



MIAMI BEACH

OFFICE OF THE CITY MANAGER

NO. LTC # 133-2007

LETTER TO COMMISSION

TO: Mayor David Dermer and Members of the City Commission

FROM: Jorge M. Gonzalez, City Manager

DATE: June 6, 2007

SUBJECT: May 20th Flooding Incidents

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The purpose of this Letter to Commission is to inform you about the circumstances surrounding flooding incidents throughout the City on May 20th, 2007.

Background

During the early morning hours, some of the streets in Miami Beach were significantly flooded following a torrential rainfall event that registered an intensity of approximately 6.0 inches in about 6 hours. The spread of rainfall was further intensified during the hours of 10:00 AM and 11:00 AM, when 2.72 inches fell within one (1) hour alone. Statistically, a rainfall event of this type would occur once every ten (10) years.

On the same day, astronomically high/low tides surrounded our barrier island. Although the storm event occurred during the predicted low tide level, the elevation of the low tide exceeded the normal low tide conditions by as much as 0.5 ft.

The rain water collected through the City's stormwater drainage system discharges into water bodies which are subject to tidal conditions. Due to the limited grade differentials between our streets and the water level at the Bay, the drainage outfalls are generally submerged. When high tide occurs, localized flooding generally takes place in low lying areas. Flooding may also be exacerbated during high intensity rainfall events and abnormal tidal conditions.

In 1994, the City retained the services of an engineering consultant, CH2MHill, to develop a comprehensive stormwater master plan. This plan divided the City into approximately 172 stormwater basins which are areas of common topographic characteristics which collect rain water and discharge it into the waterways. The master plan identified 31 high priority drainage basins which warranted significant drainage system improvements. The CIP Neighborhoods Improvement Program has incorporated the comprehensive stormwater master plan into its neighborhood improvements projects for implementation over the next 5 years.

The drainage design for the neighborhood projects adopted a 5-year/24 hour frequency storm as the design baseline, along with a program of swale reclamation and reconstruction for rain water runoff retention. The 5-year/24 hour frequency storm design is a synthetic representation of a storm event that may occur every five (5) years with duration of 24 hours. To properly compare this intensity with the May 20th event, the 5-year/24hr storm can spread 5.0 inches over a 6 hour period, whereas the May 20th event actually spread 6.0 inches over 6 hours, or one (1) additional inch above the 5 yr/24hr storm event. This difference,

although apparently minor, can actually produce considerable volumes of water that overwhelm the design capacity, of the existing drainage system.

As indicated above, the May 20th event was exacerbated by a deluge that amounted to 2.72 inches in a period of one hour (10:00 AM to 11:00 AM). This torrential rainfall, coupled with the higher-than-usual low tide conditions, augmented the impacts to the existing system, overwhelming its conveyance capacity and eventually resulting in the abnormal flooding observed that day.

In addition to the stormwater improvements spearheaded by CIP, the City's Public Works Department has also been very proactive in its ongoing stormwater maintenance program. Public Works Operation Division has improved the frequency of inspection and maintenance for the storm drainage system to minimize obstructions in the stormwater system. Approximately 6000 stormwater catch basins and stormwater mains of 18 inches in diameter or smaller are inspected and maintained by the Public Works Department Maintenance Division, at least once every 18 months. As part of a new 5 year cycle program, the flushing and inspection of stormwater mains larger than 18 inches in diameter, together with their associated manholes and outfalls, are outsourced to contractors.

Where sporadic and isolated drainage problem occur and the CIP Neighborhood Improvements are not anticipated to be implemented for two years or longer, the Public Works Department makes every effort to mitigate and reduce the drainage problem on an ongoing basis.

Please feel free to contact me if you have any further questions or concerns.



JMG/RCM/FHB/FV