

City of Lynchburg Combined Sewer Overflow

March 4, 2014



Lynchburg CSO Timeline

- * Began investigations in 1979
- * Wrote Long Term Control Plan in 1989
- * Special Order issued in 1994
- * LTCP Update in 2000
- * LTCP Update in 2013

Previous CSO Strategies

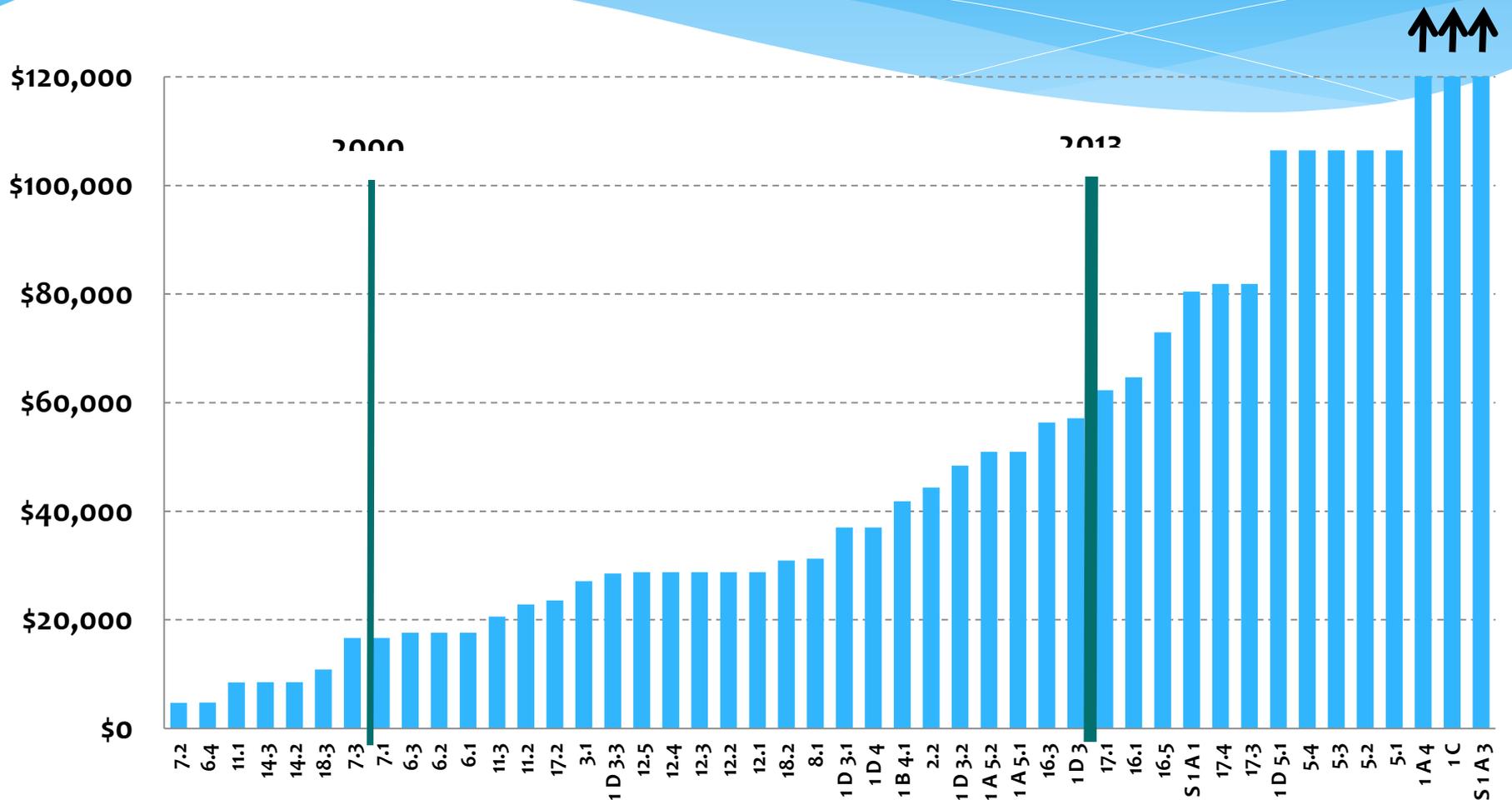
Complete Separation

- * 1979 – 132 overflow points
 - * Separate 13 of 16 sub-basins
 - * Combination of separation and overflow storage in 3 of 16 sub-basins
- * 1989 – 108 overflow points
 - * Full separation (59 projects)
 - * Interceptor upgrades (29 projects)
 - * Rooftop disconnections (3 phases)
- * 2000 – 60 overflow points
 - * Reaffirmed the 1989 strategy

2013 – Strategy Change

1. Diminishing water quality return on investment
 - * Most cost efficient projects were done first
 - * 35 of 59 separation projects are complete
 - * 22 of 29 interceptor projects are complete
 - * Rooftop disconnections are 75% complete
2. Stormwater Regulations
 - * Creating new stormwater discharges is no longer considered a solution.
3. Modeling Techniques
 - * Extensive data collection
 - * Multiple scenario investigation
4. Significant Cost Savings

1. Diminishing WQ Returns



2. Stormwater Regulations

- * There is a bigger picture
- * CSO ≠ The ONLY bacteria problem
- * Complete separation ≠ Water quality standard compliance

Decision Criteria

- * 1979, 1989, 2000

- * Are the overflows eliminated?

- * 2013

- * Are water quality standards met?

3. Modeling

- * 1989 and 2000
 - * 19 alternatives were compared
 - * Subjective analysis
 - * Removing overflow points and reducing overflow volume were the technical criteria
- * 2013
 - * Over 70 collection system alternatives were modeled
 - * Receiving water modeled for 15 alternatives
 - * 72 flow meters installed
 - * 9 rain gauges used
 - * 3 different software packages used

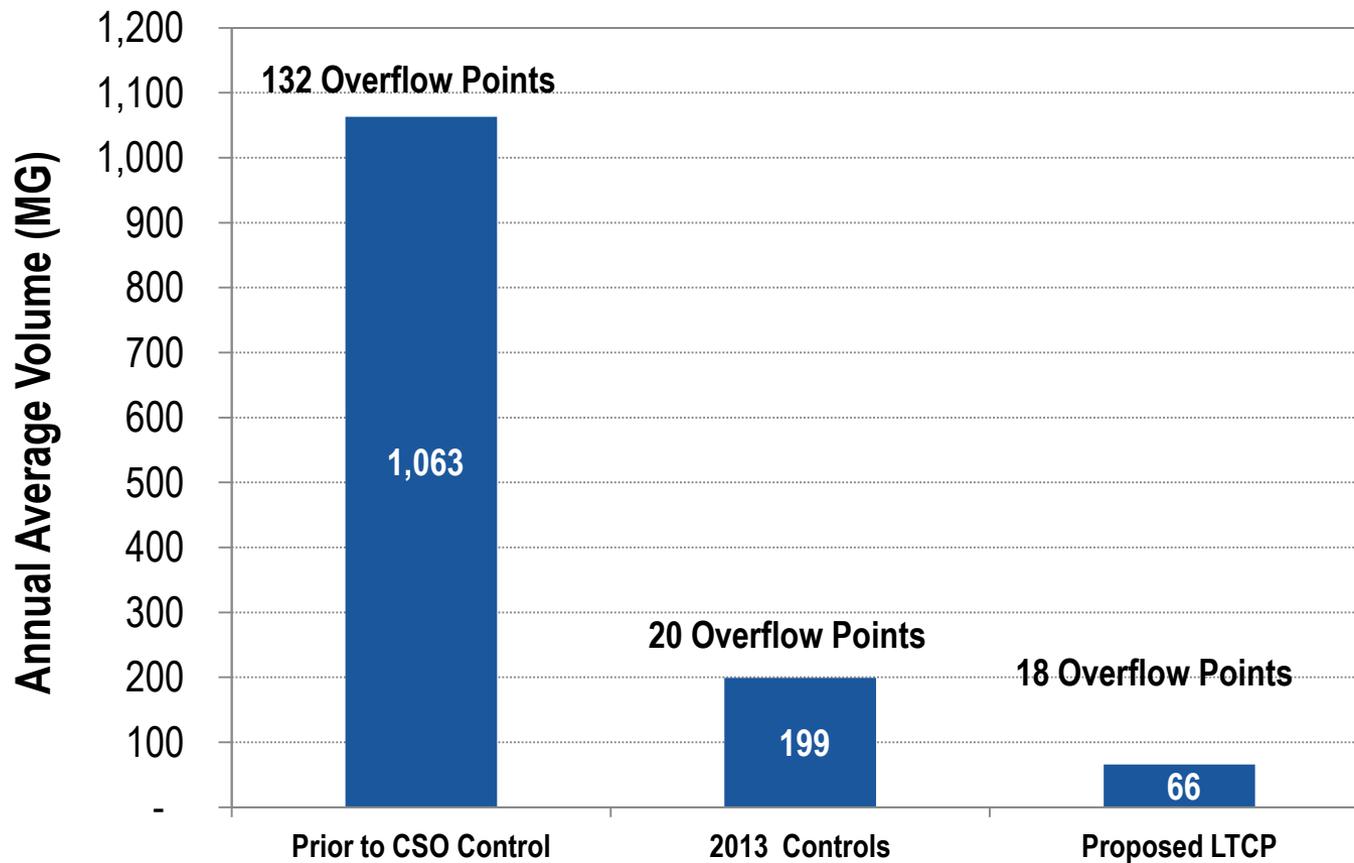
Why not more green infrastructure?

- * Lynchburg is highly supportive of green alternatives
- * Green options were in the pool of alternatives
- * Green options did not score as high as the selected alternative
- * Reasons:
 - * Clay soils
 - * Steep slopes
 - * Less hydrologic value than in higher density communities
 - * Greater social value in a higher density community than in Lynchburg

What is the New CSO Proposal?

- * Finish the James River Interceptor replacement
- * Finish some already initiated separations
- * Modify some overflow points
- * Install some inline storage
- * Convey more combined flow to WWTP
- * Install storage at WWTP
- * Increase WWTP capacity
- * Disinfect WWTP overflows

Overflow Volume Comparison



Overflow Frequency Comparison

- * Currently

- * 20 overflow points
- * Most frequent overflows over 60 times per year
- * Average point overflows about once per month
- * 5 points overflow less than once per year

- * Proposed

- * 18 overflow points
- * Most frequent overflows 14 times per year
- * Average point overflows less than 4 times per year
- * 10 points overflow less than once per year



New CSO Proposal Timeline

- * Initial draft submitted May 16, 2013
- * Revised plan resubmitted December 18, 2013
- * 15 years to complete following approval
- * Constraints
 - * Approval
 - * Financial capability
 - * \$30 million state grant
 - * \$30 million city borrowing