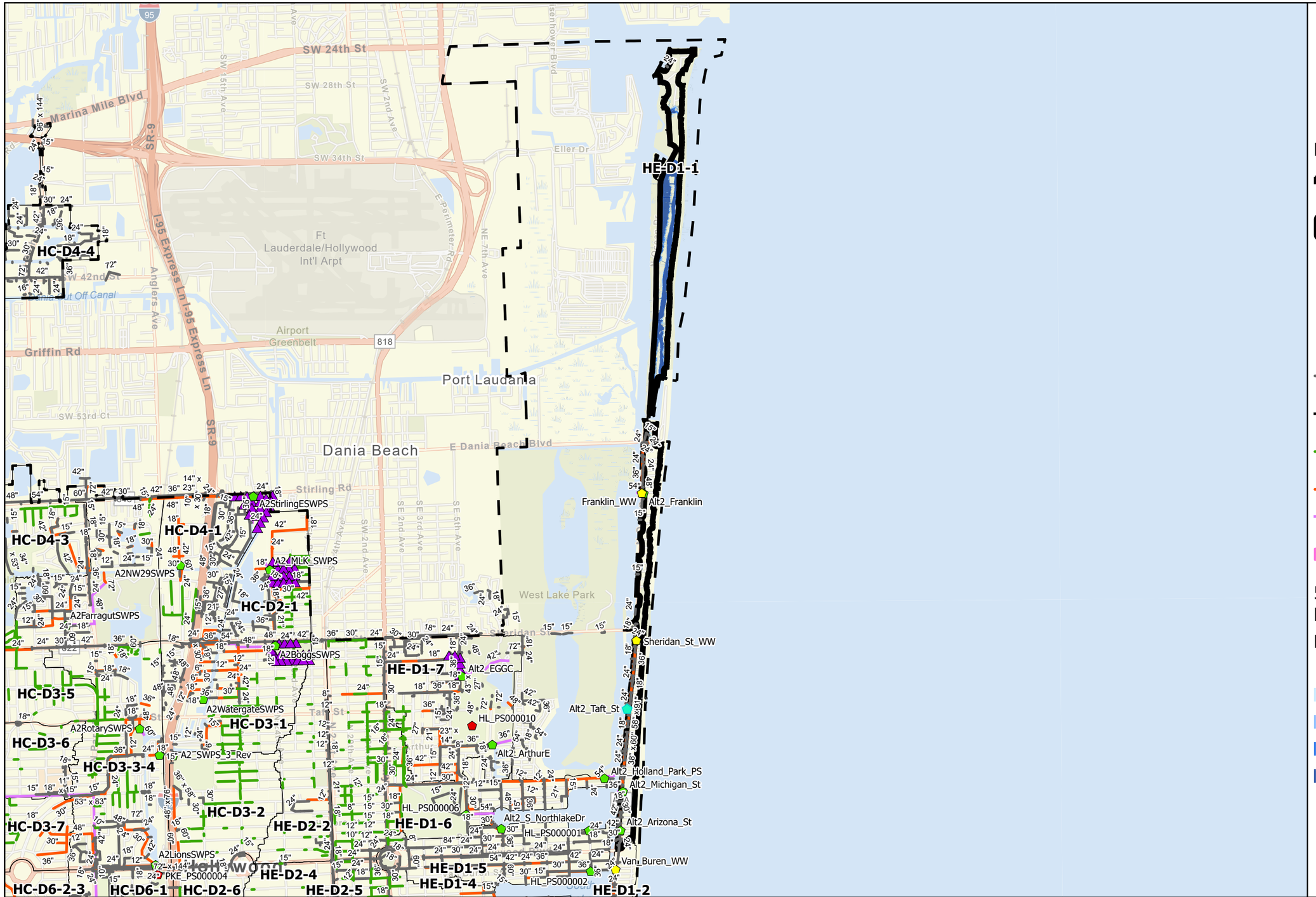

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 2 SWPS
- Alt 2 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 2 Exfiltration Pipe
- Alt 2 Gravity Pipes
- Alt 2 Forcemains
- Alt 2 Detention Pond

5-Year ALT 2 Storm Flood Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 2 CIP for 5-year Design Storm in CIP Area North Beach and South Central Beach

0 1,500 3,000 6,000 Feet

1:42,000

City of Hollywood Stormwater Master Plan

HE-D1-1_ALT2-5

2/28/2023

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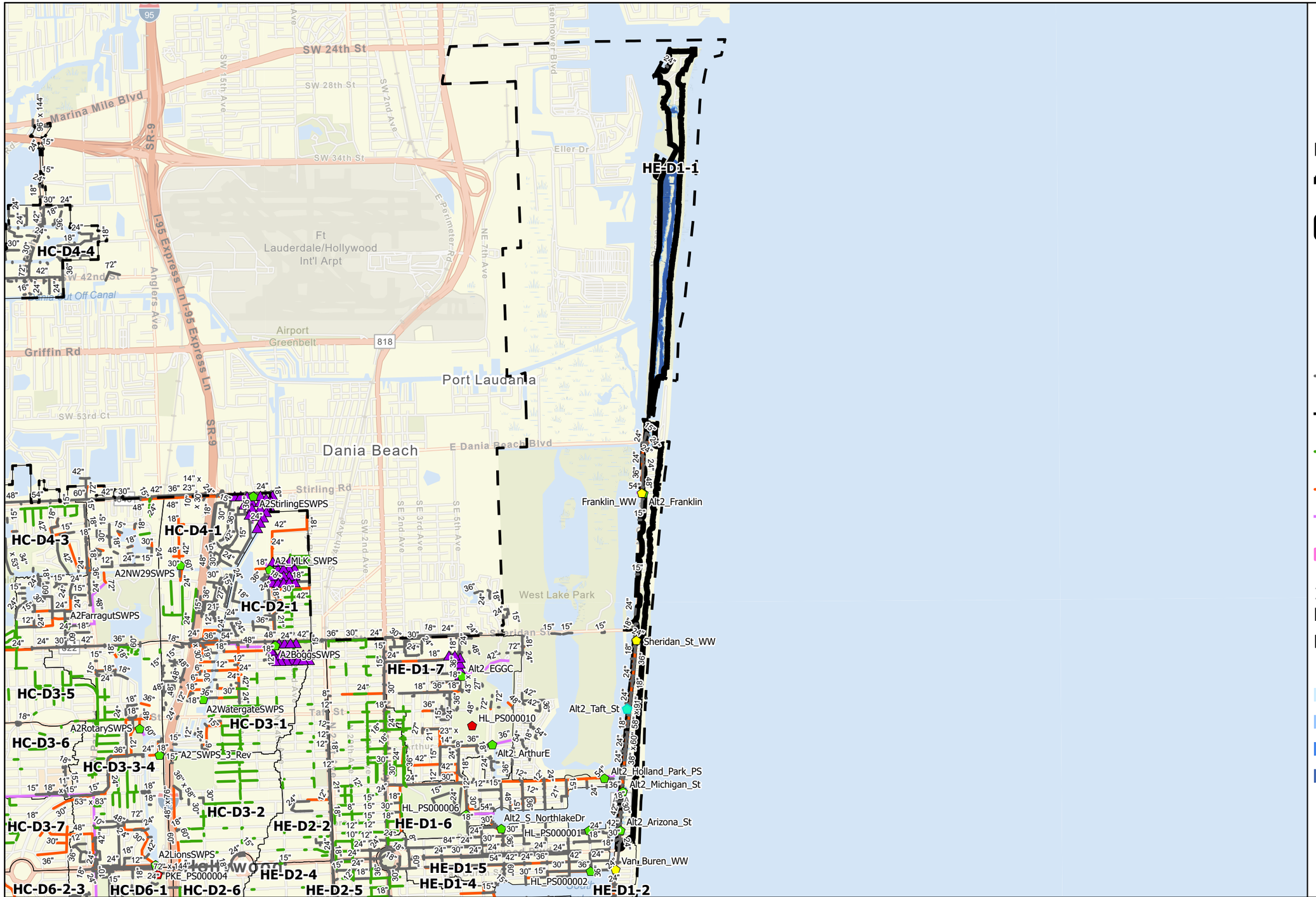

Legend

- Hollywood City Limits
- Focused CIP Area
- Existing SWPS
- Near Term SWPS
- Alt 2 SWPS
- Alt 2 Injection Wells
- Existing Gravity Pipes
- Existing Forcemains
- Alt 2 Exfiltration Pipe
- Alt 2 Gravity Pipes
- Alt 2 Forcemains
- Alt 2 Detention Pond

10-Year ALT 2 Storm Flood

Feet

- <= 0 ft.
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- > 1.5 ft.

CDM Smith

CITY OF Hollywood FLORIDA

Predicted Flooding Reduction and Proposed ALT 2 CIP for 10-year Design Storm in CIP Area North Beach and South Central Beach

0 1,500 3,000 6,000 Feet

1:42,000

City of Hollywood Stormwater Master Plan

HE-D1-1_ALT2-10

2/28/2023

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		CONCEPTUAL CAPITAL COST ESTIMATE					North Beach and South Central Beach	
							Alternative 1	
PUMP STATIONS WITH FORCE MAINS								
ITEM #	Master Sheet Index	DIAMETER (INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24	FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36	FM- Force Main Collector	Circular	LF	$ 242.00	0	$ -
0003	15	42	FM- Force Main Collector	Circular	LF	$ 336.00	350	$ 117,600
0004	16	48	FM- Force Main Collector	Circular	LF	$ 612.00	150	$ 91,800
0005	17	54	FM- Force Main Collector	Circular	LF	$ 982.00	150	$ 147,300
0006	18	60	FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66	FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72	FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24	FMO- Force Main Offline	Circular	LF	$ 353.00	0	$ -
0010	11		IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12		IWO-Injection Wells -Offline		EA	$ 75,000.00	0	$ -
0012	6	PS-Storm Drainage Pump Stations < 166 cfs		I	EA	$ 2,400,000.00	2	$ 4,800,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs		II	EA	$ 3,500,000.00	2	$ 7,000,000
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs		III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs		IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS			EA	$ 8,000,000.00	0	$ -
AIN SUBTOTAL								$ 12,156,700
EXFILTRATION WITH GRAVITY MAINS							orth Beach and South Central Beac	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0020	21	15		GM-Gravity Main Collector	Circular	LF	$ 40.00	0	$ -
0021	22	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	1,106	$ 53,088
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	83	$ 4,295
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	625	$ 49,984
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	713	$ 82,018
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	0	$ -
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	989	$ 212,657
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	280	$ 63,000
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	986	$ 231,616
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	957	$ 354,164
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	252	$ 100,880
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	1,420	$ 613,526
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	2,082	$ 666,144
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	820	$ 336,364
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	0	$ -
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	84	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	0	$ -
0056	50			Weir Box CS		EA	$ 7,500.00	0	$ -
0057	53			CS-22 Remod		EA	$ 200,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0055				Gravity Structures-Inlets		EA	$ 30,000.00	87	$ 2,617,250
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
GRAVITY MAIN SUBTOTAL							#N/A		$ 5,384,986
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	10,963	$ 2,960,010
								CONSTRUCTION COST SUBTOTAL	**$ 20,501,696**
GENERAL CONDITIONS								orth Beach and South Central Beac	
0061		Mobilization				LS	**4%**	$ 20,501,696	$ 820,068
0062		Insurance and General Conditions				LS	**2%**	$ 20,501,696	$ 410,034
0063		Permits/Fees				LS	**2%**	$ 20,501,696	$ 410,034
0064		Maintenance of Traffic				LS	**3%**	$ 20,501,696	$ 615,051
0065		Engineering Design & CA Oversight Costs				LS	**15%**	$ 20,501,696	$ 3,075,254
0066		Construction Engineering Inspection Costs				LS	**4%**	$ 20,501,696	$ 820,068
0067		OCI Management Cost				LS	**15%**	$ 20,501,696	$ 3,075,254
0068		Project Contingency Costs				LS	**30%**	$ 20,501,696	$ 6,150,509
		Land acquisition							
NS SUBTOTAL									$ 15,376,272
TOTAL									**$ 35,877,968**

		CONCEPTUAL CAPITAL COST ESTIMATE						North Beach and South Central Beach	
								Alternative 2	
PUMP STATIONS WITH FORCE MAINS									
ITEM #	Master Sheet Index	DIAMETER (INCHES)		DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0001	13	24		FM- Force Main Collector	Circular	LF	$ 167.00	0	$ -
0002	14	36		FM- Force Main Collector	Circular	LF	$ 242.00	350	$ 84,700
0003	15	42		FM- Force Main Collector	Circular	LF	$ 336.00	150	$ 50,400
0004	16	48		FM- Force Main Collector	Circular	LF	$ 612.00	0	$ -
0005	17	54		FM- Force Main Collector	Circular	LF	$ 982.00	150	$ 147,300
0006	18	60		FM- Force Main Collector	Circular	LF	$ 1,149.00	0	$ -
0007	19	66		FM- Force Main Collector	Circular	LF	$ 1,329.00	0	$ -
0008	20	72		FM- Force Main Collector	Circular	LF	$ 1,473.00	0	$ -
0009	225	24		FMO- Force Main Offline	Circular	LF	$ 353.00	0	$ -
0010	11			IWI-Injection Wells-Inline		EA	$ 65,000.00	0	$ -
0011	12			IWO-Injection Wells -Offline		EA	$ 75,000.00	0	$ -
0012	6	PS-Storm Drainage Pump Stations < 166 cfs			I	EA	$ 2,400,000.00	4	$ 9,600,000
0013	7	PS-Storm Drainage Pump Stations < 166-246 cfs			II	EA	$ 3,500,000.00	0	$ -
0014	8	PS-Storm Drainage Pump Stations < 246-328 cfs			III	EA	$ 4,900,000.00	0	$ -
0015	9	PS-Storm Drainage Pump Stations< 328-410 cfs			IV	EA	$ 6,750,000.00	0	$ -
0016	54	PS-CS22 Storm Drainage Pump Stations 600CFS				EA	$ 8,000,000.00	0	$ -
IN SUBTOTAL									$ 9,882,400
EXFILTRATION WITH GRAVITY MAINS								orth Beach and South Central Beac	
ITEM #	Master Sheet Index	DIAMETER (INCHES)	Width(INCHES)	DESCRIPTION	TYPE	UNIT	UNIT COST	QUANTITIES	SUBTOTAL
0022	22	21		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0021	21	18		GM-Gravity Main Collector	Circular	LF	$ 45.00	0	$ -
0023	23	24		GM-Gravity Main Collector	Circular	LF	$ 48.00	1,824	$ 87,552
0024	24	30		GM-Gravity Main Collector	Circular	LF	$ 52.00	57	$ 2,964
0026	25	36		GM-Gravity Main Collector	Circular	LF	$ 80.00	453	$ 36,240
0028	26	42		GM-Gravity Main Collector	Circular	LF	$ 115.00	227	$ 26,105
0029	27	48		GM-Gravity Main Collector	Circular	LF	$ 125.00	0	$ -
0030	28	54		GM-Gravity Main Collector	Circular	LF	$ 150.00	0	$ -
0031	29	60		GM-Gravity Main Collector	Circular	LF	$ 220.00	0	$ -
0032	30	66		GM-Gravity Main Collector	Circular	LF	$ 428.00	0	$ -
0033	31	72		GM-Gravity Main Collector	Circular	LF	$ 485.00	0	$ -
0035	32	29	45	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 205.00	0	$ -
0036	33	32	49	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 215.00	165	$ 35,475
0037	34	34	53	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 225.00	237	$ 53,325
0038	35	38	60	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 235.00	988	$ 232,180
0039	36	43	68	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 370.00	638	$ 236,060
0040	37	48	76	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 400.00	739	$ 295,600
0041	38	53	83	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 432.00	1,351	$ 583,632
0042	39	58	91	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 320.00	1,371	$ 438,720
0043	40	63	98	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 410.00	669	$ 274,290
0044	41	68	106	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 460.00	106	$ 48,760
0045	42	72	113	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 570.00	0	$ -
0046	43	82	128	GM-Gravity Main Collector	Horizontal Ellipse	LF	$ 650.00	0	$ -
0048	44	72	120	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0072	45	72	72	GM-Gravity Main Collector	Rectangle Closed	LF	$ 570.00	0	$ -
0049	46	72	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 750.00	0	$ -
0050	47	96	96	GM-Gravity Main Collector	Rectangle Closed	LF	$ 850.00	0	$ -
0051	48			GBP-Gravity Backflow Pipe <36"		Ea	$ 35,000.00	0	$ -
0052	49			GBP-Gravity Backflow Pipe >36"		Ea	$ 70,000.00	0	$ -
0053	5			GW-Gravity Wells		EA	$ 105,000.00	0	$ -
0054	4	48		ET-Exfiltration Trench		LF	$ 250.00	0	$ -
0055	50			Weir Box CS		EA	$ 30,000.00	0	$ -
0057	53			CS-22 Remod		EA	$ 525,000.00	0	$ -
0058	55			SW-04 Remod		EA	$ 150,000.00	0	$ -
0056				Gravity Structures-Inlets		EA	$ 7,500.00	75	$ 561,313
0059	56			Ditch Improvement		LF	$ 50.00	0	$ -
0091	57			Swale/Ditch Headwall		Ea	$ 10,000.00	0	$ -
0090	10			Exfil_End Weir		Ea	$ 5,000.00	0	$ -
0092	51			Ret/Det Pond		CUY	$ 355.00	0	$ -
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
							#N/A	#VALUE!	#VALUE!
	GRAVITY MAIN SUBTOTAL								$ 2,912,216
0060		Pavement Restoration including Pavement Marking (Full Road)				LF	$ 270.00	9,475	$ 2,558,250
							CONSTRUCTION COST SUBTOTAL		$ 15,352,866
GENERAL CONDITIONS								orth Beach and South Central Beac	
0061		Mobilization				LS	4%	$ 15,352,866	$ 614,115
0062		Insurance and General Conditions				LS	2%	$ 15,352,866	$ 307,057
0063		Permits/Fees				LS	2%	$ 15,352,866	$ 307,057
0064		Maintenance of Traffic				LS	3%	$ 15,352,866	$ 460,586
0065		Engineering Design & CA Oversight Costs				LS	15%	$ 15,352,866	$ 2,302,930
0066		Construction Engineering Inspection Costs				LS	4%	$ 15,352,866	$ 614,115
0067		OCI Management Cost				LS	15%	$ 15,352,866	$ 2,302,930
0068		Project Contingency Costs				LS	30%	$ 15,352,866	$ 4,605,860
NS SUBTOTAL									$ 11,514,649
TOTAL									$ 26,867,515

HE-D1-1 Pre-Post CIP Flood Inundation Maps

The following figures provide the predicted existing conditions flooding for the 5- and 10-year storm in the CIP Area and the predicted flood reduction for these storms under the Alternatives 1 and 2 CIP:

- **Figure HE-D1-1-EC_5 - Current Conditions Flooding in CIP Area 5-year Design Storm**
- **Figure HE-D1-1-EC_10 - Current Conditions Flooding in CIP Area 10-year Design Storm**
- **Figure HE-D1-1-CIP_ALT1_5 - Predicted Flooding Reduction and Proposed ALT1 CIP for 5-year Design Storm**
- **Figure HE-D1-1-CIP_ALT1_10 - Predicted Flooding Reduction and Proposed ALT1 CIP for 10-year Design Storm**
- **Figure HE-D1-1-CIP_ALT2_5 - Predicted Flooding Reduction and Proposed ALT2 CIP for 5-year Design Storm**
- **Figure HE-D1-1-CIP_ALT2_10 - Predicted Flooding Reduction and Proposed ALT2 CIP for 10-year Design Storm**
- **Table HE-D1-1_ALT1 – Planning Budget for Alternative 1 Proposed CIP**
- **Table HE-D1-1_ALT2 – Planning Budget for Alternative 2 Proposed CIP**

3.2.4.2 CIP Area HE-D1-2 (South Central Beach)

Root Causes of Flooding

This CIP Area's drainage system is owned and managed by FDOT for their roadway SR-A1A (a.k.a., N and S Ocean Drive). The City's side streets and landuse are mostly built-out and consist of primarily impervious buildings, roads, sidewalks, and parking, and are sloped toward the west from the eastern natural elevated dune ridge at the beach side, and significant stormwater runoff flows into the FDOT's PSMS both piped and by overland sheet flow depending on the location. This stretch of State roadway through Hollywood Beach has experienced historic flooding problems as the system is currently served only by gravity outfalls to the ICW which, due to the low roadway elevation, limits the hydraulic capacity able to flow out of the system during periods where rainfall events are coincident with high tides. Many of the City's side streets have dips at their intersections with SR A1A further exacerbating the flooding at several locations trapping the water at the side street turnouts.

FDOT has a long-term master drainage plan in place for this roadway that consists of the installation of a series of SWPSs with upgraded collection systems for each subbasin in its right of way which it intends to fund and implement over the next 20 years - the first four of which are in progress at the time of this SWMP analysis and potentially up to two more are proposed to be accelerated and jointly funded by the CRA. Additionally, FDOT has seawall improvements and backflow prevention systems planned to address the recurrent tidal flooding in their roadway.

It is important to note that the SWMP CIP area HE-D1-2 analysis herein is not intended to replace the FDOT's in-place, long-term drainage plan for its roadway, nor should the City likely take on this responsibility, as it is the only evacuation route for the barrier island and is maintained by the State. The significant cost of retrofitting the large stormwater infrastructure required for this area within the already tight underground utility corridor could be better applied to other areas of the City where this type of partnership is not available. The analysis does provide an understanding of the drainage patterns, the root causes of flooding, and will assist the City and CRA with design reviews and project guidance.

The barrier island future proposed SWMP CIP analysis thus assumes the in-progress CRA road raisings, streetscapes, and side street drainage improvements projects which were provided for the SWMP are all in place and operational, the four initially-proposed FDOT pilot SWPS are also installed at their provided design capacities, the seawalls are raised to a continuous EL of 5 ft NAVD along the ICW, BFPs are installed in the outfall pipes and are working properly at the outfalls, and lining has been performed for leaking pipes. The proposed CIP that would meet the City's LOS alternatives is provided below as independent, alternate plan to meet the City's LOS, to compare to the FDOT in progress program for their corridor.

To be useful, the alternatives proposed do not simply mirror the FDOT's recommendations, but rather provides fewer, larger SWPSs and associated infrastructure, which may not be feasible in all locations due to available land, right of way, construction logistics, or utility conflicts, which cannot be determined at this planning- level, until final design. .

Alternative 1

Proposed CIP:

- Four new SWPSs along SR A1A working in conjunction with the proposed four FDOT SWPSs serving the area from Hollywood Blvd south to Hallandale Beach Blvd:

    1. Georgia SWPS – Type II 190 cfs, 150 ft of twin 42-inch FM into the ICW serving Hollywood Blvd in the north and south to Jefferson Street. New collection systems and inlets in SR A1A to the new SWPS.

    2. Azalea SWPS – Type I 100 cfs, discharging into the ICW serving Jefferson St in the north and south to Iris Ter, 400 ft of 42-inch FM. New collection systems and inlets in SR A1A to the new SWPS.

    3. Magnolia SWPS - Type II 200 cfs, discharging under SR A1A in 300 ft of twin 42-inch FMs into the ICW serving Iris Ter in the north south to 3505 S Ocean Dr. New collection systems and inlets in SR A1A to the new SWPS in the City's parking lot.

    4. Seacrest SWPS - Type II 185 cfs, discharging into the ICW serving to 3505 S Ocean Dr in the north and south to Hallandale Beach Blvd. New collection systems and inlets in SR A1A to the new SWPS in the parking lot.

Summary of Locations Not Meeting ALT 1 LOS:

1. Structures Flooded pre-36, post seawall-43, post-5

Summary of Offsite Issues Affecting CIP Area:

1. The seawalls to the south on the ICW in the neighboring City of Hallandale Beach must also be raised to 5 ft NAVD in the future to avoid tidal flooding flowing into the City.

2. Iris Terr will need to be raised to have a geometry similar to the other A1A side streets to remove the existing dip and the flooding if not yet performed.

Alternative 2

Proposed CIP:

- Four new SWPSs along SR A1A working in conjunction with the proposed four FDOT SWPSs serving the area from Hollywood Blvd south to Hallandale Beach Blvd:

    1. Georgia SWPS – Type I 105 cfs, 150 l.f. of twin 36-inch FM into the ICW serving Hollywood Blvd in the north and south to Jefferson Street. New collection systems and inlets in SR A1A to the new SWPS.

    2. Azalea SWPS – Type I 80 cfs, discharging into the ICW serving Jefferson St in the north and south to Iris Ter, 400 l.f. of 42-inch FM. New collection systems and inlets in SR A1A to the new SWPS.

    3. Magnolia SWPS - Type I 135 cfs, discharging under SR A1A in 400 ft of twin 42-inch FMs into the ICW serving Iris Ter in the north south to 3505 S Ocean Dr. New collection systems and inlets in SR A1A to the new SWPS in the City's parking lot.

    4. Seacrest SWPS - Type I 185 cfs, discharging directly into the ICW serving to 3505 S Ocean Dr in the north and south to Hallandale Beach Blvd. New collection systems and inlets in SR A1A to the new SWPS in the parking lot.

Summary of Locations Not Meeting ALT 2 LOS:

1. Structures Flooded pre-36, post seawall-43, post-11

Summary of Offsite Issues Affecting CIP Area:

1. The seawalls to the south on the ICW in the City of Hallandale Beach must be raised to 5 ft NAVD in the future to avoid tidal flooding flowing into the City.

2. Iris Terr will need to be raised to have a geometry similar to the other A1A side streets to remove the existing dip and the flooding if not yet performed.

HE-D1-2 Pre-Post CIP Flood Inundation Maps

The following figures provide the predicted existing conditions flooding for the 5- and 10-year storm in the CIP Area and the predicted flood reduction for these storms under the Alternatives 1 and 2 CIP:

- **Figure HE-D1-2-EC_5 - Current Conditions Flooding in CIP Area 5-year Design Storm**
- **Figure HE-D1-2-EC_10 - Current Conditions Flooding in CIP Area 10-year Design Storm**