**South Broadway Drainage and Storm Water Quality Plan (April 2013, URS) Datum is NAVD 88**

*Project Overview*

* SWMM modeling confirmed that the South Broadway pond would overflow during a 100-yr, 24-hr event, resulting in flooding between the pond and the Bell-Commercial pump station.
* Manholes between the pond and the pump station have top elevations 6 feet lower than the pond overflow, so surcharging is likely.
* Storage is 26.9 acre-feet at the spillway crest. However, only 12 acre-feet of storage is available before manholes begin to surcharge

*Report*

* Total 100-yr, 24-hr overflow volume = 4.6 acre-feet, peak overflow = 70 cfs into Commercial Street
* Total 100-yr, 6-hr overflow volume = 2 acre-feet

**South Broadway Pond Record Drawings (Project 416590, 3/25/1995, RTI) Datum is msl (NGVD 29)**

* Top of embankment at elevation 4950.0, storage 28.5 acre-feet, surface area 2.8 acres
* Spillway crest at elevation 4948.8, storage approximately 26 acre-feet
* Bottom at approximately elevation 4935.6 [invert at outflow pipe]
* Weir length = 73 ft, width = 2.67 ft
* Outlet pipe = 30” @ 0.1%
* 100-year peak at elevation 4947.73, storage 22.6 acre-feet (100-yr, 24-hr?)
* Invert elevation of outlet = 4935.68

**South Broadway Detention Basin Design Reports (RTI)**

*Design Calculations (April 1992), Library Doc 524*

*Final Analysis Phase Report (July 1991), Library Doc 193*

* Hydraulic modeling completed with EXTRAN (part of SWMM) using 100-yr, 6-hr storm
* Floodwaters leaving the storm drains through flooded manholes were assumed to leave the system and were not accounted for further

**SBDSWQP –**

*South Broadway Pond, Depth-Area CurveSB.DepthArea*

Depth Area

0 0 [invert elevation = 4938.345 ft NAVD = 35.68 NGVD]

3.94 21780 [4938.345 + 3.94 = 4942.285 NAVD – 2.665 = 4938.62 NGVD] ??

4.42 43560

5.19 65340

8.74 87120

14.36 108900

16.54 121968 [spillway elevation = 4938.34+16.54 = 4954.88 NAVD = 4952.22 NGVD (???)]

*Storage unit S.BroadwayPond*

Invert El = 4938.345

Max Depth = 17.54 [spillway overflow **OVF\_SBP** modeled as 1’ deep, so max depth in pond 1 foot higher than spillway elevation]

Ponded Area = 121968

Checks:

* Datum conversion used in SBDSWQP was 2.665 ft (NAVD-NGVD)
* Inverts: 4938.345 NAVD – 4935.6 NGVD = 2.745 ft ………………okay
* Spillway crest:
  + 4954.88 – 2.665 = 4952.2 NGVD. …………………………………??????????????
  + Depth to spillway crest (record drawings) = 4948.8 – 4935.6 = 13.2 ft…………………….??
* Total depth:
  + record drawings = 4950.0 – 4935.6 = 14.4 ft
  + SBDSWQP depth-area curve = 16.54 ft ……………………….??
* Storage (from depth-area curve to depth 16.54) = 26.9 acre-ft. Narrative says this is storage to the spillway crest