

MEMO

TO: Marvin E. Carter, Michael O’Haire and David Gunter

FROM: George A. Simons, P.E., Carter Associates, Inc. (CAI)

RE: IRFWCD – Clarifications Regarding: August 17, 2005 Memo regarding the Flood Plain Cut and Fill Policy for the 100 Year Storm Event

DATE: October 13, 2020

David Gunter, IRFWCD Superintendent recently became aware of a discrepancy between the FEMA FIRM maps and the IRFWCD Stormwater model results. Mr. Gunter engaged CAI to prepare a clarification for presentation to the IRFWCD Board. That clarification is provided below in Part A. 1. The clarification is required due to a recent review of topographical survey information for a proposed project in which the existing grades are below the IRFWCD 100 year flood elevation; however the FEMA maps indicate that the area is Flood Zone X (area of minimal flood hazard). The IRFWCD methodology for demonstrating compliance with the IRFWCD Maintenance of Flood Plain Storage Policy allows the design engineer to select the 100 year Flood elevation from either the FEMA FIRM Maps or the IRFWCD study. The design engineer looked at the FEMA FIRM map and determined that the site is not in a Flood Zone. The design engineer elected to use the FEMA FIRM Map and did not consider the IRFWCD model results in determining if the site was required to maintain the Flood Plain Storage.

The case in point is near the intersection of Oslo Road and 43rd Avenue. A review of FEMA FIRM 12061 CO358 H appears to depict 43rd as a water shed boundary. Land west of 43rd is in Flood Zone AE 20 and land east of 43rd is in Flood Zone X. The IRFWCD Sub-lateral B-7 extends across 43rd Avenue and allows water to equalize during a flood event, if the FEMA FIRM map flood elevation of 20.0 NAVD is used the water would inundate the subject site. The IRFWCD model result for the peak stage during the 100 year event is elevation 19.5 NAVD, (ref. IRFWCD Node 39 elevation 21.0 NGVD) well above the existing grades, (17.5+/- NAVD). Given the fact that the site currently floods, IRFWCD landowners may be negatively impacted if this site does not provide the same flood storage in the future after development.

The clarification needed will assist all stormwater design engineers working within the district as well as the city and county engineers reviewing plans as to the appropriate methodology for meeting the flood plain cut and fill policy.

- A. Flood Plain Calculations and Compensation for a Development Site – 100 Year Storm Event
1. Within the project site, all flood plain storage must be maintained from pre to post development. Predevelopment calculations shall be based on existing site conditions (1929 NGVD or NAVD 88) as determined by a Florida Registered Land Surveyor. Post development calculations shall be based on the design grades. The design engineer must review both the FIRM maps and the IRFWCD study and select the 100 year flood elevation. However, if the site floods per the IRFWCD study and is depicted as a FIRM map Zone X, then the design engineer must use the IRFWCD model results and comply with the maintenance of Flood Plain Storage Policy.

2. The flood plain encroachment (fill) is based on the volume of proposed fill between the existing ground, (or the wet season water table if a lake or wetland is present) and the 100 year flood elevation. Fill above the 100 year elevation is not displacing flood waters and therefore not included.
3. The volume of flood plain compensating storage (cut) is based on the volume of cut between the existing ground and the wet season water table. If a wet detention system is used for the flood plain storage compensation, then the control elevation of the bleed down weir shall be used as the lower elevation of the cut volume calculations. The upper elevation of the compensating storage volume calculations is the ground elevation or the 100 year flood elevation if it is below the existing ground elevation.
4. Flood plain compensating storage (cut) calculations, which include volume above the 100 year flood plain elevation, are not allowed, regardless if there is an onsite peak stage above the 100 year flood plain elevation at some point during the computer modeling of the event.
5. The flood waters within the District canals must be allowed to flow into the development's flood storage area when the District's canal system is above the flood storage area water levels within the development. Therefore, the stormwater outfall connection must meet the following criteria:
 - a. Flap gates are not allowed.
 - b. The pipe connections shall be of a large enough diameter that the head loss is minimal and flows maximized. Small diameter pipes designed to meet the 2'' limitation rule will restrict the flows during a flood event and therefore, are not allowed. Weirs/Orifices shall be utilized. The typical overflow structure which has a restrictive orifice(s) for the 2'' limitation will include a larger weir at the onsite 25 year storm elevation. During storm events larger than the 25 year storm, the larger weir will allow the flood waters from the District canals to move freely into and out of the development storage area. It is understood that below the 25 year storm elevation the inflow from District canals may be restricted to the 2'' limitation orifice.
6. An offsite compensating flood storage area may be utilized to balance the cut and fill for a project in which the onsite flood storage is inadequate under the following conditions:
 - a. The offsite flood storage area is located within the same sub-lateral drainage basin.
 - b. The offsite flood storage area has approximately the same 100 year flood elevation (0.1' +/-).
 - c. The offsite flood storage area must be encumbered with development restrictions to preserve the flood storage for the proposed project. The proposed project shall include home owners' association duties to preserve and maintain the offsite area in regards to function and appearance. In cases where the offsite flood storage area is itself a development, then the home owners association which covers the site must be required to preserve and maintain the site through deed restrictions.
7. Previously approved projects cannot be utilized to compensate for flood storage for future developments.