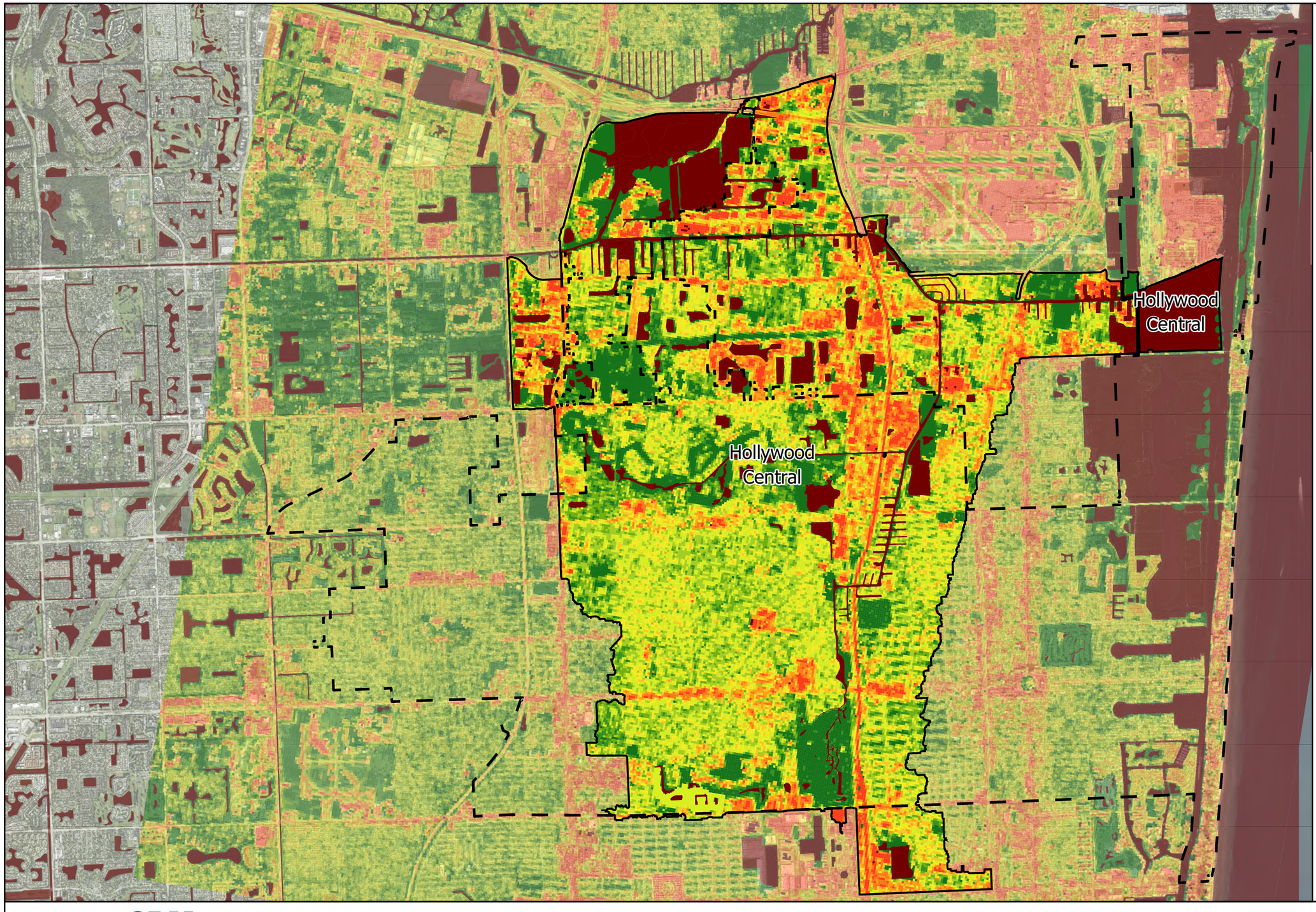

Legend

- Hollywood City Limits
- Hollywood Central

Impervious %

- 0% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% - 50%
- 51% - 60%
- 61% - 70%
- 71% - 80%
- 81% - 90%
- 91% - 99%
- 100%

CDM Smith

CITY OF Hollywood FLORIDA

Impervious Cover for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-3

08/09/2022

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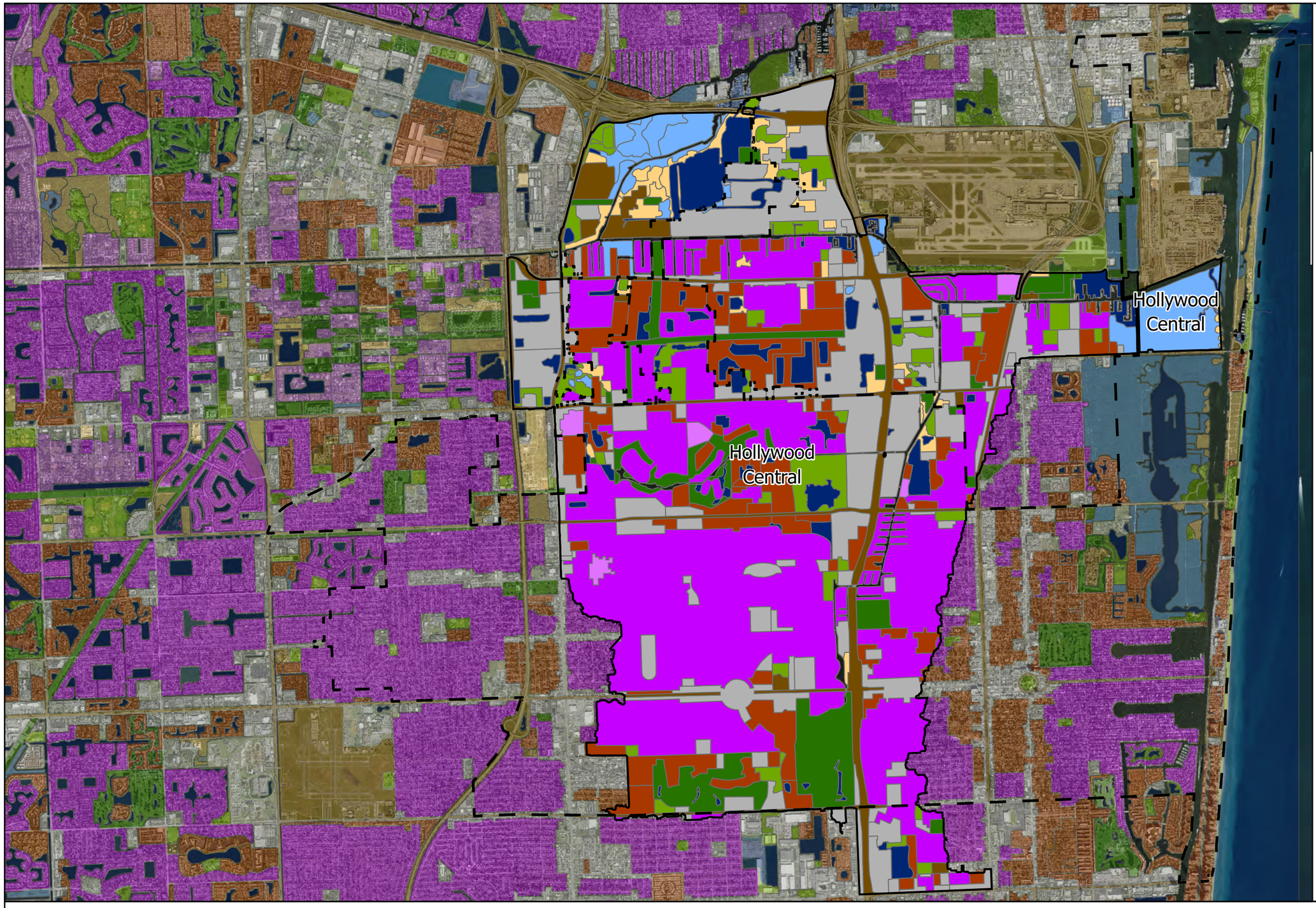

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CDM Smith

CITY OF Hollywood FLORIDA

SFWMD Land-Use for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-4

08/09/2022

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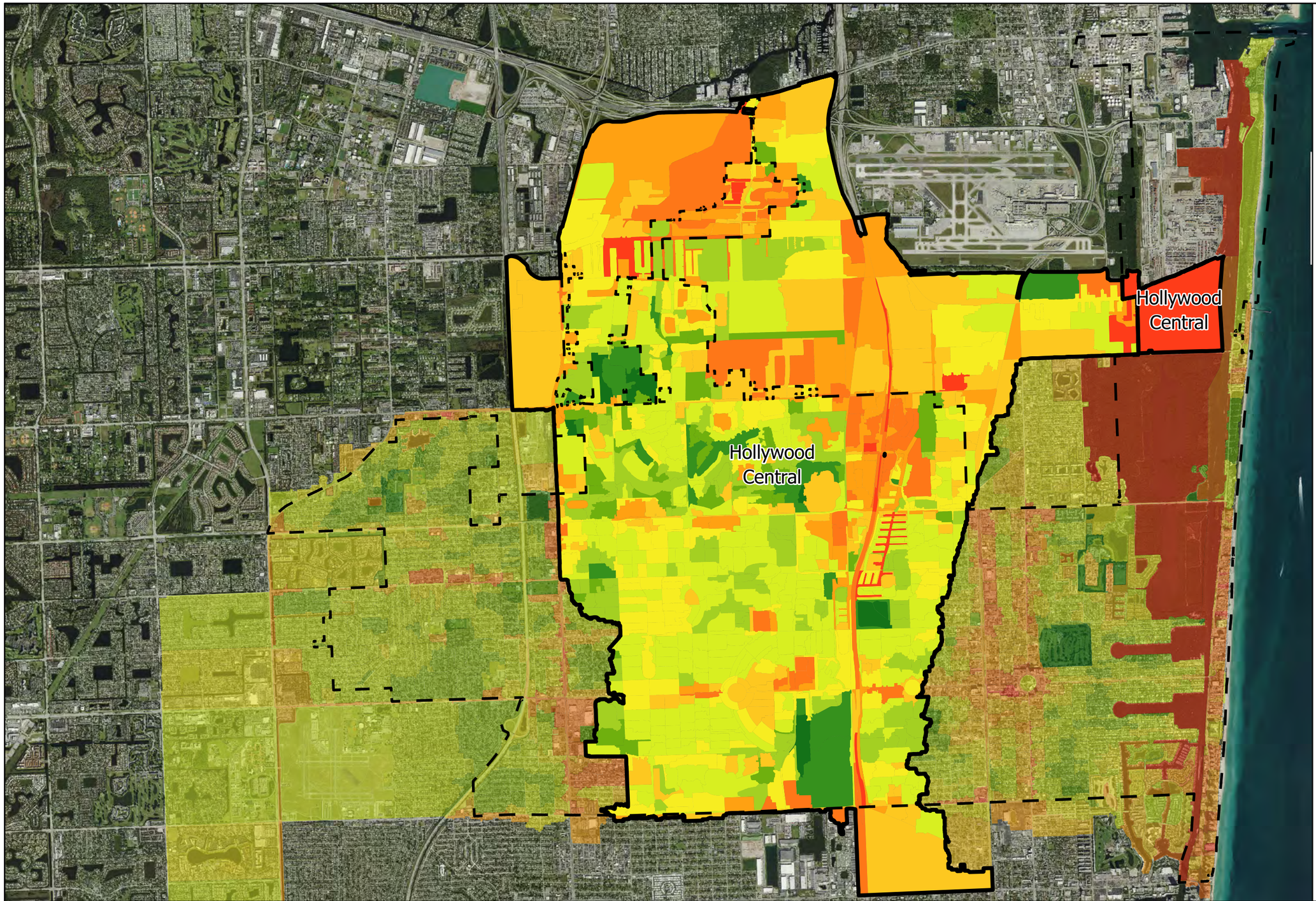


N

CDM Smith

CITY OF Hollywood FLORIDA

Total Impervious Percentage for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-5

08/10/2022

Figure 2.1-6 Landuse Category Breakdown for the HC Basin

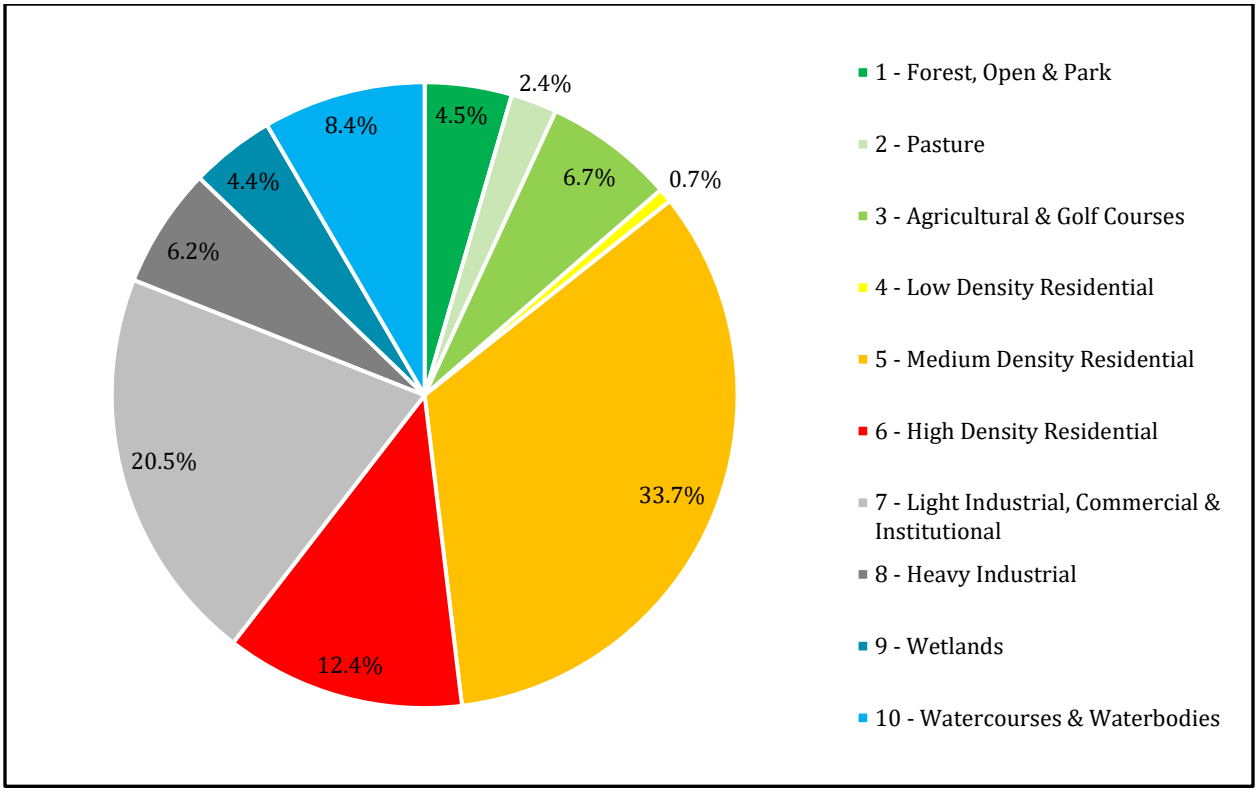
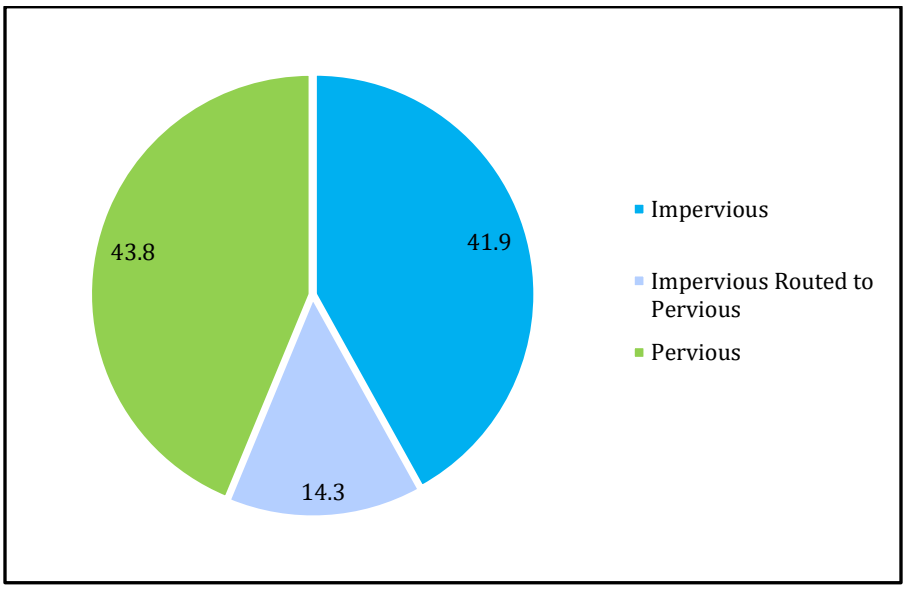


Figure 2.1-7 Breakdown of Impervious Cover for the HC Basin

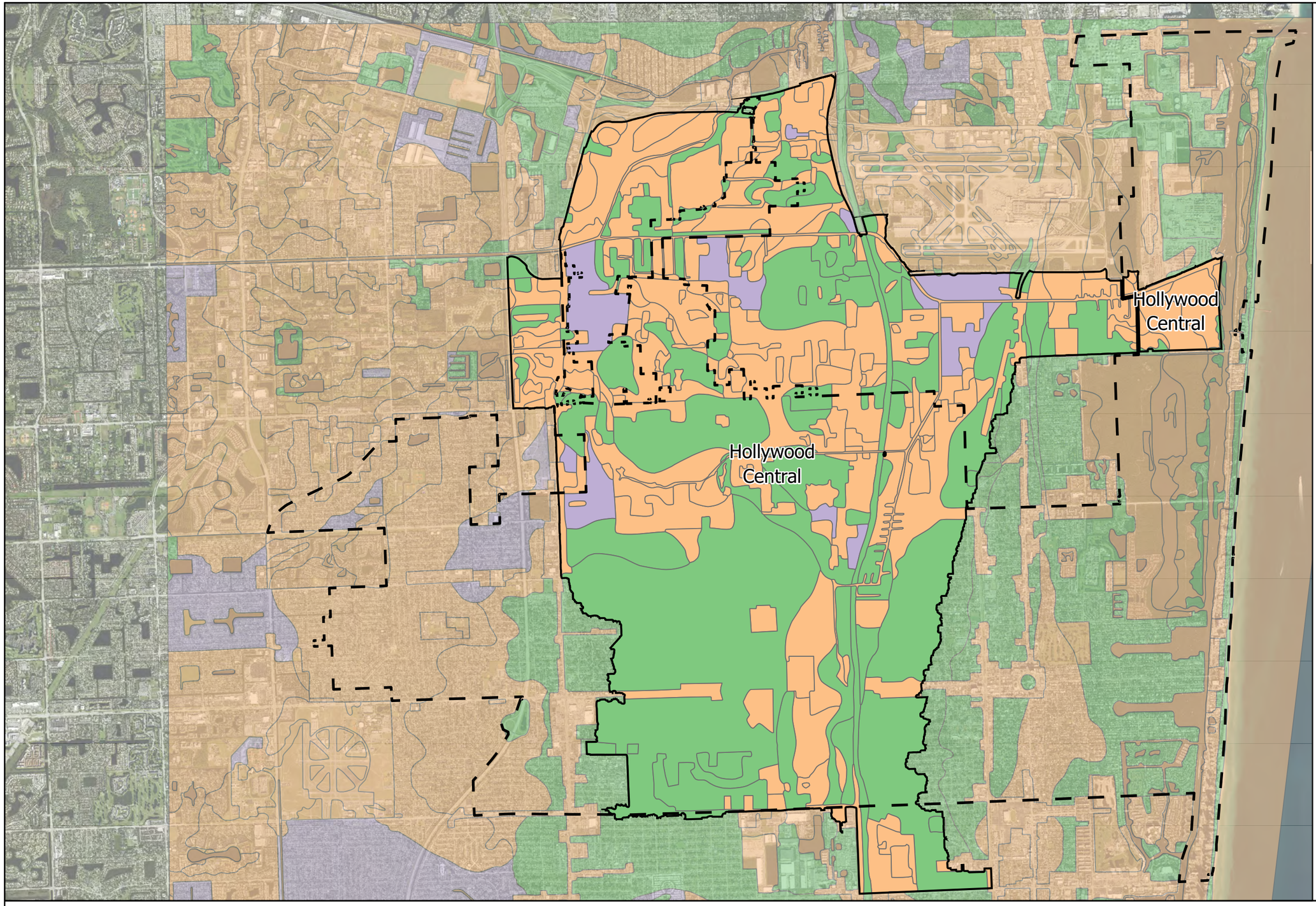


Design Storm rainfall volume development is discussed in the Model Development TM, Section 2.5.2. Generally, the largest volume within the C-10 (Spur), C-11, or C-10 (canal) basin was used for that portion of the overall HC model.

Table 2.1-1 HC Basin Design Storm Volumes and Intensities

Storm	C-10 (Spur)		C-11		C-10 (Canal)	
	Rainfall Depth (inches)	Peak Hour (inches)	Rainfall Depth (inches)	Peak Hour (inches)	Rainfall Depth (inches)	Peak Hour (inches)
5-year, 24-hour	7.3	3.0	7.4	3.0	7.4	3.0
10-year, 24-hour	8.9	3.7	9.0	3.7	9.0	3.7
25-year, 72-hour	15.5	4.7	15.6	4.8	15.5	4.8
100-year, 72-hour	21.3	6.5	21.5	6.5	21.3	6.5

Surface soils in the HC Basin are primarily composed of Hydrologic Soil Group (HSG) Type A, Type B, or Dual Class (A/D, or B/D) soils in the NRCS soils map included, as shown on **Figure 2.1-8**. One of the soil types found in the C-10 Basin is classified as Urban Land, which is defined as land covered by impervious urban development such as airports, shopping centers, parking lots, large buildings, streets, sidewalks, and/or other structures, so that natural soil is not readily observed. Note that as a result of urbanization, the underlying soil may be disturbed or covered by a new layer. In this case, utilizing the Type D HSG classification for modeling is commonly recommended. Soils types with dual classifications generally represent areas where there is a lens of poorly drained soils lying above a section of better draining soils. Typically, the lower (Type D) classification is used in hydrologic and hydraulic (H&H) models, unless the soil is disturbed, such as a field of row crops where it is likely the upper lens has been penetrated. For this modeling effort, the dual class soils were provided a Type D classification. **Figure 2.1-9** displays the HSG classifications deployed in the HC Basin model. The Model Development TM describes how the different soils types are converted to Green-Ampt model parameters.



NRCS Soils Map for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

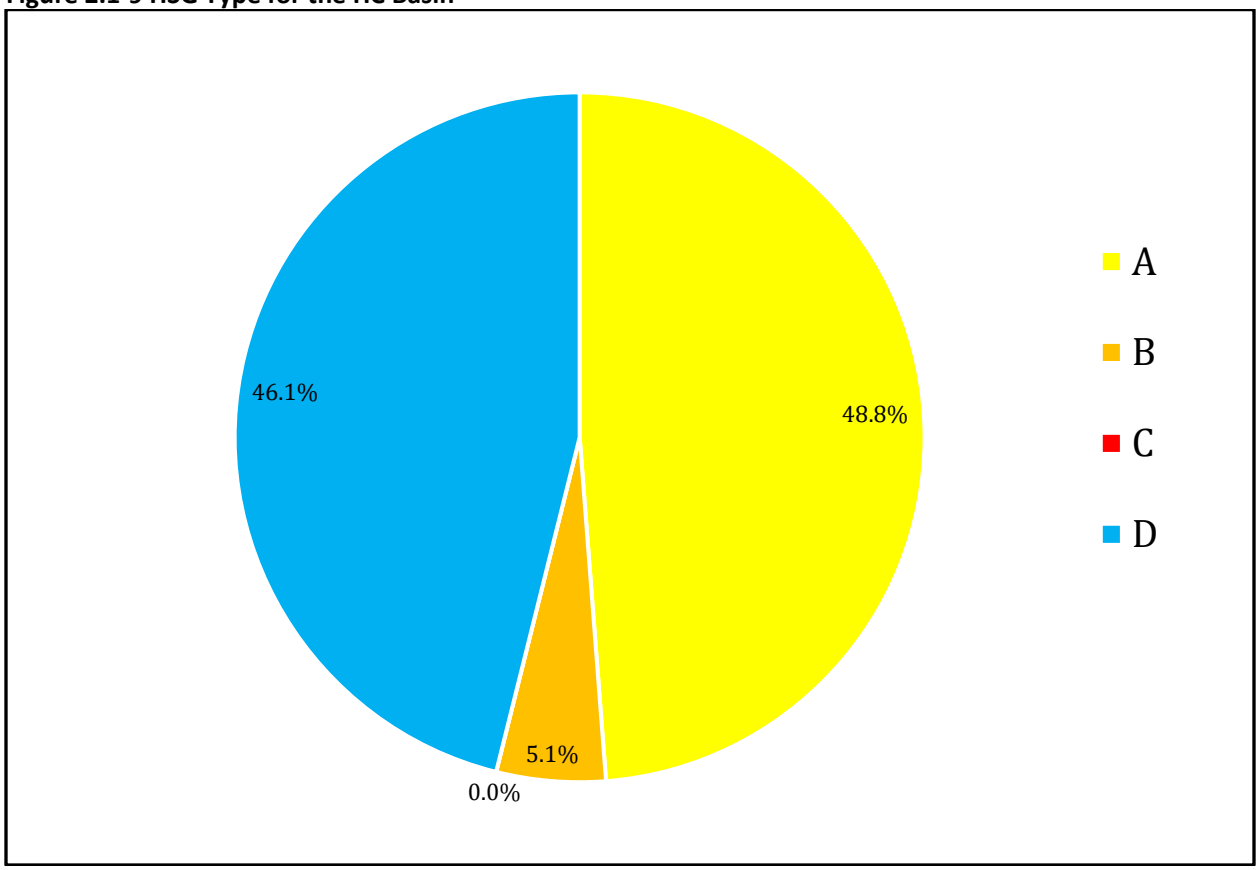
Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-8

08/10/2022

Figure 2.1-9 HSG Type for the HC Basin



2.1.2 HC Basin Modeling and Analysis Overview

Hydrologic and Hydraulic Model Elements

The developed H&H models for the HC Basin stormwater management system were used to evaluate the performance of the City's existing stormwater management system and to analyze future CIP projects. Model analysis evaluated the PSMS for multiple size rainfall events and downstream tidal boundary conditions. The PSMS includes constructed stormwater facilities as well as canals, ditches, and other overland flow paths that discharge to the downstream waterbody (i.e., boundary condition). The PSMS generally includes all open channels, swales, and ditches picked up by the LiDAR, and pipes 24 inches in diameter and larger. Smaller structures are modeled where necessary for detail or where no other stormwater infrastructure exists.

The HC Basin modeled area is comprised of a total of 13,933 acres further delineated into 1,075 sub-basins ranging in size from 0.65 acres to 376 acres with a mean size of 13 acres. The larger sub-basins include wetlands adjacent to the Dania Cutoff Canal and the South River Canal. The largest sub-basin within City limits is 148 acres in the Orangebrook Golf and Country Club. There are 926 subbasins in the HC delineated within City boundaries, covering 8,321 acres with an average size of approximately 9 acres. **Table 2.1-2** summarizes the HC Basin model elements.

Table 2.1-2 Summary of the HC Basin Model Elements

Sub-basins		1,075
Junctions		0
Storages	**Functional**	1,917
	Tabular	1,123
Outfalls		12
Conduits	**Circular**	2,092
	Custom (Bridge)	13
	Ellipse	31
	Rectangular Closed	4
	Irregular Canal	94
	Irregular Outfall	6
	Irregular Overland	2,414
	Trapezoidal Overland	7
	Arch	1

Appendix A includes the detailed HC Basin model schematic (**Figure HC-EC**) with standard symbology and **Appendix B** includes more detailed tables presenting the HC Basin model element characteristics. These tables include the following:

- **Table HC-1** Hydrologic Parameters per Sub-basin
- **Table HC-2** Hydraulic Nodes Data
- **Table HC-3** Hydraulic Conduit Data
- **Table HC-4** Model Pump Data
- **Table HC-5** Model Weir Data
- **Table HC-6** Model Exfiltration Data

Model Nodes and Outfall Elements

Model nodes representing manholes are modeled as functional storage nodes with a minimal amount of constant storage area (12.56 square feet, which is equivalent to a typical 48-inch diameter manhole). Pump Station wet wells are modeled as functional storage nodes with constant areas equivalent to the wet well area, if the station dimensions were provided, or 100 square feet if the dimensions were not provided.

The 12 HC model outfalls represent:

- One outfall to the ICW, with a time series stage boundary condition developed from the city-wide model, per storm.
- Two outfalls north of I-595 in the South River, just south of the South Fork of the New River, with stage time series boundary condition per storm, developed from a combination of the City-wide model with an older version of the Fort Lauderdale model (see Model Development TM).
- One pipe outfall immediately west of the SFWMD C-13 structure, with a stage time series boundary condition developed from the Central Broward Water Control District (CBWCD) models (see Model Development TM).
- One pipe outfall west of the Florida Turnpike, also with a stage time series boundary condition developed from the CBWCD models (see Model Development TM).
- Seven overland flow outfalls, which allow floodwater to sheetflow to the West Basin model, and south off Pembroke Rd to Broward County, outside City Limits.

The HC model also has three locations where boundary conditions are set with inflow time series per storm (in storage nodes, as opposed to outfalls):

- One located at the intersection of Sheridan St and N Dixie Hwy, representing flow in the 42-inch FDOT system along Sheridan, developed from the City-Wide model.
- One located on the Dania Cutoff Canal at Griffin Rd and represents multiple outfalls from Fort Lauderdale-Hollywood International Airport to the Dania Cutoff Canal. Though the peak flows are relatively high, they represent a relatively small fraction of total flows in the Dania Cutoff Canal. Since all outfalls are outside the City of Hollywood limits, co-locating the inflows is not expected to significantly alter model results inside the city.
- One located at the SFWMD C-13 Structure, and represents flows thought he structure during design storms developed from the CBWCD models (see Model Development TM).

In addition to the summary of model elements provided above, 10 sub-basins, 10 storage nodes, and 10 outfalls were required to be used to simulate the exfiltration systems in the HC Basin. The aquifer has been divided into 10 contiguous sections in the basin area because the initial level of the base groundwater varies depending on location (see Broward County Future Groundwater Elevation Map, Figure 2-11 in the Model Development TM). Additionally, the aquifer was subdivided geographically for ease of implementation. The virtual systems representing groundwater are not included in the model schematic nor in the tables. The HC exfiltration systems are described in further detail in the section below.

The City's project-specific survey and the GIS coverage of stormwater pipes in the HC Basin identifies:

- 78 stormwater points of discharge (within City limits) that discharge to the C-10 Canal
- 17 that discharge to the C-10 Spur Canal, downstream of the CS-22 Structure at 46th Ave
- 2 that discharge to the C-11 Canal
- 3 that discharge to a connection to the South River Canal

Note, these outfalls will all require backflow prevention and raised seawalls if not already installed.

There are an additional 30 links (within the City boundary) representing the sheet flow to the C-10 Canal from the sub-basins along the shore. Generally, these overland sheet flow cross-sections represent the seawall surveyed in that area. If a seawall is not present over a portion of the shoreline, the topography behind the shoreline determines the elevation of the overflow. There are an additional 54 overland flow links that sheetflow to the C-10, C-11, and C-10 Spur Canals where no seawall is present, but the topography is less than 5 ft-NAVD. In these locations, there will be a need for seawall construction.

Pump Stations

In the SWMM, pumps are represented by stage-flow links connected to an inflow storage node that serves as the wet well. The outflow section of the link is connected to a node that serves as a force main to an outfall. The types of pumps represented in this model are in-line pumps where flow increases incrementally with inlet node depth (SWMM Type 2).

There are four existing stormwater pump stations (SWPS) in the HC Basin (see schematic Figure HC-EC in Appendix A for locations and connectivity), each using a constant flow capacity over the range of wet well depths since the actual pump curves at the SWMP level of analysis for large design storms is unnecessary. Pumps are typically set to turn on at levels above the static water table and cycle off as water levels drop in the wet well.

All pump station information was obtained from City-provided as-builts or other available or discovered plan sets, and the Stormwater Pump Stations Condition Assessment Report, TetraTech, March 2021.

- SW-03 has a total maximum capacity of 29 cubic feet per second (cfs) or 13,000 gallons per minute (gpm) and is located at the northwest corner of Sunset Golf Course, west of the Arthur Street turn-around, east of I-95 and south of the C-10 Canal. This pump station discharges water into the C-10 Canal through 150 ft-long spur canal adjacent to I-95. The station has a 24-inch gravity pipe bypass with a backflow preventor that is currently non-operable. For modeling purposes, this backflow preventor has been fixed to allow pre-storm stages in the canal to be lower than the initial conditions in the C-10 Canal. For this station, the wet well is set at -5.4 ft-NAVD. The single pump cycles on when depth in the wet well reaches 6.8 ft (1.4 ft-NAVD) and cycles off when depth drops to 6.3 ft (0.9 ft-NAVD).

- SW-04 has a total maximum capacity of 80.2 cfs or 36,000 gpm and is located at the northern end of the Orangebrook Golf and Country Club. This pump station discharges water directly into the upstream end of the C-10 Canal. The pump station has a 55 ft-long bypass weir at approximately 2.5 ft-NAVD (the weir elevation is estimated from LiDAR as the SWPS Assessment had no elevation information). For this station, the wet well invert is set at -7.6 ft-NAVD. The SWMP has two pumps:

  - The primary pump is 40.1 cfs and is set to cycle on when the depth in the wet well reaches 7.9 ft (0.3 ft-NAVD), and cycles off when the depth falls to 7.6 ft (0 ft-NAVD).

  - The secondary pump is 40.1 cfs and is set to cycle on when the depth in the wet well reaches 8.1 ft (0.5 ft-NAVD), and cycles off when the depth falls to 7.6 ft (0 ft-NAVD).

- SW-05 has a total maximum capacity of 1.8 cfs or 800 gpm and is located near the intersection of Washington St and S 29th Ave. This pump station discharges water to the I-95 FDOT ditch through 868 ft of 8-inch force main. For this station, the wet well invert is set at -2 ft-NAVD. The SWPS has two pumps:

- The lead pump is 0.9 cfs and is set to cycle on when the depth in the wet well reaches 1.9 ft (-0.1 ft-NAVD) and cycles off when the depth falls to 1 ft (-1 ft-NAVD).
- The lag pump is 0.9 cfs and is set to cycle on when the depth in the wet well reaches 4.2 ft (2.2 ft-NAVD) and cycles off when the depth falls to 1 ft (-1 ft-NAVD).

- SWPS-11 represents an FDOT pump station, outside the Hollywood City Limits, but that pumps from Chaves Lake in Hallandale to a ditch between Orangebrook Golf and Country Club and the Tri-rail line adjacent to I-95. The ditch eventually empties into the C-10 Canal just north of the SWPS 4 listed above. The tributary area includes West Pembroke Rad and some tributary areas on either side of the road, in both Hollywood and Hallandale, though most of the tributary area is outside the Hollywood City Limits. From best available information provided by FDOT, the pump station has a total maximum capacity of 160 cfs or 72,000 gpm and is located between I-95 and SW 30th Ave in Hallandale, approximately one quarter mile south of Pembroke Road. This pump station discharges water to the FDOT ditch through 1,365 ft of 64-inch force main. A second FDOT PS exists adjacent to the pond west of Park Rd in Hallandale that also can contribute to the force main flow; however, the force main becomes a limiting factor and it is beyond the scope of this SWMP to model all FDOT systems. Chavez Lake and the surrounding tributary area is modeled to provide boundary conditions for the Pembroke Rd sub-basins, and to provide the capacity necessary for flows to be maintained in the ditch and eventually to the C-10 Canal. For this station, the wet well invert is set at -10 ft-NAVD. The SWPS has four pumps:
  - The first pump is 40.1 cfs and is set to cycle on when the depth in the wet well reaches 11.4 ft (1.4 ft-NAVD) and cycles off when the depth falls to 10.4 ft (0.4 ft-NAVD).
  - The second pump is 40.1 cfs and is set to cycle on when the depth in the wet well reaches 11.9 ft (1.9 ft-NAVD) and cycles off when the depth falls to 10.9 ft (0.9 ft-NAVD).
  - The third pump is 40.1 cfs and is set to cycle on when the depth in the wet well reaches 12.4 ft (2.4 ft-NAVD) and cycles off when the depth falls to 11.4 ft (1.4 ft-NAVD).
  - The fourth pump is 40.1 cfs and is set to cycle on when the depth in the wet well reaches 12.9 ft (2.9 ft-NAVD) and cycles off when the depth falls to 11.9 ft (1.9 ft-NAVD).

Exfiltration and Well Systems

The HC Basin existing stormwater management uses exfiltration systems as one of its methods to reduce flooding, increase recharge, and improve water quality by collecting, storing, infiltrating, treating, and conveying stormwater runoff in the Biscayne Aquifer. These systems include:

1. Exfiltration/French Drains: Perforated pipes situated in a gravel-filled rectangular shaped excavation into the shallow groundwater system. There are approximately 13.9 miles of exfiltration/French drains in the HC Basin.

2. Recharge/Drainage Wells: There are two types of potential recharge wells used in the South Florida area—gravity driven wells and injection (pumped) wells. There is one gravity drainage/recharge well in the HC Basin and there are no injection wells in EC HC Basin. Gravity drainage wells use the differential driving head of the land surface water surface elevation and the aquifer ground water table elevation to overcome the well casing friction and any salinity interface density to push stormwater runoff out into the porous and highly transmissive limestone layer underground. The use of Biscayne Aquifer drainage wells (Class V wells) is restricted to zones where the total dissolved solids (TDS) exceeds 10,000 milligrams per liter (mg/L) (i.e., not suitable for drinking) and only if there is there is no Class G-II (potable ground water source) aquifer impact. It is important to note that new, proposed recharge wells will need to have pre-treatment and will be screened.

As described earlier, in the HC Basin the regional water table elevation is estimated for 10 separate regions. Each region has a specified initial water table level based on the Broward County future groundwater elevation map (see Model Development TM) and these initial levels will be higher in the future sea level rise scenarios. The regional water tables were designed to automatically rise in the model based on precipitation and infiltration using regional land-use estimates, i.e., the 10 model sub-basins ("GW" prefix), 10 storage nodes ("BiscayneAQ" prefix), and 10 outfalls ("AQLossOut" prefix). These are virtual elements designed solely to predict water table elevations and are not hydrologically or hydraulically connected to the model PSMS. The exfiltration rating curves are developed outside the model in a spreadsheet, based on length of system and count of wells per sub-basin, and other sub-basin specific parameters. The curves are head versus flow curves, where the head is internally calculated in the model by subtracting the regional groundwater elevation from the site-specific flood stage. As in actual conditions, in the large design storms, some of the low-lying exfiltration systems cease operations as the water table rises to ground surface. The Model Development TM provides more details on the exfiltration systems and how rating curves were developed for each type per model sub-basin.

2.1.3 HC Basin Existing Conditions Level of Service

Known Flooding Problem Areas and Causes

Much of the HC Basin is expected to flood in the extreme events simulated with these design storm models. The neighborhoods with the most street flooding in the 5-year and 10-year storms, and structure flooding in the 100-year storm, per square mile include:

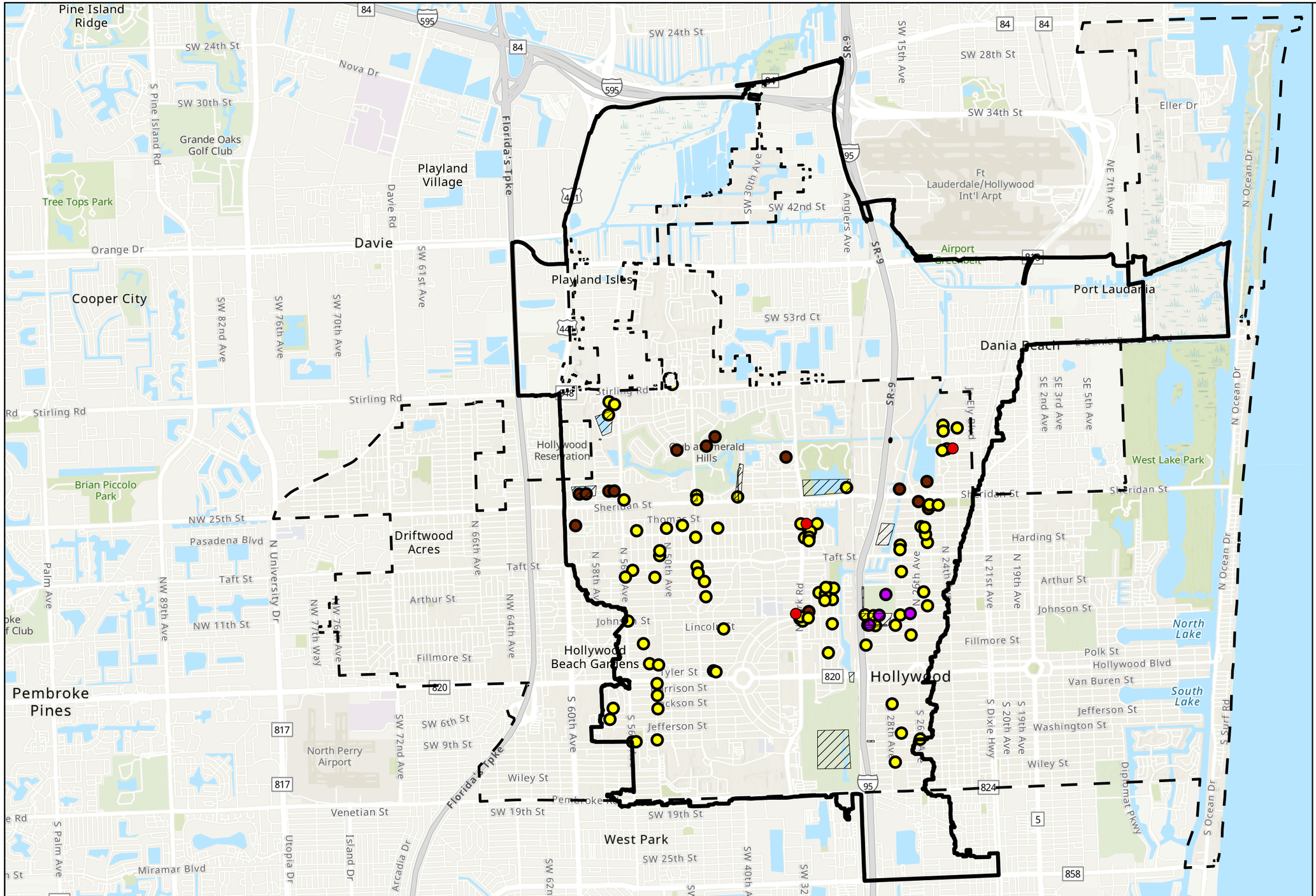
- Highland Gardens, in low-lying areas adjacent to I-95. The primary causes of flooding in this neighborhood are topography and the lack of positive PSMS to a canal or eventually to the ICW. I-95 effectively blocks historic flow paths to the C-10 Canal "valley" to the west, creating a closed depressional area between the ridge and the highway.

- North Central, south of Johnson St near I-95. The Johnson St neighborhood is low-lying, also separated from historic flowpaths by I-95, and receives runoff from I-95. The neighborhood drains to Sunset Golf Course and SW-03, but the canal through the Golf Course is not well

maintained and SW-03 does not have the EC capacity to maintain stages low enough to meet the City's LOS Goals.

- North Central, adjacent to the finger canals. The primary causes of flooding in the finger canal portion of the neighborhood (between Arthur and Sheridan) are topography and stages in the C-10 Canal. This neighborhood is within the historic C-10 floodplain and many of the roads have elevations near or below the one-year stillwater boundary condition (2.5 ft-NAVD).
- Park East near Liberty St and along Park Ave. The primary causes of flooding in this neighborhood are topography and the lack of a positive PSMS. The neighborhood drains to a pond north of Liberty St, but the pond does not connect to the C-10 Canal and does not provide enough storage to meet the City's LOS Goal.
- Hollywood Hills on both sides of Hollywood Blvd. The street elevations in Hollywood Hills are significantly higher than those listed above; however, there are multiple locations of enclosed depressional areas with no positive PSMS. In the EC, exfiltration and swales are used to limit flooding, but these are not sufficient to meet the City's LOS Goals.
- Playland (multiple streets). This is a depressional area with no positive PSMS.

In addition to these neighborhoods, street flooding has been noted by the City at Cody Street, west of N 23rd Ave, Stirling Rd & N 30th Ave, and Washington St east of US-441. **Figure 2.1-10** provides a more comprehensive HC Basin map of complaints related to storms and/or flooding, locations where moderate to severe flooding was noted in community workshops, and streets where City staff, including Underground Utilities staff have noted problems.



CDM Smith

CITY OF Hollywood FLORIDA

Major Flooding Areas within the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-10

08/10/2022

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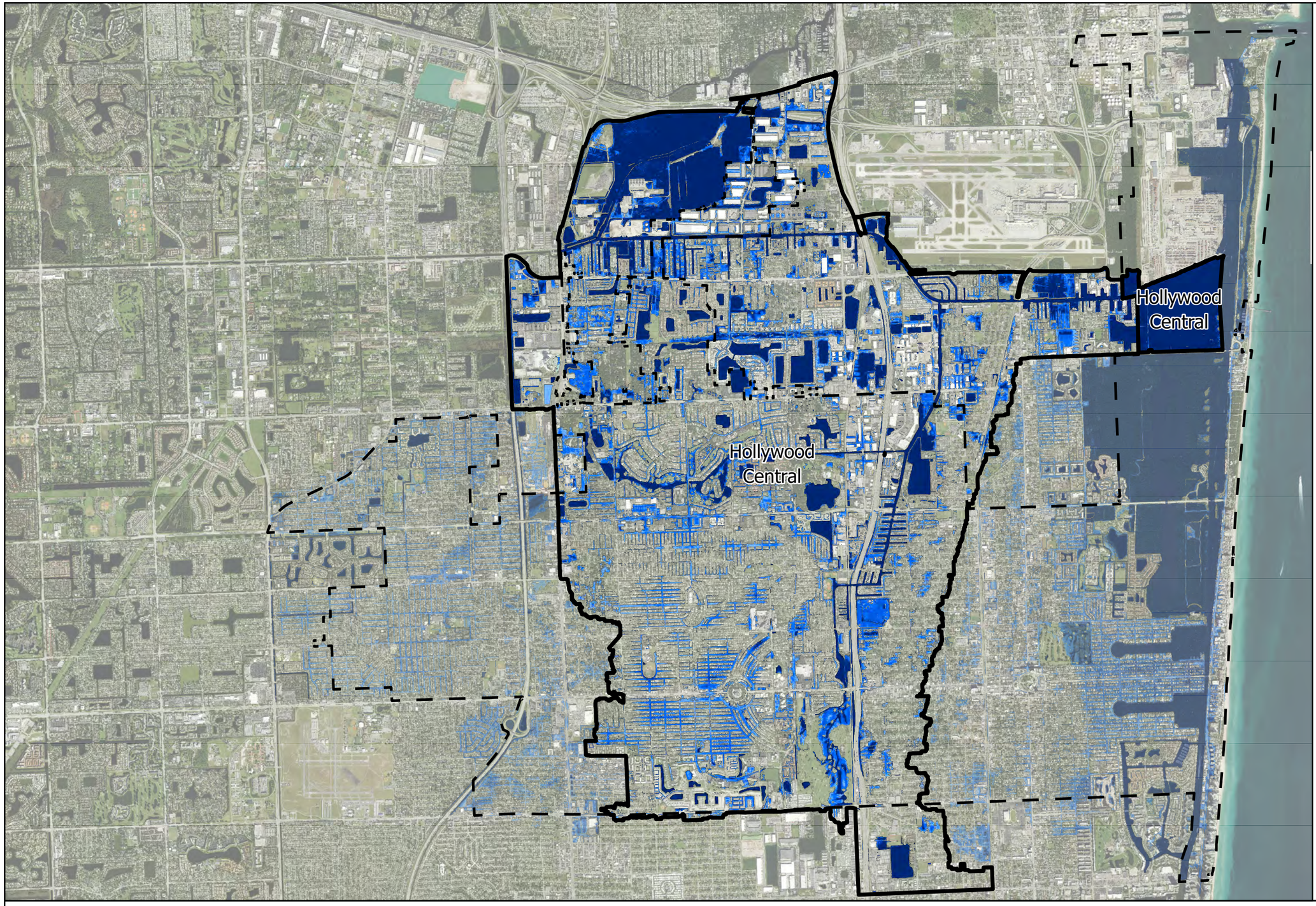
Existing Conditions (EC) Model Results and Design Storm Inundation Mapping for HC

The verified HC Basin EC model was run for the base simulation for each design storm considering a well maintained, clean pipe condition. A summary of peak flood stages for the simulated EC model is presented in **Appendix C Table HC-7.** Flood mapping of the base simulations of existing conditions for the 5-year and 10-year, 24-hour design storm; and the 25-year and 100-year, 72-hour design storms are presented on **Figures 2.1-11 through 2.1-14**.



N

CDM Smith

CITY OF Hollywood FLORIDA

5-Year, 24-Hour Design Storm for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-11

08/10/2022

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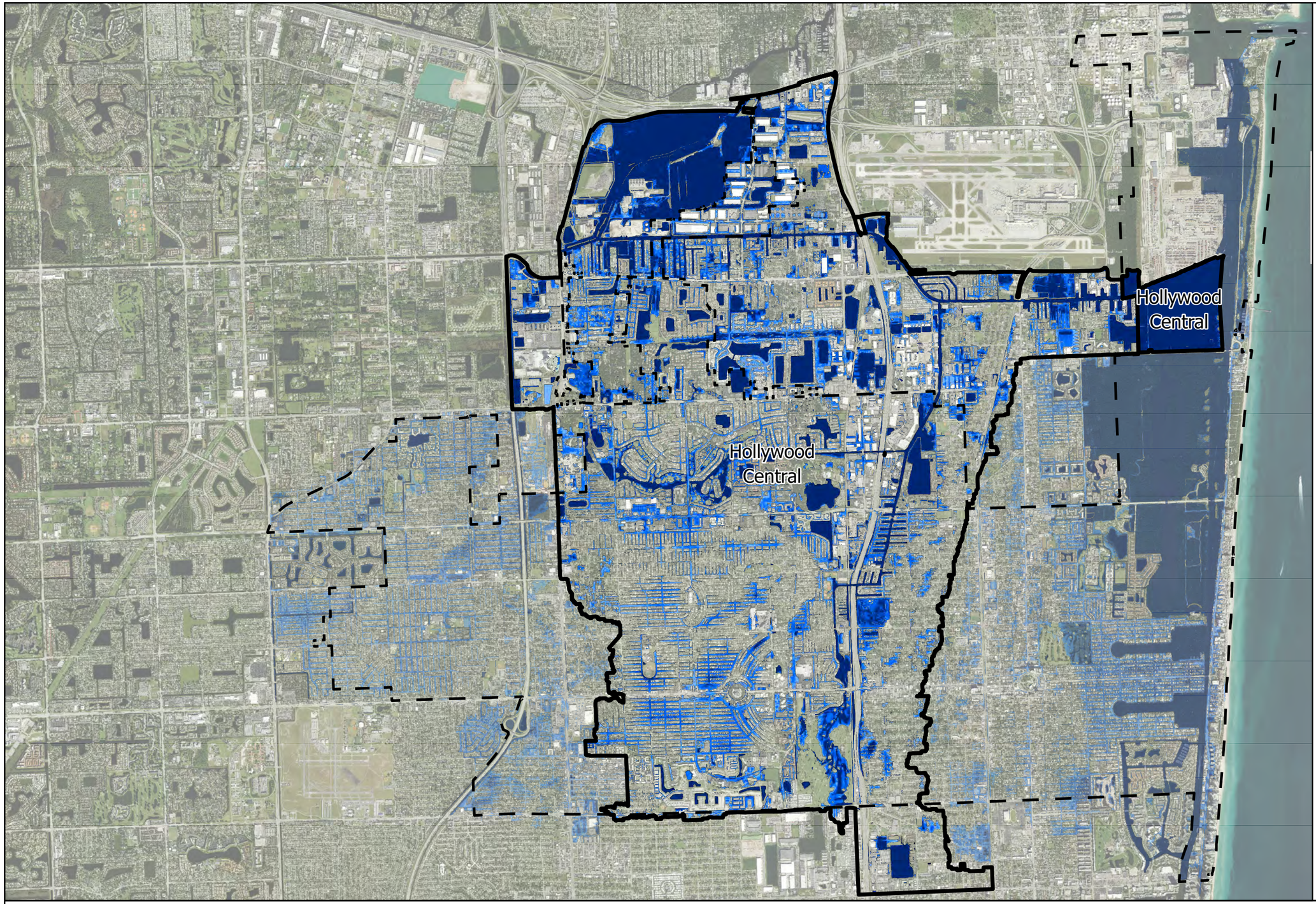


Legend

- Hollywood City Limits
- Hollywood Central

10-Year Storm Flood Depth Feet

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

CDM Smith

CITY OF Hollywood FLORIDA

10-Year, 24-Hour Design Storm for the Hollywood Central Basin

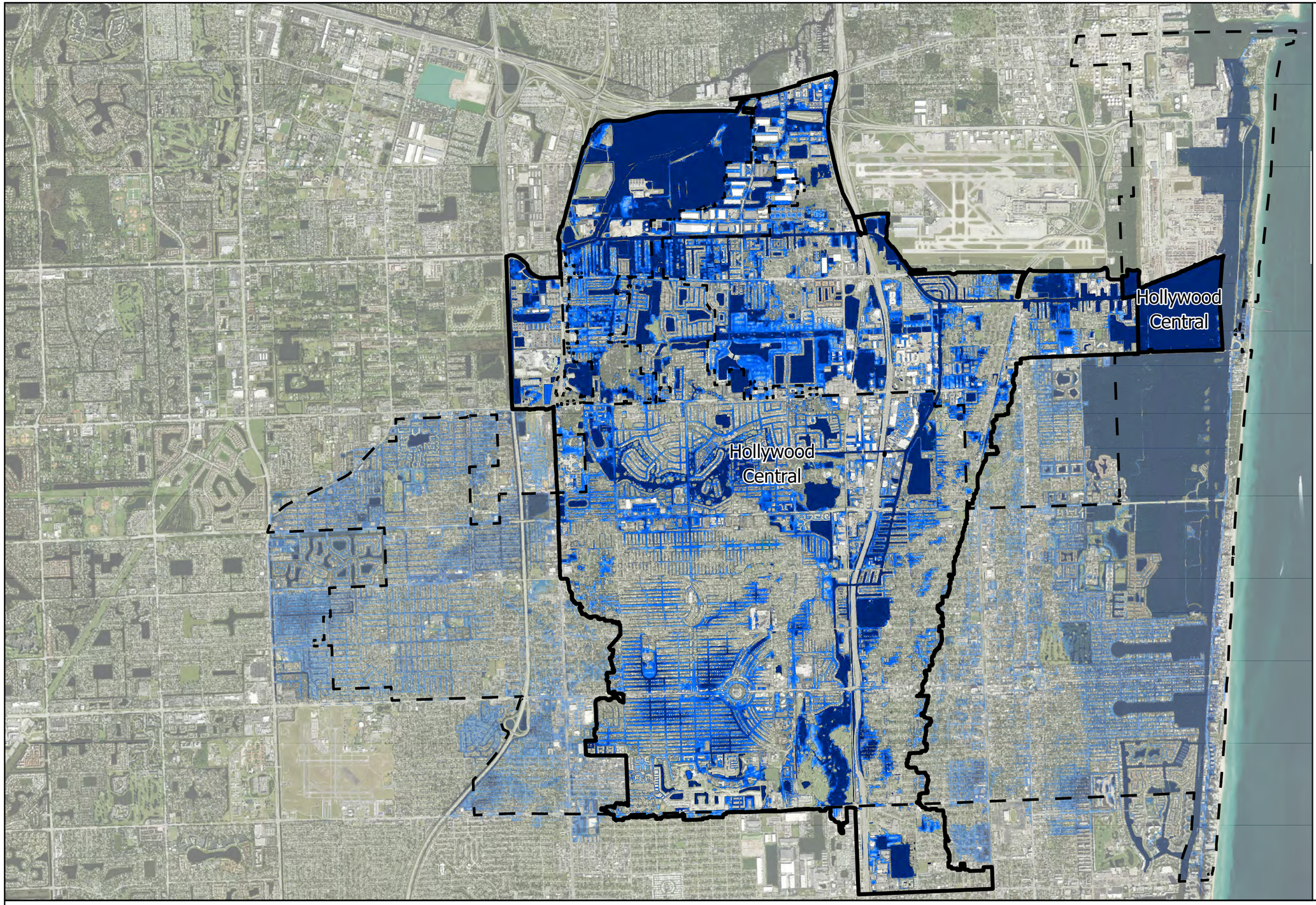
0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-12

08/10/2022



Legend

- Hollywood City Limits
- Hollywood Central

25-Year Storm
Flood Depth Feet

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

N

CDM Smith

CITY OF Hollywood FLORIDA

25-Year, 72-Hour Design Storm for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan
Figure 2.1-13
08/10/2022

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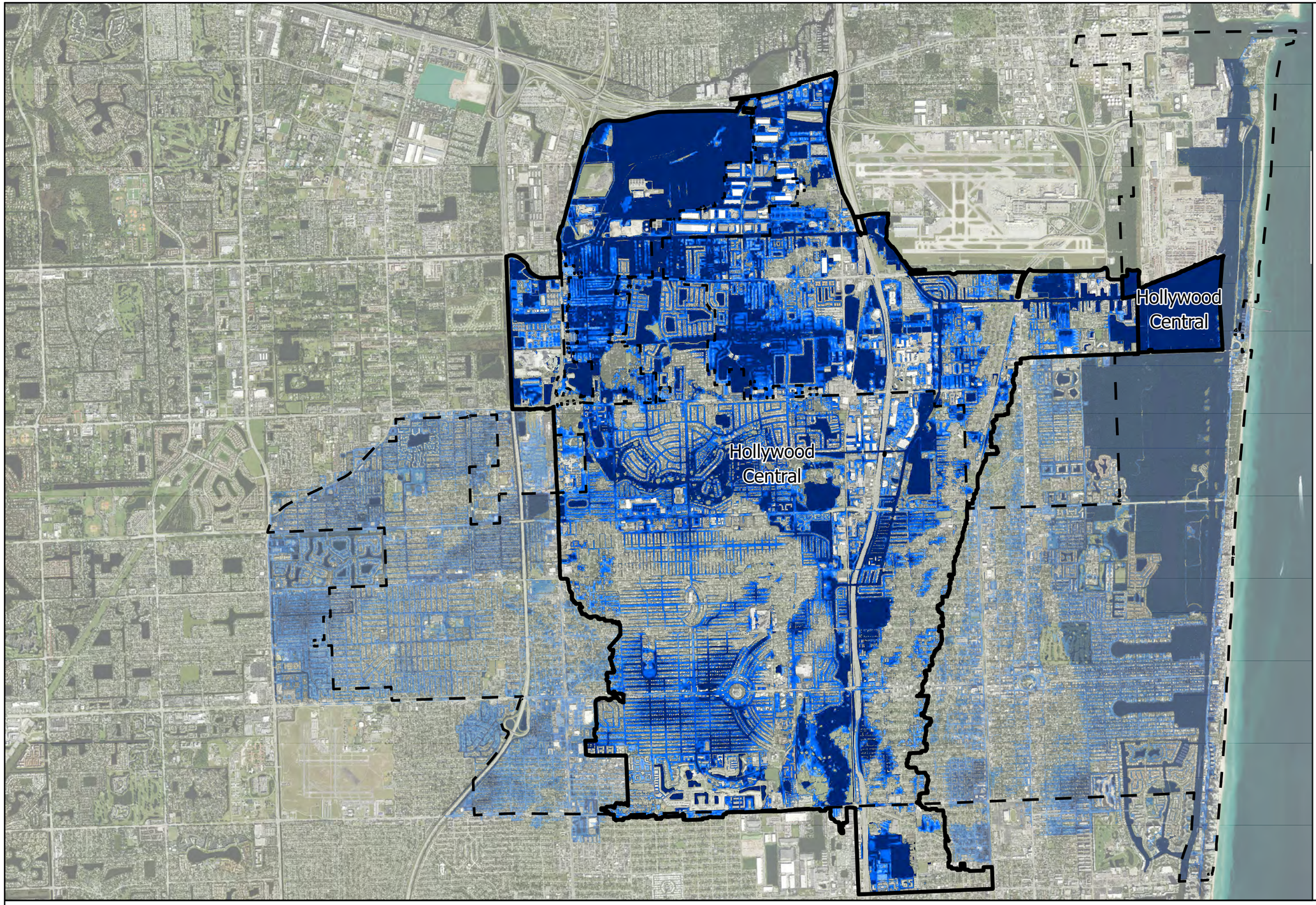

Legend

- Hollywood City Limits
- Hollywood Central

100-Year Storm Flood Depth Feet

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

N

CDM Smith

CITY OF Hollywood FLORIDA

100-Year, 72-Hour Design Storm for the Hollywood Central Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.1-14

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2.2 Hollywood East Basin Model (HE)

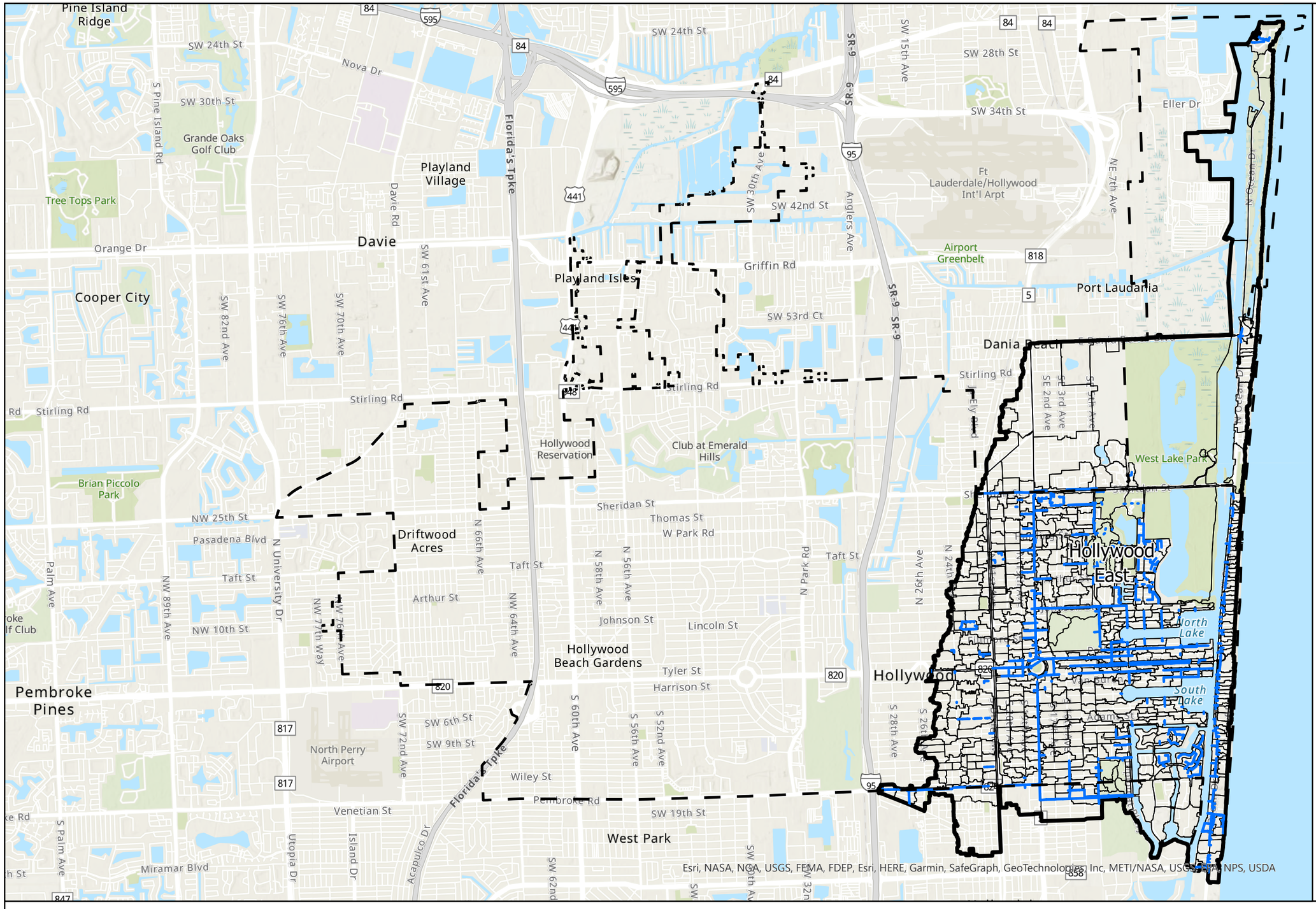
2.2.1 Hollywood East Basin Description

The Hollywood East Basin (HE) consists of 7,066 acres of low-lying land that primarily discharges to the Intracoastal Waterway. **Figure 2.2-1** includes a delineation of the HE Basin and a schematic representation of the PSMS within the basin. For modeling purposes, the HE Basin combines the "East" Basin from the Model Development TM with the Hollywood Beach (HB) Basin because the two basins share outfalls to the ICW. However, because there are hydraulic connections other than the ICW, they may easily be separated for future analysis if necessary. The HE Basin is characterized by over 100 PSMS discharges to the ICW, West Lake, North Lake, South Lake, and to ditches or canals that directly connect to one of the lakes or the ICW. Most of these drain low-lying roads and will need backflow prevention and/or to be replaced with new pump stations. Additionally, there are over 100 links in the HE Basin model representing seawalls, or substitute for the location a seawall will need to be built in the future. Typically, the length of seawall each link represents is based on the size of the subcatchment behind the seawall.

The northern boundary of the HE Basin is delineated by Dania Beach Blvd west of the ICW, and extends up to Port Everglades Cut on the Hollywood Beach side. The southern boundary extends south of Pembroke Rd., including portions of Hallandale that contribute to flooding along the southern boundary of the City. The western boundary is delineated by a diagonal topographic ridgeline extending from NW 8th Ave at West Pembroke Rd to the intersection of Federal Hwy (U.S. 1) and Dania Beach Blvd. North of Dania Blvd., the western boundary is the edge of the ICW. Note that Port Everglades is not part of the SWMP since the City does not perform stormwater services for the Port and it has its own stormwater master plan. The eastern boundary of the HE model is the topographic ridge between the City and the Atlantic Ocean (typically at the boardwalk).

The HE Basin borders the C-10 Basin to the west, though there is little hydraulic connection because of the topographic ridge separating the models. In the C-10 Basin (see Section 2.1), flows in a 54-inch diameter pipe along Sheridan were added as inflow. For the HE Basin model, a stage time series in this pipe, west of the boundary is set per storm as the boundary condition. The stage time series have been developed from the city-wide model for this purpose. Additionally, inflow time series from the C-10 Basin at the confluence of the Dania Cutoff Canal and the ICW have been added, per storm from the city-wide model. This model includes 5,586 acres within the City limits and necessarily includes tributary areas beyond the City boundaries of 1,449 acres as shown on the figure.

Figure 2.2-2 shows the Digital Elevation Model (DEM) for the HE Basin in North American Vertical Datum (NAVD 88). Topographic elevations range from near 0 ft-NAVD in the wetlands near the ICW and West Lake, to approximately 15 ft-NAVD along the ridge between the C-10 and HE basins, with one local neighborhood above 20 ft-NAVD. Approximately 49% (678) of the HE Basin's stormwater inlets are between 2.5 ft-NAVD and 21.9 ft-NAVD; however, over 700 inlets (51%) on the PSMS are located where the LiDAR elevations are below 2.5 ft-NAVD.



Legend

- Hollywood City Limits
- Subbasins
- PSMS >= 24in

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Hollywood East Basin and PSMS

0 2,000 4,000 8,000 Feet

1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.2-1

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Hollywood East

Legend

- Hollywood City Limits
- Hollywood East

2018 USGS DEM Elevation

20 ft

0 ft

N

CDM Smith

CITY OF Hollywood FLORIDA

Digital Elevation Model (DEM) for the Hollywood East Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.2-2

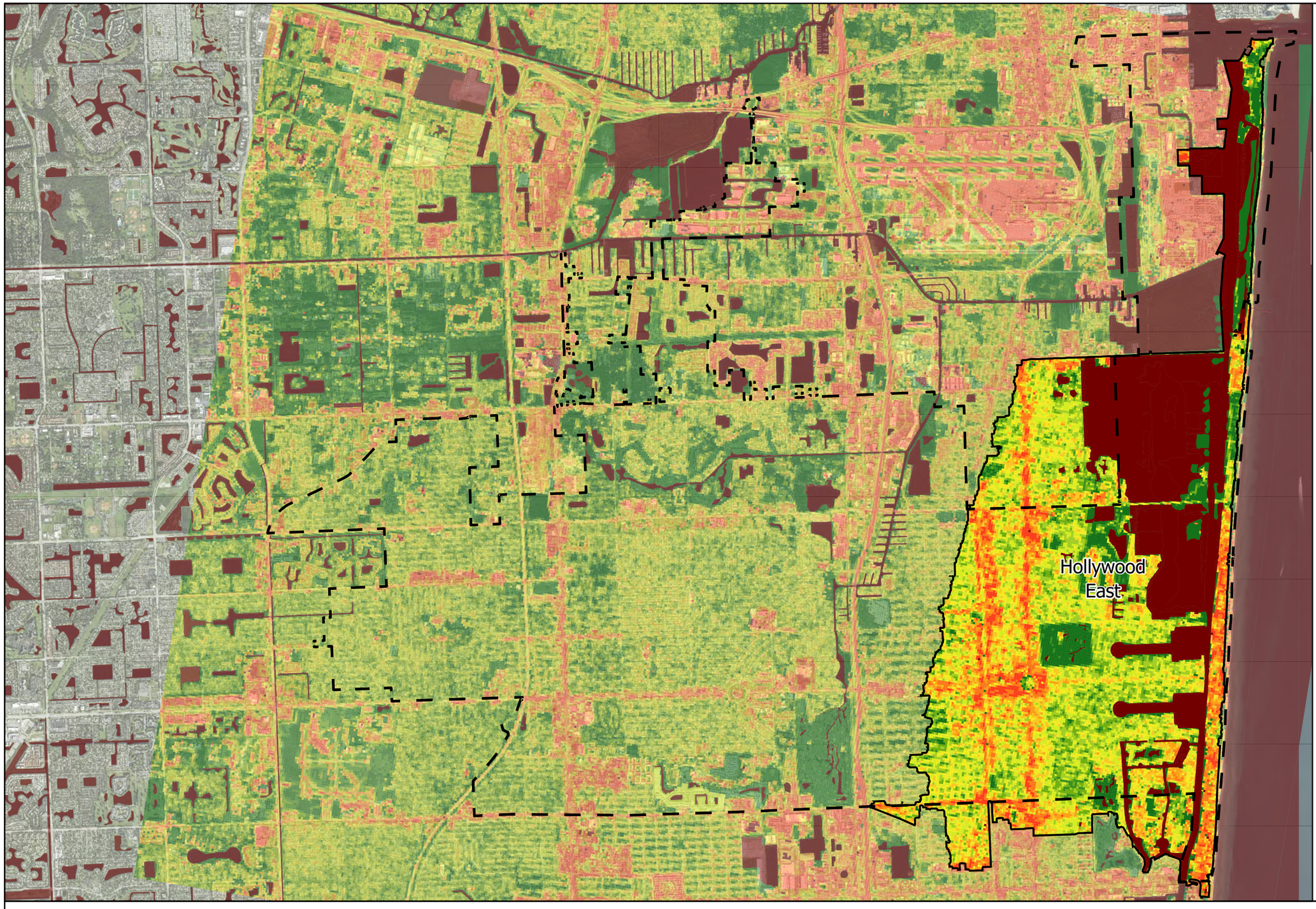
08/09/2022

These lower elevations are all near the coast and are susceptible to storm surge and sea level rise. Further, the associated low street elevations preclude using gravity recharge wells or other exfiltration systems, since the driving heads are not sufficient for effective or efficient gravity discharge. Existing exfiltration systems currently installed in these areas and in low-lying areas just above 2.5 ft-NAVD are not expected to work well, either as simulated in the model or in actual operation.

Figure 2.2-3 presents a map of the impervious cover for the HE Basin based on the USGS NLCD coverage, and **Figure 2.2-4** presents a map of the SFWMD land-use for the HE Basin. As described in detail in the Model Development TM, impervious coverages were intersected with the sub-basin delineations to develop average impervious percentages for each sub-basin. The model also distinguishes between DCIA areas, which are routed to the PSMS, and non-DCIA areas, which are routed to pervious areas within the sub-basin (such as a roof drain directed to a yard, rather than a driveway). In general, sub-basins with low total impervious area have large percentages of non-DCIA routed to pervious, while sub-basins with high imperviousness have low route-to-pervious percentages. The routing of runoff to pervious surfaces does not affect the volume infiltrated to soils but does change the timing of the runoff hydrograph. Other hydrologic parameters, such as pervious area roughness, were based on land-use type.

Figure 2.2-5 presents the total impervious percentage in the HE Basin, delineated by sub-basin. **Figure 2.2-6** presents a breakdown of the land use by 10 standard consolidated categories, for use in the model. **Figure 2.2-7** presents a breakdown of the impervious cover in the model. The area-weighted total impervious percent of the HE Basin is estimated to be 67.3%; therefore, approximately 4,754 acres of the 7,066 acres are expected to be impervious surface. Of this, approximately 917 acres are expected to be routed to pervious surfaces prior to entry into the HE Basin PSMS.

For design storm simulations, the SFWMD 24-hour and 72-hour unit hyetographs were used to simulate the rainfall distributions per storm. **Table 2.2-1** presents the volumes for the HE Basin for the 5-year, and 10-year 24-hour; and 25-year, and 100-year 72-hour design storms obtained from the NOAA Atlas 14. Design Storm rainfall volume development is discussed in the Model Development TM, Section 2.5.2. Generally, the largest volume found within the East Basin and Beach Basin, respectively, was used for that portion of the overall HE Basin model.



Legend

- Hollywood City Limits
- Hollywood East

Impervious %

- 0% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% - 50%
- 51% - 60%
- 61% - 70%
- 71% - 80%
- 81% - 90%
- 91% - 99%
- 100%

N

CDM Smith

CITY OF Hollywood FLORIDA

Impervious Cover for the Hollywood East Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.2-3

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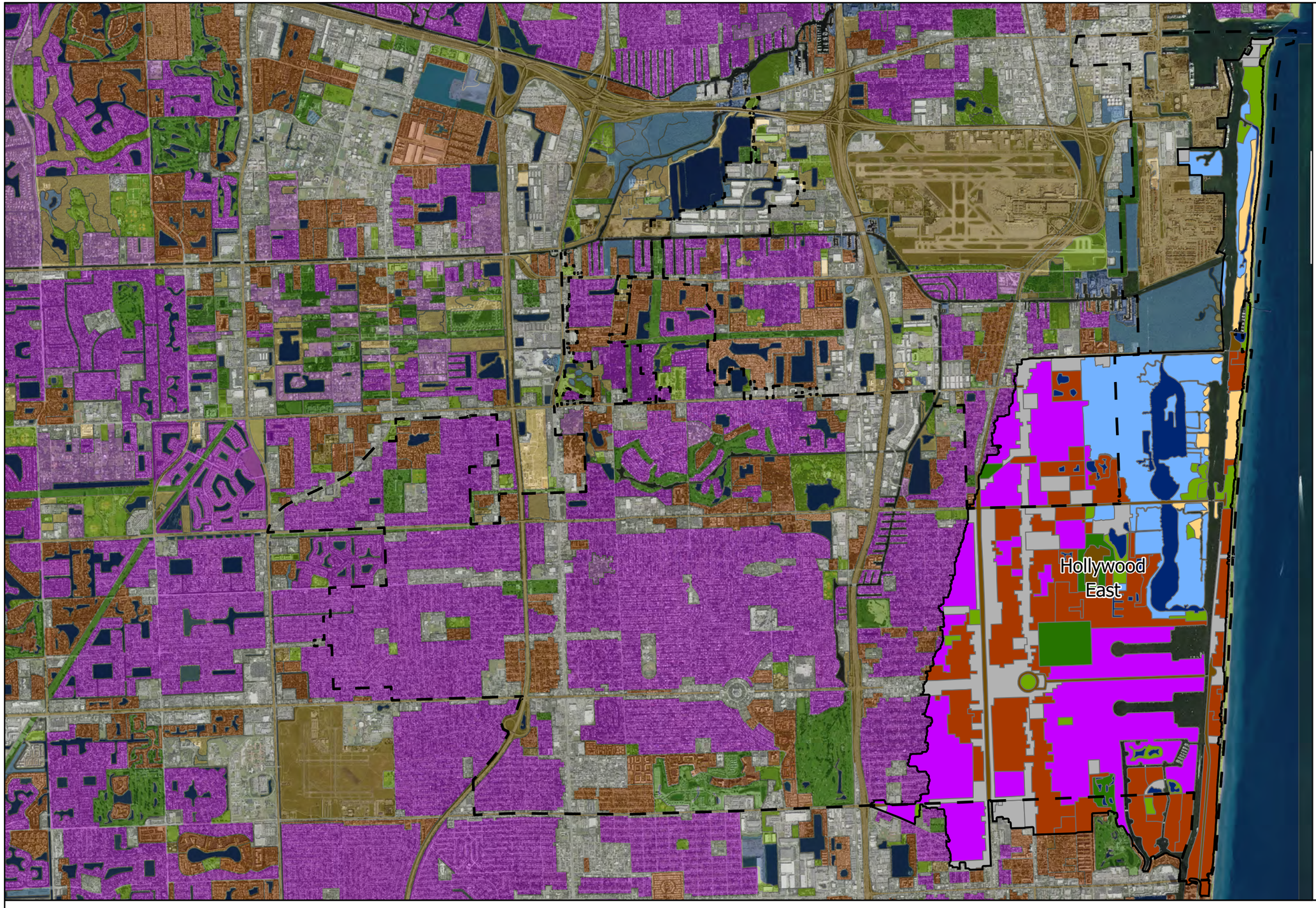

Legend

- Hollywood City Limits
- Hollywood East

Land Use

- 1 - Forest, Open & Park
- 2 - Pasture
- 3 - Agricultural & Golf Courses
- 4 - Low Density Residential
- 5 - Medium Density Residential
- 6 - High Density Residential
- 7 - Light Industrial, Commercial
- 8 - Heavy Industrial
- 9 - Wetlands
- 10 - Water Bodies

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CITY OF Hollywood FLORIDA

SFWMD Land-Use for the Hollywood East Basin

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 2.2-4

08/10/2022