

CITY OF MEDINA STORMWATER INFRASTRUCTURE



MARCH 28, 2022

STORMWATER HISTORY

HISTORICALLY DRAINAGE OF PROPERTY WAS IMPLEMENTED TO REMOVE STORMWATER AND SHALLOW GROUNDWATER FROM PROPERTY IN ORDER TO FARM, DEVELOP CITIES AND CONSTRUCT ROAD NETWORKS.



PURPOSE OF STORMWATER MANAGEMENT

- WATER QUALITY
- SALMON RECOVERY
- FLOOD CONTROL



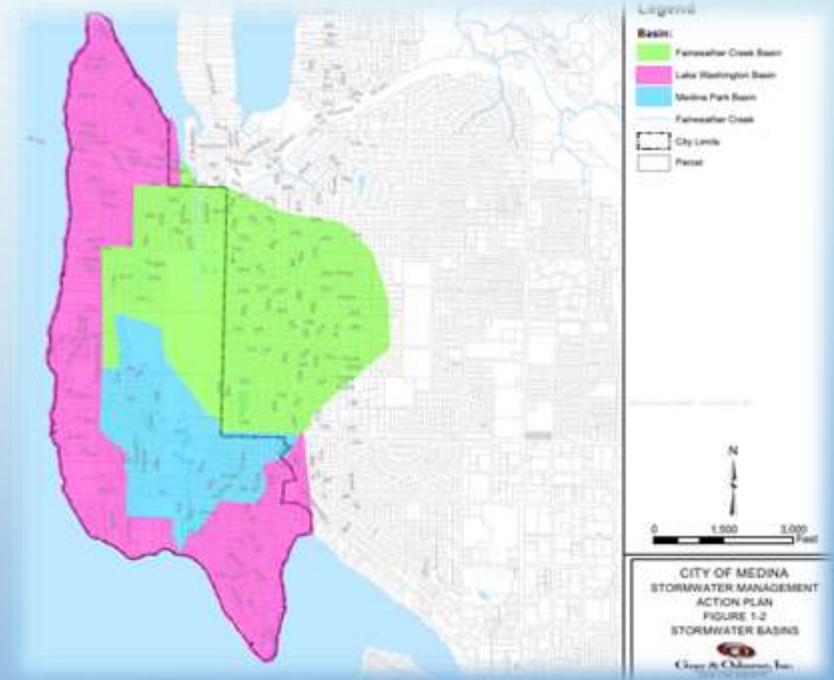
STORMWATER RELATED ISSUES

- DOWNSTREAM FLOODING
- EROSION
- FILLING OF SHIPPING CHANNELS
- POLLUTION OF DRINKING WATER SUPPLIES
- HABITAT DAMAGE
- LOSS OF RECREATION
- OILS AND GREASE
- HEAVY METALS
- NUTRIENTS
- BACTERIA
- FINE SEDIMENT
- TEMPERATURE INCREASE
- FLASHY HYDROLOGIC RESPONSE
- DIRTY
- UBIQUITOUS
- DIFFUSE
- VARIABLE
- NO ONE WANTS IT



REGULATION AND COMPLIANCE

- CLEAN WATER ACT OF 1972 – NPDES PERMIT
 - NATIONWIDE POLLUTANT DISCHARGE ELIMINATION SYSTEM PHASE II
- STATE & LOCAL REGULATIONS FOR DEVELOPMENT
- STANDARD OF PRACTICE FOR CONVEYANCE DESIGN
- DEVELOPMENT OF RUNOFF MODELS



WHAT DOES THE CITY CURRENTLY HAVE?

- 1985 PAPER MAPS
- 1992 COMPREHENSIVE STORMWATER PLAN
- 2010 GIS BASE MAP WITH HANDHELD GPS

INCOMPLETE & INACCURATE



FIELD INVESTIGATION

- GENERAL MAINTENANCE ISSUES
- NEGLECT

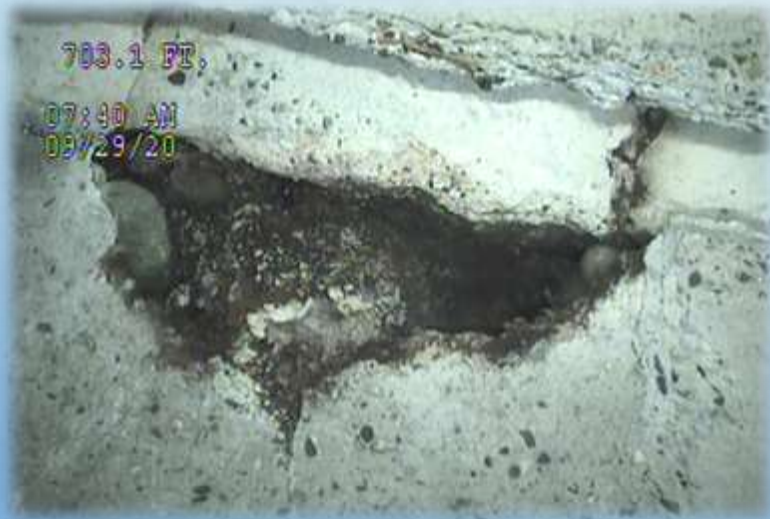


PUNCTURES, SEPARATION, CORROSION



CONCRETE PIPE DAMAGE

- STRESS CRACKS, BROKEN JOINT



ROOTS, ROCKS, DIRT, CONCRETE



POOR CONSTRUCTION

- INADEQUATE COVER
- IMPROPER BEDDING
- POOR MATERIALS



CUSTOM, MYSTERY CONNECTIONS



GENERAL FINDINGS

- LOTS OF OLDER, SMALL DIAMETER PIPES
- VARIETY OF INLETS, CATCH BASINS, FRAMES, & GRATES
- STRUCTURES HIDDEN BY LANDSCAPING
- FEW TREATMENT SYSTEMS
- FEW FLOW CONTROL FACILITIES
- LOCALIZED FLOODING ISSUES



WHAT NEEDS TO BE DONE?

- UPDATE MAP USING GIS-BASED PLATFORM
- ASSET ESSENTIALS TOOL:
 - TRACKING MAINTENANCE ACTIVITIES
 - NPDES TRACKING
- INVENTORY
- NPDES COMPLIANCE
- IDENTIFY PROBLEMS
- FIND ALL SYSTEM COMPONENTS
- MAINTENANCE SCHEDULE
- UPDATE THE MAP YEARLY
- SUSTAINABLE FUNDING SOURCE
- CONTINUE INVESTIGATION AND CONDITION ASSESSMENTS
- DEVELOP MAINTENANCE SCHEDULES PER NPDES
- DEVELOP LONG TERM CAPITAL IMPROVEMENTS



CURRENT INVENTORY APPROX. \$16M

ASSETS	LENGTH LF
12-inch or smaller	39,331
15- to 21-inch	3,841
24-inch	2,746
30-inch	44
36-inch	948
48-inch	84
60-inch	99
Unknown Pipes	5,749
Swales/Ditches	11,130
Catch Basins	1,012
Outfalls	24
Culverts	9 of various sizes



CONCLUSIONS

- OLD SYSTEM
- 50 YEARS OF DEFERRED MAINTENANCE
- PROBLEMS
- NEW NPDES REGULATIONS



LOOKING AHEAD

- ENHANCED MAINTENANCE PROGRAM
- CAPITAL IMPROVEMENT PROGRAM
- ADDITIONAL NPDES REQUIREMENTS
- FUNDING



MAINTENANCE PROGRAM

- PROACTIVE VS. REACTIVE
- MORE FREQUENT/DETAILED INSPECTIONS
- EXPOSE & MARK FACILITIES
- PIPE JETTING & TV INSPECTION
- CATCH BASIN CLEANING & ADJUSTMENT
- MINOR REPAIRS
- RECORD KEEPING
- ADMINISTRATION VS. FIELD WORK
- CLEANUP EASEMENTS



ADDITIONAL NPDES REQUIREMENTS

- ADMINISTRATION (RYAN PLUS CONSULTANTS)
- FIELD OPERATIONS (CONTRACTORS)
- ROUTINE PERMIT TASKS:
 - ANNUAL REPORT
 - TRACKING OF ACTIVITIES & COSTS
 - LONG RANGE PLANNING
 - LID CODE IMPLEMENTATION & UPDATES
 - PUBLIC EDUCATION, OUTREACH, & INVOLVEMENT
 - MAPPING UPDATES
 - IDDE INVESTIGATIONS, TRACKING, & REPORTING
 - DEVELOPMENT REVIEW, INSPECTION, DOCUMENTATION
 - O&M TRAINING & RECORDKEEPING
 - SOURCE CONTROL PROGRAM
 - MONITORING & ASSESSMENT
- NEW - SMAP (RETROFITS – CAPITAL PROJECTS, ADDED O&M COSTS)



FUNDING OPTIONS

- REET, CURRENTLY \$150K YR BUT TAKES FROM OTHER CAPITAL PROJECTS
- GRANTS – YES, HOWEVER UNRELIABLE / UNSUSTAINABLE
- REQUIRE DEVELOPERS TO UPDATE FRONTAGE SYSTEM OR PAY INTO IMPROVEMENT PLAN
- STORMWATER UTILITY WITH ANNUAL FEE

