

FLOOD MITIGATION PLAN: FROM SUPPLEMENTAL ENVIRONMENTAL PROJECT TO IMPLEMENTATION

June 21, 2018

This project was undertaken in connection with the settlement of an enforcement action under the Clean Water Act, United States et al. v. Lexington-Fayette Urban County Government, brought on behalf of the U.S. Environmental Protection Agency.



LEXINGTON

LEXINGTON HISTORY OF FLOOD MITIGATION

Lexington's first method of "ranking" projects for flood implementation came after the June 1992 storm.

- The Lexington area received 4.99 of rain inches over an 18 hour period.

This rain event led to the Countywide Study by Proctor Davis Ray (PDR) Engineers.

- The study included the development of a "severity score" for flooding issues.

This severity scoring system consisted of 22 factors.

- Each factor had a different point value assigned.
- The maximum score possible was 1635 points.

1993 FLOOD PROJECT SEVERITY SCORE PROCESS

When an area reported flooding issues, written questionnaires were sent to area residents in an attempt to determine:

- extent,
- frequency,
- severity, and
- source of flooding.

After a score was calculated, a potential solution was developed and a “back of the envelope” opinion of cost determined.

Dividing the cost by total points gave a value of dollars per point for the project.

Projects were then “prioritized” in ascending order of dollars per point.

CONSENT DECREE UPDATE TO FLOOD MITIGATION PROCESS

In 2011, the Lexington-Fayette Urban County Government (LFUCG) entered into a Consent Decree with the United States Environmental Protection Agency and the Commonwealth of Kentucky.

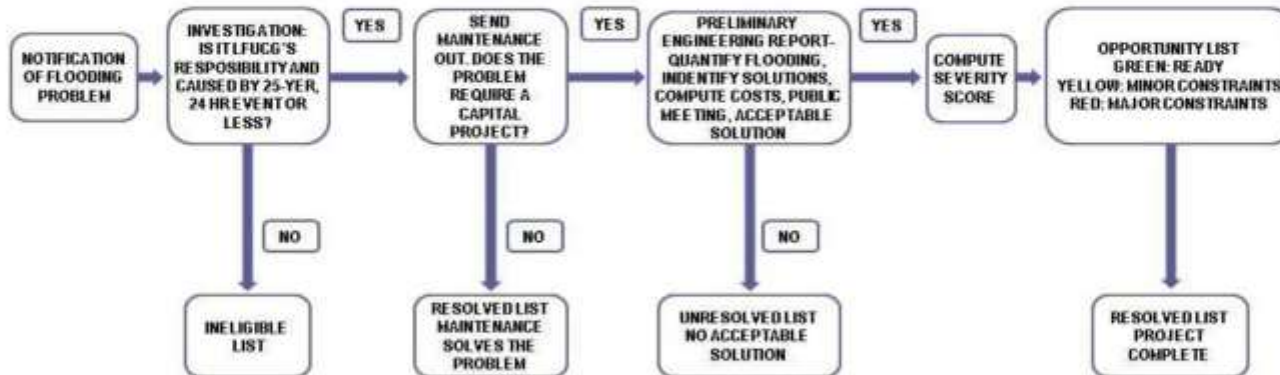
Appendix K-2 of the Consent Decree required LFUCG to develop a methodology to evaluate flood prone areas and prioritize future capital projects—a Supplemental Environmental Project “SEP.”

LFUCG advocated for this SEP in lieu of paying higher stipulated penalties.

LFUCG contracted with GRW Engineers, Inc. to perform the baseline evaluation of the existing stormwater system to provide data for the development of:

- A severity score system;
- Identification of “near term” flood relief or elimination actions;
- Capital project implementation recommendations; and
- Estimated capital project costs for recommended projects.

Severity Score Process



Capital Project Implementation Recommendation

- The first step in developing a Preliminary Engineering Report requires either the LFUCG or a consultant “recanvas” the project area with written questionnaires and a “windshield survey” to determine whether or not the project is still viable.
 - If residents report that the previous flooding issue has been resolved-- whether through public infrastructure improvement or in response to development, the project will be removed from the Priority List.
 - If residents report that the previous flooding still occurs, the LFUCG will contract with a consulting firm to create a Preliminary Engineering Report (PER) for the project area.

Capital Project Implementation Recommendation and Estimated Capital Costs

- Each PER is to contain, at a minimum, the following components:
 - Written questionnaires sent to residents of the identified area
 - Hydrologic and hydraulic analysis of the stormwater infrastructure in the identified area
 - Field surveying of stormwater infrastructure, open channel (cross section & profile), roads, lowest floor and lowest adjacent grade of all structures in the area, utilities
 - Areas subject to flooding during the 25-yr, 24-hr storm event or less are mapped
 - A minimum of three (3) alternatives to mitigate flooding up to and including the 25-yr, 24-hr storm event
 - Right of Way/ Easement requirements
 - Permit requirements
 - Opinions of probable cost for each alternative

Capital Project Implementation Recommendation and Estimated Capital Costs

- Once alternates are developed, a meeting with impacted residents is held to present the alternates and develop consensus on the solution.
- Once a consensus solution is determined, the following actions occur:
 - A consultant is hired through either an indefinite services contract to develop detailed plans and contract documents for the agreed upon solution including;
 - Detailed surveying
 - Detailed Right of Way/ Easement requirements
 - Permits (local, state, federal)
 - Utility coordination
 - Plan sheets, details, notes, quantities
 - Final Opinion of Cost
 - Bidding documents
 - Assistance with funding sources such as KIA, FEMA, etc.

Capital Project Implementation Recommendation and Estimated Capital Costs

- The consultant assists in the bidding process by drafting addenda, preparing a bid tabulation, and making a recommendation of award.
- The consultant assists during construction by answering technical questions, reviewing pay applications, and creating “punch lists”, and other closeout documents.

Capital Project Non-Implementation Recommendation

- If maintenance will resolve the issue, the maintenance is performed and the situation monitored. If no future flooding occurs, the project will be recommended for removal from the Priority Project List .
- If the PER does not identify any current flooding issues, the following process is followed:
 - Follow up letters are sent to the area under investigation briefly explaining the findings to date and allowing residents 30 days to present any additional or new information.
 - If no new information is received, the district Councilmember for the area is notified in writing of the findings and a recommendation is made to remove the project from the priority list.
 - If no objection is received, the project will be removed from the priority list the following January when an updated list is created and posted to LFUCG’s web page.

RECENT FLOOD RELIEF ACTIONS

- Using the procedure outlined above, LFUCG has had completed work for the following projects:
 - Walhampton Dr. (#61.2)
 - Wilson Downing Road @ Wilson Downing Tributary(#64.5)
 - Elam Park(#67.5)

IDENTIFICATION OF NEAR TERM FLOOD RELIEF ACTIONS



IDENTIFICATION OF NEAR TERM FLOOD RELIEF ACTIONS

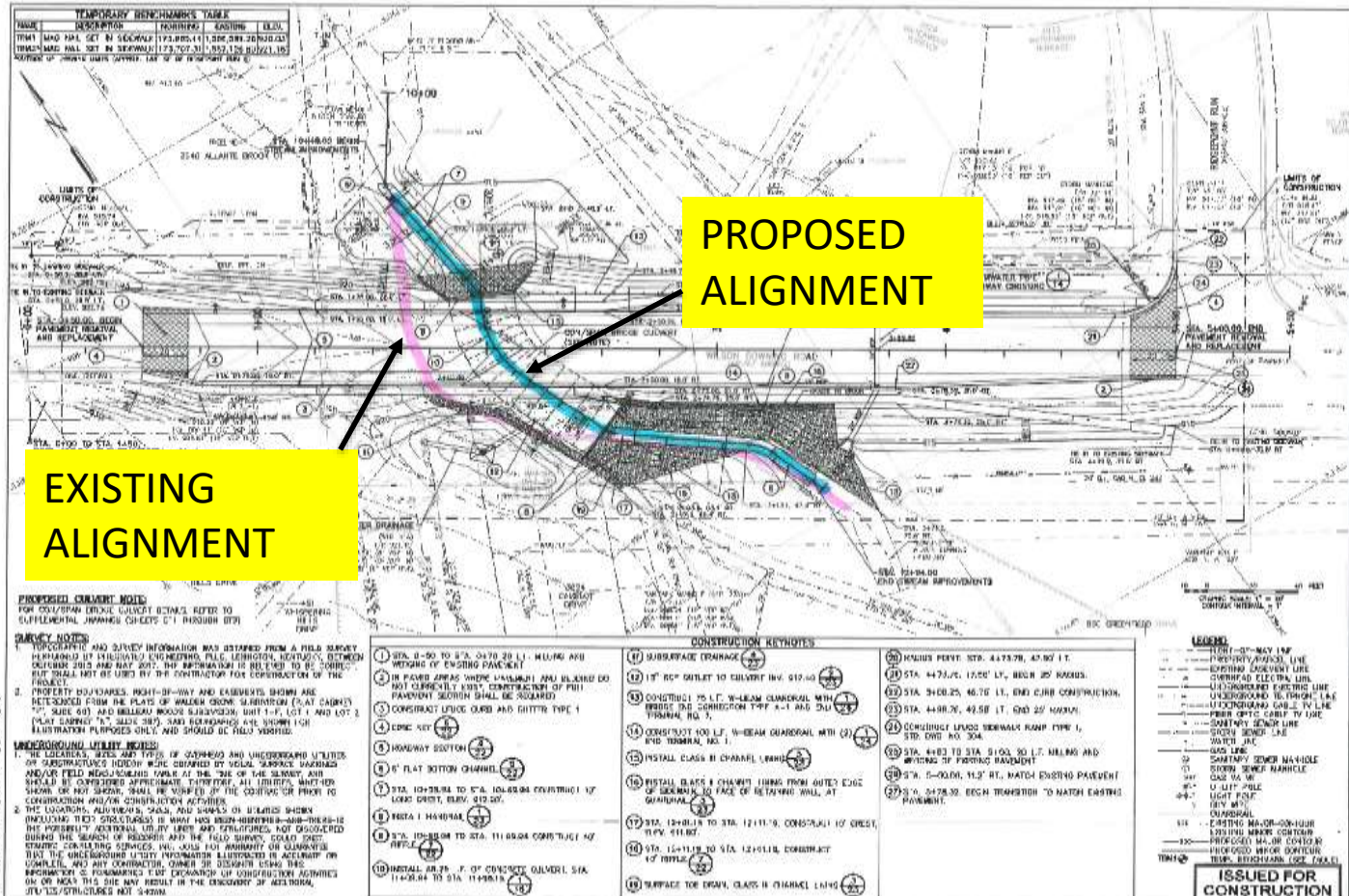


CURRENT FLOOD RELIEF ACTIONS

- Using the procedure outlined above, LFUCG is currently working on the following projects:
 - Wilson Downing Road @ Wilson Downing Tributary(#64.5)
 - Southland Dr./Wolf Run(#s 66.6, 71, 80.3, 80.6, 85.5,)
 - Peachtree/ Woodhill (#s 71.5 & 72)
 - Lyon Dr. – to be added to list in 2019.



CURRENT FLOOD RELIEF ACTIONS Wilson Downing Rd.



EXISTING ALIGNMENT

PROPOSED ALIGNMENT

PROPOSED CONSTRUCTION NOTES:
FOR CONSTRUCTION CONTRACTORS REFER TO SUPPLEMENTAL DRAWING SHEETS C-1 THROUGH D-10

SURVEY NOTES:

1. TOPOGRAPHY AND SURVEY INFORMATION WAS OBTAINED FROM A FIELD SURVEY PERFORMED BY REGISTERED ENGINEERING FIRM, LEXINGTON SURVEYING, BETWEEN OUTSIDE 2015 AND MAY 2017. THE INFORMATION IS BELIEVED TO BE CORRECT. THIS SHALL NOT BE USED BY THE CONTRACTOR FOR CONSTRUCTION OF THE PROJECT.
2. PROPERTY BOUNDARIES, RIGHT-OF-WAY AND EASEMENTS SHOWN ARE DETERMINED FROM THE PLATS OF WILSON DOWNING SUBDIVISION (PLAT CARRIED "P", SHEET 60) AND BIRLAWOOD SUBDIVISION, UNIT 1-F (LOT 1 AND LOT 2 PLAT CARRIED "P", SHEET 287). THIS INFORMATION IS SHOWN FOR ILLUSTRATION PURPOSES ONLY AND SHOULD BE FIELD VERIFIED.

UNDERGROUND UTILITY NOTES:

1. THE LOCATION, DEPTH AND TYPE OF UNDERGROUND AND UNDERGROUND UTILITIES OR STRUCTURES INDICATED WERE OBTAINED BY VISUAL SURFACE INSPECTION AND/OR FIELD INVESTIGATION CONDUCTED AT THE TIME OF THE SURVEY. THIS INFORMATION IS BELIEVED TO BE CORRECT. ALL UTILITIES, WHETHER SHOWN OR NOT SHOWN, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND/OR CONSTRUCTION ACTIVITIES.
2. THE LOCATION, DEPTH AND TYPE OF UNDERGROUND UTILITIES SHOWN (INCLUDING THE TYPE OF UTILITY) IS WHAT HAS BEEN OBSERVED AND THERE IS NO ASSUMPTION THAT ALL UTILITIES ARE SHOWN. CONTRACTORS ARE ADVISED THAT THE UNDERGROUND UTILITY INFORMATION ILLUSTRATED IS ACCURATE FOR COMPLETE AND ANY CONSTRUCTION, OWNER OR DESIGNER USING THIS INFORMATION IS RESPONSIBLE FOR DETERMINATION OF CONSTRUCTION ACTIVITIES ON OR NEAR THIS SITE MAY RESULT IN THE EXPOSURE OF UNEXPECTED UTILITIES/STRUCTURES NOT SHOWN.

- | CONSTRUCTION KEYNOTES | |
|--|---|
| 1. STA. 0+50 TO STA. 0+70 (20 L.F.) MILLING AND PATCHING OF EXISTING PAVEMENT | 17. SUBGRADE DRAINAGE |
| 2. IN ROADWAY AREAS WHERE MILLING AND PATCHING DO NOT COMPLETELY RESTORE CONSTRUCTION OF FULL PAVEMENT SECTION SHALL BE REQUIRED | 18. 12" RCP OUTLET TO CURBWAY INV. 510.00 |
| 3. CONTRACT LAYOUT CURB AND GUTTER TYPE 1 | 19. CONSTRUCT 15.0 L.F. W-BEAM CURB/RAIL WITH 6" RIBS TO CONNECTION TYPE 1-A-1 AND 2-A-1 (TYPICAL, NO. 2) |
| 4. EDIC ACCT | 20. CONSTRUCT 100 L.F. W-BEAM CURB/RAIL WITH 6" RIBS (TYPICAL, NO. 1) |
| 5. ROADWAY SECTION | 21. INSTALL CLASS II CHANNEL LEAK |
| 6. 8" FLAT BOTTOM CHANNEL | 22. INSTALL CLASS I CHANNEL LEAK FROM OUTER EDGE OF SIDEWALK TO FACE OF RETAINING WALL AT GUTTER |
| 7. STA. 10+28.00 TO STA. 10+38.00 CONSTRUCT 12" LOAD CREST, BENCH 510.00 | 23. STA. 12+18.11 TO STA. 12+111.00, CONSTRUCT 12" RCP |
| 8. BENCH 1 HASDRAIN | 24. STA. 12+111.00 TO STA. 12+121.00, CONSTRUCT 12" RCP |
| 9. STA. 10+38.00 TO STA. 11+38.00 CONSTRUCT 40" RCP | 25. SURFACE TO DRAIN, CLASS II CHANNEL LEAK |
| 10. INSTALL 48" R.F. 9" OF CONCRETE CURBWAY, STA. 11+38.00 TO STA. 11+45.00 | 26. 48" R.F. PERKY PERKY, STA. 4+75.00, 45.00 FT |
| | 27. STA. 4+75.00, 17.00' L.F., BENCH 20' RISES |
| | 28. STA. 5+00.00, 46.70' L.F., END CURB CONSTRUCTION |
| | 29. STA. 4+98.26, 42.58' L.F., END 20' WALKWAY |
| | 30. CONSTRUCT 15.00' SIDEWALK RAMP TYPE 1, STA. 5+00.00 TO STA. 5+15.00 |
| | 31. STA. 4+82 TO STA. 5+00.00 L.F. MILLING AND PATCHING OF EXISTING PAVEMENT |
| | 32. STA. 5+00.00, 11.52' FT., MATCH EXISTING PAVEMENT |
| | 33. STA. 5+278.30, BENCH TRANSITION TO MATCH EXISTING PAVEMENT |

LEGEND:

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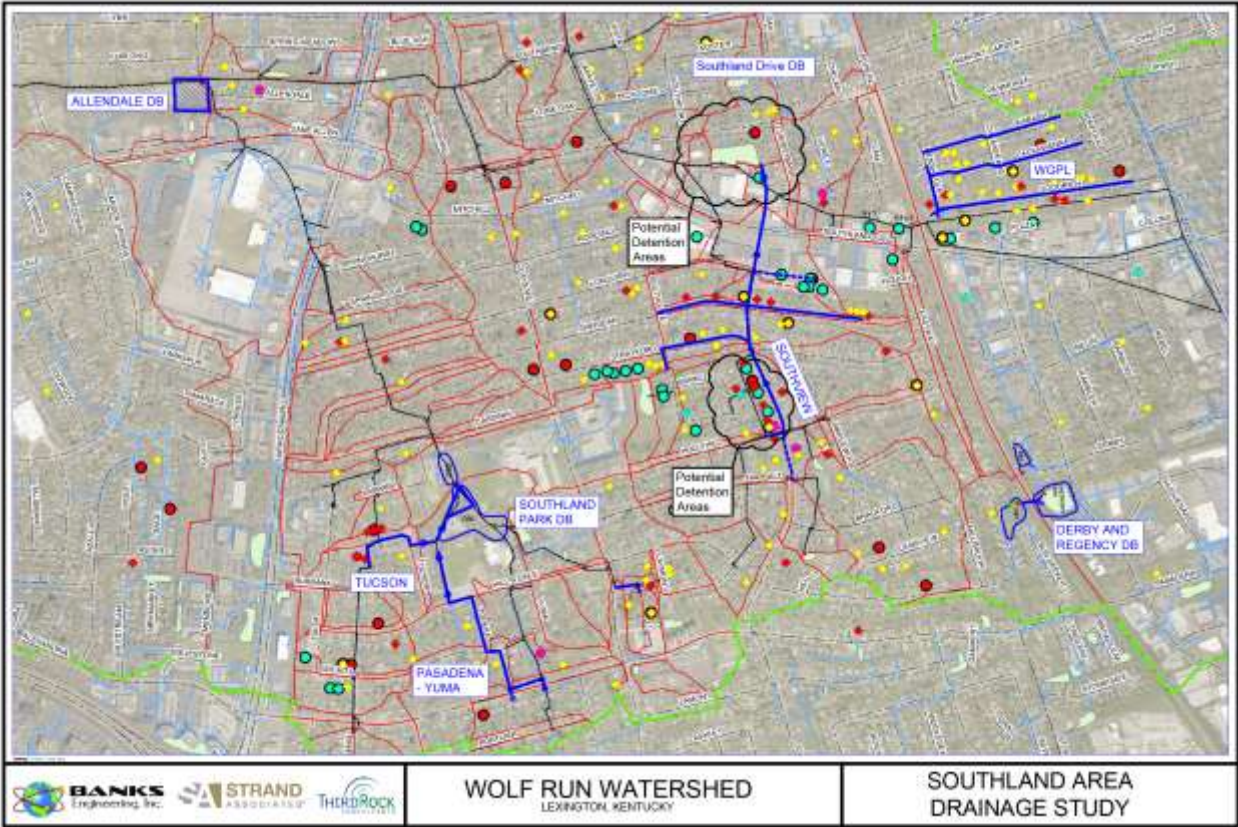
NO.	REVISION
1	ISSUED FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION

Project Number: 17-0001
 Date: 05/05/2018
 Drawn: J. J. J. J.
 Checked: J. J. J. J.
 Project Engineer: J. J. J. J.
 Date: 05/05/2018

CURRENT FLOOD RELIEF ACTIONS

Southland/Wolf Run



CURRENT FLOOD RELIEF ACTIONS

Peachtree/Woodhill



CURRENT FLOOD RELIEF ACTIONS

Lyon Dr.



QUESTIONS?

