

**Issue 62: Standards for the Summary of Discharge Table (SODT)**

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**Background**

The Summary of Discharge Table (SODT) is a component of the Flood Insurance Study (FIS) report, created by the North Carolina Floodplain Mapping Program (NCFMP) engineering and mapping contractors (EMC). The SODT lists the 10%, 2%, 1%, and 0.2% annual chance discharges corresponding to the locations for flooding sources studied by detailed methods (limited detailed study, redelineation, and detailed study).

**Issue**

The major issue is inconsistency between the hydrology and hydraulics (H&H) analyses and FIS reports for limited detailed and new detailed studied streams. These inconsistencies in the SODT may cause confusion and inaccuracies while revising/updating the hydraulic models during the Letters of Map Change (LOMC) process and map maintenance.

Several common problems have been identified in the SODT which include: (1) the discharge change locations are misrepresented in the SODT and do not match with the hydraulic model (2) the discharge values used in the hydraulic model do not match with the SODT (3) sudden surges and reductions in the discharge shown in the SODT are not identified and explained.

**Recommendations**

(1) Discharge Change Locations

The discharge change locations should be represented in accordance with the hydraulic model. The hydrologic analyses may have been performed to compute more discharge locations and corresponding discharges; but the discharge locations actually used in the hydraulic models should be used to create the SODT.

The discharge locations should start from the most downstream drainage point (at mouth - typically at the confluence with the main stem) and should be listed moving upstream (Figure 1). The discharge locations should be identified based on the distance from a landmark (road or dam) or confluence with the main stem.

Flooding Source	Location	Drainage Area (square miles)	Discharges (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Mill Creek <sup>2,3</sup>	At mouth	2.2	420	690	800	1,190
	Approximately 300 feet upstream of the confluence with Cape Fear River	1.8	375	580	660	990

**Figure 1. Flow Change Locations in the Summary of Discharge Table**

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The discharge change locations should be identified at the most downstream drainage points in the subbasin for which the discharges are calculated. This may seem contrary to how the discharges are placed in the hydraulic model. For example, in the current versions of HEC-RAS (version 3.1.3) the discharge change locations are placed from the cross-section which lies most upstream in the subbasin. Though they are represented differently in the SODT and hydraulic model, the discharges assigned to each of the cross-sections should still match between the two.

### (2) Discharge Values

While the hydraulic model may have discharges with multiple decimal digits, the discharges in the SODT should be rounded to the nearest integer.

### (3) Sudden Surges and Reductions

Generally, the discharges increase downstream (bigger drainage area generally means larger discharge). But in some cases the discharge may reduce downstream due to presence of a dam/lake if it provides significant storage. In addition, sometimes an unusual sudden increase in discharge can be noticed due to high urbanization in the subbasin. Such cases should be indicated for each flooding source with the superscripts (Figure 2)

Tank Creek Tributary A <sup>2,3</sup>	At mouth	2.2	450	820	1,090	1,540
	At dam	2.0	320	570	750	1,050
	At O'Dell Road	1.9	290	500	650	920
	At dam	1.6	180	290	370	500
	Below Railroad	1.1	75	80	90	100
	Above Railroad	1.1	450	820	1,090	1,540
Willis Creek	Approximately 520 feet upstream of State Highway 87	6.6	*	*	526	*
*Data Not Available <sup>1</sup> Discharges regulated by B. Everett Jordan Dam <sup>2</sup> Discharges reduced by storage <sup>3</sup> Discharges increased by urbanization in the watershed						

**Figure 2. Sudden Surges and Reduction in Discharges**

### (4) Future Conditions Discharges

For the counties/communities where the Future Conditions are also mapped (i.e. Mecklenburg County), an additional column (Figure 3) should be inserted in the SODT for '1% Future Annual Chance' discharges (Refer to Issue paper 26).

**Summary of Discharges**

Flooding Source	Location	Drainage Area (square miles)	Discharges (cfs)				
			10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Future Annual Chance	0.2% Annual Chance

**Figure 3. Future Conditions Discharges**

**(5) Discharges for Approximate and Detailed Studied Streams**

As noted earlier, the SODT lists the discharges only for flooding sources studied by detailed methods (limited detail study, redelineation, and detailed study). The 'approximate study' streams should not be listed in the SODT. For redelineated streams, the discharges should be obtained from previous studies.

For limited detailed study and some redelineated streama, the 10%, 2%, and 0.2% annual chance discharges may not have been determined. In such cases, the discharges should be represented with an asterisk (\*) for these flood events.

**Discussion Summary**

**Date Discussed:**

**Discussion Attendees:**

**Summary of Discussion**

**Final Guidelines**

**Points of Contact**

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**References**

Issue 26: FIS Report and FIRM Standards for Mapping Future Conditions