

Drew Park Re-development – Results (Stormwater Modeling) 6/28/06

Scope

- The City of Tampa Stormwater Dept. is focusing on two sub-basins that currently discharge into the Henry Street Canal (Hills. County owned and maintained canal). The main focus is to relieve flooding along the Lois Avenue and adjacent side streets from Hillsborough Avenue to Woodlawn Avenue and Hesperides Street to Church Avenue.

Strategic Action Plan

- Through the Community Redevelopment Area (CRA) process, the City of Tampa is in the planning stage of redeveloping the Drew Park area. A planning/engineering contract has been awarded to URS. Their task involves developing a strategic action plan which includes infrastructure improvements, land use changes and recommendations for incentives to encourage redevelopment.

Stormwater Improvements

- The first stage of the Drew Park Stormwater Project was to take the Hills. County Stormwater Model (Lower Sweetwater Creek), modify the City's system within their model to match our current conditions, re-run the model using the County's SWMM 4.3 version and then use the existing flows from Node 404100 and Node 404200 as the allowable outflow for design (exiting the two systems that will be our two major basins for the proposed design). Node 404100 is the existing outfall for the Lois Avenue Basin which currently discharges from a City pond. Node 404200 is the existing outfall for the Grady Avenue Basin which currently discharges into the canal via a box culvert. (see node/link map, attached)
- The Re-development of the Drew Park area will include the widening and streetscaping of Lois Avenue and redevelopment opportunities within this area will change the land use. The results of the widening will require the existing ditches to be replaced by a closed conveyance system. Proposed stormwater piping and pond storage will also relieve the flooding in these areas. The Grady Avenue Basin will divert a portion of the Lois Avenue Basin to a new gravity line tying to an existing under-utilized box culvert at Hale Avenue.

Existing Lois Avenue Basin = 482.10 acres
Existing Hale/Grady Avenue Basin = 66.20 acres
Total Existing Contributing Area = 548.30 acres

Proposed Lois Avenue Basin = 404.80 acres
Proposed Hale/Grady Avenue Basin = 143.50 acres
Total Proposed Contributing Area = 548.30 acres

We proposed to re-direct 77.3 acres via stormwater pipe system to the Hale/Grady Avenue Basin. The existing Lois Avenue and Hale/Grady Avenue flows for each stormwater event will be matched with the proposed flows and a proposed pond will be included in the Hale/Grady Avenue Basin to treat and attenuate flows. Flooding in the area will be alleviated by increasing capacity of this system. The proposed Hale/Grady Avenue Basin pond is 6.19 ac (top of bank). Due to tailwater conditions, pumps have been added to the stormwater model to lift the

water into the pond. The proposed pumps have a combined estimated peak flow of 120,000 gallons per minute (3 – 310 HP pumps). The existing pond on the Lois Avenue Basin will remain, it currently is 4.04 ac (top of bank).

Hillsborough County will be requiring the City to match existing flow rates into the Henry Street Canal. There is an existing point of discharge from each of the two basins that the City has been modeled. The existing flows (Q) from each stormwater event is as follows: Existing total max. flows (Q) for both basins for the 25Y/24H stormwater event is 376.52 cfs. Existing total max. flows (Q) for both basins 5Y/24H stormwater event is 302.08 cfs.

Re-Development – Findings

The future redevelopment of Drew Park will change the land-use (and therefore impervious/perviousness) in these existing two basins. Below are results of the hydraulic modeling for the two basins and the differences that occur after the re-development is complete. The information on the right side of the table is the result of the proposed land-use changes generally resulting in increased curve number (CN) values:

Stormwater Event	Prior to Re-Development		Including Re-Development	
	Flows = cfs	Pond max. el.=ft	Flows = cfs	Pond max. el.=ft
LOIS AVE. BASIN		TOB = 29.00		
25Y/24Hour Lois Ave.	*Qp=12.13 *Qo=250.10	25.56	Qp=13.22 Qo=268.32	25.66
5Y/24Hour Lois Ave.	Qp=10.61 Qo=147.35	23.78	Qp=13.04 Qo=174.86	24.04
5Y/4Hour Lois Ave.	Qp=29.66 Qo=303.02	25.34	Qp=29.82 Qo=313.22	25.45
GRADY/HALE BASIN		TOB=30.00		
25Y/24Hour Grady/Hale Ave.	Q=90.00	27.83	Q=91.84	27.88
5Y/24Hour Grady/Hale Ave.	Q=39.97	26.23	Q=42.30	26.32
5Y/4Hour Grady/Hale Ave.	Q=84.99	27.69	Q=86.28	27.73
5Y/3Hour Grady/Hale Ave.	Q=80.53	27.56	Q=81.86	27.60
5Y/2Hour Grady/Hale Ave.	Q=71.77	27.30	Q=73.32	27.34
5Y/1Hour Grady/Hale Ave.	Q=49.17	26.56	Q=61.14	26.96

*Qp are the flows from the existing pond and Qo are the bypass flows (bypassing the pond).

Recommendations

Flows during these design storms generally show less than a 10% increase due to re-development. Pond levels are increase by several tenths of a foot in some cases but no increase in required regional pond size is anticipated.

The incremental cost of accomodating flows from re-development may be minimal or non-existent. If so, it may be possible to allow developers to provide treatment without attenuation if master planned CN values are followed. The Environmental Resource Permitting (ERP) agency, typically the Southwest Florida Water Management District, would need to buy-in to this concept.